ICMEM

International Conference on Management in Emerging Market (ICMEM 2018)

IBEC

The IABEP International Business Engineering Conference (IBEC 2018)

PROCEEDING BOOK

Digital Integration and Business Sustainability in Emerging Markets

Padma Legian Resort Bali
8 - 10 August 2018

Organized by:

SBM ITB
School of Business & Management

IABEP
International Association of
Business Engineering Professionals

Proceeding Book of International Conference on Management in Emerging Markets (ICMEM 2018)

"Digital Integration and Business Sustainability in Emerging Markets"

Padma Legian Resort Bali

8 – 10 Agustus 2018

Proceeding Book of International Conference on Management in Emerging Market (ICMEM 2018)

"Digital Integration and Business Sustainability in Emerging Markets"

Chief Governing Officers   : Prof. Kadarsah Suryadi (Rector of ITB)

Prof. Bambang Riyanto (Vice Rector of Research, Innovation & Partnerships of ITB)

Chief Supervisory Officer   : Prof. Sudarso Kaderi Wiryono (Dean of SBM ITB)

Chief Executive   : Nur Budi Mulyono

Secretary   : Yunieta Anny Nainggolan

Annisa Rizkia Syaputri

Treasurer   : Adita Pritasari

Mila Jamila Khatun Badriyah

Reviewer   : Dedy Sushandoyo

Liane Okdinawati

Desy Anisya Famaciawati

Novi Amelia

Noorhan Firdaus Pambudi

Donald Crestofel Lantu

Aria Bayu Pangestu

Marina Natalia Tampubolon

Emilia Fitriana Dewi

Novi Amelia

Akbar Adhi Utama

Nur Budi Mulyono

Layung Anindya P

R Aswin Rahadi

Fransisca Budyanto Widjaja

M Yorga Permana

Yuanita Handayati

Ahmad Danu

Mandra Lazuardi Kitri

Anggara Wisesa

Henndy Ginting

Adita Pritasari

Nur Arief Putranto

Prawira Fajarindra Belgiawan

Taufik Faturohman

Dimas Maulana

Eko Agus Prasetio

Meditya Wasesa

Sita Deliyana Firmialy

Melia Famiola

Sinta Aryani

Andika Putra Pratama

Atik Aprianingsih

Lidia Mayangsar

Shimaditya Nuraeni

Nurrani Kusumawati

Yudo Anggoro

Reza A. Nasution

Fitri Aprilianty

Ilham Fadhil

Subiakto Sukarno

Annisa Rahmani

Isti Raafaldini M

Achmad Fajar H

Salfitrie Roos

Achmad Ghazali

Mustika Sufiati P

Harimukti Wandebori

PREFACE

It is with pleasure that the School of Business and Management, Institut Teknologi Bandung (SBM ITB) concurrently organizes the 3rd International Conference on Management in Emerging Markets (ICMEM) and the 2nd International Business Engineering Conference (IBEC) in Bali, Indonesia. For the first time, SBM ITB is trusted to host IBEC, the conference of the International Association for Business Engineering Professionals (IABEP).

This year, the theme for ICMEM is "Digital Integration and Business Sustainability in Emerging Markets" while the theme for IBEC is "Business Engineering and Industry 4.0 in a Global Economy." Both highlight the phenomenon of digitalization in today's globalized world. For ICMEM specifically, it serves as an avenue for academics and scholars to participate in providing solutions and ideas for businesses, governments, and investors on how to best manage uncertainties in emerging countries. Participants are expected to share their insights through their paper and poster presentations. Participants can also register for a series of workshops, which are the core activities of IBEC.

Collectively, with about more than 200 papers accepted for presentation at ICMEM and XXX people registered in IBEC workshops, it is expected that participants benefit from the experience of sharing in both conferences. Selected papers have the opportunity to be published in an academic journal, some SCOPUS-indexed and some DIKTI-accredited.

Overall, I am grateful for the contribution of the committee members, partners, sponsors, authors, and general participants, as well as others involved in the making of the conferences, including the finalization of this Book of Abstracts.

Bandung, August 2018

Chairman of ICMEM 2018

Dr. Eng. Nur Budi Mulyono

ICMEM IBEC

ICMEM & IBEC 2018
CONFERENCE PROGRAM

Wednesday, 8th August 2018

Time	Event	Location
08.00 - 09.00	ICMEM Registration	Pre function
09.00 – 09.30	Opening speech : Prof. Sudarso Kaderi Wiryono	Ballroom (Plumeria 1,2,3)
09.20 – 10.00	Keynote Speech	
10.00 – 10.30	Coffee Break	
10.30 – 12.00	Panel Session: Prof. Kung-Jeng Wang; Dr. Deddy Priatmodjo K.; Dr. Raoul Oberman Moderator: A. Taschner	Ballroom (Plumeria 1,2,3)
12.00 – 13.30	Lunch Break	
13.30 – 15.00	Poster Presentation	Ballroom (Plumeria 1,2,3)
15.00 – 15.15	Coffee Break	
15.15 – 17.20	Industrial Gathering from BNI and Mandiri Moderator: Dr. Yunieta Anny Nainggolan	Hibiscus 1 & 2

Thursday, 9th August 2018

Time	Event	Location
08.00 – 09.00	ICMEM Registration	Pre function
09.00 – 10.00	Paralel Session 1-4	Hibiscus, Gustavia, Gardenia, Michelia, Magnolia, Amhertia 2
09.30 – 10.30	IBEC Registration	Pre function
10.00 – 10.30	Coffee Break	
10.30 – 10.45	Welcoming Speech: Elected Governour I Wayan Koster	Ballroom (Plumeria 1,2,3)
10.45 – 11.00	IBEC Opening Speech: Prof. Sudarso Kaderi Wiryono	

ICMEM IBEC

11.00 – 11.15	IBEC Opening Speech: A. Taschner	
11.15 – 12.15	Keynote IBEC : Hendrik Brumme	
12.15 – 13.30	Lunch Break	
13.30 – 15.00	IBEC Panel Session: H. Brumme, E. Sweeny, A Budiman, M.D. Tangkas. Moderator: Yudo Anggoro Ph.D and A. Taschner	Ballroom (Plumeria 1,2,3)
15.00 – 15.30	Coffee Break	
15.30 – 17.30	IBEC Workshop 1A Opportunities of Industry 4.0 for Business Models and Processes (Daniel Palm, ESB Business School)	Hibiscus
	IBEC Workshop 1B Blockchain Technology (Mohd Ridzuan Bin Darun, Universiti Malaysia Pahang)	Amhertia
15.30 – 17.35	Parallel Session 1- 4	Gustavia, Gardenia, Michelia, Magnolia

Friday, 10th August 2018

Time	Event	Location
08.00 – 09.00	ICMEM & IBEC Registration & morning coffee	Pre function
09.00 – 11.30	Paralel Session 1-8	Hibiscus 1, Hibiscus 2, Gustavia, Gardenia, Amhertia 1, Amhertia 2, Michelia, Magnolia
09.30 - 11.30	IBEC Workshop 2A The Global Maker Movement and the Future of Industry (Martin Grossman, Bridgewater State University)	Plumeria 1
	IBEC Workshop 2B Industry 4.0 and Modern Supply Chain Management (Edward Sweeney, Aston University)	Plumeria 2

ICMEM IBEC

11.30 – 13.30	Extended Lunch Break	
13.30 – 15.30	IBEC Workshop3A Industry 4.0 in manufacturing and logistics: economic and technological barriers and drivers for automation and robotics (Wolfgang Echelmeyer, ESB Business School)	Plumeria 1
	IBEC Workshop 3B Big Data Analytics (Nur Budi Mulyono, Institut Technologi Bandung, + Alfred Budiman, Samsung R&D)	Plumeria 2
13.30 – 15.30	Parallel Session 1- 8	Hibiscus 1, Hibiscus 2, Gustavia, Gardenia, Amhertia 1, Amhertia 2, Michelia, Magnolia
15.30 – 16.00	Coffee Break	
15.45 – 17.20	IBEC Workshop Closing Session Business Engineering and Industry 4.0 in a Global Economy - The Way Forward Workshop hosts+ facilitators, workshop participants Moderator: A. Taschner	Plumeria 1& 2
16.00 – 17.45	Paralel Session 1- 8	Hibiscus 1, Hibiscus 2, Gustavia, Gardenia, Amhertia 1, Amhertia 2, Michelia, Magnolia
18.00 – 20.45	Gala Dinner and awarding night	Main pool side / ballroom

ICMEM IBEC

SPEAKERS' PROFILES

Prof. Dr. Hendrik Brumme

Hendrik Brumme (Doctorate, Erasmus University; Diplom-Wirtschaftsingenieur, Karlsruhe University) has been President of Reutlingen University since 2012. Previously, he served as Vice-President at the same institution for a five-year term. During the 16 years of industrial experience at Hewlett Packard, he held a number of senior management positions. From 1998 to 2004, he was Director of Operations and Head of the European Enterprise Systems plant in Germany with an annual turnover of $US 2.5 bn. This manufacturing facility won several industrial awards for excellence. His teaching and research focus is in the fields of supply chain management; logistics planning as well as factory management and development.

Professor Kun Jen Wang

Professor Kun Jen Wang is a distinguished professor in Department of Industrial Management at National Taiwan University of Science and Technology. His research interest are Medical Informatics, Supply Chain Management, Service Science and Innovation, Technology and Operations Management, Computational Intelligence in Production Economics. He has done many research project, among them more than 40 projects were sponsored by NSC, Top university grant project, Taiwan Tech, and industries. He also has a research project with topic a novel decision-support model of demand fulfillment and resource allocation for improving capital and capacity efficiency in TFT-LCD industry, as well as Taoyuan International airport city and logistics industry planning. He has been awarded NTUST outstanding research award, NTUST excellence teaching award, and CIIE paper award for his excellence work in his research area. In addition, he has many publications, such as 60 referred journal papers including 40+ SCI/SSCI papers (IEEE Transactions on Systems, Man, and Cybernetics, IIE Transaction, European Journal of Operational Research etc.), 3 US patent, and 3 Taiwan patents.

Deddy P. Koesrindartoto Ph.D

Deddy Koesrindartoto is an Assistant Professor at the School of Business and Management, Institut Teknologi Bandung. (SBM ITB). He is an Economist by training, received a Ph.D. in Economics with a minor in Statistics, and an MSc. in Industrial Engineering, all from Iowa State University. He also earned a first degree in Electrical Engineering from ITB, Bandung. He was the former Director of Graduate Programs of Management Science in SBM ITB, oversees both Master and PhD Programs. Before that assignment, He served as Director of Institutional Development and Planning at SBM ITB. Currently he is the Head of Capital Market and Investment Laboratory and the Head of Kresna – SBM ITB Financial Trading Center, School of Business and Management ITB. Prior to joining SBM ITB in 2005, he was a Research Fellow at the Center for Computational Finance and Economics Agents (CCFEA) at the University of Essex, UK. He spent three years working for energy services industries before pursuing graduate studies. Corporate Finance, Investment Management, Capital Markets, Statistics for Business, Complex Adaptive Systems, Microeconomics, and Macroeconomics are among Deddy's present and past teaching assignments. He consulted for World Bank, Ministry of Finance, BAPPENAS, Islamic Development Bank, Indonesia Antitrust and Competition Agency (KPPU), Australian Indonesia Partnership for Economic Governance (AIPEG), Indonesia National Council for Climate Change (DNPI), Boston Consulting Group , and some other private companies.

Prof. Dr. Edward Sweeney

Professor Ed Sweeney is Professor of Logistics and Systems at Aston University in Birmingham, UK and Director of the Aston Logistics & Systems Institute. He is an experienced researcher with over 150 publications in the form of books, book chapters, journal papers and articles to his name. He also sits on the editorial boards of several leading academic journals and currently chairs the Logistics Research Network (LRN), the UK's leading network of scholars in the supply chain field. Ed has worked and lectured in over 50 countries and collaborated with many of the world's leading companies. His current work focusses on the development of sustainable and resilient global supply chain architectures.

ICMEM IBEC

Alfred Boediman, Ph.D

Alfred Boediman is an information technology practitioner who has been in the IT world for decades. He is an experienced senior management who has implemented changes to answer business and technology needs across a number of areas in the Software R&D and Telecommunication sectors. Alfred Boediman, PhD is also an Adjunct Professor in University of Chicago Graduate School of Business - Asia Campus, he holds degrees from University of Indonesia, Vrije Universiteit Brussel, RIT and UC Booth School of Business. He got his PhD degree in Econometrics & Statistics from the University of Chicago. His postdoctoral research focuses on examining the neuro-statisical approach in derivatives financial exchange with combination of multi layered market sentiment. He currently serves as Vice President of Samsung Research & Development Indonesia, he also teaches business at the famous American university, University of Chicago. Besides being successful in his career, he is also an individual who has a strong passion in education. He is also advisor for Polsky Center of Entrepreneurship in the University of Chicago, while enjoying organization activities like biking, archery and cooking in his free times.

IR. I MADE DANA M. T. MSi

Ir. I Made Dana M.Tangkas, MSi also known as Made Tangkas was born on October 13, 1965 from Pupuan Village, Tabanan Regency, Bali. A lot of achievements and positions have been achieved by Made Tangkas. Besides currently serving as Director of PT. Toyota Indonesia (PT. TMMIN), Made Tangkas had served as Vice President of Toyota in the Asia Pacific region for the period of 2009-2012 and he was also a board member of Astra Bina Ilmu Foundation (YABI) and Astra Dharma Bhakti Foundation since 2009 until now. Having expertise in automotive industry, Made Tangkas is often invited as a Guest Lecture at several well-known universities including ITB, IPB, UI and ITS. He has also worked with Jakarta Government under the leadership of Ahok in CSR and the improvement of Mampang, intersections in Jakarta for traffic safety on November 18 th 2013. Other than being busy in the automotive industry, Made Tangkas likes to write, therefore in 2010 Made Tangkas published a book titled "Building The Best Indonesia Business Way" with DR. (Hc) Ary Ganjar agustian.
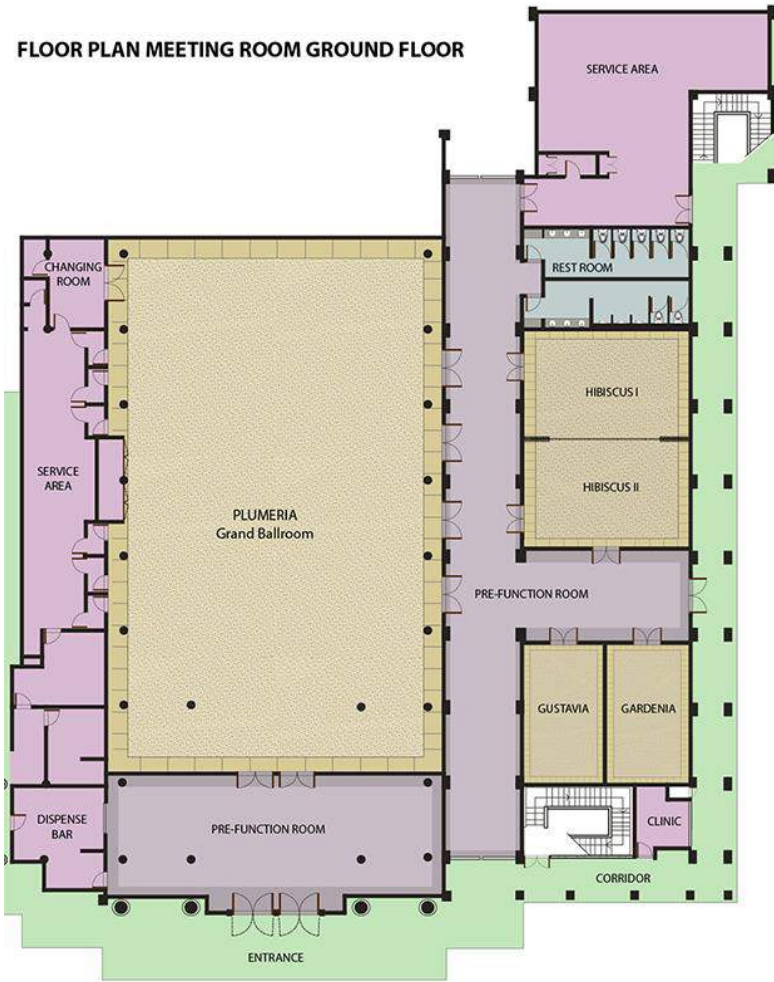
Dr. Raoul Oberman

Raoul Oberman is a leadership coach and an angel investor. Raoul coaches Family Owned Business owners and their families in South East Asia. Selectively he invests in early stage Ag-tech and Data-analytics ventures and helps them accelerate their growth. Raoul dedicates a portion of his time to non-for-profit organizations, e.g., Endeavor Indonesia, Partnership for Sustainable Agriculture Indonesia, and the Australia Indonesia Center As a board member and mentor of Endeavor, Raoul supports the creation of a start-up ecosystems in Indonesia through mentoring. As a board member and shareholder of Kaiima, he helps an Israeli Agri-tech company spearhead sustainable breeding technologies globally. In 2014 Kaiima was nominated by MIT as one of the 50 smartest companies. Raoul is a Director Emeritus, McKinsey since end of 2013. During 23 years with McKinsey he has worked in Asia, Northern Europe and the Middle East. For the last 3 years he led McKinsey's operations in Indonesia. For 5 years Raoul globally led the leadership training programs for young McKinsey partners. Raoul holds a PhD in Economics, Frankfurt University. He is US/Dutch born and grew up in Germany. He lives with his wife in Jakarta, Indonesia. They have four children who live in Europe and Asia.

SCIENTIFIC COMMITTEES

Prof. Iftekhar Hasan	Fordham University, USA (Finance)
Prof. Amine Tarazi	University of Limoges, France (Finance)
Prof. Rezaul Kabir	University of Twente, Netherlands (Finance)
Prof. Arifin Angriawan	Purdue University Calumet, USA (Strategic, Organization Studies, Finance)
Prof. Charles Rarick	Purdue University Calumet, USA (International Business)
Prof. Emmanuelle Nys	University of Limoges, France (Finance)
Prof. Sudarso Kaderi Wiryono	Institut Teknologi Bandung, Indonesia (Finance, Risk Management)
Prof. Togar M. Simatupang	Institut Teknologi Bandung, Indonesia (Operations and Supply Chain Management)
Prof. Dr. Ir. Dermawan Wibisono	Institut Teknologi Bandung, Indonesia (Performance Management)
Prof. Jann Hidajat Tjakraatmadja	Institut Teknologi Bandung, Indonesia (Knowledge Management)
Prof. Dr. Utomo Sarjono Putro	Institut Teknologi Bandung, Indonesia (Decision Science)
Prof. Dr. Sudrajati Ratnaningtyas	Institut Teknologi Bandung, Indonesia (Entrepreneurship and Technology Management)
Prof. Yoshiyuki Matsuura	Yamaguchi University, Japan (Operation, Finance)
Prof. Irwan Ekaputra	Universitas Indonesia, Indonesia (Finance)
Dr. Zaafri A. Husodo	Universitas Indonesia, Indonesia (Finance)
Dr. Ivan Butar Butar	Sampoerna School of Business, Indonesia (Management, Leadership)
Dr. Ubaidillah Zuhdi	Gdansk University of Technology, Poland (Economics)
Irwan Trinugroho, Ph.D	Universitas Sebelas Maret, Indonesia (Finance)
Gatot Yudoko, Ph.D	Institut Teknologi Bandung, Indonesia (Operation Management)
Deddy P. Koesrindartoto, Ph.D	Institut Teknologi Bandung, Indonesia (Economics, Finance)
Dr. Mursyid Hasan Basri	Institut Teknologi Bandung, Indonesia (Operation Management)
Dr. Isrochmani Murtaqi, S.E., M.Acc.	Institut Teknologi Bandung, Indonesia (Accounting)
Dr. Ir. Yuni Ros Bangun, MBA	Institut Teknologi Bandung, Indonesia (Management and organization)

HOTEL ROOMS MAP

FLOOR PLAN MEETING ROOM GROUND FLOOR

SERVICE AREA

REST ROOM

CHANGING ROOM

SERVICE AREA

HIBISCUS I

HIBISCUS II

PLUMERIA
Grand Ballroom

PRE-FUNCTION ROOM

GUSTAVIA | GARDENIA

DISPENSE BAR

PRE-FUNCTION ROOM

CLINIC

CORRIDOR

ENTRANCE

FLOOR PLAN MEETING ROOM 1ST FLOOR

SERVICE AREA

RESH ROOM

PANTRY | PANTRY

AMHERSTIA I

DRY GARDEN

AMHERSTIA II

VOID

PRE-FUNCTION ROOM

REST ROOM

REST ROOM

MICHELIA | MAGNOLIA

PRE-FUNCTION ROOM

PRAYING ROOM

DELONIX II | DELONIX I

FOYER

FOYER | STORE

CORRIDOR

DECK

ICMEM IBEC

TABLE OF CONTENTS

ACCOUNTING

BUSINESS STRATEGY

ICMEM IBEC

FINANCE AND INVESTMENT

HUMAN CAPITAL AND ORGANIZATION

ICMEM IBEC

ICMEM IBEC

ICMEM IBEC

OPERATIONS

ICMEM IBEC

POSTER

ICMEM IBEC

ACCOUNTING

ICMEM IBEC

ICMEM

The 3rd International Conference on Management in Emerging Markets

Cost-Based Analysis of Conventional and Autonomous Mobile Services in Indonesia

Meygantara Faozal Holieff[a*], Prawira Fajarindra Belgiawan[b]

[a,b]*School of Business and Management, Bandung Institute of Technology, Jl. Ganesha No 10, Bandung 40132, Indonesia*

Abstract

Since 2012, Autonomous Vehicle (AV) has become a spotlight issue in several countries. In the theme of "Ready for Automated Driving", some automobile manufacturer and technology representative join its first AV seminar and gives their view. Many benefits are stated in this seminar held in Washington, USA. On the other hand, Swiss also develop this technology. They develop and conduct the research especially in term of cost structure. They found the substantial changes in cost structure after hypothetically applying this technology. It is also interesting to apply AV technology in Indonesia case where online transportation has now become popular. In the uncertainty condition after ride-sharing mode dominates the transportation market, an innovation such as an autonomous vehicle is needed to compete for each other. This research is conducted to analyze the benefit contribution if it is implemented in the conventional transportation mode. The benefit can be caught if there is any substantial changing in cost structure. Autonomous technology is assumed to replace the human driver which impact to reducing variable cost. This technology also might change the fixed cost for a long-term. Using coding providing by ETH Zurich, this research focuses on cost structure changing while this technology is hypothetically implemented in Indonesia.

Keywords: Autonomous Vehicle; Fixed Cost; Variable Cost; Intention to Use

1. Introduction

Since 2012, The Transport Research Board Annual Meeting—the world's largest conference on transport research and development has never stopped to discuss about Autonomous (also called *self-driving, driverless, robotic*) Vehicle as their current issue. They put "Ready for Automated Driving" as the topic under the spotlight of its own seminar for the first time in 2012 in Washington, USA (Fraedrich et al., 2016). Until 2016, there were already more than ten sessions on autonomous driving which also invited the biggest technology company developing this kind of vehicle, as well as Google to be a keynote speaker. It reflects that autonomous vehicle is not only interesting for automobile manufacturing industry only, but also for the company providing the technology system and self-driving intelligent for its vehicle (Fraedrich et al., 2016).

There are 8 features which make Self-driving car interesting, such as Adaptive Speed Control, Automatic Emergency Braking, Automatic Lane Maintain Freeway Driving Mode, Traffic Jam Mode, Autonomous Parking System, Self-Driving Mode, Autonomous Driving Mode (PR Newswire, 2015). If this eight features are implemented to the conventional cars, the cars will evolve to become the 5th level of automation vehicle where the technology system fully takes the human driver roles in any situation such as executing of steering, acceleration, monitoring, and many dynamic driving tasks (Litman, 2018).

Burns et al (2013) found that the cost of driverless vehicles is approximately 0.15 US$ per trip-mile. They concluded that the variable cost factor is substantially changed to gain the profit. It was estimated the cost by differentiation

---

* Corresponding Author: Tel.: +62-813-2192-9353.
  E-mail address: meygantara@sbm-itb.ac.id

ICMEM

categories, which capture fixed and variable cost. For another case, it was found that the self-driving taxi remains economically competitive more than private cars because autonomous features can replace the human driver which means reducing the salary cost of operation totally (Bösch et al., 2017).

In 2014, IHS Automotive's research predicts that the world will adopt the autonomous vehicle in sometimes after 2050 (IHS, 2014). But it can be faster since World Economic forum publish its study for the past few decades that the time to reach the point of mass adoption has decreased to about 15 to 20 years (World Economic Forum, 2017). It is in line with the popular mechanic information that the technology of the cars are more likely to be implemented for the next 15-20 years after it is discovered (Stewart, 2017). Therefore, there is a possibility for Indonesia to adopt this technology for the next 15-20 year. To realize this idea, it is important for Indonesia to have a study about AV to begin the implementation, where currently, to the best of our knowledge, there is no research about it for Indonesian context. Thus, Indonesia needs a research started by the basic-cost structure that might be changed after implementing the autonomous feature and the impact for Indonesian people intention to use AV. Therefore the objective of this research is to find changes in cost structure if the AV technology is hypothetically implemented in conventional cars and taxis.

The structure of this paper is as follows. After the introduction part the in second section, we discuss cost structure of cars and taxis from previous research. Followed by methodology and the result of our calculation. Finally the conclusion is given in the last section.

2. Conventional Vehicle Cost Structure

There are three types of conventional private car that popular in Indonesia according to its market share, as shown in Table 1 (Bosch et al., 2017; Sindonews, 2017; Mobil Motor, 2017; Okezone, 2017). Table 1 also shows the definition, example and market share of each type of car. Where we see that Minibus market share is the largest (94.30%).

Table 1. Car Types

Car types	Definition	Brand	Market Share
MidSize	Four seater urban vehicle	Honda Jazz RS	50.00%
VAN	Seven seater urban vehicle	Toyota Avanza	51.40%
MiniBus	Sixteen seater with a small trunk	Toyota Hiace	94.30%

The cost structure of these cars is constructed by fixed cost and variable cost (Bosch et al, 2017). The fixed and variable cost of the private cars are presented in Table 2 below:

Table 2 Fixed and Variable Cost of Private Cars

FIXED COST	MIDSIZE	VAN	MINIBUS
Capacity	4	7	16
Acquisition (IDR)	262,500,000	208,300,000	461,000,000
Interest (IDR/a)	14,936,250	11,852,270	26,230,900
Insurance (IDR/a)	5,460,000	4,332,640	5,532,000
Tax (IDR/a)	5,250,000	4,166,000	9,220,000
Parking (IDR/a)	10,560,000	10,560,000	10,560,000
Other (IDR)	700,000	700,000	700,000
VARIABLE COST	MIDSIZE	VAN	MINIBUS
Depreciation (IDR/a)	26,250,000	20,830,000	46,100,000
Maintenance (IDR/a)	817,300	931,820	1,128,000
Cleaning (IDR/a)	2,080,000	2,080,000	2,080,000
Tires (IDR/a)	1,652,200	1,298,000	1,540,000

Fuel (IDR/a)	13,200,000	13,200,000	13,200,000
Toll (IDR/a)	13,728,000	13,728,000	13,728,000

Note: IDR/a is the cost per year (annual)

Different to private cars, cost structure on a taxi is defined as a combination of fixed and variable cost named direct cost. This research uses this cost because it is directly related to its services (Bluebird, 2016) and covered by its customer as the fare per kilometer. In 2016, Bluebird (2016) publishes their direct cost for operating vehicle of 31,716 for four kinds of the fleet. Since this research focus on regular taxi but there is no specific cost for this kind of fleet, it assumes that all vehicle have the same cost annually, presented at Table 2 below:

Table 3 Annual Direct Cost of Taxi (2016)

Direct Cost	Annual Cost per fleet (IDR)
Salaries, Allowance and Driver Cost	46,123,155.51
Fuel	29,798,618.99
Depreciation	21,918,085.51
Repair, Maintenance, and Spare Parts	6,129,083.11
KIR, Tera, and Fleet operation	2,047,389.33
Insurance	420,607.90
Others	1,590,648.25

3. Methodology

Since the autonomous technology have not been implemented yet in Indonesia, we only performed a hypothetical study to construct the cost structure if the autonomous features are adopted to the conventional vehicle. The data is calculated in Excel and R-Studio. From the data processing, we obtain the changing of the cost structure. The detail of the cost assumption and scenario can be seen in Appendix A.

4. Findings

Hypothetically, if the automation features was implemented to a conventional vehicle, the cost will be substantially changed as shown in Table 4.

Table 4 Cost of Autonomous Vehicle

COST	MIDSIZE (AV)	%	VAN (AV)	%	MINIBUS (AV)	%
Capacity	4		7		16	
Acquisition (IDR)	332,010,000	+26.48	277,810,000	+33.37	583,072,800	+15.08
Insurance (IDR/a)	3,276,000	-40.00	2,599,584	-40.00	5,532,000	-40.00
Tax (IDR/a)	5,250,000	0.00	4,166,000	0.00	9,220,000	0.00
Parking (IDR/a)	10,560,000	0.00	10,560,000	0.00	10,560,000	0.00
Other (IDR)	700,000	0.00	700,000	0.00	700,000	0.00
Maintenance (IDR/a)	975,623	1.73	947,972	1.73	1,147,552	1.73
Cleaning (IDR/a)	2,080,000	0.00	2,080,000	0.00	2,080,000	0.00
Tires (IDR/a)	1,486,980	-10.00	1,168,200	-10.00	1,386,000	-10.00
Fuel (IDR/a)	7,920,000	-40.00	7,920,000	-40.00	7,920,000	-40.00
Toll (IDR/a)	13,728,000	0.00	13,728,000	0.00	13,728,000	0.00

ICMEM

When several types of cars evolve to become an autonomous vehicle, the cost structure will also change. The changing of the private cars are shown as the figure 1 below.

Overall, the autonomous feature can impact the cost that spent by the customer. The total fixed cost will increase IDR 67,326,000 on Honda Jazz, IDR 67,776,944 on Toyota Avanza, and IDR 67,297,200 on Toyota Hiace after the autonomous feature adds its acquisition cost and decrease its insurance cost. Nevertheless, the customer can gain the efficiency through decreasing in annual spending that represented by the variable cost up to IDR 5,431,053 for Honda Jazz, IDR 5,393,648 for Toyota Avanza, and IDR 5,414,448 for Toyota Hiace.
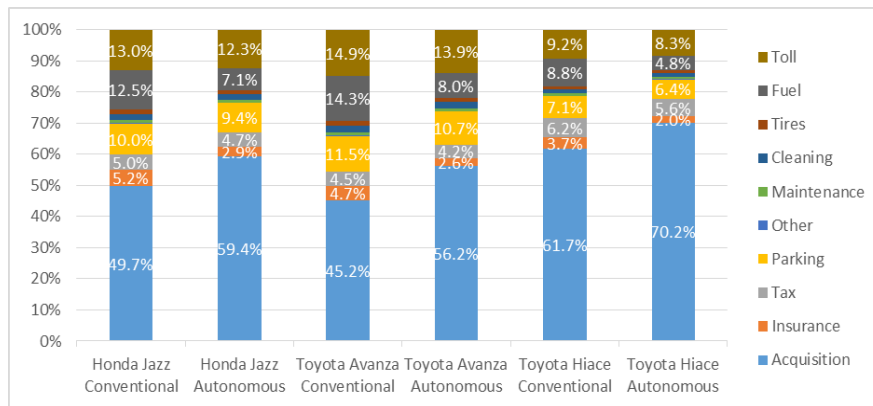
Fig. 1. Cost Structure comparison between conventional and autonomous car.

Same to the case of Taxi, there are a substantial changing after implementing the autonomous vehicle to conventional taxi. It makes the cost of Salary, Allowance, and Driver Cost become 0% to the total cost. There is no this kind of cost for autonomous taxi's cost structure. The fuel becomes lower to 22.6% of the total cost. The Repair, Maintenance, and Spare Part take a substantial changing because the percentage of this cost becomes 18%. Insurance that has decreased up to 40% than before, actually give a stable proportion because it takes 0.6% only to the structure. Last, even there is no changing for Depreciation, KIR, Tera and Fleet Operation, and another cost. They contributed to the structure change substantially to become 50.4%, 4.7%, and 3.7%. It is shown in Figure 2 below.
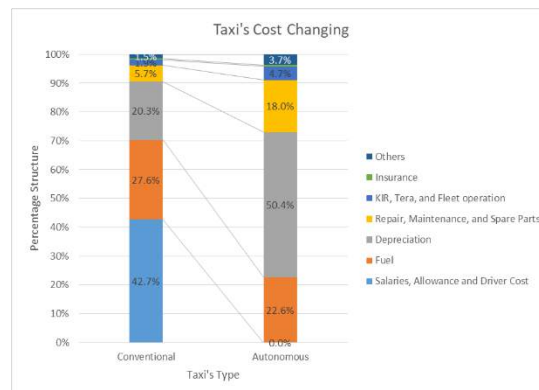
Fig. 2 Cost Structure comparison of Taxi.

ICMEM

As an aggregate calculation, this research finds the impact of this changing to the cost of taxi operation. If the automation features are implemented in the taxi, it will decrease the cost up to IDR 64,540,330 in a year per fleet. If a fleet run up to 60,000 km in a year, it will decrease the cost up to IDR 1,075 per kilometer. While the operator keeps the same fare but has the lower cost, the operator can catch profit IDR 1,081,658,580,210 higher in a year for 24,873 regular taxi fleet that they have. It is a substantial benefit for the taxi operator.

5. Conclussion

As a conclusion, this research finds a structure changing after the autonomous technology is hypothetically implemented in several types of conventional cars and conventional taxi in Indonesia context. For a conventional car, cost of acquisition becomes a variable that changed substantially. Even another fixed cost variable become lower than before, the cost of acquisition keep the total fixed cost being increased substantially. Fixed cost on changing the structure substantially. While the cost of maintenance increase, the decreasing in fuel cost and tire cost keep the total variable cost being lower.

Same to the case of a taxi, reduction in Salaries, allowance, and Driver cost totally make the structure changing and increase the proportion of another cost. Depreciation and Maintenance cost become a dominant proportion on the new cost structure after automation feature is implemented. Overall, the adoption of autonomous technology to a conventional taxi will reduce the cost per kilometer up to IDR 1,075. It becomes substantial because when the operator keep the same fare while the direct cost becomes lower, it will become a higher profit potential up to IDR 1,081,658,580,210 in a year.

For local transportation manufacturer or technology provider, they should catch this increase in fixed cost as an opportunity to conduct further research and development to develop the technology at a cheaper cost. They can start the research and development as soon as possible to keep their position as the main player in the future. For Taxi Operator, they should start to consider this technology adoption to their fleet. The decreasing in cost can become a good cost efficiency while the competition to online transportation become a hot issue in Indonesia. Through this technology, they can gain profit higher. They should catch this opportunity before the competitor grabs it faster.

For the customer, they have to choose the transportation mode wisely. While the cost of owning the private cars become higher and is not efficient compared to public transportation, using public transportation can give a good impact to their financial and reduce the traffic on the road. For the writer, we have to always elevate the knowledge and follow the issue related to this technology because it always develops day by day. Every developed issue can strengthen our position and we can share it to develop the strategy where we will work with.

There are several shortcomings of this study. First, to the best of our knowledge, there is no previous study about cost structure changing and intention to use of Autonomous Vehicle in Indonesia, which make this study difficult to get proper information. Therefore, the scenario and assumption are limited to the previous study from US and Switzerland that have developed this technology in their countries. Second, there is no real automation technology in Indonesia makes the simulation only do at the computer programming. If Indonesia ready to start the research, it can be a better simulation to calculate the cost better.

Third, this research commonly uses the average spending for the customer in Indonesia. For the variable cost of maintenance, the cost per several year and kilometer will be different because they have several spare parts which must be replaced differently. Thus, maintenance cost for a first-year will be different to second, third, fourth, and fifth year. To get a comprehensive result, the future research should consider this differentiation of cost in multiple years.

To make the future study to be more comprehensive, the future study must encourage the related parties to join. While this study wants to measure the cost of toll, there is an insurance cost component that is charged as a toll tariff also. While the study wants to measure the insurance cost, they need a good information from some technology provider and transportation policy planner. Thus, the future study should be a combination of these parties to ensure the information being integrated and in a good communication for creating a better future transportation technology system in Indonesia.

ICMEM

Last, the researcher should try to calculate the cost for another transportation mode, such as MRT, LRT, BRT, etc. it is important to make a comparison between all transportation modes in Indonesia. While the market has a concern for cost efficiency, the comparison can be a base to develop a kind of AV that have a good profit and efficient in Indonesia.

Appendix A

Cost for Operating Honda Jazz

Cost	Value	Assumption, Remark, and Sources
acquisition	262,500,000	Midsize vehicle selected based on market share which are 50.00% Source: Santoso, W. B. (2017, September 15). Agustus 2017, New Honda Jazz Kuasai Pasar Hatchback. Retrieved June 13, 2018, from https://autotekno.sindonews.com/read/1240076/120/agustus-2017-new-honda-jazz-kuasai-pasar-hatchback-1505475404. The Sales price for the type of Honda Jazz RS M/T 2017, Source: Honda Indonesia. (n.d.). JAZZ. Retrieved November 11, 2017, from https://www.honda-indonesia.com/model/jazz
insurance	5,460,000	IDR 262,500,000*2.08%. Source: Otoritas Jasa Keuangan. (2017). Peraturan OJK Nomor 6/SEOJK.05/2017. Jakarta, Indonesia: OJK.
tax	5,250,000	IDR 262,500,000*2.00%. Source: DPRD dan Gubernur Provinsi DKI Jakarta. (2017). Peraturan Daerah Provinsi DKI Jakarta Nomor 2 Tahun 2015: Pajak Kendaraan Bermotor. Jakarta, Indonesia.
parking	10,560,000	8 hours/day*22 days/month*IDR 5000/hours*12 month. Source: Gubernur Provinsi DKI Jakarta. (2017). Peraturan Gubernur Provinsi DKI Jakarta Nomor 31 Tahun 2017: Tarif Layanan Parkir, Denda Pelanggaran Transaksi Dan Biaya Penderekan/Pemindahan Kendaraan Bermotor. Jakarta, Indonesia. Retrieve May 16, 2018, from https://jdih.jakarta.go.id/uploads/default/produkhukum/NO.31_.pdf
other	700,000	Administration fee. Source: Simulasi Kredit Mobil. (n.d.). Simulasi Kredit Mobil. Retrieved November 11, 2017, from https://www.simulasikredit.com/simulasi_kredit_mobil.php
maintenance	959,000	Maintenance for 30,000 km usage. Source: Ferdian, A. (2015, December 15). Merawat Grand New Avanza, Cukup Rp 222.000 per Bulan. Retrieved November 11, 2017, from http://otomotif.kompas.com/read/2015/12/15/163456515/Merawat.Grand.New.Avanza.Cukup.Rp.222.000.per.Bulan
clearing	2,080,000	IDR 40,000*52 weeks. Source: Car Wash. (2017, November 11). [Harga Cuci Mobil]. Unpublished raw data. Jl. Cireundeu Raya No. 77 Lebak Bulus – Jakarta Selatan (salon)
tires	1,652,200	2 tire of 185/55 R16 types. Source: Tyrepac. (n.d.). Harga Ban Mobil & Truk Terbaru. Retrieved November 11, 2017, from http://tyrepac.co.id/Form/B2C/Tyreshow.aspx?TyreID=73&Brand=Achilles&Model=Achilles%202233
fuels	13,200,000	Pertalite of IDR 50,000*22 days*12 month from South to Central of Jakarta. Source: BPHMIGAS. (n.d.). HARGA BBM DI SPBU. Retrieved November 11, 2017, from http://www.bphmigas.go.id/harga-bbm-di-spbu
Toll	13,728,000	IDR (9,500+9,500+7000)*22 days*12 month*twice. From South to Central of Jakarta. Source: PT Jasa Marga. (n.d.). Tarif Tol. Retrieved November 11, 2017, from http://www.jasamarga.com/public/id/infolayanan/toll/ruas.aspx?title=Jakarta%20-%20Tangerang#tarif and PT Citra Marga Nusaphala Persada. (n.d.). Info Layanan - Jalan Tol Lingkar Dalam Kota Jakarta - Tarif Jiut	PT Citra Marga Nusaphala Persada Tbk Tarif JIUT. Retrieved November 11, 2017, from http://id.citramarga.com/info-layanan/jalan-tol-lingkar-dalam-kota-jakarta/tarif-jiut/

Cost for Operating Toyota Avanza

Cost	Value	Assumption, Remark, and Sources
acquisition	208,300,000	Van vehicle selected based on market share which are 51.40% Source: M. (2017, September 27). Market Share Toyota Avanza Agustus 2017 Capai 51,4%. Retrieved June 13, 2018, from http://mobilmotor.co.id/2017/09/market-share-toyota-avanza-agustus-2017-capai-514/. The Sales price for the type od Toyota Avanza 1.3G M/T 2017, Source: Toyota Astra Motor. (n.d.). Product	Avanza	PT. Toyota Astra Motor	Mobil Terbaik Keluarga Indonesia. Retrieved November 11, 2017, from http://www.toyota.astra.co.id/product/avanza
insurance	4,332,640	IDR 208,300,000*2.08%. Source: Otoritas Jasa Keuangan. (2017). Peraturan OJK Nomor 6/SEOJK.05/2017. Jakarta, Indonesia: OJK.

ICMEM

Cost	Value	Assumption, Remark, and Sources
tax	4,166,000	IDR 208,300,000*2.00%. Source: DPRD dan Gubernur Provinsi DKI Jakarta. (2017). Peraturan Daerah Provinsi DKI Jakarta Nomor 2 Tahun 2015: Pajak Kendaraan Bermotor. Jakarta, Indonesia.
parking	10,560,000	8 hours/day*22 days/month*IDR 5000/hours*12 month. Source: Gubernur Provinsi DKI Jakarta. (2017). Peraturan Gubernur Provinsi DKI Jakarta Nomor 31 Tahun 2017: Tarif Layanan Parkir, Denda Pelanggaran Transaksi Dan Biaya Penderekan/Pemindahan Kendaraan Bermotor. Jakarta, Indonesia. Retrieve May 16, 2018, from https://jdih.jakarta.go.id/uploads/default/produkhukum/NO.31_.pdf
other	700,000	Administration fee. Source: Simulasi Kredit Mobil. (n.d.). Simulasi Kredit Mobil. Retrieved November 11, 2017, from https://www.simulasikredit.com/simulasi_kredit_mobil.php
maintenance	931,820	Maintenance for 30,000 km usage. Source:AUTO 2000. (n.d.). Servis Berkala. Retrieved November 11, 2017, from https://auto2000.co.id/servis-mobil/servis-berkala/
clearing	2,080,000	IDR 40,000*52 weeks. Source: Car Wash. (2017, November 11). [Harga Cuci Mobil]. Unpublished raw data. Jl. Cireundeu Raya No. 77 Lebak Bulus – Jakarta Selatan (salon)
tires	1,298,000	2 tire of 185/70 R14 types. Source: Tyrepac. (n.d.). Harga Ban Mobil & Truk Terbaru. Retrieved November 11, 2017, from Tyrepac. (n.d.). Harga Ban Mobil & Truk Terbaru. Retrieved November 11, 2017, from http://tyrepac.co.id/Form/B2C/Tyres\earch.aspx
fuels	13,200,000	Pertalite of IDR 50,000*22 days*12 month from South to Central of Jakarta. Source: BPHMIGAS. (n.d.). HARGA BBM DI SPBU. Retrieved November 11, 2017, from http://www.bphmigas.go.id/harga-bbm-di-spbu
Toll	13,728,000	IDR (9,500+9,500+7000)*22 days*12 month*twice. From South to Central of Jakarta. Source: PT Jasa Marga. (n.d.). Tarif Tol. Retrieved November 11, 2017, from http://www.jasamarga.com/public/id/infolayanan/toll/ruas.aspx?title=Jakarta%20-%20Tangerang#tarif and PT Citra Marga Nusaphala Persada. (n.d.). Info Layanan - Jalan Tol Lingkar Dalam Kota Jakarta - Tarif Jiut	PT Citra Marga Nusaphala Persada Tbk Tarif JIUT. Retrieved November 11, 2017, from http://id.citramarga.com/info-layanan/jalan-tol-lingkar-dalam-kota-jakarta/tarif-jiut/

Cost for Operating Toyota Hiace

Cost	Value	Assumption, Remark, and Sources
acquisition	461,000,000	Minibus vehicle selected based on market share which are 94.30% Source: Okezone. (2014, July 13). Luncurkan New Hiace Luxury, Toyota 'Rajai' Segmen Van Komersial : Okezone News. Retrieved June 13, 2018, from https://news.okezone.com/read/2017/10/24/542/1801570/luncurkan-new-hiace-luxury-toyota-rajai-segmen-van-komersial. The Sales price for Toyota Hiace type od Commuter Manual, Source:Toyota Astra Motor. (n.d.). Product	HiAce	PT. Toyota Astra Motor	Mobil Terbaik Keluarga Indonesia. Retrieved November 11, 2017, from http://www.toyota.astra.co.id/product/hiace
insurance	5,532,000	IDR 461,000,000*1.20%. Source: Otoritas Jasa Keuangan. (2017). Peraturan OJK Nomor 6/SEOJK.05/2017. Jakarta, Indonesia: OJK.
tax	9,220,000	IDR 461,000,000*2.00%. Source: DPRD dan Gubernur Provinsi DKI Jakarta. (2017). Peraturan Daerah Provinsi DKI Jakarta Nomor 2 Tahun 2015: Pajak Kendaraan Bermotor. Jakarta, Indonesia.
parking	10,560,000	8 hours/day*22 days/month*IDR 5000/hours*12 month. Source: Gubernur Provinsi DKI Jakarta. (2017). Peraturan Gubernur Provinsi DKI Jakarta Nomor 31 Tahun 2017: Tarif Layanan Parkir, Denda Pelanggaran Transaksi Dan Biaya Penderekan/Pemindahan Kendaraan Bermotor. Jakarta, Indonesia. Retrieve May 16, 2018, from https://jdih.jakarta.go.id/uploads/default/produkhukum/NO.31_.pdf
other	700,000	Administration fee. Source: Simulasi Kredit Mobil. (n.d.). Simulasi Kredit Mobil. Retrieved November 11, 2017, from https://www.simulasikredit.com/simulasi_kredit_mobil.php
maintenance	1,128,000	Maintenance for 30,000 km usage. Source: Indo Media. (n.d.). Perkiraan Biaya Service Mobil Honda. Retrieved November 11, 2017, from http://www.hondanational.org/2017/01/perkiraan-biaya-service-mobil-honda.html

ICMEM

clearing	2,080,000	IDR 40,000*52 weeks. Source: Car Wash. (2017, November 11). [Harga Cuci Mobil]. Unpublished raw data. Jl. Cireundeu Raya No. 77 Lebak Bulus – Jakarta Selatan (salon)
tires	1,540,000	2 tire of 195R15C types. Source: Tyrepac. (n.d.). Harga Ban Mobil & Truk Terbaru. Retrieved November 11, 2017, from https://tyrepac.co.id/Form/B2C/Tyresearch.aspx
fuels	13,200,000	Pertalite of IDR 50,000*22 days*12 month from South to Central of Jakarta. Source: BPHMIGAS. (n.d.). HARGA BBM DI SPBU. Retrieved November 11, 2017, from http://www.bphmigas.go.id/harga-bbm-di-spbu
Toll	13,728,000	IDR (9,500+9,500+7000)*22 days*12 month*twice. From South to Central of Jakarta. Source: PT Jasa Marga. (n.d.). Tarif Tol. Retrieved November 11, 2017, from http://www.jasamarga.com/public/id/infolayanan/toll/ruas.aspx?title=Jakarta%20-%20Tangerang#tarif and PT Citra Marga Nusaphala Persada. (n.d.). Info Layanan - Jalan Tol Lingkar Dalam Kota Jakarta - Tarif Jiut	PT Citra Marga Nusaphala Persada Tbk Tarif JIUT. Retrieved November 11, 2017, from http://id.citramarga.com/info-layanan/jalan-tol-lingkar-dalam-kota-jakarta-tarif-jiut/

Vehicle Variable Scenario for Private Cars

Variable	Value	Assumption, Remark, and Sources
Capacity	0	All type of private cars
Acquisition	0.2648 0.3337 0.1508	+26.48% to a conventional Honda Jazz, +33.37% to a conventional Toyota Avanza. and +15.08% to conventional Toyota Hiace: Litman, T. (2018). *Autonomous Vehicle Implementation Predictions: Implications for Transport Planning*. US: Victoria Transport Policy Institute
Insurance	-0.4	-40% to any conventional vehicle. The sources found that the insurance cost will be decrease by 40-80%. Assumption: it will be 40% because the insurance calculation factor in Indonesia is different which is more complex than US. Therefore, decreasing human error risk will not change another risk factor that is included in insurance calculation in Indonesia: Stephens, T. S., Gonder, J., Chen, Y., Lin, Z., Liu, C., & Gohlke, D. (2016). *Estimated Bounds and Important Factors for Fuel Use and Consumer Costs of Connected and Automated Vehicles*. US: National Renewable Energy Laboratory. Retrieved May 20, 2018.
Tax	0	Assumption: do not change because there is no official information from Ministry of Finance of Indonesia
Parking	0	Assumption: do not change because there is no official information from the Government and Operator
Other	0	Assumption: do not change because there is no information
Maintenance	0.0173	+1.73% to any conventional vehicle: Litman, T. (2018). *Autonomous Vehicle Implementation Predictions: Implications for Transport Planning*. US: Victoria Transport Policy Institute.
Cleaning	0	Assumption: do not change because there is no information
Tires	-0.1	-10% due to less stress thanks to a more fluid driving style: Assumption: Similar effect as fuel consumption: Stephens, T. S., Gonder, J., Chen, Y., Lin, Z., Liu, C., & Gohlke, D. (2016). *Estimated Bounds and Important Factors for Fuel Use and Consumer Costs of Connected and Automated Vehicles*. US: National Renewable Energy Laboratory. Retrieved May 20, 2018.
Fuel	-0.4	-40% to any conventional vehicle: Stephens, T. S., Gonder, J., Chen, Y., Lin, Z., Liu, C., & Gohlke, D. (2016). *Estimated Bounds and Important Factors for Fuel Use and Consumer Costs of Connected and Automated Vehicles*. US: National Renewable Energy Laboratory. Retrieved May 20, 2018.
Toll	0	Assumption: do not change because there is no official information from Toll operator such as Jasa Marga and Citra Marga Nusaphala Persada.

ICMEM

Vehicle Variable Scenario for Taxi

Variable	Value	Assumption, Remark, and Sources
Salaries, Allowance and Driver Cost	-1	-100% to the conventional vehicle: Bösch, P. M., Becker, F., Becker, H., & Axhausen, K. W. (2017). Cost-based analysis of autonomous mobility services. *Transport Policy*. doi:10.1016/j.tranpol.2017.09.005
Fuel	-0.67	-67% to the conventional vehicle: World Economic Forum. (2017, March). The Future of Electricity New Technologies Transforming the Grid Edge. Retrieved June 8, 2018, from http://www.bing.com/cr?IG=4F710F24342C430AAF61B9 000D5A146B&CID=0932A4E10D81673F1FF2A8E90C7 C66F2&rd=1&h=BUGRmnNIKQEMtsCQEoT-FPmwN6YoZ0tbuwNZOoN1rU8&v=1&r=http://www3.w eforum.org/docs/WEF_Future_of_Electricity_2017.pdf&p =DevEx.LB.1,5541.1
Depreciation	0	It will be the same: Litman, T. (2018). *Autonomous Vehicle Implementation Predictions: Implications for Transport Planning*. US: Victoria Transport Policy Institute.
Repair, Maintenance, and Spare Parts	+0.28	+28% to the conventional vehicle: IHS, 2014. Emerging Technologies: Autonomous Cars – Not if, but when. Technical Report, Englewood, Colorado
KIR, Tera, and Fleet operation	0	Assumption: It will be the same because there is no proper information
Insurance	+0.4	-40% to any conventional vehicle: Stephens, T. S., Gonder, J., Chen, Y., Lin, Z., Liu, C., & Gohlke, D. (2016). *Estimated Bounds and Important Factors for Fuel Use and Consumer Costs of Connected and Automated Vehicles*. US: National Renewable Energy Laboratory. Retrieved May 20, 2018.
Others	0	Assumption: It will be the same because there is no proper information

References

Bösch, P. M., Becker, F., Becker, H., & Axhausen, K. W. (2017). Cost-based analysis of autonomous mobility services. *Transport Policy*. doi:10.1016/j.tranpol.2017.09.005

Bragg, Steven. "Cost structure." *AccountingTools*, 32 Aug. 2017, www.accountingtools.com/articles/what-is-cost-structure.html

Burns, Lawrence D. (2013): Sustainable mobility: A vision of our transport future, in: Nature 497, pp. 181-182.

Fraedrich, E., Cyganski, R., Wolf, I., & Lenz, B. (2016). *User perspectives on autonomous driving: A use-case-driven study in Germany*. Berlin: Geographisches Institut, Humboldt-Universität zu Berlin.

IHS Automotive. (2014). *Emerging Technologies: Autonomous Cars – Not if, but when*. Technical Report, Englewood, Colorado. In collaboration with Bain & Company

Litman, T. (2018). *Autonomous Vehicle Implementation Predictions: Implications for Transport Planning*. US: Victoria Transport Policy Institute.

PR Newswire (2015). Global - Automatic/Self Driving Car Opportunity Market Analysis. Retrieved December 4, 2017, from https://search.proquest.com/docview/1688441556?accountid=31562.

PT Bluebird Tbk. (n.d.). 2016 Annual Report: Driving Forward. Retrieved June 10, 2018, from http://www.bluebirdgroup.com/wp-content/uploads/2015/10/AR-2016-PT-Blue-Bird-e-reporting1.pdf

Stewart, B. (2017, November 14). The 15 Biggest Car Technology Breakthoughs of the Last 25 Years. Retrieved June 8, 2018, from https://www.popularmechanics.com/cars/g2778/most-important-automotive-tech-milestones/

World Economic Forum. (2017, March). The Future of Electricity New Technologies Transforming the Grid Edge. Retrieved June 8, 2018, from http://www.bing.com/cr?IG=4F710F24342C430AAF61B9000D5A146B&CID=0932A4E10D81673F1FF2A8E90C7C66E2&rd=1&h=BUG RmnNIKQEMtsCQEoT-FPmwN6YoZ0tbuwNZOoN1rU8&v=1&r=http://www3.weforum.org/docs/WEF_Future_of_Electricity_2017.pdf&p=DevEx.LB.1,5541.1

ICMEM

The 3rd International Conference on Management in Emerging Markets

Earnings Management and Operating Performance

Ronald Tehupuring[a*], Amor Marunda[b]

[a,b]*Gadjah Mada University*

Abstract

The purpose of this study is examine the effect of earnings management on the operating performance. This study uses a sample of mining companies listed on the Indonesia Stock Exchange period 2012-2016. However, the year of analysis uses the period 2014-2016. While the year 2012-2013 is used in calculating real earnings management that requires two years earlier. The results showed that the accrual earnings management had a positive and significant effect on the operational performance. Meanwhile, real earnings management has no effect on the operational performance. In the third test result of earnings management proxy found that only ACFO have positive and significant effect on the operational performance. Meanwhile, APROD and ADISX have no significant effect on the operational performance. The results of this study provide practical implications that the average mining company in Indonesia Stock Exchange uses the accrual profit management to improve the operational performance of the company compared to real earnings management.

Keywords: Accrual Earnings Management; Real Earnings management; Operating Performance

1. Introduction

One of the important issues in accounting research is earnings management. Schipper (1989) defined earnings management as "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gains." Cohen & Zarowin (2010), McVay (2006), and Roychowdhury (2006) suggest that previous studies related to earnings management tend to focus on accrual earnings management. In fact, earnings management is not only done by managers through the gap of financial accounting standards. However, earnings management can also be done by managers through the real activities of the company. This is consistent with Zang (2012) statement that earnings management is performed by managers not only through a single technique to meet expected earnings target. Therefore, to detect the behavior of managers in earnings management, it must consider the two techniques of earnings management are accrual earnings management and real earnings management. Scott (2003) stated that motivates managers make earnings management as (1) to obtain bonuses, (2) tax savings, (3) the change of CEO, and (4) initial public offering.

The negative implications of managers making earnings management are that earnings information becomes inaccurate. Dechow and Dichev (2002) showed that accuracy of earnings information can be known through three important characteristics were (1) earnings information can show the current operational performance accurately, (2) earnings information can be a good indicator in assessing the company's performance in will come, and (3) earnings information can be an appropriate measure in assessing the company's performance. Manager behavior in earnings management can be known through agency theory. This theory explains that a conflict of interest between shareholders and managers. Manager of the company try to fulfill its interests rather than interests of shareholders. Efforts to meet the interests of managers lead managers tend to manage earnings to achieve the target earnings in accordance with the

---

* Corresponding author

ICMEM

wishes of the managers. Efforts to manage profits made by managers can be through an accrual or a real earnings management.

The impact of using accrual based accounting to record transactions and the company's economic events is the accrual income management. In principle, accrual-based accounting records all the financial transactions experienced and recognized by the company regardless of whether cash is received and paid in cash. As a result, the emergence of various accrual accounts in the company's financial statements such as, debt, accounts receivable, revenues received in advance, fees paid in advance, depreciation expenses, and others. There are several components in the financial statements that managers tend to use in the use of accounting election gaps. These components are classified into current assets, fixed assets, current liabilities and profits. Current assets components that are often used by managers as objects of earnings management are the components of cash or cash equivalents, receivables, inventories, and prepaid expenses. Whereas, the object of earnings management of fixed asset components is the method of depreciation and estimation of the economic life of the asset. Furthermore, the components of current debt that are used as the object of earnings management are short-term and long-term debt that will mature. Finally, the earnings component that becomes the object of earnings management is the component of income and expense (Sulistiyanto, 2008). Accrual earnings management is often used by managers depending on the motivation of either manager to increase profits, lower profits, or even earnings.

Unlike the accrual earnings management, real earnings management is a manager action that deviates from the normal business activities of a company with the aim of achieving earnings targets (Cohen & Zarowin, 2010; Roychowdhury, 2006). Real earnings management actions undertaken by managers can be classified into three important parts: (1) sales manipulation relates to the actions of managers in increasing sales temporarily at a certain period by offering a relatively low price (discount) or easier credit terms. The goal is to increase sales of the current period, so that profit targets are achieved. (2) the decrease of discretionary expenses relating to general costs, sales, and administration, research and development costs, and advertising costs. The goal is to improve current profit and cash flow. (3) excessive production associated with an increase in production volume will reduce fixed costs per unit of product, thereby reducing cost of goods sold and increasing operating earnings. These three real earnings management techniques are performed by managers with the aim of increasing the earnings target of the current period. However, the negative implication of using this method is that the company's long-term performance is reduced.

The phenomenon of earnings management by managers does not only happen to global companies such as Enron Corporation, Worldcom, Tyco, Heal South, and Toshiba. However, the phenomenon of the case of earnings management by managers also occurred in several companies in Indonesia, namely, PT. Ades Alfindo, Tbk; PT. Katarina Utama, Tbk; PT. Lippo, Tbk; PT. Indofarma, Tbk; or PT. Kimia Farma, Tbk. Leuz et al. (2003) showed that as a result of the protection of shareholders in Indonesia, the management of earnings performed by managers tends to be more intensive than in countries with strong shareholder protection. Therefore, this research is important to do with the aim to test the effect of good earnings management, accrual profit management and earnings management real to the company's operational performance.

Various phenomenon of the above case shows that earnings management is still done by managers to meet their interests. In particular, the phenomenon of earnings management cases also occur in some mining companies namely, PT. Timah, PT. Ancora Mining, and PT. Bumi Resources. PT. Timah (Persero), Tbk is suspected of providing fictitious financial statements in the first semester of 2015. This fictitious financial reporting activity was conducted to cover up the worsening financial performance. According to the Chairman of the Timah Employee Association (IKT) that if referring to the real condition that occurred in PT. Timah, Tbk, the financial statements of the first semester of 2015 PT. Timah, Tbk is fictitious because in the first semester of 2015 the operating profit of PT. Tin has incurred a loss of Rp.59 billion (www.tambang.co.id).

Another case phenomenon in mining company that is, PT. Ancora Mining Service (AMS) was reported by Justice Community Forum (FMPK) to the Directorate General of Taxation (DJP) of the Ministry of Finance regarding alleged manipulation of financial statements. According to the head of the FMPK Investigation section, the indication of the manipulation of financial statements is evident from the income of Rp.34.9 billion but there is no investment movement. In addition, the company also found evidence of interest payment of Rp.18 billion when AMS admitted to

ICMEM

not having debt. FMPK also found evidence of Rp.5.3 billion of receivables but no clarity of transactions. That is, the company's business income is smaller than passive income (www.republika.co.ic.id).

Indonesian Corruption Watch (ICW) reported the sale of three coal mining companies belonging to the Bakrie Group to the Directorate General of Taxation. ICW suspects the reporting engineering conducted by PT. Bumi Resources, Tbk and its subsidiaries since 2003-2008 caused the state losses of US $ 620.49 million. ICW calculation results using various primary data including audited financial statements indicate that the sales report of PT. Bumi Resource, Tbk during 2003-2008 lower US$ 1.06 billion from the actual. As a result, it was also estimated that the state losses from the shortage of revenue from the Coal Production Fund (royalty) of US $ 143.29 million (www.bisnis.tempo.co).

Various phenomenon of earnings management in some mining companies above shows that motivation of managers to make earnings management to improve company performance, thus showing the achievement of manager performance in managing the company. Therefore, this study uses mining companies as research samples. Another important reason is (1) the company contributes 95% to non-tax revenues from the overall revenue of 2016 (Katadata.com), (2) relatively complete mining company data, and (3) the behavior of managers of mining companies in managing corporate earnings is relatively high.

The result of testing of the effect of accrual earnings management on the operational performance of the company has inconsistent findings. Sanjaya & Devie (2017), Waseemullah et al. (2015), Yusnita, Mulyadi, & Erick (2015) and Ardekani et al. (2012) shows that accrual earnings management has a positive and significant effect on firm performance. Meanwhile, Pae (1999) and Felthem & Pae (2000) showed that accrual earnings management has no significant effect on firm performance. Akram et al. (2015) showed that the accrual earnings management has a negative and significant effect on the firm performance. Furtermore, Prasetyo, Subchan, & Harjanto (2017) showed that accrual earnings management has negative and significant effect on firm performance.

Gunny (2010) examines the economic consequences of real earnings management and shows that real earnings management has a negative and significant on long-term performance. According to Gunny (2010), real earnings management actions undertaken by managers will show short-term performance. However, real earnings management will be detrimental to the company's long-term performance. The findings of Tabasssum, Kaleem, & Nazir (2014) showed that real earnings management has a negative and significant effect on long-term performance. Wijayanti, Irwandi, & Ahmar (2014) showed that real earnings management as ACFO and APROD has positive and significant effect n firm perfoemance. Furtermore, Yusnita, Mulyadi, & Erick (2015) showed that real earnings management has positive significant effect on firm performance. The background description described earlier, then the purpose of this study to test the effect of earnings management on operating performance.

2. Hypothesis Development

Operational performance is the ability of managers in managing the company's operational activities by utilizing the company's resources to achieve earnings targets. Through operational performance, stakeholders can know the productivity and prospects of the company. One of the factors affecting operational performance is earnings management. Earnings management becomes one of the factors influencing operational performance motivated by the existence of conflict of interest between shareholder and manager. This conflict of interest causes managers tend to manage earnings to achieve profit targets in accordance with the wishes of managers. Efforts to manage earnings made by managers can be through accrual and real profit management. Accrual income management is the action of managers in managing the profit figure through the applicable accounting standards (Frank et al., 2009). Meanwhile, real earnings management is an action of managers deviating from normal business activities with the aim of increasing the earnings of the present period (Cohen & Zarowin, 2010; Roychowdhury, 2006).

Sanjaya & Devie (2017), Waseemullah et al. (2015), Yusnita, Mulyadi, & Erick (2015) and Ardekani et al. (2012) shows that the accrual income management has a positive and significant effect on the performance of the company. Meanwhile, Pae (1999) and Felthem & Pae (2000) showed that accrual income management has no significant effect on company performance. Akram et al. (2015) shown that the accrual income management has a negative and

ICMEM

significant effect on the performance of companies in the Pakistan Stock Exchange. Furtermore, Prasetyo, Subchan, & Harjanto (2017) showed that accrual earnings management negatif dan significant effect on firm performance. Scott (2009) showed that accrual earnings management (discretionary accrual) has reverse accrual properties. The nature of the reverse accrual is that if a firm accrues a certain amount of accruals, thereby increasing its profit in the current period, then the accrual value will reverse and reduce its profit in the next period.

Gunny (2010) examines the economic consequences of real earnings management and showed that real earnings management has a negative and significant on long-term performance. According to Gunny (2010), the real earnings management actions undertaken by managers will show short-term performance. However, real earnings management will be detrimental to the company's long-term performance. The findings of Tabasssum, Kaleem, & Nazir (2014) showed that real earnings management has a negative and significant effect on long-term performance. Wijayanti, Irwandi, & Ahmar (2014) showed that real earnings management has positive and significant effect on firm performance. Furtermore, Yusnita, Mulyadi, & Erick (2015) showed that real earnings management through ACFO and APROD have positive and significant effect on firm performance. Based on the description, the hypothesis of this study is as follows.

H_{1a} : Accrual earnings management has a positive effect on the operational performance.
H_{1b} : Real earnings management has a positive effect on the operational performance.

3. Data and Methodologies

3.1 Data and Sample Selection

This research uses mining company period 2012-2016 as research sample. However, this study will only use the year 2014-2016 in the analysis. The reason is the period 2012-2013 as the previous year is used to calculate real earnings management. Selection of sample using purposive sampling that is, (1) mining company in industry sub-sector at least amount 8 companies during period 2012-2016, and (2) have complete of data. An important reason for the number of companies at least 8 companies to obtain variations in profit management calculations as suggested by Cohen & Zarowin (2010) and Cohen et al. (2008). Based on the results of sample selection, this study obtained 34 sample companies for 3 years, so the number of observation samples is 102 observations.

3.2 Earnings Management

This study uses accrual earnings management and earnings management to measure manager behavior in managing corporate profits. Accrual earnings management calculations using the modified cross sectional Jones Model (Jones 1991) as described in Dechow et al. (1995). Estimates of modified Jones model calculations are as follows.

$$\frac{TA_{it}}{Assets_{i,t-1}} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{\Delta REV_{it}}{Assets_{i,t-1}} + k3\frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon it \dots (1)$$

Notes:
TA_{it} = NI – CFO
$Assets_{i,t-1}$ = Lag total assets
ΔREV_{it} = Change in revenue
PPE_{it} = Gross value of property, plant, and equipments.

The estimation coefficient is then used to estimate the normal accrual as follows.

$$NA_{it} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{(\Delta REV_{it}-\Delta REC_{it})}{Assets_{i,t-1}} + k3\frac{PPE_{it}}{Assets_{i,t-1}} \dots (2)$$

Furthermore, the measurement of discretionary accrual is as follows.

ICMEM

$$\text{DA}_{it} = \frac{TA_{it}}{Assets_{i,t-1}} - N_{ait} \dots\dots\dots (3)$$

In our robustnes test, we used two alternative measures of discretionary accruals. In one alternative measure we estimated the following in the first stage:

$$\frac{TA_{it}}{Assets_{i,t-1}} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{\Delta REV_{it} - \Delta REC_{it}}{Assets_{i,t-1}} + k3\frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{it} \dots\dots (4)$$

This study further adopts real profit management calculations from Roychowdhury (2006), Cohen et al. (2008), Cohen & Zarowin (2010), and Wu et al. (2015). The following are real earnings management calculations through normal estimate of level of production cost, cash flows from operations, and discretionary expenditures.

$$\frac{PROD_{it}}{Assets_{i,t-1}} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it-1}}{Assets_{i,t-1}} + \varepsilon_{it} \dots\dots (5)$$

$$\frac{CFO_{it}}{Assets_{i,t-1}} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it}}{Assets_{i,t-1}} + \varepsilon_{it} \dots\dots (6)$$

$$\frac{DISX_{it}}{Assets_{i,t-1}} = k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it-1}}{Assets_{i,t-1}} + \varepsilon_{it} \dots\dots(7)$$

After estimating the calculation of the three real earnings management, then the next researcher calculate the third abnormal level of each real earnings management with the following equation.

$$\text{APROD}_{it} = \frac{PROD_{it}}{Assets_{i,t-1}} - [k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it-1}}{Assets_{i,t-1}}] \dots\dots (8)$$

$$\text{ACFO}_{it} = \frac{CFO_{it}}{Assets_{i,t-1}} - [k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it}}{Assets_{i,t-1}} + k3\frac{\Delta Sales_{it}}{Assets_{i,t-1}}] \dots\dots (9)$$

$$\text{ADISX}_{it} = \frac{DISX_{it}}{Assets_{i,t-1}} - [k1t\frac{1}{Assets_{i,t-1}} + k2\frac{Sales_{it-1}}{Assets_{i,t-1}}] \dots\dots (10)$$

The third comprehensive proxy of real profit management can be calculated as follows.

$$REM = APROD - ACFO - ADISX \dots\dots (11)$$

Notes:
PROD   = Production cost (sum of cost of good sold)
CFO   = Cash flow operation
DISX   = Discretionary accrual (sum of SG&A expenses, Research & Development expenses)
APROD = Abnormal production cost
ACFO   = Abnormal cash flow operation
ADISX   = Abnormal discretionary accraul
REM   = Real earnings management

3.3   Operating Performance

Operational performance is the ability of managers in managing the company's operational activities through the sacrifice of corporate resources to achieve profit targets. This study uses Return on Assets (ROA) to measure operating performance. The following is the calculation of the measurement of operating performance.

$$ROA = \frac{Net\ Income}{Total\ Assets} \dots\dots (12)$$

ICMEM

Based on previous research, this research uses leverage, sales growth, and company size adopted Dechow & Sloan (1991) and Jones (1991). The following is a table of operational definitions of variables used in the study.

Table 1. Operational Definition

Categories	Variable Name	Symbol	Definition
Dependent Variable	Operating Performance	ROA	Net Income/Total Assets
Independent variables	Accrual Earnings Management	AEM	Discretionar Accrual
	Real Earnings Management	REM	Proxy comprehensive of Sum of APROD-ACFO-ADISX indicates a higher degree of earnings management.
		ACFO	Abnormal Cash Flow From Operation indicates a higher degree of earnings management.
		APROD	Abnormal Production indicates a higher degree of earnings management.
		ADISX	Abnormal Discretioner indicates a higher degree of earnings management.
Control Variables	Leverage	DAR	Total Liabilities/Total Assets
	Sales Growrh	SGW	(Total Sales$_t$ – Total Sales$_{t-1}$)/Total sales $_{t-1}$
	Size	LTA	The natural logarthm of total assets.

4. Results

4.1 Descriptive Statistics

Table 2 shows the results of descriptive statistics of research variables. The minimum ROA value is -0.643, while the maximum value reaches 0.153, with the standard deviation of 0.118391, showing that degree of operating performance of the mining firm of the listed in the Indonesian Stock Exchange. Table 2 also shows that the minimum value of AEM is -0.445, while the maximum value reaches 0.222, with the standard deviation of 0.112117, showing that degree of accrual earnings management. Then, the minimum REM value is -38.034, while the maximum value reaches 77.875, with the standard deviation of 8.618023, showing that degree of real earnings management.

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
AEM	102	-0.445	0.222	-0.05244	0.112117
REM	102	-38.034	77.875	0.33885	8.618023
ACFO	102	-0.262	0.311	0.01937	0.077570
APROD	102	-37.551	0.213	-0.37338	3.718216
ADISX	102	-0.092	0.315	0.03164	0.058784
ROA	102	-0.643	0.153	-0.00861	0.118391
LEV	102	0.007	1.898	0.50860	0.305949
SGW	102	-1.000	33.979	0.21588	3.414173
SIZE	102	5.519	12.593	8.89169	1.943019

ICMEM

4.2   Regression Results

Table 3 reports the correlation matrices of variables and AEM and ROA, while the negative correlation between LEV, SIZE and ROA. Then. Table 4 shows that positive correlation between AEM. ACFO and ROA, while negative correlation between LEV, SIZE and ROA.

Table 3. Pearson Correlations of Real Earnings Management Comprehensive

Variables	ROA	AEM	REM	LEV	GROWTH	SIZE
ROA	1					
AEM	0.612***	1				
REM	0.079	0.026	1			
LEV	-0.382***	-0.202**	-0.060	1		
SGW	-0.032	-0.080	0.000	0.028	1	
SIZE	-0.248**	0.023	-0.004	-0.036	0.189**	1
Notes: *, **, *** indicate significance at the level of 0.10, 0.05, and 0.01, respectively						

Table 4. Pearson Correlation of Real Earnings Management No Comprehensive

Variables	ROA	AEM	ACFO	APROD	ADISX	LEV	SGW	SIZE
ROA	1							
AEM	0.612***	1						
ACFO	0.051	-0.420***	1					
APROD	0.004	-0.014	-0.279**	1				
ADISX	0.078	0.106	0.004	-0.372***	1			
LEV	-0.382***	-0.202**	0.011	0.002	-0.182**	1		
SGW	-0.032	-0.080	-0.058	0.007	0.069	0.028	1	
SIZE	-0.248**	0.023	-0.171**	0.026	0.191**	-0.036	0.189**	1
Notes: *, **, *** indicate significance at the level of 0.10, 0.05, and 0.01, respectively								

The result of hypothesis testing of the effect of accrual earnings management and real profit management (comprehensive proxy) on operating performance is shown in table 5 below.

Table 5. OLS Regression of The Effects of Earnings Management on Operating Performance

Independent Variables	Predicted Sign	Dependent Variable (ROA)	
		Main Test	Robustness Test
AEM	±	0.599***	0.547***
REM	+	0.001	0.001
LEV	-	-0.107***	-0.117***
SGW	+	0.003	0.002
SIZE	±	-0.017***	-0.018***
Constant		0.231***	0.234***
F		21.214	18.588
Prob.		0.000	0.000
Adjusted R^2		0.500	0.465
Sample Size		102	102
Notes: to avoid the normality, multicollinearity, autocorrelation and show free of thre problem; *, **, *** Represent significance at the level of 0.10, 0.05, and 0.01, respectively			

Table 5 shows that accrual income management has a positive and significant impact on operational performance. Meanwhile, real profit management has no significant effect on operational performance. These findings prove that mining companies use discretionary accruals to increase corporate profits. Accrual policies are used by managers through various loopholes of financial accounting standards. Consistent with the characteristics of mining companies that tend to have high risk, then the manager of this company prefer to use accrual profit management when compared with real profit management. Mining companies are companies that are risk-intensive. That is, when the exploration

ICMEM

stage does not find the minerals that have certain advantages, it will affect the company's profit. This characteristic indicates that the tendency of mining companies to produce on a large scale, reducing the burden of discretionary not being intensively undertaken by managers. However, sales manipulation is still possible for managers to do. This is because sales manipulation is related to lighter credit terms. Table 5 also shows that the robustness test results are consistent with the main test results. The results of this study are consistent with the research of Sanjaya & Devie (2017), Waseemullah et al. (2015), Yusnita, Mulyadi, & Erick (2015) and Ardekani et al. (2012) shows that the accrual earnings management has a positive and significant effect on the firm performance.

The results of the impact of accrual earnings management and earnings management (ACFO, APROD, and ADISX) on operating performance are shown in table 6 below.

Table 6. OLS Regression of The Effects of Earnings Management on Operating Performance

Independent Variables	Predicted Sign	Dependent Variable (ROA)	
		Main Test	Robustness Test
AEM	±	0.699***	0.633***
ACFO	+	0.330**	0.299**
APROD	+	0.003	0.003
ADISX	+	0.080	0.094
LEV	-	-0.099***	-0.110***
AGW	+	0.003	0.003
SIZE	±	-0.016***	-0.017***
Constant		0.212***	0.217***
F		16.880	14.445
Prob.		0.000	0.000
Adjusted R^2		0.524	0.482
Sample Size		102	102
Notes: to avoid the normality, multicollinearity, autocorrelation and show free of thre problem; *, **, *** Represent significance at the level of 0.10, 0.05, and 0.01, respectively			

Table 6 shows that accrual earnings management and abnormal cash flow have a positive and significant effect on operational performance. The results of this study consistent with Yusnita, Mulyadi, & Erick (2015) showed that abnormal cash flow from operation has a positive and significant effect on firm performance. Meanwhile, abnormal production cash flow and abnormal discretionary burden have no significant effect on operational performance. These findings prove that abnormal cash flow can still be done by managers in improving corporate profits. In contrast to manufacturing companies, mining companies tend to be less intensive in large-scale production or reduce the burden of discretionary. This is done because the characteristics of mining companies are different from the characteristics of manufacturing companies. Mining companies require estimation of accuracy in exploring or extracting natural resources, so that if the exploration estimate bias, it will affect the target profit of the company. Robustness test results also support the main test results of this study.

5. Conclusions

This study aims to examine the effect of earnings management, both the accrual profit management and real profit management on the company's operational performance. The sample used is a mining company listed on the Indonesia Stock Exchange period 2012-2016. However, the year of analysis uses the period 2014-2016. While the year of 2012 until 2013 is used in calculating real profit management because it requires two years earlier. The results showed that the accrual income management had a positive and significant effect on the operational performance. Meanwhile, real earnings management has no effect on operational performance. The real earnings management test results separately show that ACFO has a positive and significant effect on the operational performance.

These findings suggest that mining companies tend to use discretionary accruals to increase corporate profits rather than real earnings management. Accrual policies are used by managers through various loopholes of financial

ICMEM

accounting standards. This is consistent with the characteristics of high-risk mining companies, so managers prefer to use accrual earnings management as compared to real profit management. Mining companies are companies that are risk-intensive. Solids of this risk can be known through the stages of exploration of minerals that if not done well, it will affect the company's profits. This characteristic indicates that the tendency of mining companies to produce on a large scale, reducing the burden of discretionary not being intensively undertaken by managers. However, sales manipulation is still possible by managers in managing corporate profits. The reason is that sales manipulation deals with lighter credit terms in increasing sales targets.

This study provides the theoretical implication that in developing countries the tendency of accrual earnings management is more intensively used by managers. This shows that there is still a conflict of interest between the manager and the shareholders. To reduce these conflicts of interest, a goal alignment between managers and shareholders is required. That is, managers strive to meet the interests of shareholders and vice versa shareholders pay attention to the welfare of managers. One form of shareholder concern for the welfare of managers is managerial share ownership. The implication for the policy is the effectiveness of the monitoring system to the mining companies, so that the behavior of earnings management can be reduced and even eliminated. Regulatory monitoring system can be known through institutional share ownership.

This research has several limitations: (1) the conclusion is based only on the various proxies of earnings management based on accrual, real, and operating performance, (2) generalization of research result can only be used for mining company, and (3) this research only use year 2014-2016 to explain the data phenomenon of earnings management last three years. Finally, further research is expected (1) to use real and accrual profit management proxies in addition to Dechow et al. (1995), Roychowdhury (2006), Cohen & Zarowin (2010), Wu et al. (2015); (2) the sample of the company can be expanded by using a nonfinancial firm to know earnings management trends; and (3) increase the number of years of research to earn earnings management trends over several years, eg data of the last ten years.

References

Akram, M. A., Hunjra, A. I., Butt, S., & Ijaz, I. 2015. Earnings management and organizational performance: Pakistan Vs India. *Basic Research Journal*. Vol. 4(9), pages 211-220.

Ardekani, M.A., Nejat, Y., Hashemijo, M. 2012. Acquisition, earnings management and firm's performance: Evidence from Malaysia. *Journal of Business Studies Quarterly*. Vol. 4(1), page 91-110.

Cohen, D. A., & Zarowin, P. 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*. Vol. 50(1), page 2-19.

Cohen, D.A., Dey, A., & Lys, T.Z. 2008. Real and accrual-based earnings management in the pre-and-post-sarbanes-oxley periods. *The Accounting Riview*. Vol. 83(3), pages 757-787.

Dechow, P.M., & Sloan, R.G. 1991. Executive insentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economic*. Vol. 14(1), page 145-176.

Dechow, P.M., Sloan, R.G., & Sweeney, A.P . 1995. Detecting earnings management. *The Accounting Review*. Vol. 70, page 193-225.

Dechow, P.M., & Dichev, I.D. 2002. The qwuality of accrual and earnings: The role of accruals estimation. *The Accounting Riview*,. Supplement: Quality of earnings conference.

Frank, M.M., Lynch, L.C., & Rego, S.O. 2009. Tax reporting aggresiveness and its relation to aggressive financial reporting. *The Accounting Riview*. Vol.84(2), page 467-496.

Gunny, K.A. 2010. The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings Benchmarks. *Contemporary Accounting Research*. Vol. 27(3), page 855-888.

Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research*. Vol. 29(2), page 193-228.

Leuz, C., Nanda, D., & Wysocki, P.D. 2003. Investor protection and earnings management: An international comparison. *Journal of Financial Economics*. Vol. 69, page 505-527.

McVay, S.E. 2006. Earnings management using classification shifting: An examination of core earnings and special items. *The Accounting Riview*. Vol. 81(3), page 501-531.

ICMEM

Pae, J. 1999. Earnings management and its impact on the information content of earnings and the properties of analysis forecast. Thesis. Published. UMI.

Prasetyo, W. S., Subchan., Harjanto, S. 2017. The effect of earnings management on firm performance with good corporate governance as moderating variable. *Jurnal Ekonomi Manajemen dan Akuntansi*. No. 43/Th. XXIV, page 33-48.

Roychowdhury, S. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economic*. Vol.42, page 335-370.

Sanjaya, S., & Devie. 2017. The eefect of earnings management on financial performance with earnings quality as intervening variable. *Business Accounting Riview*. Vo. 5(1), page 205-216.

Scott., W.R 2003. Financial accounting theory. Toronto. Prentice-Hall International Edition.

Scott, W.R 2009. Financial accounting theory. Fifth edition. Canada Prentice-Hall.

Schipper, K. 1989. Comentary Katharine on Earningns management. *Accounting Horizon*.

Sulistiyanto, H. S. 2008. Earnings management. Theory and empirical model. Jakarta. Grasindo.

Tabassum, N., Kaleem, A., & Nazir, M. S. 2014. Real earnings management and future performance. *Global Business Riview*. Vol. 16(1), pages 1-14.

Waseemullah., Safi, I., & Shehzadi, A. 2015. Earnings management and firm performance: A case of Karachi Stock Exchange listed firms in Pakistan. *International Journal of Economics and Empirical Research*. Vol. 3(6), pages 278-285.

Wijayanti, H., Irwandi, S. A., & Ahmar, N. 2014. Influnce of Real Profit Management on Company Performance with Operating Cash Flow Operation. *Jurnal Economia*. Vol. 10(1), page 11-23.

Wu, P., Gao, L., & Gu, T. 2015. Business strategy, market competition and earnings management: Evidence from China. *Chinese Management Studies*. Vol. 9(2), pages 401-424.

Yusnita, H., Mulyadi., & Erick. 2015. The effect of accrual earnings management and riil earnings management on firm performance. *JAFFA*. Vo.3(1), page 1-16.

Zang, A.Y 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Riview*. Vol.87(2), page 675-703.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Effect of Audit Quality toward the Relationship between Political Connection and Real Earnings Management

Eva Herianti [a*], Arna Suryani[b], Amor Marundha[c]

[a]*Faculty of Economics and Business, Department of Accounting, Muhammadiyah University Jakarta*
[b]*Faculty of Economi and Business, Department of accounting, Batanghari University Jambi*
[c]*Faculty of Economi and Business, Departement of Accounting, Persada Indonesia YAI University Jakarta*

Abstract

High-quality audit is an audit that is performed by the auditor as a barrier for the effectiveness earnings management conducted by the management company for management earnings which tends to obscure the proven performance of the company if there are errors in financial reporting. One of the indication of the improvement on the company's performance is reflected through its profit figure is the earnings management strategies undertaken by the management company to achieve earnings targets. Politically connected companies that have a tendency to manage earnings in achieving its profit target to achieve certain goals are supposed to win the tender. This study aimed to examine the effect of audit quality on the relationship between political connections and real earnings management. The study sample consisted of 59 manufacturing companies which in a row to publish their financial statements from 2008-2015 on the Indonesia Stock Exchange. The used year used for the analysis is 2010-2015.

Keywords: Political Connections; Quality Audit; Real Earnings Management

1. Introduction

Management of companies tends to use some of the earnings management strategies to manage their earnings (Badertscher, 2011). Accrual earnings management strategy occurs when managers use judgment in generally accepted accounting principles in order to achieve good economic performance (Dechow and Skinner, 2000), while the management of real profit occurs when managers take action to change the time or arrangement of operating, investing and / or financing transactions in an effort to influence the output of the accounting system. Roychowdhury (2006) explains that the management of real profit is the difference in practice over the activity of abnormal operation performed by the practice of the activity of normal operation motivated by the desire of management to provide the false notion to shareholders that they believed that the purpose of financial reporting particular has been achieved in accordance with activity the company's normal operations. Accrual earnings management performed by the company are not achieved through the process of changing the operating activities of the company but through a wide choice of accounting methods used to describe the company's activities. Instead, the real earnings management involves changing the operating activities of the company in an effort to improve the current period earnings. Thus, earnings management conducted by the company either through management of accrual earnings and real earnings management related measures undertaken manager to increase or decrease profits. However, both the management of such earnings, real earnings management has an impact on the company's operating activities compared to the accrual earnings management. This study will be assessed in terms of the laws and regulations (politics). This is because that politics and business are two activities that exist within an economic entity are interrelated. The purpose of politics is to

---

* Corresponding author.
  Email address: heriantieva@gmail.com

ICMEM

formulate public policy, including in relation to the interests of the business world and vice versa, can support the business world politics in a country.

Politics is defined by Sumarni and Soeprihanto (1999) as the degree of centralization of political power, the nature of political organization, party system, and awareness in society. Thus, in order to carry out the purpose of politics is needed general policies regarding the regulation and distribution of the allocation of existing resources for the purpose of society and not just to achieve personal goals. In finance activities that occur within political parties is needed source of funding. On the one hand, political parties obtaining funding sources from their members or sympathizers, but the condition of other political parties are also often obtain funding from governments and companies. Vermonte (2012) explains that in Indonesia, political parties are basically more dependent on the government and corporations, compared with contributions coming from members. According to Chaney et al. (2011), a company said to have political connections if at least one of the Board of Directors of both the chairman and members and the Board of Commissioners both the chairman and members are officials or former officials of the parliament, military, police, ministers, deputy ministers, and heads areas or close contact with the president, vice president, politician or party. Meanwhile, faccio et al. (2006) defines political connections as a situation where one large shareholder (someone who has a stake sebasar 10% of the total shares with voting rights) or one of the leaders of companies either the CEO, president, vice president, chairman, secretary is a member of parliament, minister, or people who have close links with politicians or political parties.

Faccio (2006), Li et al. (2013), Zhou (2013), Pastor and Veronesi (2013) stated that political connections are recognized as an important political capital in creating value for the company. Some literature shows that companies are connected politically to have better access to resources, in bentukperlakuan privileged by banks owned by the government or the manufacturer of raw materials, taxes are lighter and supervisory regulations are not strict, so that political connections enhance corporate value and performance (Chen et al., 2011; Fisman, 2001; faccio 2006). In contrast, other studies have shown that there is a negative impact on their political connections to company performance and the quality of financial reporting, the results of research conducted by Fan, Wong and Zhang (2007) reported that companies with CEOs who are connected politically in China has low performance compared to CEOs who are not connected to politics based on return stock initial offering dan public accounting performance. Chaney et al. (2011) showed that the quality of earnings reported by companies connected politically to be significantly lower than companies that are not politically connected with the use of accounting data in 19 countries. Additionally, Schleifer and Vishny (1994) stated that the value of the company can be threatened when political connections can distort incentives, the wrong investment placement, and increase corruption.

Based on the phenomenon in the background described above encourage researchers to conduct research related "The Effect of Audit Quality on the Relationship between Political Connection and Real Profit Management (Empirical Study on Manufacturing Companies Listed on the Indonesia Stock Exchange in 2010-2015 Periods).

1.1 Formulation of the Problem

1. What is positive influence on the political connections to real earnings management?

2. Is the audit quality negatively affects the relationship between political connections and management of real profit?

1.2 Research Objectives

This study aimed to examine the effect of audit quality toward the relationship between political connections and real earnings management. The purpose details of this study can be described as follows:

1) To examine the effect of the political connections toward real earnings management.
2) To examine the effect of audit quality toward the relationship between political connections and real earnings management.

ICMEM

2. Literature Review And Hypothesis Development

2. 1. Agency Theory

Agency theory proposed by Jensen and Meckling (1976) described an agency relationship as a contract between the principal and agen. The principal or shareholders gave a mandate to the agent or manager to act in managing the company in the hope that the company's management can use company resources effectively and efficiently to maximize shareholder value both in the short term and long term. However, agent or manager does not always act in the interests of shareholders because the manager also has a personal interest. This led to the conflict of interest between shareholders and managers. Jensen and Meckling (1976) define agency costs from three sides: (1) the cost of monitoring by the principal; (2) the cost of the resource by the agent; and (3) residual loss. To mitigate the conflict of interest, then the shareholders provide appropriate incentives for managers and managers took part in the ownership of shares. In addition, the shareholders also tend to be willing to spend in order to limit their monitoring of irregularities committed by the manager.

2. 2. Real Earnings Management

Roychowdhury (2006) defines the management of real profit as the difference in practice over the activity of abnormal operating practices operating activities were normal motivated by management's desire to give the false notion to shareholders that they believed that the purpose of financial reporting particular has been achieved in accordance with the activity of the normal operation of the company.

2. 3. Political Connections

Faccio et al. (2006) defined that political connections as a situation where one large shareholder (someone who has a stake as big as 10% of the total shares with voting rights) or one of the leaders of companies either the CEO, president, vice president, chairman, or secretary is a member of parliament, minister, or people who have close ties with politicians or political parties. Companies that have political connections tend to be viewed from two sides, namely the positive and negative side. On the positive side, companies with political connections in general will benefit from this relationship include: (1) won the project tender; (2) ease of obtaining a bank loan; (3) the ease in obtaining the contract; (4) has a bid price is relatively higher when the Initial Public Offering (IPO); (5) a reduction in tax payments (faccio 2006; Leuz and Gee, 2006 ;; Li et al., 2008; Claessens et al., 2008; Francis et al., 2009; Boubakri et al., 2012. While politically connected company when seen on the negative side politically connected companies that are likely to suffer because of information asymmetry less accurate predictive analysis (Chen et al., 2010).

2. 4. Audit Quality

According to Watkins et al. (2004), audit quality is conformance audits conducted by auditors with the the audit commitee. In addition, Fairchild (2008) defined audit quality as a basic framework to enhance the credibility of the information the financial report user on the financial statements.

Some aspects related to audit quality according Dies (2007) are as follows: (1) the length of the auditor or audit of age, which means that the longer the auditor to audit the same client, the lower the quality of the audit; (2) the number of clients, which means that more and more clients are audited by the auditor will increase the quality of the audit; (3) the financial condition of the client, which means that the healthy condition of the company, the company tends to put pressure on auditors to follow the applicable standards; and (4) Riview by third parties, which means that audit quality would increase if the same client in review by third parties. Quality audits are often used to determine earnings management is done by a company and the auditor's ability to reveal the presence of earnings management.

ICMEM

2. 5.   Political Connections and Real Earnings Management.

Real earnings management occurs when managers manage earnings with the intention to mislead stakeholders in a way to ensure that financial reporting objectives have been achieved through a change in the practice of ordinary activities (Roychowdhury, 2006). Real earnings management conducted by the management companies tend to be motivated by timing, meaning that real earnings management can be done during the accounting period. The results of the study of Wu et al. (2012) showed that private companies with political connections tend to gain tax advantages better when compared with the private company that is not connected to politics, while companies with the status of the government majority ownership is no significant effect on the tax advantages. Fraser et al. (2006) show that companies with political connections in Malaysia are more profitable and have high leverage. Braam et al. (2015) shows that companies are politically connected have an important role in changing the management strategy of earnings accrual earnings management to real earnings management strategy because it is difficult to detect by the regulator or auditor.Berdasarkan brief description above, the hypothesis proposed in this study is.
H_1: Political connections has a positive effect on real earnings management

2. 6.   Political Connections, Audit Quality and Earnings Management Real

Agent or manager does not always act in the interests of shareholders because the manager also has a personal interest. This led to the conflict of interest between shareholders and managers. Mitigate the asymmetry of information between the management companies (manager) with the shareholders of the required third party mediation, namely an independent auditor. With the independent auditors, it is able to monitor the actions of management companies to improve the credibility and accountability of financial reporting. Faccio (2010) shows that companies are politically connected have lower performance when compared with companies that are not connected to politics. With the independent auditor as an external auditor, it can mitigate the company in the management of real income because of the reputation management company will be damaged if the reported financial statements indicate that the low quality of financial reports for management profits that managers use to improve the performance of the company. Quality audits can be measured using firm size which is affiliated with the big four and non-big four. Rusmin (2010) stated that earnings management measurement is conducted by the management company with the results of audits conducted by accounting firm affiliated with the big four lower when compared with non big four KAP. Thus, the hypothesis proposed in this study is.
H_2: audit quality has negative effect on the relationship between political connection and earning management.

3.   Research Methods

3. 1.   Data Types and Data Sources

The data used in this research is secondary data such as financial statements and annual reports from 2008 to 2015 period. The used year in the analysis is 2010-2015. The reason used in 2008 and 2009 in the study due to calculate the real earnings management which requires data two years earlier. Data governance structure SBY_Boediono and Jokowi-JK and the structure of the members of Parliament are also needed in this research. The financial report and annual reports obtained from the company's website as well www.idx.co.id ICMD (Indonesia Capital Market Directory).

3. 2.   Population and Sample

Population is the generalization region consisting of the object / subject that has certain qualities and characteristics defined by the researchers to learn and then be inferred (Sugiyono, 2012). The population in this study manufacturing companies listed in Indonesia Stock Exchange. In this study, the sampling technique adalahpurposive sampling is a sampling technique by using certain considerations (Sugiyono, 2012). Sampling criteria are as follows:

ICMEM

a. Companies listed on the Stock Exchange 2009-2014.
b. Manufacturing company which has issued financial statements and audited annual from 2009-2014 years in a row.
c. The Company did not experience a loss or negative earnings.
d. Companies have complete data relating to the variables used in this study.

3. 3.   Operational Definitions

In this research there are independent variables, moderating variable, the dependent variable and the control variables that were used to test the hypothesis. The independent variables in this study are the political connections. Moderating variable is the quality of the audit. The dependent variable in this research is the real earnings management. In addition, the control variable is also used to control the influence of the independent variables to the dependent to strengthen the research results. Control variables in this study are the size of the company.

3. 3. 1.   Real Profit Management

Real earnings management occurs when a change in the practice of the company's normal operating activities motivated by the manager's desire to mislead stakeholders to ensure that financial reporting objectives have been achieved (Roychowdhury, 2006). There are three models used by Roychowdhury (2006) to measure earnings management through real activities manipulation. The three models used in this study and may be described as follows:

1. Real Activities Manipulation through Cash Flows Operating Activities

The regression model to look for cash flow the company's normal operating activities as follows:

$$CFOT / At\text{-}1 = \alpha 0 + \alpha 1 \ (1 \ / \ At\text{-}1) + \beta 1 \ (St \ / \ At\text{-}1) + \beta 2 \ (\Delta St \ / \ At\text{-}1) + \epsilon t$$

Information:
CFOT / At-1: Operating activities Cash flow in year t scaled by total assets at year t-1.
A1 (1 / At-1): intercept scaled by total assets at year t-1 with the goal of cash flow operating activities do not have a value of 0 when sales and sales lag is 0.
St / At-1: Sales in year t scaled by total assets at year t-1.
ΔSt / At-1: Sales in year t minus sales in year t-1 scaled by total assets at year t-1.
A0: Constants.
Єt: Error term in year t.

Regression to find the value of cash flow the company's normal operations are not performed with the classical assumption for the value needed is the coefficient of the regression results of this study tersebut.Dalam used is cash flow abnormal operations company is the excess of the value of the actual cash flows operating activities with normal operating activities cash flows that are calculated by using estimated coefficients obtained from the above equation model.

$$ABN\_CFO = CFOT - CFOT \ / \ At\text{-}1$$

2. Real Activities Manipulation through Production Costs

ICMEM

The production costs in this study is defined as the sum of cost of goods sold (COGS) and the change in the value of inventories throughout the years of the study or the difference between the actual inventory year with the previous year. The model for determining the cost of goods sold is a linear function sebegai stated the following:

$$COGS_t / A_{t-1} = \alpha 0 + \alpha 1 (1 / A_{t-1}) + \beta (S_t / A_{t-1}) + \epsilon t$$

To calculate the company's growth model is used as follows:

$$\Delta INV_t / A_{t-1} = \alpha 0 + \alpha 1 (1 / A_{t-1}) + \beta 1 (\Delta S_t / A_{t-1}) + \beta 2 (\Delta S_{t-1} / A_{t-1}) + \epsilon t$$

By using the two models above equation, then the company's normal production costs can be estimated by the model as follows:

$$PROD_t / A_{t-1} = \alpha 0 + \alpha 1 (1 / A_{t-1}) + \beta 1 (S_t / A_{t-1}) + \beta 2 (\Delta S_t / A_{t-1}) + \beta 3 (\Delta S_{t-1} / A_{t-1}) + \epsilon t$$

Information:
$PROD_t / A_{t-1}$: Cost of production in year t scaled by total assets at year t-1, where $PROD_t = COGS_t + \Delta INV_t$
$\alpha (1 / A_{t-1})$: intercept scaled by total assets at year t-1 with the aim that the value of the cost of production does not have a value of 0 when sales and sales lag is 0.
S_t / A_{t-1}: Sales in year t scaled by total assets at year t-1.
$\Delta S_t / A_{t-1}$: Sales in year t minus sales in year t-1 scaled by total assets at year t-1.
$\Delta S_{t-1} / A_{t-1}$: Changes in sales in year t-1 scaled by total assets at year t-1.
$\alpha 0$: Constants
ϵt: Error term in year t.

As with normal operating activities cash flows of the company, the estimated value of the coefficient of the regression equation above can be used to calculate the value of the company's normal production costs. To find the value of abnormal production costs peruusahaan can be obtained by subtracting the value of the actual production costs with normal production costs are calculated using the estimated coefficients of the model above.

$$ABN\_PROD = PROD_t - PROD_t / A_{t-1}$$

3. Real Activities Manipulation through Discretionary Costs

In this study, discretionary cost is defined as the amount of advertising costs, research and development expenses, and cost of sales and general and administrative. Regression models were used to calculate the cost of a normal level of discretionary companies as follows:

$$DISEXP_t / A_{t-1} = \alpha 0 + \alpha 1 (1 / A_{t-1}) + \beta (S_{t-1} / A_{t-1}) + \epsilon t$$

Information:
$DISEXP_t / A_{t-1}$: Cost discretionary in year t scaled by total assets year t-1
$\alpha (1 / A_{t-1})$: intercept scaled by total assets at year t-1 with the goal of discretionary costs do not have a value of 0 when sales and sales lag is 0.
S_{t-1} / A_{t-1}: Sales in year t-1 scaled by total assets at year t-1.

In this study will be calculated value of abnormal discretionary costs. The coefficient of the estimated regression equation above can be used to calculate the normal value of discretionary costs, so as to look for abnormal discretionary cost value can be obtained by menguragkan values to actual discretionary fee with normal discretionary costs are calculated using the estimated coefficients of the equation above.

ICMEM

$$ABN\_DISEXP = DISEXPt - DISEXPt / At-1$$

By following the Wu et al. (2015) to explain the overall real earnings management, the third section above the real earnings management in the regression to obtain the residual value. The residual value is combined to calculate the overall real earnings management with the following equation:

$$Remt = APRODt - ACFOt-ADISt$$

3. 3. 2. Political Connections

In this study, the criteria of the company which have political connections as follows:

1. The boards of directors and / or commissioners have a dual position as a politician affiliated with political parties.

2. The boards of directors and / or commissioners have a dual position as a government official.

3. The board of directors and / or commissioners dual position as a military officer.

4. The boards of directors and / or commissioners are former government officials or former military officials.

5. The owners of the company or shareholders are politicians / government officials / officers of military / former government officials / former military officials.

6. Direct government ownership (state / local enterprises).

7. Member successful team victory Jokowi-JK.

We use dummy variables, political connections worth 1 if the company meets one of the above criteria, and otherwise be 0 if it does not meet these criteria.

3. 3. 3. Quality Auditor

Audit quality is every possibility that may occur when the auditor audited the financial statements of the auditee and if we find a violation will be reported in the audited financial (Dewi and Teak, 2014). Quality audits in this study was measured by the size of the firm. If the company is audited by public accountant affiliated with the big four will be given a value of 1, otherwise if audited by KAP non big four will be given a value of 0.

3. 3. 4. Company Size

Firm size is measure of total assets owned by each company as the samples. Total assets selected in this study because the total assets of more representative and stable (Sudarmadji and Sularto, 2007).

3. 4. Data Analysis Methods

The analytical tool used in this research is the SPSS software version 17.0. In order for the regression model is not biased (BLUE), so in this study will be tested to meet the assumptions of classical regression model was good. This classic assumption test consists of testing normality, multicollinearity test, heteroscedasticity test and autocorrelation test.

Normality test is used to determine whether the residuals have a normal distribution. A good regression model is having a normal distribution of data or close to normal. In this test used one sample Kolmogorov-Smirnov. Data is

ICMEM

said to be normally distributed if the significance is above 5% (Gujarati, 2003). Multicolinearity test aims to test whether the regression model found a correlation between the independent variables. A good regression model is a model that does not happened correlation between the independent variable. Decision-making regarding the presence or absence of an independent antarvariabel korealsi is to see the value of tolerance and the variance inflation factor. Gujarati (2003) says that if the tolerance value is more than 0.1 and VIF are not more than 10, the linear relationship between the independent variables in the regression model does not contain multikolinearitas. Heteroskedastisitas test aims to determine whether the regression model occurred inequality residual variance of an observation to another observation. If the residual variance of an observation is to observation of others remain then called and if different homokedastisitas called heteroscedasticity. A good regression model is a regression model that meets homokedastisitas assumptions. Heteroscedasticity test is conducted by test glezser. Glejser test conducted by fixed residual value and the absolute regression as the dependent variable. The test is to see the significance of the results of the regression residuals absolute as the dependent variable. Heteroskedastisitas problem will occur when each independent variable has a significance value less than 0.05 alpha (Gujarati, 2003). Autocorrelation test aims to test whether the linear regression model was no correlation between residue errors in period t with residue error in period t-1 (previous). If there is a correlation, then there is a problem of autocorrelation. Autocorrelation arise because successive observation at all times in relation to each other. This problem arises because the residual (error bullies) are not free from one observation to another observation. Decision-making regarding the presence or absence of autocorrelation is as follows: if the Durbin-Watson value obtained is between -2 to 2, it is assumed there is no autocorrelation (Santoso, 2010).

Hypothesis testing using Moderated Regression Analysis (MRA) to examine (1) the political pengaruhkoneksi against real earnings management and (2) to test the effect of audit quality on the relationship between political connections and real earnings management

The mathematical equations to test the hypothesis in the study are as follows:

$$ML = \alpha + \beta 1 KP + \beta 1\ UKP + e \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$$ML = \alpha + \beta 1 KP + \beta 2 KA + \beta 3 KP * KA + \beta 1 UKP + e \dots\dots\dots\dots\dots\dots (2)$$

4. Research Finding and Discussion

4. 1. Descriptive Statistics

In the table below, it will explain the descriptive statistics of the variables used in this study. Information on descriptive statistics consists of a number of samples (observation), the average value and standard deviation.

Table 1. Descriptive Statistics

Variable	Mean	Deviation Standard	N
Real Eaning Management	0.18	0.367	320
Political Connection	0.1875	0.39092	320
Audit Quality (Moderate)	0.1563	0.36366	320
Company Size	4.945E9	9.09249E9	320

The above table shows that the amount of data used in this research were 320 observations from the annual financial statements and companies listed on the Stock Exchange in 2008-2015. But the data analyzed in this study from 2010-2015. This is because in the calculation of real earnings management takes the two previous years of data that is data in 2008 and 2009. The average earnings management variables in this study is 0:18 with the standard deviation value

ICMEM

is 0367. Furthermore, the average of value and standard deviation political connections (0.1875) and (0.39092), quality audit (0.1563) and (0.36366), and the size of the company (4.945E9) and (9.09249E9).

4. 2.   *Classic Assumption Testing Results*

To avoid biased interpretations, this study used classical assumption test consisting of normality test, multicollinearity, hypothesis testing, heterocedasticity test, and autocorrelation test. Here is a classic assumption test results by the second equation model to test the hypothesis.

Table 2. Classical Assumption Test Results

Model I					
Clasical Assumption	Testing Type	Variable			Notes
		KP	UKP		
Normality	Kolmogorov	1.132			Fulfilled
	Sig.	0.154			
Multicolinearity	Tolerance	0.784	0.784		No Multicol
	VIF	1.275	1.275		
Heterocedastisity	Glejser (Sig.)	0.630	0.164		No Hetero
Autocorelation	Durbin-Watson	1.396			No Auto
Model II					
		KP	KA(MOD)	UKP	
Normality	Kolmogorov	1.225			Fulfilled
	Sig.	0.099			
Multicolinearity	Tolerance	0.155	0.180	0.715	No Multicol
	VIF	6.450	5.555	1.399	
Heterocedastisity	Glejser (Sig.)	0.121	0.095	0.175	No Hetero
Autocorelation	Durbin-Watson	1.427			No Auto

Source: Secondary data is processed, 2016

According to the table above, then test the classical assumption of normality, multicollinearity test, test and autocorrelation test heterocedasticity have to meet the assumptions required, so that the subsequent analysis is hypothesis testing.

4. 3.   *Hypothesis Test Results*

Here is a table of hypothesis testing results influence the quality of audits of the relationship political connections with real earnings management in two equations models.

Table 3. Hypothesis Test Results

Model I			
Variable	Coeficient	t-value	p-value
Political Connection	-0.106	-1.816	0.070
Firm Size	-5.264E-12	-2.105	0.036

ICMEM

R^2	= 0.043		
Adjusted R^2	= 0.037		
Std. Error of Est.	= 0.360		
F	= 7.187		
Sig.	= 0.001		
Model II			
Political Connection	0.128	0.985	0.325
Audit Quality (M)	-0.261	-2.005	0.046
Firm Size	-6.821E-12	-2.616	0.009
R^2	= 0.055		
Adjusted R^2	= 0.046		
Std. Error of Est.	= 0.358		
F	= 6.178		
Sig.	= 0.000		

Source: Processed Secondary Data, 2016

According to the table above, hypothesis testing the effect of audit quality on the relationship of political connections and real earnings management tested in two models. The first model to test the hypothesis of the influence of political connections to real earnings management by using the control variable is the size of the company. Furthermore, both models are used to test the effect of audit quality on the relationship between political connections and real earnings management by using the control variable sized companies. F count and significance of the two models above shows that this research model meets the goodness of fit (fitness model).

Model 1 shows the R2 value of 0.043. It means that 4.3% of real earnings management variation can be explained by variations in political connections and the size of the company, while the remaining 95.7% is explained by other factors that are not used in this research model. Model II showed R2 value of 0.055. This means that 5.5% of real earnings management variation can be explained by variations in political connections, the quality of the audit and the size of the company, while the remaining 94.5% is explained by other factors that are not used in this research model.

Results of testing the hypothesis 1 show that political connections do not significantly affect the real earnings management while the size of the company negatively affect the real earnings management. The testing results second hypothesis suggests that the quality auditor may moderate the influence of political connections to the management of real profit with the direction of the coefficient is negative. This indicates that the quality of auditors has negative influence on the relationship between political connections and real earnings management. In addition, the size of the companies that serve as control variables showed a negative effect on real earnings management.

4. 4.   Discussion

4.4.1 Political Connections has a Positive Effect on Real Earnings Management

Hypothesis 1 stated that there is positive effect on the political connections of real earnings management is not supported empirically. The regression results indicate that the coefficient value of -0106 to -1816 of t-test or a significance value of 0.070. The results of this study are not supported due to the existence of alleged political connections can have a negative impact on the performance of a company by company management through the actions of real earnings manipulation. Schleifer and Vishny (1994) explained that the company's performance will be threatened when political connections distort incentives, the wrong investment placement, and increasing corruption. Moreover, Chaney et al. (2011) stated that the company is connected to politics tend to be monitored by the public, thereby reducing the positive benefits of political connections. Results of testing the control variables firm size negatively affects the real earnings management empirically supported. This means that large-sized companies tend to

perform management actions smaller profit when compared with the smaller company. This means that large-sized companies are often monitored closely by stakeholders to present a credible financial reporting.

4.4.2 Audit Quality has a Negative Relationship between Political Connections and Real Earnings

   Management

Hypothesis 2 stated that audit quality has a negative affects on the relationship between political connections and real earnings management empirically. The regression results indicate that the coefficient value of -0261 to -2005 of t-test or a significance value of 0.046. These results indicate that the quality of audit to mitigate their political connections to the actions of management to manage earnings in real terms. This is because the companies that connect politics tend to be monitored closely by the public (Chaney et al., 2011), thus causing the auditor would attempt to audit the financial statements of the company connected politically to ensure the credibility of the financial statements in order to give confidence to the public that the company's financial statements politically connected have good performance or be free of material misstatement. Therefore, the presence of an independent auditor as an external auditor, it can mitigate the company in management of real profit because of the reputation management company will be damaged if the financial statements are reported to indicate the quality of the financial statements are low because of earnings management that managers use to improve the performance of the company, the testing results the control variables firm size negatively affects the real earnings management empirically supported. Such a model 1 that has been explained previously those large-sized companies tend to perform management actions which have smaller profit when compared with the smaller company. This means that large-sized companies are often monitored closely by stakeholders to present a credible financial reporting.

5.   Conclusion

This study aimed to examine the effect of audit quality on the relationship between political connections and real earnings management. The study sample consisted of 59 companies manufacturing in a row to publish its financial statements from 2008-2015 on the Indonesia Stock Exchange. Year used for the analysis is 2010-2015. This is because the two previous years of 2008 and 2009 are used to calculate the real earnings management. By using purposive sampling, it obtained 320 observations for use in the analysis stage.

The results of the study hypothesis 1 show that the political connection has not significant affect the real earnings management. While firm size as a control variable has significant effect and negatively related to real earnings management. Hypothesis 2 testing results show that audit quality has a negatively affects the relationship of political connections and real earnings management. In addition, the control variable (firm size) that is used to control the effects of an audit of the quality of the relationship of political connections and real earnings management empirically supported.

Limitations of this study are: (1) the study had R2 which is still relatively small for both research models above, so further researchers are expected to use the factors that influence the real earnings management as the ownership structure or the information asymmetry; (2) the results of this study can not be generalized to non-manufacturing companies listed in Indonesia Stock Exchange, so further research is expected to use other companies as research samples; and (3) limitations of data sources to obtain their political connections, therefore, further researchers are expected to use other criteria to detect political connections.

References

Badertscher, B. (2011). Overvaluation and the Choice of Alternative Earnings Management Mechanisms. The Accounting Review, 1491-1518.

Barton, J. and P. Simko. 2002. The Balance Sheet as an Earnings Management Contraint. The Accounting Riview. 77. 1-27.

ICMEM

Braam, G., Nandy, M., Weitzel., U., & Lodh, S. (2015). Accrual Based and Real Earnings Management and Political Connections. The International Journal of Accounting, 50. 111-141.

Chaney, P. K., Faccio, M., & Parsley, D. (2011). TheQuality of Accounting InformationIn Politically Connected Firms. Journal OfAccounting and Economics, 51(1), 58-76.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual based earnings management in the pre-and post-Sarbanes–Oxley periods. The Accounting Review, 83(3), 757–787.

Cohen, D., & Zarowin, P. (2010). Accrual based and real earnings management activities around seasoned equityofferings. Journal of Accounting and Economics, 50(1), 2–19.

Dechow, P.M., and D.J. Skinner. 2000. Earnings Management: Reconciling theViews of Accounting Academics, Practitioners, and Regulators.Accounting Horizons Vol. 14 (2) : 235-250.

Dewi, K. dan I.K. Jati. 2014. The Impact of Executive, Company Behaviour, and Corporate Behaviour.

Governance for Tax Avoidance at Bursa Efek Indonesia. E-Jurnal Accountancy Universitas Udayana. 6 (2): 249-260.

Ewert, R., & Wagenhofer, A. (2005). Economic effects of tightening accounting standards to restrict earnings management. The Accounting Review, 80, 1101–1124.

Faccio, M. 2006. "Politically Connected Firms." American Economics Review, Vol. 96, No. 1, h.369-386.

Faccio, M., Masulis, R., & McConnell, J. (2006). Political connections and corporate bailouts. Journal of Finance,61(6), 2597–2635.

Fan, J. P. H., T. J. Wong, & Tianyu Zhang. 2007. "Politically Connected CEOs, Corporate Governance, and Post-IPO Performance of China'S Newly Partially Privatized Firms." Journal of Financial Econommics 84. 330-357.

Fan, J. P. H., T. J. Wong, & Dong-Hua Chen. 2004. "Politically Connected CEOs, Corporate Governance, and Post-IPO Performance of China'S Partially Privatized Firms."

Fisman, R. (2001). Estimating the Value of Political Connection. The American Economic Review, Vol. 91, No. 4, 1095-1102.

Graham, J., Harvey, R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics, 40(1–3), 3–73.Gujarati, Damodar, 2003, Ekonometri Dasar. Terjemahan: Sumarno Zain, Jakarta: Erlangga.

Gunarsih, Tri. 2004. "Agency Problem and Diversification." KOMPAS, No.10,.52 – 69.

Gunny, K. 2005. What Are the Consequences of Real Earnings Management? Working Paper : University of Colorado.

Jensen, M. C & W. H. Meckling. 1976. "Theory of The Firm: Managerial Behavior, Agency Costs and Ownership Structure." Journal of Financial Economics, Vol. 3, No. 4. h.305-360.

Li, K., Griffin, D., Yue, H., & Zhao, L. (2013). How does culture influence corporate risk taking? Journal of Corporate Finance, 23, 1–22.

Pastor, L., & Veronesi, P. (2013). Political uncertainty and risk premia. Journal of Financial Economics, 110(3),520–545.

Primasari, R. (2013). Political Connection Impact and Corporate Governance Toward Audit Fee. Skripsi. Fakulty of Business and Economic Diponegoro University.

Roychowdhury, S. (2006). Earnings Management Through Real Activities Manipulation. Journal of Accounting and Economics, 335-370.

Rusmin. 2010. "Auditor Quality and Earnings Management: SingaporeanEvidence". Managerial Auditing Journal, Vol. 25, No. 7, pp. 618-638.

Santoso, S. 2010. Multivariate Statistic Concept and SPSS application software. Jakarta: PT Elex Media Komputindo.

Schipper, K. December 1989. Commentary on Earnings Management. AccountingHorizons. 91-102.

Shleifier, A. & R. W. Vishny. 1994. "Politicians and Firms." Quarterly Journal of Economics 109. h.995-1025.

Sudarmadji, A.M. dan Lana Sularto, 2007. "The Impact of Firm Size, Profitabilitas, leverage, and Type of Company Ownership toward Voluntary Disclosure of Annual Financial Disclossure ", Proceeding PESAT, Volume 2.

Sugiyono. 2012. Research Method for Quantitative and Qualitative R&B. Bandung: Alfabeta.

Sumarni, Murti & John Soeprihanto. 1999. Business Basic. Yogyakarta: Liberty Yogyakarta.

Sutrisno, 2007, Financial Managment, Ekonesia: Yogyakarta.

Vermonte, Philips J. 2012. "Political Party Fund: Problem amd Several Solution Alternative." Analisis CSIS, Vol. 41, No. 1, h.82-94.

Wu, P., Gao, L., &Gu., T. (2015). Business Strategy, Market Competition and Earnings Management. Evidence From China. China Management Studies. Vol. 9. No.3

BUSINESS STRATEGY

ICMEM   IBEC

ICMEM

The 3rd International Conference on Management in Emerging Markets

Developing Policies for Domestic Gas Industry Sustainability using Soft System Dynamic Model Approach

Yos Sunitiyoso[a]*, Andika Mahardika[b], Shimaditya Nuraeni[c]

[a,b,c]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No.10, Bandung 40132, Indonesia*

Abstract

During economic downturn by low oil price, most of fossil-based industry having negative growth including domestic gas industry at Indonesia. This experience making industry player set the new foundation and changing all gas industry structure. Government also using different approach for policy making on gas industry. The next questions are how develop strategy for new business landscape of gas industry, where the future of gas industry and how demand and supply play the role in future gas industry at Indonesia. This research aim to develop strategy to increase domestic gas industry growth using system dynamic modeling. The methodology of research combines between soft system model ("SSM") and system dynamic approach ("SD"). SSM approach being utilized on problem identification, stake holder analysis using rich picture and define the variables within inside the system. SD utilized for causal loop diagram continues to stock/flow diagram. SD also being used for further qualitative analysis to predict gas industry's response to strategy that being developed on model.

Keywords: Modelling, Policies, Behavior System, Soft System Methodology, System Dynamics

1. Introduction

Indonesia gas industry having strong pressure on growth. Most of gas industry player having difficulties on growth due to market and policies. If gas industry considers as a system then policies are override the system to aim specific goal within specific time frame. Set of policies was issued by government to increase size of industry. The result of these policies varies greatly and not making clear policies streamline.

This research considers gas industry as a system. The complexity of system need to identify to get correct variables. Stake holder analysis was the one of technic to create the variable and creating causal loop. Causal loop diagram is expressing feedback between variable in the complex of system (Sterman,1980). Authors using combination of soft system modelling (Checkland,2001) and system dynamic modelling (Sterman,1980).

System modelling is an appropriate method to analyze the complexity of gas industry, there are two approaches being used to develop system: soft and hard approach. Soft approach tends to use for resolving social issue in community. In the opposite, hard system tends to use for non-social system such as production versus consumption behavior, therefore hard system relies on data. The combination of these two approaches called soft system dynamic modelling. Since gas industry need to examine both for social issue and data analysis, that's why soft system dynamic is correct frame work to develop policy scenario.

The effect of low oil price bringing low investment on gas exploration resulting insufficient gas production to meet consumption in the near future. Some research prediction, Indonesia will be shortage of production and tend to import gas for next 4-5 years (Mahardika and Sunitiyoso,2017). This research purpose to develop set of policies as part of strategy to facing different structure of gas industry in near future using soft system methodology and system dynamics

---

* Corresponding author. Tel.: +62-857-1463-7269
  E-mail address: yos.sunitiyoso@sbm-itb.ac.id

ICMEM

2. Methods

2. 1.   Soft System Dynamic Modeling Framework (SSDM)

SSDM modeling for natural gas business needs 10 stages implementation steps (see Figure 1). These 10 implementations steps will be categorized into three worlds: real world, problem oriented system thinking world, and solving-oriented system thinking world (Ulloa and Caceres, 2005).
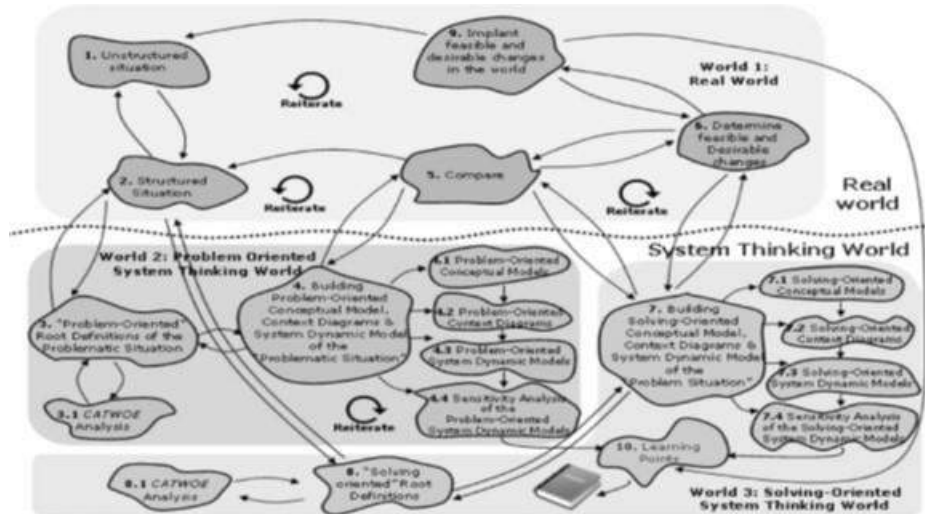
Figure 1. Implementation Steps for SSDM (Ulloa and Caceres, 2005)

For the purpose of this research, the SSDM stages will be modify, since this research intend to predict the behaviour model of gas industry. Behaviour model is how system react to response for any policies regulator or new business strategy of private sector. Oil and Gas behaviour modelling on this research can be describe as seen in Figure 2 (Mahadika and Sunitiyoso, 2017)
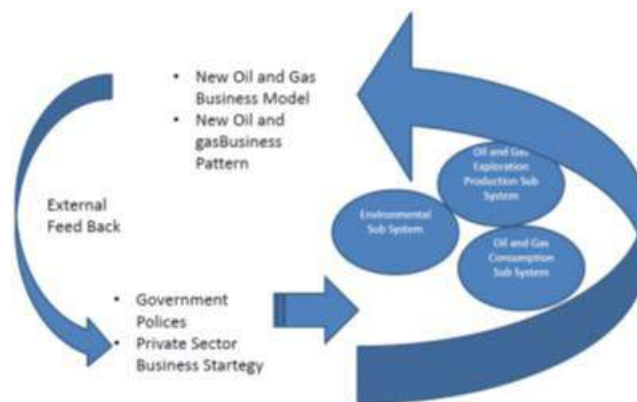
Figure 2. Oil and Gas Behaviour Modeling (adapted from Mahardika and Sunitiyoso, 2017)

Thus, the methodology for this research consist of two part, the soft system approach and system dynamic approach (Figure 3).

ICMEM

SOFT SYSTEM APPROACH

Step 1. World 1: Real World

- Stage 1 : Unstructured Problem Situation
- Stage 2 : Structured Problem Situation

Step2. World 2: The Problem Oriented System Thinking World

- Stage 3 : Problem Oriented Root Definitions
- Stage 4 : Building Problem Oriented definition using rich picture

Step 3. World 1: Real World

- Stage 5 : Comparing the Problem-Oriented System Dynamic result with real world by interviewing stake holder, focus group discussion and questioner.
- Stage 6 : Determining Feasible and Desirable Changes in real world.

SYSTEM DYNAMIC APPROACH

Step 4. World 3: Solving Oriented System Thinking World

- Stage 7 : Using system dynamic approach such as causal loop diagram, stock and flow diagram and creating mathematical model from existing data.
- Stage 8 : Creating policy scenario to achieve desirable changes, predict the trend inside a system in specific time frame

Step 5: World 1: Real Word

- Stage 9 : Implementation a set of policies, comparing the actual result with computer aided simulation.

Step 6: World 3: Solving Oriented System thinking world

- Stage 10 : Learning Point and re-design of policies based on comparison result.

Soft System Dynamic Modelling

Figure 3. Research Methodology

The modification of SSDM implementation is following general steps for system modelling: (1) Conceptualization, (2) Formulation, (3) Testing, and (4) Testing (Randers, 1980). Implementation of SSDM also able to plot to general steps of system modelling, step 1 until step 3 is conceptualization phase, step 4 is formulation phase, step 5 is testing phase and step 6 is implementation steps. Hence, the final framework of this research is presented in Figure 4.

ICMEM
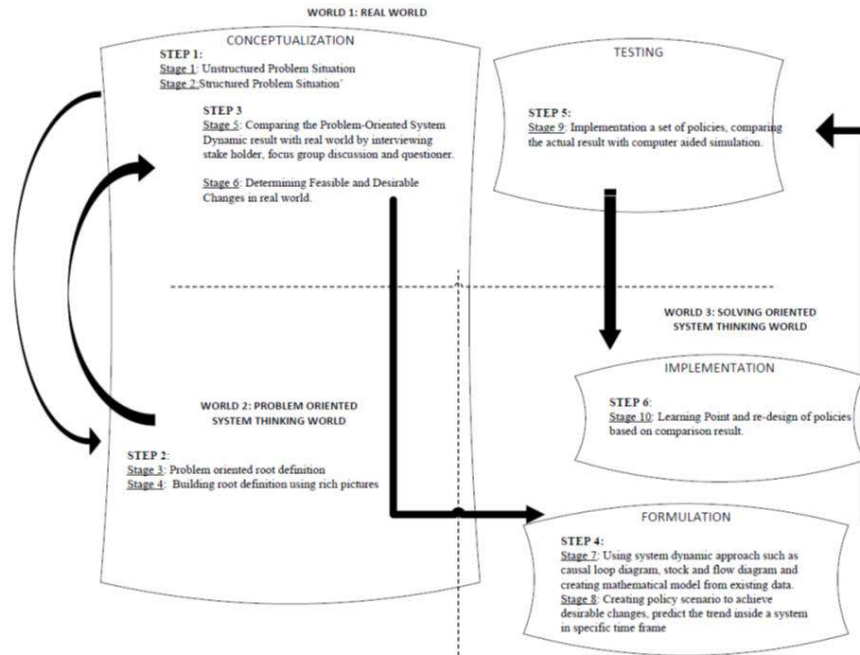
Figure 4. Modified SSDM Implementation Steps for Policy Making

2. 2.   *Data Collection*

This research use qualitative and quantitative analysis. Data being collected using focus group discussion, questionnaires and official data from Ministry Energy & Mineral Resources. Another supporting data for outside of oil and gas industry will be using Government's statistical data (BPS)

3.   Result and Discussion

Stage 1: Unstructured Problem with Indonesia gas industry, (W1: Real World)

Indonesia natural gas industries considered as complex system. Some issues related to gas utilization at domestic market becomes unstructured. Gas producer not able to sell the produced gas meanwhile gas consumer always asking for gas allocation. These issues create uncertainties in business and it's mean gas industries losing their attractiveness compare to another business sector or another ASEAN gas business.

Comparing to other countries, Indonesia natural gas industry less attractive because the lowest IRR in the world for exploration and production sector. Meanwhile, consumption sector need viable gas price to provide lower energy price to public. As reference, UK is the lowest government take, is only 40.1% and also the highest IRR with 41.5%, as comparison Government take for Indonesia is 78.7 %, the second highest worldwide (IPA presentation, 2017)

These issues are unstructured and all stakeholder not able to share the common objective on gas industries. A lot of approaches was taken by government to make the business attractive such as: gross split for new and extension blocks, lowering gas price and etc. Most of approaches based on finance and engineering, the policy not able to change the system behavior as desired. Soft system dynamic modelling will be using different approach, human based approach to structure the problems and dynamic modelling approach to create scenario and desired changes for very scenarios.

ICMEM

Converting the unstructured problem to structured problem needs some approaches. System dynamic using stake holder analysis to structure the problem meanwhile soft system model using rich picture continues to structure the problem. Soft system dynamic modelling focus on human perception inside the system.

Indonesia gas industry in a back bone for energy sustainability, in this concept means fulfillment of energy demand and preserve for future energy and environment (Tester, 2011). It's been agreed from all research where renewables energy is the back bone for Indonesia energy sustainability. However, sustainability means fulfillment of current energy demand and its impossible all the demand of energy able to cover with non-fossil energy based. Gas is the one of fossil-based energy that able to satisfy energy demand meanwhile renewables energy being developed.

There are 3 main purposes to use dynamic modelling: (1) to clarify the deep understanding of complex system, (2) to create a set policy for desired changes of a system, (3) to capture the mental model and perception all stake holder in a complex system (Albin,1997). This research purpose is focus on creating a set policy for desired changes of as system, in this case natural gas industry as a system.

Why natural gas industry is considered as separate system with crude oil industry? Technically, gas and oil sometimes come from same reservoir that commonly known as associated gas. However, both associated gas or gas from reserve is totally different value chain compare to crude oil. So, it's different stake holder and impossible to put in as a system, the system itself will be unstructured.

Stage 2: Structured Problem Situation, (W1: Real World)

As explained, soft system dynamic modelling is combination between soft system methodology and system dynamic. Hence, for root problem definition using soft system methodology called rich picture. The reason using rich picture rather than value-based stake holder analysis because human approach. Soft system methodology considers the system doesn't exist at the beginning that whys rich pictures will be giving clear structure of problem root definition, meanwhile in system dynamic the system already exist in real world and as reference for stake holder analysis. Problem statement this research is slowing/negative growth on Indonesia gas industries and the rich pictures explained below:
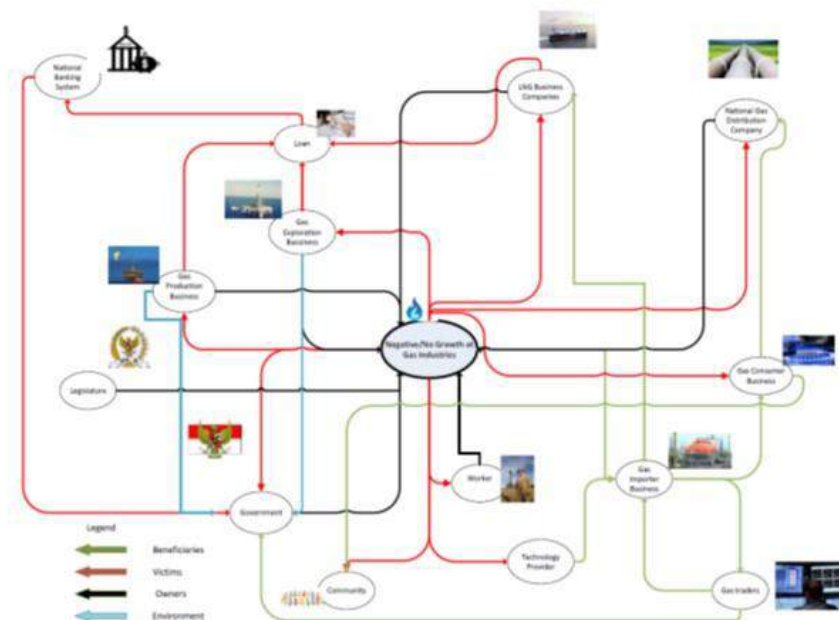
Figure.5 Rich Picture for Indonesia Gas Industry.

ICMEM

There are four connection line on rich pictures where represent beneficiaries, victims, owner and environment. The details explanation as below:

Beneficiaries

Beneficiaries are the parties who get advantage and/or positive result from an event. In this rich picture, explained that if no growth at natural gas industry, the beneficiaries is gas importation business. Gas importation business will be the party who supplying the gas to fulfill the demand. The second layer of beneficiaries are gas trader since it's will be the parties who fulfill the gas for import from international market. Since most of gas will be importing as LNG, other beneficiaries are national distribution company and national LNG business. National LNG business in this system are regasification business, LNG shipping and terminal business. Since most of gas will be transported via pipeline from regasification plant, national distribution company also getting beneficiaries from slowing growth at Indonesia natural gas industries. Technology provider in this case will be changing the focus from gas production technology to gas transportation and distribution technology.

In paradox, Government also act as beneficiaries for no growth a domestic natural gas industry since the importers subject to importation tax, meanwhile Government also as victim on this scene. Gas importation also giving benefit for gas consumer business. For example, gas consumer business will be having enough amount of gas to produce power to communities.

Victims

Victims are the parties that get disadvantage negative result from the event. On rich pictures above, the main victims for no growth at natural gas industries are gas exploration business, gas production business, gas distribution and LNG business. These businesses will be reduced their investment since market size of gas business will be deuterated.

In Paradox, LNG business and gas distribution not really victims in this case, since these two-business able to balance with gas importation. Gas production and gas exploration are the real victims. Since gas exploration and production tied-in with national banking system, there are huge possibilities that national banking system will be affected by no growth at natural gas industries. In fact, Government will be getting double impact as a victim: (1) reducing government take from gas industries and (2) possible to have impact from national banking system, hence gas business not having big loan portion comparing to other sectors.

Worker at natural gas industry is the victims where will be having direct impact in short period time. Lower activities on gas exploration and production pushes the business to reduce the workforce. If the reducing activities is massive, there are a lot of social impact and also contribute to national consumption, surely need to check portion of gas industry for national consumption.

Owners

Referring to rich picture shown above, gas industry having several owners. Owner is stake holder that having high interest for gas industry growth. The owners' business growth depending on market size of gas industry. From the rich pictures above, the identified owners:

1) Government is the main owner of gas industry since the national income from gas industry quite high. On top of that, Government also responsible for energy sustainability in Indonesia, it's the major concern of Government since gas fired power plant close to 20% (ESDM, 2014). Government need to find another energy source for as replacement in term of energy sustainability.
2) Gas production companies (together with exploration) is the backbone parties for gas industry since the gas production companies will be producing gas from reserve. Gas production companies can be classified as "the growth actor" for gas industry. Gas industry will be having strong growth if gas production companies having good performance in term of reserve and financial.
3) Gas exploration companies are main actor for finding new gas reserve. These companies spending amount of investment money with certain risk in order to find new reserve. Gas industry sustainability really depends on new exploration.

4) Workers are the owner that having high dependencies on gas industry. Referring the downturn during 2015-2017, most of workers losing their jobs. It's hidden problem and lead to macro-economic downturn since will be reducing consumption in general. Skilled workers are one of actors for industry workers. The worker in gas industry will need time to build a set of skills such as: need on job training and field experiences. Skilled workers is asset for gas industry to drive growth as well as financial investment,

5) LNG business companies also the owner of gas industry since the Indonesia is archipelago country. LNG is one of sustainable "mode of gas transportation". LNG business is the parties who enabling gas consumption.

Gas distribution companies is having similar intention with LNG business as enabler for gas consumption, the parties who delivering gas to consumer

Stage 3. Problem Definition

Based on rich picture explanation on previous stage, the problem identified is slowing growth for gas industry will transform from gas producer to gas import business. It's will be changing all gas industry landscape at Indonesia. The major stake holder will not ready and having business inertia instead.

Domestic upstream gas industry reducing the size and worker will significantly getting the bad impact. If this condition unavoidable, domestic gas industry need to transform the business model and focus to midstream and downstream business

Stage 4 System Dynamic Model

Variable was identified based on rich picture. Causal loop was established based on brainstorming, survey and focus group discussion. The list variables that develop from rich picture:
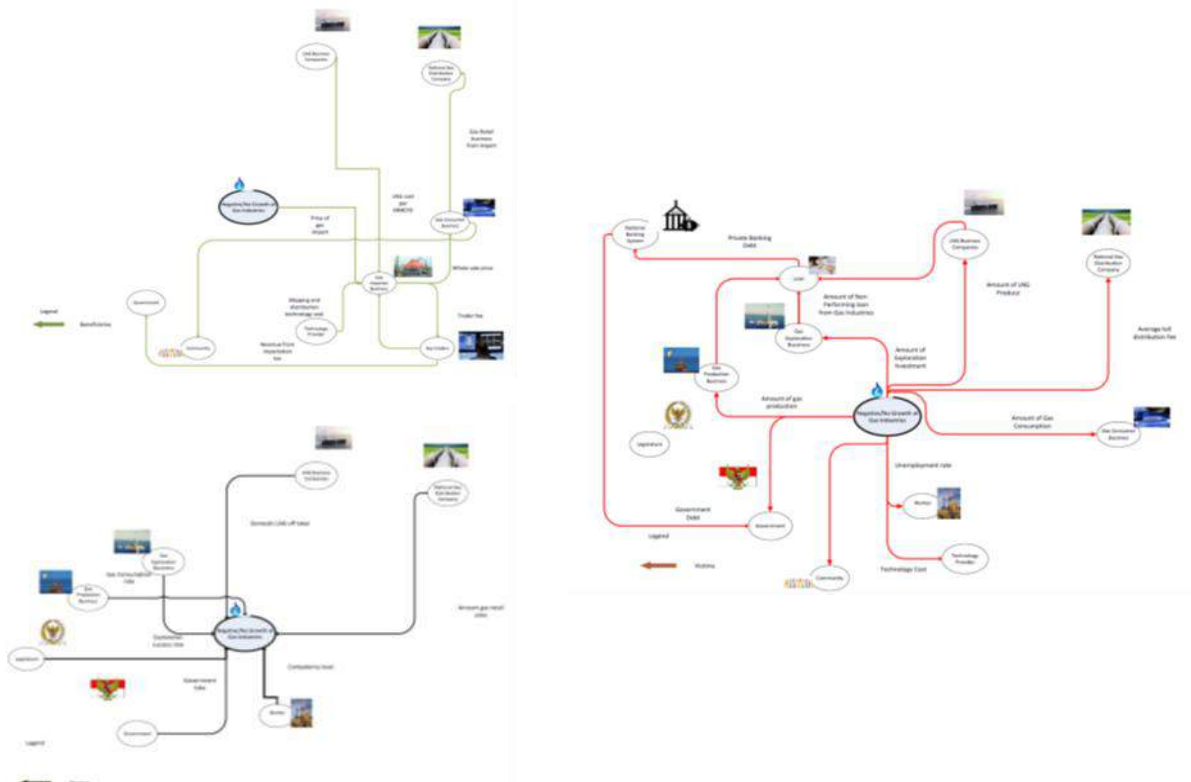
Figure.6 Rich Picture with Variables

ICMEM

The variables will be transform to causal loop. The feedback between variable was taken by interviewing stakeholder, questioner and focus group discussion. The final causal loop can be seen below:
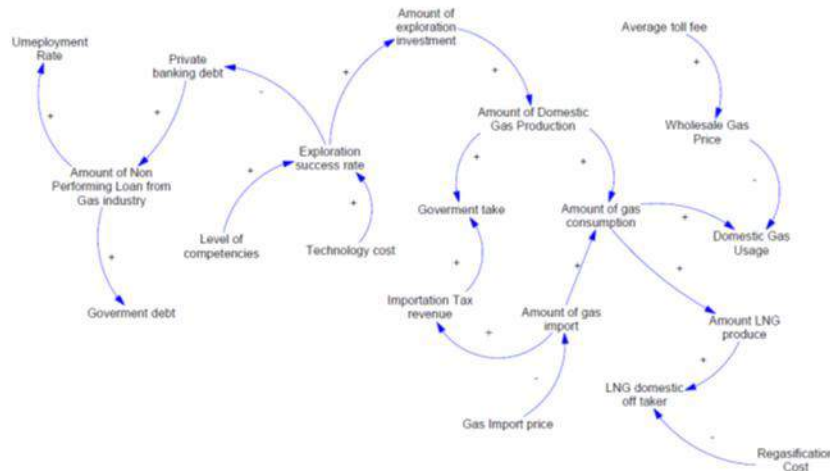
Figure 7. Causal Loop Diagram

Causal loop divided by 3 sections: Investment, production, consumption. From causal loop above, the key variable is exploration success rate which is depends on exogenous variables: level of competencies and technology cost. If exploration success rate increase, it will affect amount of exploration investment and private banking debt. Since exploration success rate increase, investor will confidence with level of competencies and level of technology applied. It's will increase further amount of exploration investment.

Since amount of investment increase, it will be bringing positive effect to domestic gas production. Since gas is not classified as commodities so gas buyer needed prior production, its mean gas production increases as well as gas consumption. Gas will be transporting as LNG and thru pipe line. Some of gas users also using LPG and CNG, in this case consider as mode of transportation even though there is some different on application and technology applied. Domestic gas usage need really depends on wholesale gas price (including toll fee). Meanwhile LNG domestic off taker will be increase with lower regasification cost.

If exploration success rate is low, it will increase private sector debt at banking system since all the cost will not recover by government. This situation will lead to higher number of non-performing loan. As the effect of high non-performing, Gas Companies pushed by Bank or private banking sector to do efficiency, number of unemployment will be increased.

From causal loop, there are some important variables for sustainable gas industry was identified: exploration success rate and domestic gas consumption. The next step is building policies base on these two key variables, commonly said policy structure.

Stage 5 Developing and Streamlining Policies structure

As mentioned above, some key variable already identified. The next step is developing policies based key variables. The policies structure to create sustainable domestic gas industry can be seen as below:

ICMEM
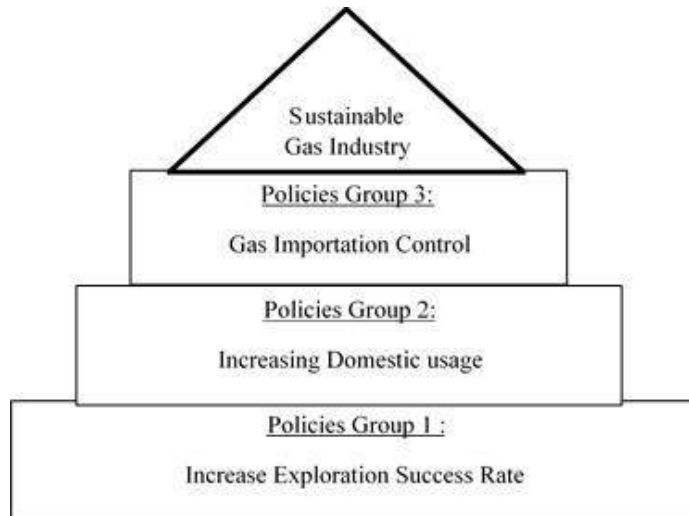
Figure 8

Group 1 Policies are foundation for sustainable gas industry, if these policies failed to implement means all the policies in group 2 and group 3 will be failed also. Policies at group 1 will become key factor for streamlining the policies toward to achieve the goal for sustainable gas industry. Based on causal loop, level of competencies of worker and technology applied are the main issue.

References

Anderson, Virginia & Johnson, Lauren , (1997), System Thinking Basic : From Concept to Causal Loop, Waltham, Pegasus Communication Inc.

Chi, Chyong K & Reiner, David M & Nuttal, William J, (2009), Dynamics of the UK Natural Gas Industry: System Dynamics Modelling and Long-Term Energy Policy Analysis*, Electricity Policy and Reseacrh Group,* June,np

Chocri, Nazli & Heye, Christopher, (1990), Simulation Model (International Petroleum Exchange), *Energy Journal,* 15:363-378.

Ministry Of Energy and Mineral Resource RI, (2015), Handbook of Energy and Economic Statistic of Indonesia, November, 20-40

Price Water Cooper, (2016), Oil and Gas Invesmet and Taxation Guide, May, 7:30-45.

Rothamael, Frank T, (2013), Strategic Management Concept, New York, Mc Graw Hill

SKK Migas, (2016), Pemanfaatan Gas Bumi di Indonesia,N/A, 1-10

Sterman, John D, (2000), *Business Dynamic and System Thinking for Complex World,* New York, Mc Graw Hill

Ventana System,(1998), *Vensim 5 Modelling Guide,*N.p.

Weijemar, Ruud, (2010), Value Chain Analysis of The Natural Gas Industry Lessons From the US Regulatory Success and Opportunities for Europe, *Journal of Natural Gas Science and Engineering,* 2: 86-104

ICMEM

The 3rd International Conference on Management in Emerging Markets

Acquisition Analysis of Star Energy Geothermal Holdings by PT. Barito Pacific Tbk.

Amri Zein[a]*, Subiakto Sukarno[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Indonesia*

Abstract

On December 2016, PT. Barito Pacific Tbk. (BRPT) entered a Memorandum of Understanding (MOU) with entities owned by BRPT's controlling shareholder, Mr. Prajogo Pangestu, to acquire the majority shares of 66.67% in Star Energy Group Holdings (SEGH), Indonesia's biggest geothermal power producer. The aim of this acquisition is to provide BRPT with a second core business, diversifying BRPT's earnings from the cyclical petrochemical sector into more stable power generation sector, which has good long-term growth prospects with the added benefit of being a green energy provider. On March 2017, BRPT announced that it had secured a USD 250 million loan to support its plan to acquire SEGH. BRPT expects to finish the audit process of SEGH and targets to complete the acquisition in 2Q18. The acquisition analysis is started from internal and external analysis of BRPT combined with SEGH performance analysis, risk analysis, stock valuation analysis using DCF model with free cash flow to the firm and relative valuation model. The research reveals that BRPT's corporate strategy to face cyclical petrochemical business and to strengthen the business profit by acquiring majority share of SEGH is a very good diversification strategy. The calculated intrinsic value per share based on the DCF valuation after SEGH's acquisition without right share issuance is Rp. 2.607, the potential upside value is 15.37% (compared with BRPT share price IDR 2.260 on end of 2017).

Keywords: *Acquisition Analysis, BRPT, Corporate Strategy, Discount Cash Flow, Star Energy*

1. Introduction

PT Barito Pacific Tbk. (BRPT) is a diversified resource-based holding company which has 50.19% stake in PT Chandra Asri Petrochemical TBK (CAP), as the operator of Indonesia's sole integrated naphtha cracker. CAP constitutes over 98% of BP's assets, revenues and net profits at present.

In 1979, BRPT began operations as a timber and woods-based producer but downsized this business following the Asian financial crisis. Subsequently, BP turned to chemicals via the acquisition of PT Chandra Asri in 2007 and of PT Tri Polyta in 2008. These two assets were merged to form CAP in 2011. This strategy came to fruition with a sharp rise in CAP's profits to USD 300 million in 2016 from USD 26 million in 2015, which stemmed from CAP's well-timed capacity expansion at end-2015 and an increase in regional chemical margins as a result of strong demand and China supply-side reform, which curtailed chemical production.

BRPT is turning to power for its next growth phase. Indonesia as a Southeast Asia's largest energy producer and consumer, boasts enormous renewable energy potential but still little progress has been made increasing renewable energy use. However, with soaring fossil fuel prices, Indonesia's dependence on fossil fuels to power its economy is no longer economically viable. Research shows that renewable energy sources can meet up to 35% of Indonesia's energy needs by 2035 (WWF: 2012).

In other side, Indonesia's steady economic growth of more than 6%, even during the recent global recession, was accompanied by a 9% growth in electricity demand each year (WWF: 2012). The country struggles to meet this

---

* Corresponding author.

E-mail address: amri.zein@sbm-itb.ac.id

ICMEM

demand. A significant number of Indonesia's population, primarily those living in rural areas and the outer islands, still lack access to electricity. The government's second crash program, to be implemented between 2009 and 2018, at an estimated cost of USD 21.3 billion, will build 60% of new capacity from renewable resources. At least 5,000 MW or 48% will be sourced from geothermal energy (WWF: 2012), which can help increase access to electricity in the outer islands where most geothermal resources are located. The other benefit is, geothermal energy use can ease Indonesia's high dependency on oil and consequently reduce the burden from heavy fossil fuel and electricity subsidies. Table 1 below shows the requirement of additional power plant to reach electricity generation capacity to 35,000 MW taken from on Rencana Usaha Penyediaan Tenaga Listrik Perusahaan Listrik Negara (RUPTL PLN) 2016 - 2025.

Table 1. Requirement of additional power plants to reach generation capacity to 35,000 MW

(Source: RUPTL PLN 2016 – 2025)

Pembangkit	IPP	PLN	Jumlah
PLTU	17,598	2,215	19,813
PLTA/PLTM	582	1,389	1,971
PLTG/MG/GU	6,123	6,785	12,908
PLTP	555	170	725
PLT Bayu	180	-	180
PLT Biomass	30	-	30
Jumlah	25,068	10,559	35,627

Regarding to this business opportunity, on December 2016, BRPT entered a Memorandum of Understanding (MOU) with entities owned by BRPT's controlling shareholder, Mr Prajogo Pangestu, to acquire the majority shares of 66.67% in SEGH, Indonesia's leading geothermal power producer. This proposed acquisition would provide BRPT with a second core business, diversifying BRPT's earnings from the cyclical chemical sector into more stable power generation, which has good long-term growth prospects with the added benefit of being a green energy provider. On March 2017, BRPT announced that it had secured about USD 250 million loan to support its plan to acquire SEGH. BRPT expects to finish the audit process of Star Energy and targets to complete the acquisition in 2Q18.

2. Literature Review

As described by Ireland, R. D.; R. E. Hoskisson & M. A. Hitt (2015: 189), an acquisition is a strategy through which one firm buys a controlling, or 100 percent, interest in another firm with the intent of making the acquired firm a subsidiary business within its portfolio. After completing the transaction, the management of the acquired firm reports to the management of the acquiring firm. Acquisition is one of corporate strategy which focusing on types and levels of product diversification strategies that firms derive from their core competencies to create competitive advantages and value for stakeholders. Diversification allows a firm to create value by productively using excess resources.

Financial ratios are used to evaluate the company's financial condition and performance. As described by Lawrence J. Gitman and Chad J. Zutter (2010: 67-70), ratio analysis of a firm's financial statements is of interest to shareholders, creditors, and the firm's own management. Both current and prospective shareholders are interested in the firm's current and future level of risk and return, which directly affect share price. The firm's creditors are interested primarily in the short-term liquidity of the company and its ability to make interest and principal payments. A secondary concern of creditors is the firm's profitability; they want assurance that the business is healthy. Management, like stockholders, is concerned with all aspects of the firm's financial situation, and it attempts to produce financial ratios that will be considered favorable by both owners and creditors. In addition, management uses ratios to monitor the firm's performance from period to period. Financial ratios can be divided for convenience into five basic categories: liquidity,

ICMEM

activity, debt, profitability, and market ratios. Liquidity, activity, and debt ratios primarily measure risk. Profitability ratios measure return. Market ratios capture both risk and return.

According to Damodaran, Aswath (2011: 596-597) in his book of Applied Corporate Finance, there are three approaches to firm valuation. The first and most fundamental approach to valuing a firm is discounted cash flow (DCF) valuation, which extends the present value principles that had been developed to analyze projects to value a firm. The value of firm is determined by four factors which are its capacity to generate cash flows from assets in place, the expected growth rate of the cash flows, the length of time it will take for the firm to reach stable growth and the cost of capital. The second way of valuing a firm or its equity is to base the value on how the market is valuing similar or comparable firms; this approach is called relative valuation. The third approach to valuing a firm applies for highly levered firms, where the equity acquires the characteristics of a call option. In this special case, equity becomes more valuable, as debt maturity increases and the volatility in asset goes up.

3. Methodology

Acquisition analysis of this corporate action in this research is conducted to understand the insight intentions of this corporate strategy, the future prospect of BRPT and the fair value of BRPT stock price compared it with to the stock value in the market which will provide investment recommendation to investors. The analysis is started from internal and external analysis of BRPT Company combined with SEGH performance analysis, risk analysis, stock valuation analysis using discounted cash flow (DCF) model with free cash flow to the firm and relative valuation model.

In this paper, the primer data used are taken from the annual report of BRPT and CAP as public listed company and combined with secondary data from investment research, investing news or websites. In processing the data, researcher using the formula based on existing theory.

In the company's external environmental analysis, the researcher uses data from annual reports and other secondary data which describe the company's external environment. The analysis of the company's external scope, carried out by using Porter's five forces method as described in a book written by David, Fred R. & David. Forest R.(2015) which consist of threat of new entrants, bargaining power of supplier, bargaining power of customer, rivalry among existing firms, and threat of substitute product or services. The researcher also conducts analysis based on SEGH performance data in producing the electricity and its capacity comparison with other geothermal power plant companies in Indonesia and in the world.

In the company's internal analysis, the researcher uses data obtained from annual reports, and calculation of financial data based on existing theory. Financial ratio analysis is conducted based on theory from Lawrence J. Gitman and Chad J. Zutter (2010: 67) and Reilly, Frank K. J and and Brown, Keith C. (2006).

Based on the results of the analysis, it can be summarized in SWOT Analysis and Risk Analysis. SWOT Analysis describes the company's factors in terms of strength, weakness, opportunity and threat. This analysis will help management to determine the company's strategy based on theory from Ireland, R. D.; R. E. Hoskisson & M. A. Hitt (2015).

Further analysis is to know about the funding scheme and how much BRPT can return to its stakeholder. Therefore, the value of company equity based on variables perceived which are related to future investment return should be calculated. The researcher takes two valuation model which are absolute valuation model with Free Cash Flow to Firm (FCFF) and relative valuation model with Price Earnings Ratio (PER) and Price to Book Value (PBV) which based on theory from Damodaran, Aswath (2011). The stock valuation will consider several factors that will reflect on cash flow projection. The company's cash flow projection is according to external environment analysis, the company's management key focus, and the company's historical financial overview.

ICMEM

4. Findings and Arguments

4. 1. *Financial Ratio Analysis*

Table 2 below shows the financial ratio of BRPT from previous 5 years (2013 - 2017)

. Table 2 Financial Ratio of BRPT 2013 – 2017 (source: Author analysis)

Financial Ratio	2013	2014	2015	2016	2017
Liquidity ratio					
Current ratio	1.3	1.4	1.1	1.3	1.7
Quick ratio	0.9	1.0	0.7	1.0	1.4
Cash ratio	0.4	0.4	0.3	0.6	1.0
Activity ratio					
Inventory turnover	8.2	10.6	6.9	7.3	7.9
Average payment period (days)	112.7	86.3	95.3	122.4	131.6
Average collection period (days)	26.4	14.9	13.7	26.3	30.7
Total asset turnover	1.1	1.1	0.6	0.8	0.7
Debt analysis					
Debt to asset ratio	0.5	0.5	0.5	0.4	0.4
Interest coverage ratio	0.5	1.1	2.2	10.9	7.5
Debt to equity ratio	1.8	1.8	1.5	1.3	1.5
Profitability ratio					
Gross profit margin	3.5%	4.4%	9.9%	24.9%	22.0%
Operating profit margin	0.6%	1.8%	4.5%	21.3%	18.1%
Net profit margin	-0.8%	-0.1%	0.4%	14.3%	11.4%
Return on Asset	-0.9%	-0.1%	0.2%	10.9%	7.7%
Return on Equity	-2.9%	-0.2%	0.7%	33.2%	26.1%
Market ratio					
Price earnings ratio	-8.5	-18.7	-13.0	5.8	20.1
Book value per share (USD)	0.2	0.2	0.2	0.2	0.1
Market/ book ratio (USD)	0.2	0.2	0.1	0.5	1.2

In overall, the ability of BRPT to fulfil the short term obligation is considerably good. The trend is positive which means the ability to pay short term liabilities is increasing. In 2017, the quick ratio and cash ratio exceed 1.0 which show a good management of cash to pay the short term obligation. BRPT management is able to manage the inventory process well as shown in the increasing trend of inventory turnover (increasing from 2013 to 2014 and from 2015 to 2017). The total asset turnover trending is relative sideways due to cyclicality in petrochemical business. The average payment period is increasing due to BRPT has bigger short term obligation to be paid as planned. However, the average collection period is increasing to 30.7 days which means that BRPT should assure the 30 days credit terms to customer can be fulfilled as planned. If it can't be fulfilled, BRPT should have plan to have buffer cash in order to run the operation smoothly. BRPT financed its activity about 40% to 50% of debt to asset ratio with quite stable cash management as shown in the sideways trend. The debt to equity ratio reached 2.2 in 2015 due to naphtha cracker project and decreased to 2016 after the project had been finished. In 2017, the debt to equity ratio increases due to loan

ICMEM

from bank for initial payment purpose to acquire majority share of SEGH. The interest coverage ratio trending is increasing which means BRPT's ability to pay the interest charge is quite good. BRPT business is growing with increasing sales and profits due to the expansion project of petrochemical plant as shown in the increasing trend especially with the highest ROE in 2016. There are still huge potential upside growth with the planned future expansion and debottlenecking project and supported by increasing demand of petrochemical products. With the increasing P/E ratio and M/B ratio, the data show that investors has increased the confidence level to BRPT stock although the book value is still relative flat in the past 5 years. This achievement will provide good opportunity to engage more investors in funding the second phase planned future expansion and debottlenecking project to deliver more growth to BRPT's business.

4. 2.   *SWOT Analysis & Risk Analysis*

From the data information, internal and external factor evaluation can be conducted and summarized in BRPT's SWOT Analysis Table 3 below.

Table 3. BRPT's SWOT Analysis (source: Author analysis)

Strengths	The largest integrated petrochemical maker in Indonesia	Weaknesses	No shares composition to employee
	The largest geothermal power plant operator in Indonesia		
	Excellent Marketing System		
	Competent Human Resources		Lack of integration and synergy between BRPT's subsidiary companies
	Integrated product and supply chain		
	Consistent Improvement of Good Corporate Governance (GCG)		
Opportunities	Strong demand for petrochemical product in Indonesia market	Threats	Slow growth of macro economy and political issue.
	Strong growth in electricity demand		Steam supply decline
	Stable economic growth		Business competition between similar companies
	Improvement of Indonesia's infrastructure		Market price volatility
			Change of government policy or regulation

In line with SWOT analysis table above, risk analysis is conducted by showing risk mapping of BRPT business with risk level from the lowest level until highest level based on risk matrix criteria sample provided by David Howald (source:http://davidhowald.com/risk-assessment-matrix/risk-assessment-matrix-beautiful-the-game-of-risk-part-i-defining-risks).

As shown in Table 4 there are 8 types of risk with high level until critical level criteria. These risks are BRPT's major focus while the other risks are moderate and low level. The BRPT's risk management focus is shown in Table 5.

ICMEM

Table 4. Risk level mapping of BRPT business (source: author analysis)

No	Risks	Risk Level
1	Industry strategic	High
2	Projects	High
3	Subsidiary companies management	High
4	Market price volatility	High
5	Raw material reserve	High
6	Business Interruption	Critical
7	Legal and regulatory compliance	High
8	Community relation	High
9	Contractor supports	Moderate
10	Security	Moderate
11	Production disruption	Moderate
12	Land availability	Moderate
13	Civil Facility & Infrastructures	Moderate

Table 5. BRPT's risk management focus (source: author analysis)

No	Risk Definition	Impact	Type of Risk
1	Industry strategic: Change in the company's long term business such as environmental challenges on the use of petrochemical product, the availability of alternative products and product price's decline	BRPT's petrochemical business is highly dependence of oil refinery products supply. The change in industry will produce a huge impact to the petrochemical business. SEGH business in power generation also face challenge with the land acquisition due to forestry regulation which will hamper the exploration activities.	Financial Risk, Commodity Risk, Legal risk
2	Project: Project risk include project completion delay, over costs and work completion quality below specification.	The barriers in the project implementation will disturb the company's target especially to increase the revenue	Operational Risk, Process Risk
3	Subsidiaries company management: the risk from miss coordination between the subsidiary companies is associated with the success in generating returns from the investment	The subsidiary companies can not be able to provide revenue contribution on investment of BRPT	Strategic Risk, Operational Risk
4	Market price volatility: All company and its subsidiaries company are subject to the risk market price volatility such as raw materials, finished good etc.	Significant market price change can affect BRPT's ability to complete the business activities due to its risk exposure to the price volatility	Financial Risk, Market Risk
5	Raw material reserve: the availability of refinery product supply or steam supply is important to meet operational needs	The raw material from refinery product can not fulfill customer demand or lack of steam supply to generate electricity as required.	Operational Risk, Process Risk

6	Business interruption: Loss of power supply, damage of major facilities and infrastructures such as bridges, road, landslides etc	The disruption can be obstacles for BRPT to generate productivity, so the company's revenue will be impacted	Operational Risk, Process Risk
7	Legal and regulatory compliance: there are ministerial, regional and other type of regulation that must be followed	Noncompliance of regulations could lead to sanctions, legal cost and other adverse effects as well as reputation loss.	Legal Risk, External risk
8	Community relations: related to the support level of the local community and Indonesian government to the company operation	The unsupported local community and Indonesia government can disturb the company's operation activity to run smoothly	External risk

BRPT management should carried out risk mitigation strategies to treat the risks properly so the impact could be minimized or reduced in certain affordable level as shown in Table 6 below.

Table 6. BRPT's risk mitigation management (source: Author analysis)

No	Risk Definition	Risk Level	Risk Mitigation
1	Industry Strategic	High	BRPT continues transform to be a diversified holding company of petrochemical, agribusiness, plantation, property, and resource based industry.
2	Project	High	The construction of BRPT's existing project are being carried out by EPC contractors who have sound experience and track record so the projects can be completed within budget, specification and timeline.
3	Subsidiaries company management	High	BRPT management coordinate and manage the integration and synergy between the subsidiary companies
4	Market price volatility	High	BRPT assures to have hedging strategy and diversify its business while maintaining the efficient and effective operation.
5	Raw material reserve	High	In order to maintain the raw material reserve, BRPT has engaged long term relationship suppliers and keep innovate new and advance technology. Strategies to produce sustainable steam supply should be prepared well with excellent support for experts.
6	Business interruption	Critical	BRPT maintains good cooperation with PLN to deliver reliable power supply, and BRPT has independently developed power generator based on available technology. Routine inspection and monitoring of all facilities are conducted and mitigated soon if any outstanding condition occur.
7	Legal and regulatory compliance	High	BRPT has a legal compliance team to support subsidiaries in complying with the applicable regulation
8	Community relations	High	BRPT has corporate social responsibility (CSR) program to all subsidiary companies which are coordinated by Bakti Barito Foundation

ICMEM

4. 3.   Acquisition Rationale and Expected Synergies

BRPT's corporate strategy to face cyclical petrochemical business and to strengthen the business profit by acquiring majority share of SEGH is a very good diversification strategy. SEGH can provide stable income to BRPT due to low operation cost required to run power plant business and the benefit of energy sales contracts' end dates which are still a long way off, with the earliest agreement expiring in 2040. This strategy will also consolidate leadership position in the Indonesia energy market and transform BRPT into an integrated energy group with full operational capabilities with several expected synergies as follow:
- Increase ability to attract and retain key talent by offering broader career development opportunities across the BRPT's holding companies, which will also reduce corporate development cost.
- Induce lower CAPEX cost by best practice sharing in CAPEX and project management
- Enlarge market capitalization of the BRPT holding companies to improve stock liquidity and credit rating of the parent entity
- Reduce volatility and risk in expected leverage ratio of the BRPT with stable cash flow from SEGH.

4. 4.   Valuation of BRPT's Share Price

In conducting share valuation, there are some assumptions used which will determine the accuracy level of share valuation as follow:
- Estimating Sales Growth
- Estimating WACC and Terminal Growth Rate
- Estimating COGS/ Sales percentage
- Estimating Operating expense/ Sales percentage
- Estimating Capital Expenditure (Capex) to Depreciation Ratio
- Estimating Change of Net Working Capital/ Sales Percentage
- Estimating Capex/ Sales Percentage

A. Before SEGH's Share Acquisition

After inputting the estimated sales growth and other variables as required, the DCF valuation model before SEGH's share acquisition can be modelled. From the valuation model, the calculated firm value is USD 2,744,407,000. After subtracting it with debt and dividing it with the current share outstanding, the calculated intrinsic value per share is Rp. 2,324.00. See calculation below.

Firm value	2,744,407	(in thousands of USD)
Less: current outstanding debt	340,767	(in thousands of USD)
Equity value	2,403,640	(in thousands of USD)
Current shares outstanding	13,959,786	(in thousands of share)
Intrinsic value per share (USD)	0.17	note: 1 USD = Rp. 13,500
Intrinsic value per share (IDR)	Rp **2,324**	
Adj Close Price as per 31 Dec 2017	Rp 2,260	

The potential upside value based on this absolute valuation is 2.83% (compared with BRPT share price IDR 2,260 on end of 2017).

B. After SEGH's Share Acquisition

Despite of estimating sales growth and other variables as required, the additional free cash flow from SEGH due to this acquisition is also inputted in this valuation model. With the assumption enterprise value (EV) basis of USD 3.5 million/MW and total capacity is 857 MW, the total enterprise value (EV) is USD 3,063 million. The acquisition value

ICMEM

66.67% share of SEGH is $ 755 million, so BRPT will have around 25% share in the geothermal business. Therefore BRPT will earn 25% of total net profit (USD 186 million) which is around USD 46.5 million. With the assumption of spending 10% of CAPEX/ net profit each year for SEGH operations, the additional income from SEGH is around USD 41.85 million. This additional income from SEGH is assumed to be fix based on contract tariff.

From the valuation model, the calculated firm value is USD 3,037,008,000. After subtracting it with debt and dividing it with the current share outstanding, the calculated intrinsic value per share is Rp. 2,607.00. See calculation below.

Firm value	3,037,008	(in thousands of USD)
Less: current outstanding debt	340,767	(in thousands of USD)
Equity value	2,696,241	(in thousands of USD)
Current shares outstanding	13,959,786	(in thousands of share)
Intrinsic value per share (USD)	0.19	note: 1 USD = Rp. 13,500
Intrinsic value per share (IDR)	**Rp** **2,607**	
Adjusted Close Price as per 31 Dec 2017	Rp 2,260	

The potential upside value based on this absolute valuation is 15.37% (compared with BRPT share price IDR 2,260 on end of 2017). Therefore, it is can be concluded that current BRPT share price has potential upside value which will provide good profit to investors, so it is recommended to BUY this stock.

4. 5. Relative Valuation Model

Although BRPT is a diverse business company, the major net income is from petrochemical business (98%) so the peer companies should have business in petrochemical business also. In Indonesia Stock Exchange, there are only a few companies that have large market capitalization, which is TPIA (Chandra Asri Petrochemical Tbk), FPNI (PT. Lotte Chemical Titan) and BRPT itself. Therefore, the relative valuation model is developed to compare the petrochemical business in global market which will provide a better comparison for BRPT since BRPT also competes in global market. There are 3 additional companies selected in this analysis, which are PTTGC (PTT Global Chemical PCL) from Thailand, IRPC PCL from Thailand, and RDSa (Shell Chemical) from Netherlands.

A. Price to Earnings (P/E) Ratio

Price to earnings ratio is a calculation to value a company based on current share price relative to the earning per share (EPS). Table 7 below shows the EPS and P/E ratio of 5 companies based on data in 2017.

Table 7. The EPS & P/E (2017) data for relative valuation model (source: author analysis)

Stock	EPS	P/E	Remarks
TPIA	256.49	29.11	Chandra Asri Petrochemical Tbk
FPNI	5.37	40.16	PT. Lotte Chemical Titan
PTTGC	9.32	10.52	PTT Global Chemical PCL (Thailand)
IRPC	0.56	13.2	IRPC PCL (Thailand)
RDSa	3.64	17.33	Shell Chemical
Average P/E		22.06	

ICMEM

BRPT	0.008	22.06	BRPT EPS = 0.008
BRPT share price (USD)		0.18	
BRPT share price (IDR)		2,382.91	assume 1 USD = Rp 13,500

The calculated average P/E is 22.06. Therefore BRPT share price can be calculated by multiplying the average P/E with BRPT's 2017 EPS which results value IDR 2,382.91. This value is almost similar with BRPT's share price value obtained from DCF Valuation model IDR 2,324.00 which has not included acquisition value of SEGH. The upside potential value based on this P/E relative valuation is 5.44% (compared with BRPT share price IDR 2,260 on end of 2017).

B. Price to Book Value (P/BV) Ratio

Price to book value (P/BV) ratio is a financial ratio to compare the current market price to its book value. As the P/E using average value in the previous analysis, the average value of P/BV comparable companies is also used to calculate the market price. Table 8 below shows the P/BV data of 5 companies based on data in 2017.

Table 8. The P/BV (2017) data for relative valuation model (source: author analysis)

Stock		P/BV	Remarks
TPIA		4.6	Chandra Asri Petrochemical Tbk
FPNI		0.85	PT. Lotte Chemical Titan
PTTGC		1.61	PTT Global Chemical PCL (Thailand)
IRPC		1.76	IRPC PCL (Thailand)
RDSa		1.33	Shell Chemical
Average P/BV		2.03	
BRPT	0.144	2.03	BRPT BV per share = 0.144
BRPT share price (USD)		0.29	
BRPT share price (IDR)		3,946.32	assume 1 USD = Rp 13,500

The calculated average P/BV is 2.03. Therefore BRPT share price can be calculated by multiplying the average P/BV with BRPT's 2017 book value which results value IDR 3,946.32. The potential upside value based on this P/BV relative valuation is 74.61% (compared with BRPT share price IDR 2,260 on end of 2017). Based on both relative valuation model, it is can be concluded that current BRPT share price has potential upside value which is attractive to investors, so it is recommended to BUY this stock.

4. 6.   *Funding Scheme of SEGH's Share Acquisition*

Current BRPT's D/E ratio is 1.5. If BRPT plans to take loan or issuing corporate bonds etc, the D/E ratio will reach 2.0. This high D/E ratio will not be attractive to investors. Therefore, BRPT can use alternative funding scheme using equity capital by issuing right shares since BRPT as a public company although this action will dilute the current shares. Based on the DCF valuation, the intrinsic value per share (IDR 2,147) is 5% lower than adjusted closed price on 31 Dec 2017. However, the intrinsic value per share will increase if the beta (β) of BRPT changes to becomes lower due to the business diversification which reduces the business portfolio risks. A DCF valuation model with assumed 10% less than current used beta (β) whereas β = 1.80, the intrinsic value per share becomes IDR 2,820. The potential upside value based on this absolute valuation is 24.80% (compared with BRPT share price IDR 2,260 on end of 2017). Therefore, it is can be concluded that current BRPT share price has potential upside value which will be attractive to investors.

ICMEM

5. Conclusions

BRPT's corporate strategy to face cyclical petrochemical business and to strengthen the business profit by acquiring majority share of SEGH is a very good diversification strategy. SEGH can provide stable income to BRPT due to low operation cost required to run power plant business and the benefit of energy sales contracts' end dates which are still a long way off, with the earliest agreement expiring in 2040. With the predicted 9% growth of electricity demand and petrochemical demand grows by 5% per year due to Indonesia's economic expansion, BRPT business is on the right track to provide good profit to investors. The threat of new entrants is low due to the requirement of huge capital, but high risk exposure and advance technology cost are challenging to run the business effectively and efficiently. BRPT has risk management to deal the risks effectively in a proper way so the risks could be reduced and controlled. Based on both absolute and relative valuation model, it is can be concluded that current BRPT share price has potential upside value which is attractive to investors.

References

BNP Paribas, *BRPT stock review*, Oct 2017.

Damodaran, Aswath (2011). *Applied Corporate Finance, 3rd Edition*, John Wiley & Sons.

David, Fred R. & David. Forest R.(2015). *Strategic Management, Concepts and Cases. 15th Edition,* Pearson Education Limited.

Gitman, L. J and and Zutter, C. J (2010). *Principles of Managerial Finance*, *13th Edition*, Prentice Hall Series.

Ireland, R. D.; R. E. Hoskisson & M. A. Hitt (2015). *The Management of Strategy: Concepts & Cases*, *11th Edition*, South-Western Cengage Learning.

Nomura research, *BRPT stock review*, Oct 2017.

PT. Barito Pacific, Tbk. (BRPT), *Annual Report 2013 – 2016*, Available from www.barito-pacific.com

PT. Barito Pacific, Tbk, a *Company Presentation: Creation of A Leading Indonesian Energy Group 2018.* Available from www.barito-pacific.com

PT. Chandra Asri Petrochemical, Tbk. (TPIA), *Annual Report 2013 – 2016*, Available from www.chandra-asri.com

PT. Chandra Asri Petrochemical, Tbk, *Management Presentation in Credit Suisse 9th Annual ASEAN Conference 2018.* Available from www.chandra-asri.com

Reilly, Frank K. J and and Brown, Keith C. (2006). *Investment Analysis and Portfolio Management*, *8th Edition*, Thomson South - Western.

Rencana Usaha Penyediaan Tenaga Listrik Perusahaan Listrik Negara (RUPTL PLN) 2016 - 2025.

SCB Economic Intelligence Center (EIC), *Petrochemical business in Indonesia – a challenging opportunity*, May 2014.

World Bank, 2017a, *Indonesia Economic Quarterly Report: Staying the Course*, Department of Foreign Affair and Trade. Sydney: The World Bank.

WWF Report, 2012, *Igniting the Ring of Fire: A Vision for Developing Indonesia's Geothermal Power*, ISBN: 978-979-1461-29-0.

https://bizfluent.com/info-8609870-capital-expenditures-depreciation-ratio.html

http://davidhowald.com/risk-assessment-matrix/risk-assessment-matrix-beautiful-the-game-of-risk-part-i-defining-risks

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html)

http://pefindo.com/index.php/pageman/page/beta-saham.html)

http://www.stern.nyu.edu/~adamodar/pc/datasets/wcdata.xls).

https://www.bloomberg.com/quote/BRPT:IJ

http://www.double-entry-bookkeeping.com/cash-flow-basics/change-in-working-capital/

www.ibpa.co.id/DataPasarSuratUtang/HargadanYieldHarian

www.investopedia.com/articles/ investing /083115/why-do-debt-equity-ratios-vary-industry-industry.asp).

www.starenergy.co.id

ICMEM

The 3rd International Conference on Management in Emerging Markets

Moderation Role of Gender in the Relationship between Service Quality and Students' Satisfaction

Saad Aziz Al-Otaibi[a*,] Sha'ri Mohd Yusof[b], Wan KhairuzamanWan Ismail[c]

[a]*International Business School, University Technology Malaysia, Jalan Sultan Yahya Petra (Jalan Semarak), 54100 Kuala Lumpur, Malaysia.*
[b]*UTM Razak School of Engineering and Advanced Technology (UTM Razak School), University Technology Malaysia, Jalan Sultan Yahya Petra (Jalan Semarak), 54100 Kuala Lumpur, Malaysia*
[c]*International Business School, University Technology Malaysia, Jalan Sultan Yahya Petra (Jalan Semarak), 54100 Kuala Lumpur, Malaysia.*

Abstract

The segregated life that exists in Saudi Arabia between males and females folks does not spare the academic lives of its citizen. This segregation is presumed to affect the student's perception of service quality and the satisfaction of the facilities provided in their universities. There is growing trend in the investigation of the difference between females and males Saudi students concerning their service quality satisfaction. In this regard, the present study intends to investigate and understand the importance of the students' perception of service quality in the education sector in order to attract and retain students. This is due to the belief that the unsatisfied student might choose to abandon their study. Therefore, the present study aims to investigate the relationship between perceived quality and overall satisfaction, as well as identifying the moderating effects of students 'gender between perceived service quality and satisfaction with university services. The statistical tool used to test the hypothesized model is the structural equation modelling with AMOS version 22, of which the results supported all the hypotheses. In terms of the hypothesis one, it reveals a significant positive correlation between perceived quality and satisfaction. The hypothesis two, on the other hand shows that there is significant moderating effects of gender, which means that male and female Saudi students in terms of their perceived university service quality are not the same which does affect their satisfaction. Meaning that, satisfaction was discovered to be different among male and female students in relation to service quality. The finding show a strong indication that university administration should focus on the quality of services provided for students as well as their satisfaction in order to enhance their academic outcomes.

Keywords: Saudi Arabia; Higher Education; Service Quality; Satisfaction; Structural Equation Modelling

1. Introduction

The issue of quality in higher educational institution (HEIs) is something complex. The two important areas of foci are academic quality and service quality. The area of emphasis in academic quality is the learning outcome, which means, the ability to acquire knowledge and mastery in subject areas. Service quality, on the other hand majorly laid emphasises on institutional services, which comprises both tangible and non-tangible characteristic. It has been stated that in the last decade customer satisfaction has been greatly affected not only by the service quality offered by higher learning institutions, but also by the ever-changing environment of the global market. Therefore, success rests solely on service quality through which a higher learning institution can gain a competitive advantage over its counterparts (Perez et al., 2007) and service quality is also observed as a key element in this success (Shahin and Samea, 2010; Mang'unyi and Govender, 2015).Service quality is a tool which measures the dimensions of quality and the discrepancy between expectations and performance (Seth, Deshmukh and Vrat, 2005). However, although delivering a high quality of the service and providing excellent customer satisfaction are must-do tasks, the need to maintain

---

* Corresponding author
  Email address: s.a.z.1433@gmail.com

ICMEM

momentum and continuously measure service quality and customer satisfaction is challenging, particularly for service institutions such as higher learning institutions (Hung et al., 2003). Several researches have been conducted across the world concerning the influence of service quality and student satisfaction. However, in the Saudi HEIs' context very few literatures are available on the effect of moderator variables. Therefore, the present study intends to investigate, students' gender moderating effect of the relationship between service quality and students' satisfaction in Saudi context. In order to address this objective the following research questions were drawn.

1. To what extent does the service quality impact on student satisfaction?
2. What role does gender have between the association of service quality and student satisfaction?

2. Literature Review and Hypotheses Development

2. 1. *Perceived Quality*

The term perceived quality is explained as the judgment or attitude of consumers towards the excellence or superiority of an entity compared to others (Zeithmal, 1987). It can also be defined as the extent and direction of differences that exists between the consumer's perceptions service and expectations (Parasuraman et al., 1988). Summarily, perceived quality is seen as the result of the comparative assessment of the expectation with the service quality received (Grönroos, 1982). Service quality is one of the management quality instrument models that has attracted the attention of researchers and practitioners in the field of management. It has been studied from various perspectives and at different levels of analysis. Over the last thirty years, a plethora of literature has been written in the service marketing arena. Most of the research done has paid attention to the dimensionalities of service quality across industries, cultures and organisations. Some measurements and scales have been developed in order to measure service quality. One of the most important, widely accepted and applied measure is the SERVQUAL measurement. However, while there are a number of studies that have been undertaken in service quality, only a few of these studies have concentrated on the predictorsof service quality (Dabholkar et al., 2000; Gounaris et al., 2005; Sultan and Wong, 2010) Service quality at higher learning institutions is a stimulating theme (Khodayari and Khodayari, 2011). It is, however, a complex and versatile concept (Harvey and Green, 1993), the outcome of which is that education quality can become a rather vague and controversial concept (Cheng and Tam, 1997). By defining service quality, organisations/companies will be able to deliver services at a higher quality level, presumably resulting in increased customer satisfaction (Ghylin et al., 2008). Service quality is defined as the overall assessment of a service by the customer (Eshghi et al., 2008) .More so, Saudi Arabia's HEIs in should strive on the constant improvements in order to cope with the ever changing competition and demand for highly competent students as well as to make education as means for revenue generation.

2. 2. *Satisfaction*

The major means of maintaining competitive advantage of a corporate organization is by delivering and proving high quality services that will lead to consumers' satisfaction. Meanwhile, consumers' satisfaction is an important concept that is concerned with the consumers' need and wants' achievement. As indicated by Petruzzellis and Romanazzi (2010) that service quality can be measured through student satisfaction because students are the actual consumers within the HEIs. Customer satisfaction is a very important element and one of the most important characteristics in order for organisations to maintain their sustainability and competitiveness in the industry. Customer satisfaction can be measured based on two characteristics which are past experiences and the expectations and perceptions of a customer of the actual services provided by any organisation and/or company (Westbrook et al., 1991; Fazzarudin, 2014). Customer/student satisfaction can be generated when students have positive experiences in terms of services. Yet, customer/student satisfaction with the services received from a college does not essentially mean that students enjoyed a high level of satisfaction, nor does it motivate them to continue using the services provided by the college. More accurately, it can be said that satisfaction is not the only element necessary to measure student loyalty (Fazzarudin, 2014). Hence, ability to have clear understanding about students' satisfaction will enable the higher institution to achieve its goals and fulfil its mission (Telford and Masson, 2005), thereby engender students' retention

ICMEM

in the institution as well as improving the institutional performance (Douglas et al., 2006). Therefore, the following hypothesis is addressed based on the above argument:

H1: There is a positive relationship between perceived quality and satisfaction.

2. 3.   *Gender*

Gender is defined based on the objective of the present research as an individual biological sex (Hoyer and MacInnis, 2010). Several authors have deemed it necessary to include gender in majority of their studies. This is due to the fact that, males and females are generally described as having unique personality features different from one another. (Testa and Mueller, 2009). Nevertheless, this case is not paramount and popular in the area relating to students' satisfaction with the serve quality provided their universities. More so, it sounds ironic that those studies included gender in their study reported gender-based differences. The practical example provided on this is when it was found that females' students placed greater emphasis on the physical and location aspects of a university than their male counterpart (Joseph et al., 2005). Based on the perceived difference in satisfaction in terms of gender and with the fact that, this area of demographic variable has majorly being overlooked, the present study therefore intends to proffer remedy to the highlighted oversight by examining the influence of gender within the relationship between perceived service quality and students' satisfaction with the serves provided by the university. The second hypothesis is formulated based on the above argument:

H2: There is a moderating impact of gender to influence relationship between perceived quality and satisfaction

2. 4.   *Proposed Theoretical Framework*

In order to commence the analysis of the previously discussed issues, there is need to develop end present a conceptual framework which will link the investigation of the relationship between perceived quality and satisfaction as well as the moderating effects of students' gender.

3.   Methods

3.1. Sample

The sample in this study consisted of students studying at Om Alqura Universities in Makkah, Saudi Arabia. A majority of the sample were female (63.3%); almost half of them 49.5% aged between 21 to 23 years. Fourth year students made up the majority (67.2%), while the rest were at the other previous levels of study (first, second and third level). Most of the students who took part in this study are at the main campus with (73.5%) the rest are from the other campuses. Purposive sampling was utilised due to several reasons. On the top of that is related to the complexity of the population which makes it difficult for the researcher to randomise the sample. At the initial step of the present study a pre-test analysis was computed. This is conducted in order to ensure that the respondents really understood the questions highlighted in the questionnaire as well as finding any errors in the wordings of the questionnaire. Distributed questionnaire to the students were initially written in Arabic Language. This is due to the fact that, Saudi Universities' students are not proficient in English. Due to this, pilot study was conducted in order to ensure that the data is reliable and valid. This pilot test was carried out with small sample size of only 30 students (Sekaran, 2003). The outcome of the Cronbach alpha analysis for each dimension was 0.855 for perceived quality, and 0.946 for satisfaction. The figures from the outcomes indicated that, they are considered valid and acceptable and can be used for further analysis.

3.2. Construct Measures

3.2.1. Perceived service quality

The instrument on the perceived service quality comprises 22 items adapted from (Parasuraman, et al., 1991) with the inclusive of academic and supported services dimensions. These are regarded as the services available in a university based on the instrument. The provided services by the university includes: physical evidence, teaching service, administrative service and augmented service. A 5 point likert scales was used to measure the construct of perceived quality which range between (5 = strongly agreed to 1 = strongly disagreed).

ICMEM

3.2.2. Overall satisfaction

On the aspect of the overall satisfaction instrument it comprises 13 questions which were adapted from past studies with little modifications. This scale was adopted from Hasan et al. (2009), and Douglas et al. (2006). A 5 point likert scale was also used to measure this construct. Which range from 1 = strongly dissatisfied to 5 = strongly satisfied.

3.3. Data Analysis

The study conducted a three-stage Structural Equation Modeling using the AMOS (version 24) model-fitting program was applied to validate the measurement of service quality and test its influence on PEB. The study ran a confirmatory factor analysis and a full-fledged modeling to verify the adequacy of the hypothesized measurement model and the structural model. The hypothesized models were estimated using the covariance matrix derived from the data. Thus, the estimation procedures employed satisfied the underlying statistical distribution theory, hence yielding estimates of defensible properties. Finally, moderation analysis of the gender was conducted to answer the second objective of this study.

4. Analysis, Results And Discussion

4. 1.   Construct Validity

The measurement model of the study was conducted to examine the validity the model constructs. Confirmatory factor analysis (CFA) provided an acceptable fit with chi-square (χ) = 691.698, degree of freedom (df) = 359, RMSEA = 0.068, comparative fit indicator (CFI) = 0.928. Howeversix items (three items from satisfaction and two from service quality dimensions) were deleted for not meeting the specification mentioned.
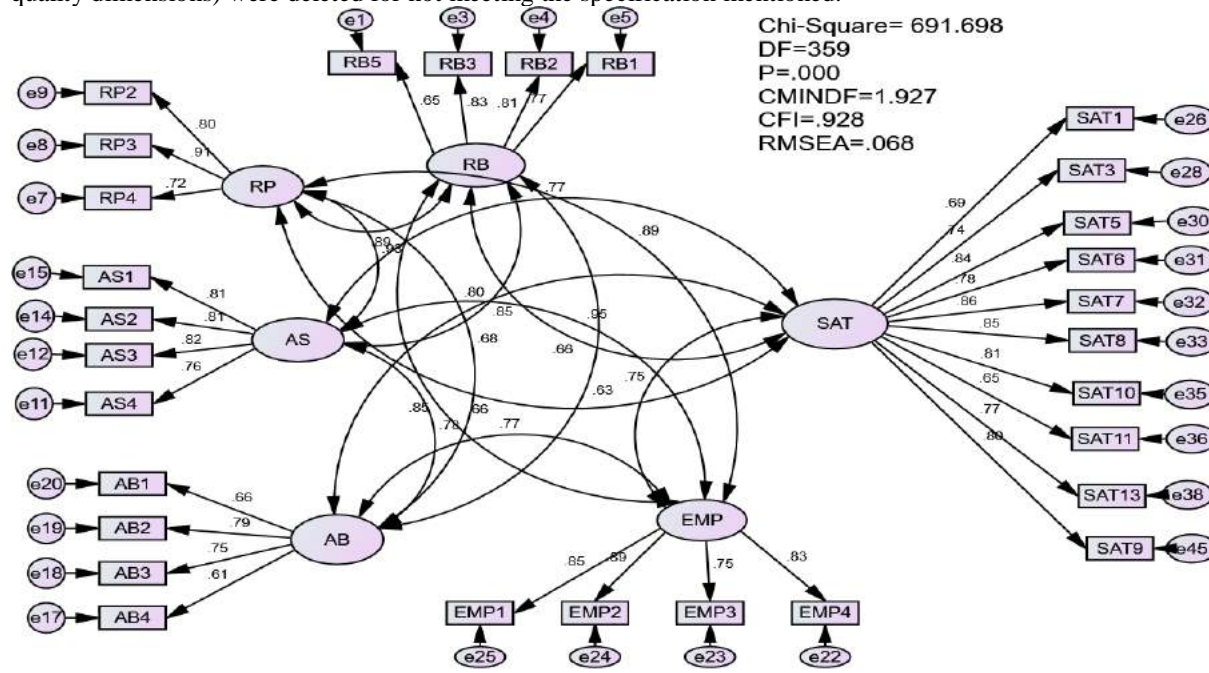
Figure 1. CFA Results of Study Model

In the same vein, further evidence concerning the construct validity of the study model as well as the adequacy of the measurement model for perceived service quality and students' satisfaction model in terms of its two types of construct validity, namely, convergent construct validity and divergent construct validity is shown. Figure 3.1 above

illustrates that all items have loadings of more than 0.60 and ranged from 0.61 to 0.91. In this case, the factor loadings for the items are acceptable with adequate sample size of participants (Hair et al., 2010). Thus, all indictors in this research are associated to their dimensions and thus there is enough proof of convergent construct validity of the measurement model. With regards to the divergent construct validity as shown, the squared correlations are less than the average variance explained values for every dimension of the coping strategies. Furthermore, the square root of the AVE for a given construct was greater than the absolute value of the correlation square of the given construct with any another factor (AVE > correlation square). The results also show that average variance extracted is more than maximum shared squared variance (MSV). Regarding the average variance explained, Table 3.3 shows that its results for all the model constructs were either close to or above the recommended value of .50. Even though the AVE value for one construct (tangible)was smaller than .5 but very close to .5, according to Bettencour (as cited in Rosebush, 2011) it is still acceptable when the condition of CRI is strong, and the item-to-item correlation exceeded .4. Hence, the discriminant validity was supported and thus, all constructs for this study supported discriminant validity.

Table 1 Discriminant Validity of the Study Model

	CR	AVE	MaxR(H)	1	2	3	4	5	6
Reliability	0.851	0.590	0.863	0.768					
Responsiveness	0.855	0.665	0.934	0.891	0.816				
Assurance	0.878	0.643	0.955	0.849	0.935	0.802			
Tangible	0.795	0.494	0.962	0.633	0.680	0.784	0.703		
Empathy	0.899	0.690	0.972	0.851	0.891	0.947	0.775	0.831	
Satisfaction	0.939	0.609	0.981	0.661	0.663	0.766	0.797	0.745	0.781

In general, the findings indicate that the construct validity for this study, is reliable and the model has psychometrically sound properties.

4. 2.   *Adequacy of the Hypothesized Structural Model*

After checking the construct validity of the model, the structural model was conducted to examine the influence of perceived service quality on students' satisfaction which addressed the first research hypothesis. The hypothesized model showed consistency of thehypothesized causal relationships with the data (normed Chi-square = 2.011; RMSEA = .071; CFI = .920). All these fit indices for the perceive service quality and students' satisfaction model satisfied their recommended values which indicateda fitting structural model. Additionally, the analysis revealed that collectively thethree exogenous variables (reliability, assurance, responsiveness, tangible and empathy) explained 60% of the variability ofthe reported perceived service quality among the respondents.The parameter estimates of the hypothesized model were free from offending values with uncorrelated errors. The path coefficients of the causal structure was statistically significant at .01 level, and of practical importance. The ىstandardized path coefficient of perceived service quality → students' satisfaction was substantial and statistically significant, β =0.77.

ICMEM
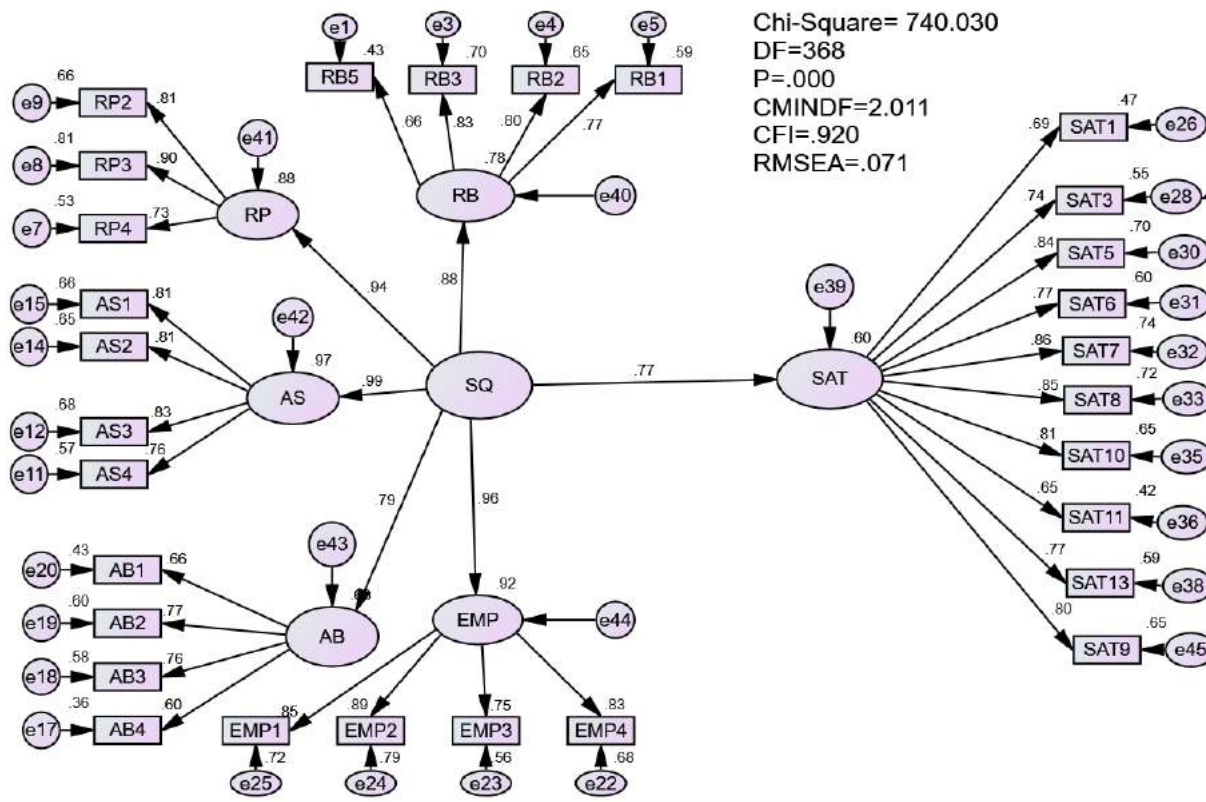
Figure .2 The Hypothesized Model of the Study

4. 3. Moderating Effect

Table 2 below shows results of the moderation analysis which meet the second hypothesis of this studythat examine the impact of gender on the relationship between service quality andstudents' satisfaction. Theestimation of the constrained measurement model produced another Chi-square value, which was then testedagainst the baseline value for statistically significant differences. Finally, the change in the CFIs and the value ofRMSEA of the restricted model were verified against the cutscores of .001 and .05, respectively (Cheung &Rensvold, 2002).

Table 2. Results of the gender-invariant analysis

	Unconstrained	Constrained	Change	Decision
Chi-square	740.030	1339.493	599.463	groups are different which means gender as a moderator variable is significant
Degree of freedom	368	736	368	
CFI	.920	.908	.012	
RMSEA	.071	.064	.013	

The variance test for the structural model showed statistically significant change in the Chi-square valueacross the Saudi male and female students' groups which resulted in a, Chi-square (df = 368) = 599.463, p > .000as shown in Table 2 above. That is, the increase in the Chi-squarevalues from the unrestricted model to the constrained model produced a poorer model of the prelateship between the service quality and students' satisfaction. Furthermore, the value of RMSEA was changed by.013 and value of CFI was changed by .012 which are above the cut value of .01.

ICMEM

5. Conclusion

Several literatures have investigated the relationship between service quality and satisfaction (e.g. Meng & Elliott, 2009; Rojas & Camarero, 2009; Tuan, 2012) of which are majorly positively related. To this effect, SEM analysis was employed in the present for the analysis of the related variables and this paper provides similar outcomes in which service quality significantly and positively predicts student's satisfaction students in their academic context. Hence the outcome of this study supported that the service quality enhancement will equally improve the level of satisfaction among higher institutions students in Saudi Arabia. Therefore, H1 was supported. It was equally noted that previously the moderating role of gender between the relationship of service quality and satisfaction have been empirically proven in different contexts, such as the public services, hotel industry and banking (Juwaheer, 2011; Karatepe, 2011; Mokhlis, 2012). Meanwhile, the finding of the present study in this aspect has also indicated that, students' gender play moderating role of the relationship between service quality and satisfaction among Malaysian tourists by employing the multi-group analysis. This shows that there exists difference in the students' satisfaction in relation to the perceived service quality between male and female tourists in Malaysia. Therefore, the H2 was supported. This means that, satisfaction was discovered to be different among male and female students in relation to service quality. In essence, the moderating effect of the students' gender has been validated in the aspect of the relationship between service quality and satisfaction in the education context of Saudi Kingdom.

References

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. Structural equation modeling, 9(2), 233-255. http://dx.doi.org/10.1207/S15328007SEM0902_5

Dabholkar, P. A., Shepherd, C. D. and Thorpe, D. I. (2000). A comprehensive framework for service quality: an investigation of critical conceptual and measurement issues through a longitudinal study. Journal of retailing, 76(2), 139-173.

Douglas, J., Douglas, A. and Barnes, B. (2006). Measuring student satisfaction at a UK university. Quality assurance in education, 14(3), 251-267.

Grönroos, C. (1982), A service quality model and its marketing implications. European Journal of Marketing, 18(4), 36-44.

Harvey, L. and Green, D. (1993). Defining quality. Assessment & evaluation in higher education, 18(1), 9-34.

Hasan, H. F. A. et al (2009). Service quality and student satisfaction: A case study at private higher education institutions. International Business Research, 1(3), 163.

Hoyer, W.D., MacInnis, D.J. (2010), Consumer Bahavior. United States of America, South-Western: Cengage Learning.

Joseph, M., Yakhou, M., Stone, G. (2005), An educational institution's quest for service quality: Customers' perspective. Quality Assurance in Education, 13(1), 66-82.

Juwaheer, T.D. (2011). Gender Bias in Hotel Guests' Perceptions of Service Quality: An Empirical Investigation of Hotels in Mauritius. E-Review of Tourism Research, 9(5), 164-189.

Karatepe, O.M. (2011). Service Quality, Customer Satisfaction and Loyalty: The Moderating Role of Gender. *Journal of Business Economics and Management*, 12(2), 278-300. http://dx.doi.org/10.3846/16111699.2011.573308

Mang'unyi, E. E. and Govender, K. K. (2015). Employees' service quality perceptions of Kenyan private universities. Journal of Contemporary Management, 12(1), 226-248.

Meng, J., & Elliott, K.M. (2009). Investigating Structural Relationship between Service Quality,mSwitching Costs, and Customer Satisfaction. The Journal of Applied Business and Economics, 9(2), 54-66.

Mokhlis, S. (2012). The Influence of Service Quality on Satisfaction: A Gender Comparison. Public Administration Research, 1(1), 103-112. http://dx.doi.org/10.5539/par.v1n1p103

Parasuraman, A., Berry, L. L. and Zeithaml, V. A. (1991). Refinement and reassessment of the SERVQUAL scale. Journal of retailing, 67(4), 420.

Parasuraman, A., Berry, L.L., Zeithmal, V.A. (1988), SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 67(4), 12-40.

Parasuraman, S. and Liang, P. C. J. (2010), April). Development of RPS parallel manipulators. In Computer and Network Technology (ICCNT), 2010 Second International Conference on (pp. 600-605). IEEE.

Pérez-Fernández J, et al. (2007) The 90S preribosome is a multimodular structure that is assembled through a hierarchical mechanism. *Mol Cell Biol 27*(15):5414-29 PMID: 17515605

ICMEM

Petruzzellis, L., D'Uggento, A. M. and Romanazzi, S. (2006). Student satisfaction and quality of service in Italian universities. Managing Service Quality: An International Journal, 16(4), 349-364.

Petruzzellis, L., Romanazzi, S. (2010), Educational value: How students choose university-evidence from an Italian university. International Journal of Educational Management, 24(2), 139-158.

Rojas, C.d., & Camarero, C. (2009). Visitors' Experience, Mood and Satisfaction in a Heritage Context: Evidence from an Interpretation Center. *Tourism Management*, 29(2008), 525-537.

Rosebush, M. (2011). *Validations of the Character Mosaic Report*. Retrieved from http://www.dtic.mil/docs/citations/ADA557599

Sekaran, U. (2003), Research Methods for Business: A Skill-Building Approach. United States of America: John Wiley & Sons, Inc.

Seth, N., Deshmukh, S. G. and Vrat, P. (2005). Service quality models: a review. *International Journal of Quality & Reliability Management, 22*(9), pp.913-949.

Shahin, A. and Samea, M. (2010). Developing the models of service quality gaps: a critical discussion. *Business Management and Strategy, 1*(1), 1.

Telford, R., Masson, R. (2005), The congruence of quality values in higher education. Quality Assurance in Education, 13(2), 107-119.

Testa, M.R., Mueller, S.L. (2009), Demographic and cultural predictors of international service worker job satisfaction. Managing Service Quality An International Journal, 19(2), 195-210.

Zeithmal, V.A. (1987), Defining and Relating Price, Perceived Quality and Perceived Value. Cambridge: Marketing Science Institute.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Strategy to Optimize Business Value of Marginal Gas Field in Onshore Central Java

Indah Anggraini[a*], Agung Wicaksono[b]

[a]Daniel Residence Kebon Kacang XII No.21 Jakarta Pusat, 10390, Indonesia
[b]Graha Irama Building 12Floor, Jl. H.R. Rasuna Said Kav. 1-2 Jakarta Selatan, 12950, Indonesia

Abstract

PHE Randugunting is one of the subsidiaries of Pertamina Hulu Energi (PHE) who managed Randugunting Block which located at Rembang, Central java. Currently, company's position is in the transition phase from exploration to development and production phase. After succeed to discover gas and condensate in R-2 Well, company faces several challenges to develop gas field such as marginal gas reservoirs, lack of gas infrastructure, limited time to the approval of plan development, total sunk cost, and limited coverage area after 3rd relinquishment. Strategy to optimize business value of marginal gas field need to be created in order to accelerate gas monetization, and maintain the blocks & potential resources in the future.

Strategy Establishment started by understanding the business situation comprehensively. External and internal analysis has been conducted to obtain better understanding of PHE Randugunting situation. The external analysis that being used is PESTEL and Porter's Five Forces, while the internal analysis using the resource-based view, The Value Chain Analysis, and 7P marketing Mix as it tools of analysis. By analyzing these factors, the strength, weakness, opportunities, and threat that revolving around PHE Randugunting has been known and being represented in the form of SWOT analysis.

Corporate strategy alignment through performance management system succeed to bring the company formulate key performance indicator and strategy but still in line with holding company strategy. To obtain proper development concept, investment business value analysis is conducted through several parameters such as internal rate of return, profitability index ratio, payback of time and net present value that also supported by focus group discussion, internal study and benchmarking process. As a results, Investment Cost on production facility with Compressed Natural Gas (CNG) as feed gas is shown optimum value to develop marginal gas field in On-shore Central Java. Regarding commercialization and marketing strategy, the analysis of Segmentation, targeting, positioning and differentiation has been conducted and support by gas buyer selection using Small Multi Attributes Rating System to helps Top Management decide and rating the potential gas buyer that ready and qualified with related attributes or criteria At the end, new business model canvas is generated to describe new business model post transformation into production phase.

Keywords: Marginal Gas; SMART Method; Gas Industry; Strategic Management; Business Value

1. Introduction

1. 1. PHE Randugunting History

PT Pertamina Hulu Energi Randugunting (PHE Randugunting) as subsidiary company of PT Pertamina Hulu Energi is one of Kontraktor Kontrak Kerja Sama (KKKS) under the supervision of SKKMigas (Satuan Kerja Khusus Pelaksana Kegiatan Usaha Hulu Migas) which engaged in upstream oil and gas in Randugunting Block, is located onshore in East and Central Java, which presently encompasses 2,102.00 Km2. Randugunting Block Production sharing contract (PSC) signed on 9th August 2007 and awarded as the first tripartite cooperation between Pertamina Hulu Energi Indonesia (PHE), Petronas Carigali Sendirian Berhad Malaysia (PCSB) and PetroVietnam EP Vietnam (PVEP), for each party hold 40%, 30 %, and 30 % of Participating Interest (PI).

---

* Corresponding author

ICMEM

The block was awarded by Government of Indonesia to be explored and developed for 30 years duration divided into Exploration Phase and Development & Production Phase. At the end of 2014, PCSB and PVEP notify their intention of withdrawal and get GOI approval at Februari 2017. Currently, Indonesia through Pertamina Hulu Energi has all the Participating Interest (100%) of Randugunting Block.

1. 2. Scope of business field undergone by PHE Randugunting

Core business activities of PHE Randugunting in upstream business sector. Since 2007, PHE Randugunting has conducted several exploration activities for G&G Studies, 2D Seismic Survey, and 4 (four) Exploration wells where 3 (three) of them (D-I, C-I, K-I) are dry hole well, 1 (one) well (W-1) is discovery oil & gas with *uneconomic* result and 1 (one) well (R-2) is *economic* discovery gas and condensate. Table-1 shown the result of Drill Steam Test (DST) at R-2 well:

Table-1. R-2 Drilling Test Result
(*Source: MOM regarding PSE with SKK Migas 2 February 2017*)

Formation	Rate
DST#1 (Tuban Limestone Reservoir)	No Flow due to tight Carbonate Reservoir
DST#2 (Tuban Limestone Reservoir)	0.945 mmscfd (after acidizing stimulation job)
DST#3 (Ngrayong Sandstone Reservoir)	10.8 mmscfd
DST#4 (Ngrayong Sandstone Reservoir)	12.94 mmscfd & 130 bcpd

The discovery of R-2 with total absolute open flow potential (AOFP) is 115 MMSCFD from DST#4 dan DST#3, lead the company to transform, from exploration phase to the development and production phase.

1. 3. Business issue faced by PHE Randugunting

There are 5 of business issues which become the basis of this paper, which are:
1. Marginal Gas Production.
   The reason why Randugunting Field facing a challenge such as marginal gas production is caused by following factors:

   a. Even though 3 (three) drill stem test of R-2 well shows good results, SKK Migas only approved PSE (*Penentuan Status Eksplorasi)* on DST#4 (Sand-1) reservoir due to unclear lateral distribution boundary of other reservoir.
   b. PHE as holding company only approve Randugunting field development with single well production scenario to reduce capital of expenditures (CAPEX) and accelerate the return on investment, which impacted to the total of reserves in Randugunting Field.
   c. Technically, layer of reservoir in Sand-1 has thickness only 8 (eight) meters with limited boundary & size structure. As the results, static modeling based on absorbent radius shows marginal size with the reserves 6.64 BCF (P1) and 0.65 BCF (P2) with recoverable resources 4.91 BCF.
   d. Dynamic modeling and simulation derived from the reserves shows marginal production rate 2 MMSCFD, Plateau 5.42 years and lifetime of production only 8.5 years (Figure 1).

ICMEM
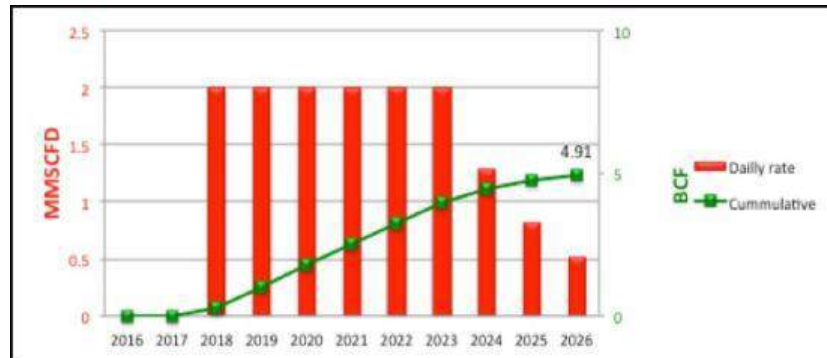
Figure 1. Gas Production profile of Randugunting Field
(Source: Dynamic Model Analysis by PHE randugunting)

2. Lack of Gas Infrastructure in surrounding area (Position relatively far from the gas source).
3. Limited Time to POD-I Completion. Based on project management perspective, Field development shall be on-stream in Q3-2018 due to potentially reduce the economic limit if delays. PHE Randugunting only has less than 6 months to prepare Engineering, Procurement, Construction, and Installation (EPCI), work-over work until the completion.
4. Total Sunk Cost. As per December 2017 status, total sun cost cost of exploration programs more than 40 MMUSD. High number of expenditures is become the potential obstacles to run the project economics, if the project performed as stands alone (full cycle). PHE Randugunting shall exercise several scenarios to bring this project to economically viable.
5. Limited area post 3rd-Relinquishment. Ten years exploration phase will be expired, implicated to PHE Randugunting shall relinquish part of the contract area not be more than twenty percent (20%) of the original total contract area. This condition affected to the prioritization of prospects and leads that will be support to further develop in Randugunting Block, because remaining area only 20% from original block area.

2. Literatur Review & Methods

2. 1. Literatur Review

Strategy formulation started by understanding the business situation comprehensively externally and internally. The external analysis that being used is PESTEL and Porter's Five Forces, while the internal analysis using the resource-based view, The Value Chain Analysis, and 7P marketing Mix as it tools of analysis the gas market. By analyzing these factors, the strength, weakness, opportunities, and threat that revolving around PHE Randugunting has been known and being represented in the form of SWOT analysis.

To obtain proper development concept, benchmarking to several field that facing similar problem was conducted as an input for basic (FEED) Front End Engineering Design. Based on FEED Study, it will generate several scenario investment that will calculate to optimizing business value in project economics through several parameters such as internal rate of return, profitability index ratio, payback of time and net present value that also supported by focus group discussion and internal study.

For Gas buyer selection & Commercialization Concept, direct inspection and evaluation of a gas buyer are performed to ensure that potential gas buyer and commercialization of Randugunting field is legally and technically feasible and economically justifiable (worth the investment). Result of inspection are processed using Small Multi Attribute Rating System (S.M.A.R.T) as decision making tools using the attributes are referred to the due diligence that required by SKK Migas combine with company prioritization aspects.

ICMEM

2. 2. Conceptual Framework

The framework that being applied in this paper is started with mentioning related business issues, external and internal analysis, strategy formulation and implementation as shown in Figure 2.
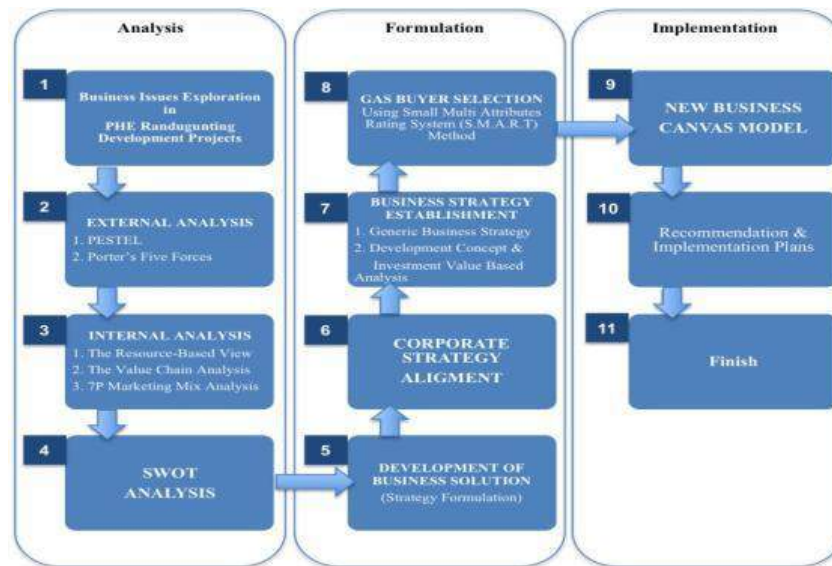
Figure 2. Conceptual Framework
(Source: Analysis)

2. 3. Method of Data Collection and Analysis

The paper will collect data from different sources. The research method that being applied in this study is semi-quantitative method while utilizes both primary and secondary data. Primary data obtained from FGD (Focus Group Discussion) and interview with top Management of PHE Randugunting, PHE and Pertamina (Persero) who become decision maker of the business development project where the author involve directly as a member of Randugunting Plan of Development Task Force in business and commercial aspect and as PHE Randugunting Performance Management Ambassador. Secondary data obtained from benchmarking the similar case of oil and gas in previous studies.

2. 4. External Analysis

Analysis regarding the business situation is needed before establishing the proper and fit strategy, since the analysis would provide better understanding for company business situation and could be used for input to generate business and long-term strategy. Analyzing the business situation externally and internally is being done by conducting interview and literature review.

(a) PESTEL (Political, Economy, Socio Culture, Technology, Environment and Legal)
PESTEL allowed this paper to comprehensively study business situation related to the Randugunting Field Development activities.

- In term of political and legal aspects, company facing several challanges such as regulation changes and new policy in oil and gas industries. Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia (Government's Regulation: Ministry of Energy and Natural Resources) Nomor 6 Tahun 2016 on Provisions and Setting Procedures of Allocation and Utilization and Price of Natural Gas, is describe about 7 (seven)

priorities of gas allocation and utilization. This regulation will affect directly to PHE Randugunting, because the decision to the selection of the gas user will impact to the gas utilization and price, so that the company shall conduct proper commercialization feasibility study to perform great results prior to development and production phase.

PHE Randugunting has set up the target to On-Stream on 2018, but in the other hand it is a year of election (PILKADA), the politic situation must be influence the operational activities including permit and other business decision, so that PHE Randugunting shall mitigate the political aspects in the future related to this project.

- In Economy aspects, the economic performance is decreasing especially in oil and gas industry, recovery effort is missing coincidentally, and commodities (including crude oil) price keep reducing. National economic performance is still affected by the global economic downturn causing a decline in the value of Indonesian exports and imports.

- In Socio cultural aspects, As state-owned company, Pertamina have a major role in supporting Indonesia Energy and Economy Independence, regarding to that Pertamina launched an effort called public service obligation (PSO) for fuels and 3kg Elpiji. In 2017 Government of Indonesia through PT Pertamina try to perform policy "BBM SATU HARGA" which allowed the people across the nation could experience same price for fuel to improve people prosperity and welfare in every province in Indonesia. Although, the PSO activities does not affect the upstream business directly (especially PHE Randugunting), but the company have been consistently contributing to the welfare and prosperity aspect around the operation site. Moreover, PHE Randugunting (Rembang site) reported that the company has actively participated in education, religious, local culture, and even social business empowerment. Those aspects established in several programs such as Randugunting Mengajar, Randugunting Berbagi, Randugunting Mengaji, and the company involving more than 40% of local people & company empowerment through the drilling activity.

- From technology aspects, gas and condensate of Randugunting Field (R-2) drilling test results has been generally delivered to LEMIGAS and for production facility has been assessed by LAPI-ITB through Front End Engineering Design (FEED) study with the results is the gas categorize as sweet gas with 0% H2S and low CO2, so there is no special treatment to develop the gas from the field besides separator, gas & condensate handling system, gas metering and storage tank.

- In environment aspects, natural gas is a type of energy resource, which is relatively clean, efficient, and easy to be reached economically. Natural gas generally produces produces fewer emissions compared to coal or refined petroleum products. However, it has to be aware of that natural gas is not completely environment-friendly. Natural gas mostly consists of methane, which is very dangerous if exposed to human. Methane potentially harms human health condition In case of direct contact, such as oxygen deprivation (asphyxia), nauseous, lost consciousness, decreased muscle coordination, and even death. The methane could lead to the open air through gas processing facilities (gas well, gas pipeline, and train processing plant) if the facilities are not constructed properly or not well maintenance.

(b) Porter's Five Forces
- The power of buyers.
High demand of gas in Central Java, bring the attraction for several potential gas buyers to invest their business in this area. Currently, source of gas is mostly gas pipe from East Java as well as Kangean, Tuban, Kepodang, Banyu Urip Bojo Negoro, PT Pertamina EP, etc, in the other hand lack of gas source in Central Java become competitive advantage for PHE Randugunting even though in marginal scale will elevate economic growth in surrounding area. Data from PT Pertagas stated that gas demand up to 100 MMSCFD. The power of buyers is low due to lack of gas source in Central Java Surrounding while the demand is high, so existence of gas source in Rembang even though in marginal scale will help gas buyer to reduce their transportation cost that currently from East Java.

ICMEM

- The Power of Supplier.
  In terms of bargaining power, the supplier is considered medium since the supplier (in this case the supplier is vendor for gas facilities) which specialized in gas infrastructure or production facility is relatively few. Gas development project is high-capital investment type, and the amount of vendor which can provide material for gas infrastructure is small in Indonesia. However, once the contract has been established between vendors and the company who wants to build gas infrastructure, they will have same position. In conclusion, the power of suppliers is high because there are few production facilities that categorize as long lead item and should be customize refer to the gas and condensate composition and other specification.

- Threat of New Entrants.
  Gas infrastructure project is considered as high-capital investment, which means not every company able to invest on this project without proper planning and sufficient budget. As explained in the section above, gas industry is slightly different from typical B2B business since a company would not built the gas infrastructure on the proven reserves block if buyers who will buy the gas does not exist. Once the buyers are established and accepted the gas sales agreement (GSA) with the sellers, the buyers will be tied with the GSA contract and should buy from the mentioned sellers and cannot shift into another seller immediately on short notice. This is because the gas infrastructure is specialized and built according to GSA, so the buyers cannot buy gas from another seller and the seller cannot sell gas to another buyer. In other words, the threat of new entrants is low since in Central Java, there is lack of new gas discoveries at Central java and there is no such CNG Mother station plant that can be distribute gas directly to the industries.

- Threat of Substitutes
  Gas mainly used for energy source for almost anything like oil, from industry power source to household daily needs. The substitutes for gas is high, although the utilization for those substitutes currently relatively small. Currently, gas is the most feasible alternative energy source since the oil price dropped significantly, but the future trend where the renewable energy is providing almost zeros emission may substitutes the need of gas completely if the technology and utilization are developed properly. In conclusion, threat of substitutes relatively moderate due to prediction of mix energy equalization will be happened starts on 2025 with supporting of proper technology and regulation.

- Rivalry among Competition.
  The major natural gas producers (as PSC operators) as of January 2016 are described on figure 2.12 mostly have a coverage area in Sumatra, Kalimantan, Papua, Sulawesi and West Java. Even though survey mapping in Java Island shown there is a clear petroleum system, but only few field that can be monetize and has significant hydrocarbon results. There are twelve oil and gas producing areas in Central Java, which are; Kepodang, Cepu Block (Pertamina Exploration & Production Cepu – PEPC) and several assets that managed by PT Pertamina EP, all of its supplies go to PLTU Power Plants (PLTU – Indonesia Power). Besides, there are several gas sources in Java island which mostly comes from the eastern of java such as Banyu Urip Bojonegoro, West of Madura Offshore, Pertamina Petrochina East Java, Pertamina EP and others company. But regarding the gas utilization using Compressed Natural Gas (CNG), there is only few company which only few companies in this field as follows:
  1. Lengowangi & Gresik Field managed by JOB Pertamina Petrochina East Java which located in Tuban East Java, with rate of gas production is 1.7 MMSCFD.
  2. Semanggi and poleng field that managed by Pertamina EP.
  3. Lapindo gas field which located in Sidoarjo with rate of gas production is 2 MMSCFD that utilized using CNG.

  In conclusion, rivalry among existing of competition is low because there's only few competitors in this industry in Central Java while the industry growth is very high. Existence gas source from Randugunting block will become key business driver for Central Java and surrounding.

2. 5. Internal Analysis

- **The Resource-Based View**
  Tangible

ICMEM

- Financial Resources : Prior to 2014, financial source is from business partner, which is Petro Vietnam and Petronas. Since both of the company had with-draw from the block, financial source and risk are solely borne by Pertamina Hulu Energi (Cash Call and WP&B Proposal).
- Resources & Proven Reserves : Based on G&G evaluation, the Randugunting Block currently (2017) is having 11 prospects & leads with recoverable resources more than 200 MMBOE. Nowadays, PHE Randugunting focus to develop proven assets as well as Randugunting Deep, Wonopotro and Lasem Prospects.
- Asset Management: Company has 3 (three) wells with status P & A wells, 1 (One) Suspended Well and Several Casing, Tubing and Office Assets in coverage area 920 km2.

Intangible

- Culture : Pertamina has established six corporate values (Clean, Competitive, Confident, Customer-focused, Commercial and Capable) that cascade into business culture model named CITTA (Competitive, Innovative, Teamwork, Transparent and Accountable).
- Human Resources : According to the RPTK (Rencana Penggunaan Tenaga Kerja) that approved by SKK Migas, there is 27 job positions with 22 manpower. Human resources assets of PHE Randugunting are consist of 7 employees in Exploration Department, 3 employees in Operation Department, 4 employees in Finance Department, 5 employees in Admin & HR Department, and 3 employees in enabler function.
- Reputation: 100% state owned company which fully supported by Government, maintaining operational & HSSE Excellent since 2007 with 2,509,942 man safe hours, Zero TRIR (Total Recordable Incident Rate), Zero LTI (Lost Time Incident), and no environmental and social impact.

- **The Value Chain Analysis**
  According to the PHE Randugunting company business process which cascade from Pertamina Business Process Model SK (No: Kpts-29/C00000/2016-S0) and APQC for classification framework, Implementation of Generic Value Chain to Randugunting Field Development Project Phase-1 is reflects on the description as follows:

  1. Primary Activities
     a. Exploration: R-2 Drilling Exploration Well
     b. Engineering, Procurement, Construction & Installation (EPCI): Implementation of Front End Engineering Design (FEED) and Production Facility Construction
     c. Development: Workover and Completion R-2 Well
     d. Production: On Stream/First Gas in Randugunting Field
     e. Assets Monetization: Commercialization of Gas Randugunting Field
  2. Support Activities
     a. Human Resources: Hire professional and expertise in core business based on organization plan
     b. Information Management System & Technology: Data Bank Management System & Technology to support company business process
     c. Firm Infrastructure: Legal for arrangement MoU, Contract, Head of Agreement, Gas Sales Agreement, Participating Interest offering to the Local Government and other supporting activities.

- **7P Marketing Mix**
  1. Product: Company will produce two products, namely gas and condensate with recoverable reserves 4.91 BCF and production rate 2 MMSCFD.
  2. Price: Gas Price that has been proposed by potential gas buyer is in range 5.5 – 7 USD/mmbtu. The price is very favorable and competitive since in East Java gas market price for CNG is around 4 – 7 USD/mmbtu.
  3. Place: Randugunting Gas Field is located onshore at Rembang Regency of Central Java Province, close to the North Sea Coast of Java (Pantura), and surrounding by industries that using natural gas as a raw material and as fuel which potentially become end user gas.
  4. Promotion : Business Gathering, Media exposures on Gas Discovery, Direct Approach through MoU, HoA, and GSA
  5. People: PHE Randugunting has 22 employees that the majority 64% are mostly in young age (25-35) which possess a bachelor and master degree in diverse majors.

ICMEM

6. Process: Gas processing steps in Randugunting Gas Field Phase-I is planned based on pre-Front End Engineering Design Study that consist of: High Pressure and Low Separator, Condensate Storage Tank, Condensate Pump, Gas Metering and Flare Package

7. Physical Evidence: Physical evidence is an aspect that assures physical facilities such as buildings, equipment, uniforms, and logo to be delivered by the organization. PHE Randugunting has a head office in Jakarta for managerial business and Randugunting Field (Wellhead) at Rembang Regency, Central Java that will be developed further.

2. 6. SWOT Analysis

Internal Analysis	**Strength**	**ASSETS** • Proven Reserves of DST#4 RGT-2 with Absolute Open Flow Potential (AOFP) of DST#4 total 73.5 MMSCFD (Proven Reserves) or 4.91 BCF recoverable reserves as key business driver for Plan of Development Phase I • Proven Assets & Upside Potential through Randugunting Emas Program (Randugunting shallow, Deep, Lasem & Wonopotro) up to 328 BSCF and 14 MMBOE. • More than 100 wells brownfield (as proven petroleum system) in Candi Complex • **920 km2** coverage area of Randugunting Block to be explored. **FINANCIAL** Production Sharing Contract with Block Basis, potential to recover total sunk cost from other development field **PERFORMANCE** • Excellent HSSE Performance with MSH 2,511,562, Zero LTI & TRIR, No Environmental and Social Issues • Operational Excellence Record with NPT 0% at RGT-2 Drilling, • The most efficient drilling cost in RGT-2 Drilling with only 4 MMUSD including 24 days of Drilling days, 16 days of Completion (4 DST). • Unqualified Financial Report (Wajar tanpa pengecualian) from 2009 - 2017. • Effective & Efficient organization • Great Business Partnership with Local Government and stakeholder
	Weakness	• Marginal gas field, limited reserves to be develop in first plan of development • Potential insufficient gas deliverability due to single well production in first plan of development • Limited time towards on stream gas production on August 2018 • Limited data resources due to availability data still use 2D Seismic
External Analysis	**Opportunity**	• **Market** : Central Java Industry strong demand, current gas shortage up to 104 BBTUD at Central Java (source by Pertagas Letter) • Potential to become gas provider at Central Java and Surrounding • **Gas Buyer** : 5 (five) Potential Gas Buyer has been listed and sent their intention, PT Pertagas (MOU), PT Super Energy (MOU), PT PGN (MOU), PT GGE and PT SPP • **Future Plan** : Integrated Gas Field Development at Central Java in future from Randugunting Emas Program up to 328 BSCF and 14 MMBOE and develop brownfield through partnership with local people, company and government. • **Production Time** : Block Expiry on August 2037, remaining 20 years for production & Exploration phase • Randugunting Block is in Strategist location near from other AP PHE/JOB which allow possibility to conduct Facility Sharing Agreement, and other cooperation.
	Threat	• Uncertainty status of POD-I Approval by Ministry of Energy and Mineral Resources • New Regulations by the government in Energy Sector • PILKADA and national election in 2018 which potentially threatening the operational business • Potential aggressive action from LSM / Non Gol

Figure 3. SWOT Analysis of Randugunting Gas Field Development

(Source: Analysis)

3. Results and Discussion

3. 1. Development Concept & Investment Value Based Analysis

Investment costs of Randugunting gas field are consist of RGT Well Drilling, Workover program and production facility. Based on Front End Engineering Design (FEED) Study, there are several scenario of investment for Randugunting development concept, such as :

1. Production facility with CNG feed gas (Compressed Natural Gas)
Production facility cost for CNG feed gas is more than 1.2 MMUSD. CNG Concept is usually used for gas capacity below 5 MMSCFD.

Gas buyer fill provide CNG Mother station as processing unit and distribution station to the end user using head truck and tube skid. CNG Mother station build period within 3 – 6 months depend on field condition/ permit & gas availability. The proposed location is in surrounding Randugunting gas filed & closed to the access road .

2. Production facility with Mini LNG feed gas (Liquefied natural gas).
Production facility cost for LNG feed gas is more than 2 MMUSD. Small scale LNG plant usually used for gas capacity below 10 MMSCFD or even more, depend on the gas availability (volume), duration of gas supply (plateau) and gas composition. Mini LNG station build period within 18 – 20 months.

3. Production facility with CNG feed gas using 17km pipeline.
Randugunting field is located at Rembang regency that passed by "Jalur Pantura" which is a major road in Java, Indonesia. It passes through 5 provinces along the north coast, Banten, Jakarta, West Java, Central Java and East

Java that very strategic location to distribute the gas. Distance between field and "Jalur Pantura" is 17 km, it is become alternative way for the company to build pipeline along 17 km and closer to the customer. Production facility cost for CNG feed gas using 17 km pipeline is more than 4 MMUSD.

4. Production facility with tie in scenario to existing pipeline (owned by SPP) with distance 50km. The distance between Randugunting field and existing pipeline that owned by PT SPP for tie in is 50 km. Production facility cost for using pipeline mechanism is more than 8 MMUSD.

From the alternative above, the author conducted further analysis regarding investment cost to develop Randugunting Field with several parameters such as Internal rate of return, Profitability Index Ratio, Payback of Time, and NPV Indicator that already input total cost including operational expenditures during life time production 8.5 years with gas sales point on well head (gas metering). Based on final discussion with SKK Migas, this project economics calculation is using "looking forward year of 2017", because Government wants to maximizing GoI share in the first POD. It means, that all of remaining sunk cost of previous well will be recover in the further development. The result of investment based valuation is shown on the table below.

Tabel 2 Investment Value Based Comparison *(Source: Analysis)*

No	Parameters	Alternative 1 (CNG Feed Gas)	Alternative 2 (Mini (Mini LNG Feed Gas)	Alternative 3 (CNG Feed Gas+ Pipeline 17km)	Alternative 4 (Tie in Gas Pipeline 50 km)
1	Investment Cost	1.2 MMUSD	2 MMUSD	4 MMUSD	8 MMUSD
2	Internal Rate of Return	59,66%	54,08%	41,34%	26,80%
3	Profitability Index Ratio	1.16	1.15	1.13	1.10
4	Payback of Time	4,73 Years	4,06 Years	5,62 Years	6,57 Years
5	Net Present Value @10%	USD 7,915,288	USD 7,586,180	USD 6,610,656	USD 5,164,489

The calculation method using the Project Economics methodology for oil and gas industry. However, gas price assumption is based on average gas price in East and Central Java, not the actual price (actual price will be determined by Ministry of ESDM and based on GSA with Gas Buyer) Economic assumption that used in the economic calculation : Recoverable Resources 4,91 BSCF, Gas Price 7 USD/MMBTU, Exploration Well Cost 4 MMUSD, Gas Production Cost 0.52 MSCF, single well production and 2 MMSCFD of production rate.

3. 2.   Gas Buyer Selection & Commercialization Concept

PHE Randugunting already received letter of intention from potential gas buyers as well as:
1. **PT. Alpha** Subsidiary company of Pertamina in gas directorate field
2. **PT. Bravo** Private Company in oil and gas industry
3. **PT. Charlie** State Owned Company in oil gas industry that has 10 subsidiary company.
4. **PT. Delta** Private Company.
5. **PT. Echo** Private Company with right of way (gas pipeline) based on land lease agreement with PT KAI (Gundih Cepu – Tambak Lorok) since 2004.

After potential gas buyer sent their intention to utilize gas from Randugunting Field, company start to conducted feasibility study and direct inspection to each field that operated by potential gas buyer. Direct inspection and evaluation of a gas buyer are performed to ensure that potential gas buyer and commercialization of Randugunting field is legally and technically feasible and economically justifiable (worth the investment). Result of inspection are processed using Small Multi Attribute Rating System (S.M.A.R.T) as decision making tools. In the making of S.M.A.R.T Analysis, the attributes are referred to the due diligence that required by SKK Migas as follows:
1. Legal Administrative, are consisted of Deed of establishment, *Tanda Daftar Perusahaan* (TDP), *Surat Ijin Usaha Perdagangan* (SIUP), *Nomor Pokok Wajib Pajak* (NPWP) Company, Commissioners and Director, PKP, *Surat*

ICMEM

Keterangan Domisili Perusahaan (SKDP), and any other business documents that related to the business & company establishment.

2. Commercialization, are consisted of Business Plan/Scheme including gas processing concept, business scheme, Scope of work, Permit, EPC, Risk Management, and any other aspects that related to the commercialization process.
3. Financial, are consisted of company cash flow that has been audited by public accountant, evidence of *Pajak Penghasilan* (PPH) of the company, Reference letter from the Bank.
4. Technical & Operational, are consisted of facility Construction Plan, Scope of work project, specification, and any other supporting elements in technical & operational.
5. HSE Management System, not limited to the system of health, safety and but also environment aspects and permit.
6. Partnership with Local Government
7. Gas Price Offer

PHE Randugunting received 5 (five) letter of intention from the potential buyer, after direct inspection company filter into 3 gas buyer that fit with company requirement that consist of 3 gas buyer PT Alpha, PT Bravo and PT Charlie. The attributes are well identified, next is input the inspection & coordination results to the S.M.A.R.T analysis, with the results as follows:

Tabel 3 Attributes of S.M.A.R.T Analysis

NO	Attributes	Weights	Normalized Weight	GAS BUYER PERFORMANCE		
				PT Alpha	Value	Aggregate of Weighted Value
1	LEGAL ADMINISTRATION	95	0,14	Complete Legal Administration	95	13,67
2	COMMERCIAL ASPECTS	100	0,15	Clear Commercial Aspects	95	14,39
3	FINANCIAL ASPECTS	95	0,14	Trusted Financial Performance	95	13,67
4	TECHNICAL & OPERATIONAL ASPECTS	100	0,15	Experienced in CNG Concept & Effective Supply Chain	90	13,64
5	HSE MANAGEMENT SYSTEM	90	0,14	Proper HSE Management System	90	12,27
6	PARTNERSHIP WITH LOCAL GOVERNMENT	80	0,12	don't have experience & less approach	60	7,27
7	GAS PRICE OFFER	100	0,15	High Gas Price Offer	100	15,15
TOTAL		660	1,00	TOTAL	625	90,08

GAS BUYER PERFORMANCE			GAS BUYER PERFORMANCE		
PT Bravo	Value	Aggregate of Weighted Value	PT Charlie	Value	Aggregate of Weighted Value
Complete Legal Administration	90	12,95	Complete Legal Administration	90	12,95
Clear Commercial Aspects	90	13,64	Clear Commercial Aspects	90	13,64
Trusted Financial Performance	90	12,95	Trusted Financial Performance	90	12,95
Well Experienced in CNG Concept & Clear Supply Chain until the transporation to end user	100	15,15	Experienced in CNG Concept but more focus on gas pipe & Jargas	65	9,85
Proper HSE Management System	90	12,27	Proper HSE Management System	90	12,27
Intensive coordination with Loc Gov & BUMD	80	9,70	Experienced coordination with Loc Gov & BUMD	70	8,48
Medium Gas Price Offer	80	12,12	Low Gas Price Offer	60	9,09
TOTAL	620	88,79	TOTAL	555	79,24

ICMEM

Performance attributes diagram, provisional decision and value tree analysis are described on the figure below.
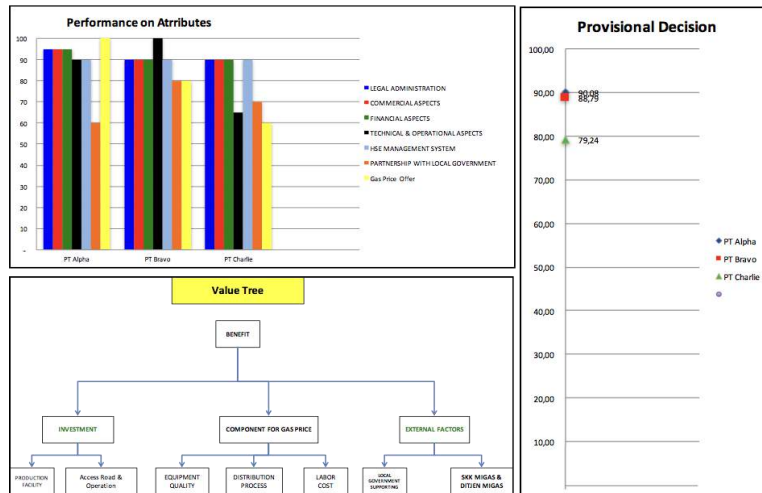
Figure 4 Performance on Attributes, Provisional Decision and Value Tree

From the analysis above, Pros and Cons are analysed based on 5 major issues in CNG Implementation concept as well as distribution mechanism, End Buyer, CNG Mother Station Construction, Gas Price Offer, Strength and Weakness of each potential gas buyer. As the final results from the analysis above and discussion with Development and commercialization team Pertamina Hulu Energi (PHE) as holding company, it can be concluded that PHE Randugunting should choose PT Alpha as subsidiary of Pertamina since the option gives the highest of weighted aggregate of value, business consideration above and also to support spirit of Pertamina Incorporated.

Figure 5 Racking Gas Buyer

3. 3.   Marketing Concept

1.   Market Segmentation.
It is because marginal gas field are usually not possible to build direct pipeline to the end-user due to need more capital expenditures that will be affected to the project economics, PHE Randugunting has been set market segmentation to the industries & commercial with compressed of natural gas mechanism as processing system.

ICMEM

Figure 6 Gas Demand Industry in Central Java

2. Marketing Target.

Randugunting block is located at Rembang, Central Java Province. In Central Java, gas utilization is dominated by electricity PLN Tambak Lorok through gas pipeline, while the second majority is for local industries. Marketing target that fits with plan of development of Randugunting field is local industries around Central Java, with strategic location only 17km from "Jalur Pantura" makes the gas is easy to distribute especially to local industries in surrounding area. Marketing target plan of Randugunting gas field is shown on the figure below:

Figure 7 Target Marketing of Randugunting Gas Field

Gas will be distributed to the food industry in Central Java and Yogyakarta with total of demand is 2 MMSCFD that mostly already has gas sales agreement between potential gas buyer and end user. Gas will be distributed using head truck and tube skid that provides by potential gas buyer.

3. Positioning

Positioning of Randugunting Gas Product is described on the figure 13. Randugunting gas quality categorize as sweet gas that no need special treatment to be process that impacted to the competitive gas price. Indicator of gas quality is in H2S and Co2 component. Regarding gas quality, most of gas buyer are require composition of H2S and Co2 is below 5% or 10%. Polarity is minimized which means less percentage of component is better. In the other side, polarity of gas price is maximized which means the higher gas price is better. From the explanation above, it can be concluded that positioning of Randugunting gas is high quality of gas with competitive price.

ICMEM
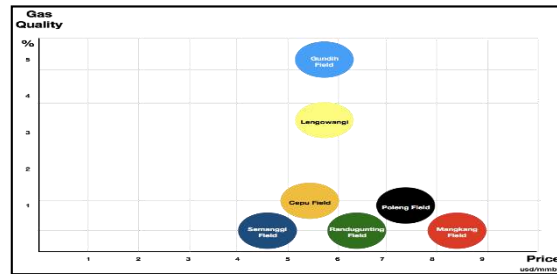
Figure 8 Randugunting Gas Field Positioning based on quality and price in Central Java

4. Differentiation

Randugunting gas differentiation can be seen from several aspects such as gas quality, location, gas demand, and potential resources :

- Quality aspects, company has reservoir target in sandstone, the quality is relatively good with low component of H2S and Co2 and categorize as sweet gas become competitive advantage for the company to compete with other gas producer.
- Location side, is located in strategic location that close to the industries and main road of Central Java. There is gas shortage in Central java up to 100 MMSCFD for local industries and increasing consistently every year, it is become business opportunity for PHE Randugunting to provide gas in the area.
- The most important thing in developing gas is sustainability, PHE Randugunting already has Randugunting Emas Program to support a vision as big gas player through integrated gas development in Central Java to be further develop. This program will attract gas buyer, because it is became business opportunity for them to expand their business.

3. 4.   Business Model Establishment

The figure as shown below is describe PHE Randugunting products value proposition, infrastructure, customers, and finances. It assists the company in aligning the activities through illustrating potential trade-offs. New business model canvas after transition phase from exploration to development & production.

Figure 9 New Business Canvas Model of Randugunting

ICMEM

4. Conclusions

Investment cost based valuation analysis helps the company to determine that the project is viable to execute. The economic parameters are Internal rate of return, Profitability Index Ratio, Payback of Time and NPV Indicator. As the results, the best development concept to commercialize marginal gas is by using CNG Concept with gas sales point on well head (gas metering) because low investment cost and higher value return.

Gas Buyer Selection using Small Multi Attributes Rating System (SMART) aims to helps Top Management decide and rating the potential gas buyer that ready, qualified and have a superior performance to cooperate with the company and distribute the gas to the end user.

The best strategy to optimizing business value in terms of commercialization and marketing in marginal gas field is by segmenting & targeting local industries at central java as main end user, and offering high quality of gas specification in strategist location as value proposition.

References

Charles W.L. Hill, Gareth R Jones, Melissa A Schilling 2015. *Strategic Management An Integrated Approach.* Cengage Learning, Stamford

Direktorat Jenderal Minyak dan Gas Bumi Kementerian Energi dan Sumber Daya Mineral Republik Indonesia. 2016. Laporan Kinerja Direktorat Jenderal Minyak dan Gas Bumi

Fred R. Dabid, Forest R. David, Frank T 2015. *Strategic Management Concepts and Cases: A Competitive Advantage Approach.* British Library, England

Harvard Business Review 2010. *On Strategy.* Harvard Business School Publishing Corporation, United States of America

Harvard Business Review 2011. *The Essentials.* Harvard Business School Publishing Corporation, United States of America

Lubiantara Benny 2015. *Ekonomi Migas: Tinjauan Aspek Komersial Kontrak Migas.* Gramedia, Jakarta

Marcel van Assen, Gerben van den Berg, Paul Pietersma 2009. *Key Management Models: The 60+ models every manager needs to know.* Prentice Hall Financial Times, United Kingdom

Pertamina Hulu Energi Randugunting 2017. Company Profile 2017

Pertamina Hulu Energi Randugunting 2017. Annual Business Reports 2017

Pertamina Hulu Energi Randugunting 2017. Annual Business Reports 2016

Pertamina Hulu Energi Randugunting 2016. *Driving Cost Efficiency in R-2 Drilling Operation for High Value Return*

Republik Indonesia. 2001. *Undang-Undang Nomor 22 Tahun 2001.* Oil and Natural Gas Jakarta.

Republik Indonesia. 2016. *Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 6 Tahun 2016.* Provisions and Setting Procedures of Allocation and Utilization and Price of Natural Gas. Jakarta

Rothaermel, Frank T 2017. *Strategic Management 3e.* Mc Graw Hill Education, New York

ICMEM

The 3rd International Conference on Management in Emerging Markets

Vendor Selection of Decision Engine Platform at Bank BTPN Using AHP Model

Yerrikho Bergas[a*], Yos Sunitiyoso[b]

[a,b]School of Business and Management, Institut Teknologi Bandung, Indonesia

Abstract

The growths of p2p lending business model of fintech increasingly burdensome the bank to compete. BTPN seeks alternative to form a new business model which will automate lending process. Therefore, the Bank created a large project called core lending system and the main part of the core lending system is the decision engine platform.

Vendor selection is very complicated process. If the vendor selection is not appropriate then it will be implied to the project implementation plan and will affect the business performance in the long term because the product or platform that should be able to function properly turned out not in accordance with the expected. AHP chosen as framework for helping vendor selection and develop a decision making support model because the framework decompose complex problem into simpler forms to then synthesize the various factors involved in the decision making problem.

The primary data collected from interview and discussion with decision makers who acted as project team, and also questionnaire. Secondary data collected from company research documents and another data coming from response documents from alternatives vendors.

From the results of data processing found that the criteria and sub criteria with the most important weighting in this project is functional capability for criteria and decision engine for origination process (functional), integration capability (technical), reputation, people expertise, and team capability (proof of concept) for sub criteria. The ranking results for four alternatives are EN, FO, PR, and CF. The research shows that AHP model can also be used for decision support system specifically related with vendor selection that has complex criteria and large number of respondents from various units and background.

Keywords: Analytic Hierarchy Process, Group Making Decision, Vendor Selection, Decision Engine Platform, Banking Industry

1. Introduction

BTPN is a foreign exchange bank that specializes in empowering and providing services for multiple customer segments such as low-income customers, which include pensioners, micro, small and medium business (MSMEs) owners, and low-income productive households, and/or the mass market (Bank Tabungan Pensiunan Nasional [BTPN], 2018). BTPN was established in 1958 in Bandung, Indonesia and was originally called *Bank Pensiunan Militer* (BAPEMIL). Along with the increasing number of customers and in order to reach wider scope of customers, it changed its name into BTPN in 1986. Its continued business growth led the bank to be listed on the Indonesia Stock Exchange in 2008. With the spirit of innovation for expansion, BTPN currently has a diverse business in banking that serves various segments including pensioners, unbanked people, small medium enterprise, premium customers, micro banking customers, millennial customers, etc. In 2014, Sumitomo Mitsui Banking Corporation (SMBC) of Japan expanded its share ownership of BTPN to become the controlling shareholder. The move has put BTPN in a favorable position of not only having a strong shareholder, but also having access to the regional and international financial markets. Lastly, BTPN launched Jenius that offers digital banking experience in an effort to attract digital savvy customers and millennials.

---

* Corresponding author. Tel.: +62 8180 8583 410.
   E-mail address: yerrikho.bergas@sbm-itb.ac.id

ICMEM

The ever-growing digital technology has undeniably affects various industries, including the financial service industry. Customers in corporate banking, retail banking, small medium enterprise banking, and other banking services now expect seamless experience and digitalized process across channels. Despite the fact that traditional physical bank outlet is still the preferred way of doing banking among other channels, there is a rapid transition of customers towards mobile and internet technologies between 2015 to 2017 (PricewaterhouseCoopers [PwC], 2017). The existing gap has created an opportunity for competitors on financial service industry, especially those focusing on the digital aspect of banking such as fintech. Fintech takes advantage of customer preferences for digital experience that is free from the siloed legacy systems and manual operating models found in most banks today. The use of digital platforms enables competitors to move with agility, while simultaneously offering lower costs as well as delivering intuitive and compelling customer experiences.

The growth of peer to peer lending business model of fintech is making it increasingly burdensome for banks to compete (Nangoy & Diela, 2018). Since fintech began to compete with banks, they have created new business models including lending decisions, source capital, and service loans. Fintech also do not lose out to major banks in terms of the benefits they capable to offer through simple digitalized processes. They are able to move faster than bank due to the less stringent regulations governing fintechs. In their effort to accelerate investments in digital lending, banks are also now faced with a challenge to compete with fintechs while avoiding a decline in profit as well as loss of market share (Bahillo et al., 2016). Banks in Indonesia, BTPN included, have shown very slow progress in digitalizing their lending process. Among capabilities that banks must develop related to automated lending are the consistency of execution across channels, technology to enable a smart view of customers, as well as an efficient and digitalized process (Fleming & Fielding, 2015). To accommodate this need, BTPN created a large-scale project called the core lending system, with a decision engine platform to be developed as a core lending system.

As of now, BTPN operates several systems that serve different lines of business without a single standardized way to manage policies, strategies, workflow, and SLAs. This has led to high operating cost, inefficiency, longer approval time, and customer satisfaction issues. When micro lending customers want to apply loan to the bank, the process cannot be done in real time, where there is still a manual recording process in the backend and this is inefficient and possible errors by human records. Moreover, with high dependency on IT team and third-party vendors, it takes a long time for BTPN to implement any policy changes. BTPN's key requirement for its project is to build the best decision engine platform and framework with flexible workflow and central credit decision engine. The end product of this project is expected to be the bank-wide decision-making platform covering the entire customers' life cycle.

Vendor selection is a crucial process in a project and should be conducted in a proper and careful manner. The failure of selecting the right vendor may result in delay of meeting required standard of goods and services. This research examines the problems in selection the vendors for one of the strategic project in companies. Due to various interests both of internal and external parties, and also the complexity of the criteria specified for this project, the implication will affect overall project if not conducted with good tools of vendor selection.

In order to effectively handle this condition and uncertainties involved in the vendor selection problem, a new method vendor selection named AHP conducted in this case. There are many other tools that used for vendor selection process. Various methods for vendor selection tools are analytic hierarchy process (AHP), multi objective programming (MOP), data envelopment analysis (DEA), mixed integer programming (MIP), goal programming (GP), genetic algorithm (GA), analytic network process (ANP), case based reasoning (CBR), cluster analysis (CA), technique for order preference by similarity to ideal solution (TOPSIS), etc (Mukherjee, 2014). Mukherjee (2014) stated among all methods mentioned, AHP is mostly used by various researches and gives more emphasizes in multiple vendor selection instead of single vendor selection.

This paper research organized as follows: Section 2 and 3 describe literature review and research methodology used for the research. Section 4 describe the results of vendor selection case for decision engine platform. Section 5 concludes the paper and suggests the recommendation for future research.

ICMEM

2. Literature Review

The high competition is going on in today's business world. Choosing the right business partner to support business competition becomes very important today. Business relies heavily on strategic relationship with vendors/ suppliers and customers where these two components must create value added that will make competitive advantage in the market (Tracey & Tan, 2001).

Another factor that plays an important role for sustainability of business is how companies establish long term relationship with vendors and suppliers, and consider them as assets of the organization (Loppacher, et al, 2011). Vendors are selected by companies commonly based on basic criteria like ability to meet the requirement standards of goods and services, good price for good value, delivery schedule. The number of researches conducted by researches shows that vendor selection and evaluation methods become very important for the sustainability of business in the future. Evaluation of a large number of vendors would involve multiple interests on a variety of criteria.

Research on vendor selection continues to grow in line with technology developments and innovation for new methodologies. The researchers create an analytical framework that combines several criteria to be incorporated and developed as models for vendor evaluation and selection process. (Saaty & Niemira, 2006)

In the process of reviewing the literature, authors focused on three criteria that are functional, technical, and proof of concept. Functional capability can be defined as any requirement which specifies what the system should do to meet the business requirement. Technical capability is one of the most critical factors in the vendor selection process (Dickson, 1966). Proof of concept can be defined as a demonstration to verify that certain proposal documents, concepts, and theories are developed as promised. Proof of concept is closely related to the quality standard owned by the product, technology, reliability product, flexibility, and adaptability of the product. The proof of concept criteria mentioned is also critical factor of vendor selection surveyed by Cheraghi et al.

3. Research Methodology

3.1. Analytic Hierarchy Process

Analytic Hierarchy Process (AHP) is a process that helps decision makers to obtain the best solution by putting complex problem into simpler forms to then synthesize various factors involved in the decision-making process (Forman & Selly, 2006). AHP considers both qualitative and quantitative aspects of a decision (Saaty & Neimira, 2006) and reduces the complexity of a decision by making a one-to-one comparison of various criteria chosen to then process them and obtain results. This technique not only helps decision makers to find the best alternative solution, but also provides a clear rational understanding for the choice taken. Guler (2008) stated that AHP is also useful for managers to formulate their desired decision-making criteria, provide a guideline to determine the level of importance of different decision-making criteria, and then obtain the best decision based on that criteria.

In addition to provide assistance in vendor selection, AHP is also used for special cases including (Saaty, 2008):

- The US Department of Defense uses it to allocate resources across multiple diverse activities.
- GSA (General Services Administration) US uses AHP to support annual IT Council in prioritizing IT development, combining it with benefit cost analysis and benefit risk analysis.
- Xerox Corporation uses AHP to allocate budget for critical research development projects.
- Ford Motor Company once used AHP to make it a priority to see what criteria to use in order to improve customer satisfaction.
- IBM used AHP to design AS 400 computer and won the award for the design effort.

Besides the above examples, there are many other programs, projects, and initiatives that used and are using AHP as one of their models or frameworks in solving various problems and/or providing solutions and recommendation. Saaty (2008) stated that in order to make a clear decision in creating priorities, complex decisions should be broken down into simple steps. Referring to Saaty (2008), steps performed in the AHP method is generally described in the following figure 1.

ICMEM

Step 1:
Defining problem and determining what information or knowledge to seek

Step 2:
Develop the decision hierarchy structure from the top to bottom

Step 3:
Construct a set of pairwise comparison matrices.

Step 4:
Use the priorities obtained from the comparisons to weigh the priorities in the level directly below. Then, add the weighted values for each element in the level directly below until the final priorities of the alternatives in the bottom-most level are obtained.

Figure 1. AHP Steps

3.2. Decision Engine Platform

Decision Engine Platform is a platform that manages decision logic. Taylor (2017) found that the platform should be agile, adaptive, and equipped with an analytic module. This kind of platform is commonly capable in accommodating rapid changes in business regulation or new business conditions. It properly utilizes data to produce effective and efficient decision, and continually learns to improve the quality of repetitive processes in operational decisions. In addition, it also conducts risk management and applies rules based on risks that are acceptable by the bank or client. The Decision Engine Platform can also make improvements in resource utilization and fraud reduction, as well as increase revenue by maximizing the utilization on data.

The Decision Engine Platform currently has two main function systems (Taylor, 2017), with the first being the operational system that performs transaction management. This system is related to rules management, determining whether business elements such as policies, requirements, conditions to use and products are the right decisions for the company. The operational system assists the bank to define complex decisions to support batch application and interactive support. This function is easy to configure and can be changed anytime without the need to rewrite the application and release new application code. When a specific rule is applied, it can also be applied to various systems so that business interaction with customers will be maintained according to the best practices. Meanwhile, the second function is the analytic system that works to utilize appropriate data to produce better decisions. This analytic system will optimize each available data and produce simulation, decision modeling, and scoring.

The operational and analytic systems are interrelated and must be integrated with the latest systems and technologies operated by the bank/client such as big data, data warehouse, machine learning, database analytic infrastructure, optimization application, data mining application, API management system, artificial technologies, cognitive technologies, and predictive modeling application.

In its actual implementation, the utilization of the decision engine platform by each client may differ and should be adjusted to the specific case faced by clients by using best practices most suited to the need of each company.

3.3. Research Process

This research began by defining the research problem, namely an appropriate vendor selection process for the implementation of decision engine platform development project. Framework used to generate findings in this research

ICMEM

is the AHP model, where the main idea is to look for the right criteria and subcriteria for the purpose of selecting appropriate vendor for the project. These criteria and subcriteria were obtained through data collection activities including gathering data from internal corporate research documents as well as through in-depth interviews with the project team prior to the commencement of the project. After all necessary data were collected, they were used to define and develop a hierarchy tree structure. The detail steps to get the best alternative for decision engine platform vendor are schematically described and shown in Figure 2.
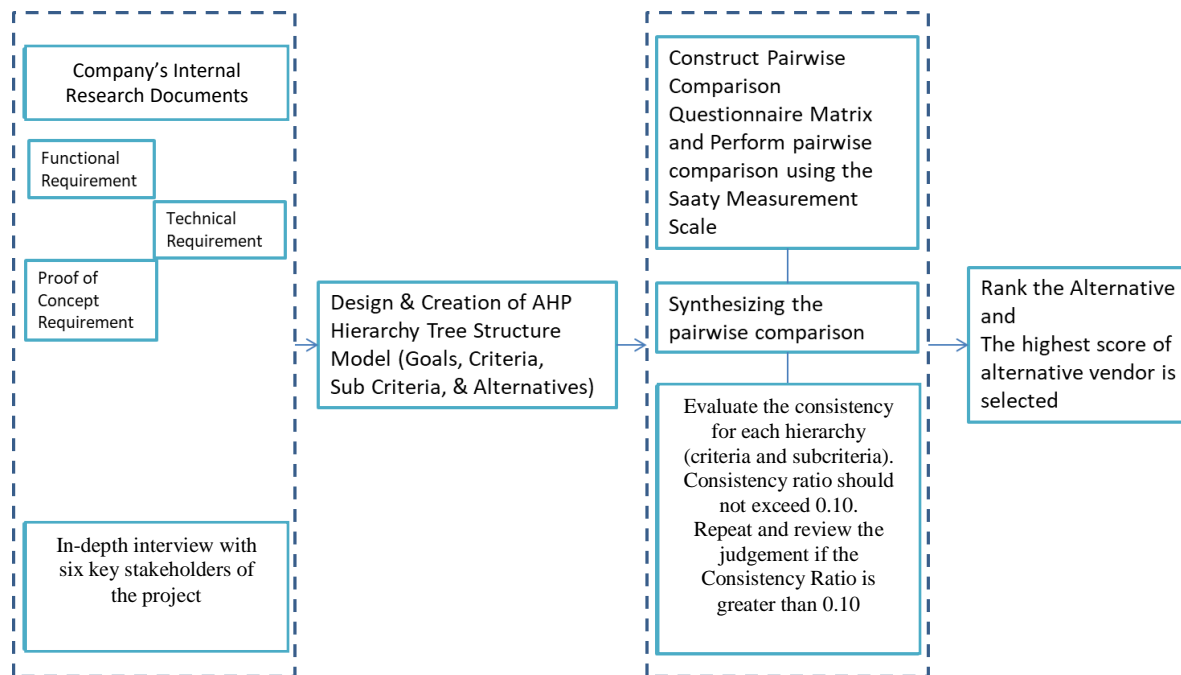
Figure 2. Research Workflow Process

A detailed AHP hierarchy tree structure is presented in Figure 3 of this journal. This tree structure was then used as a basis in determining the weight of criteria and reviewing all the alternatives based on the proposed approach.

ICMEM

AHP Hierarchy Tree Structure Model with Criteria, Subcriteria, and Alternatives
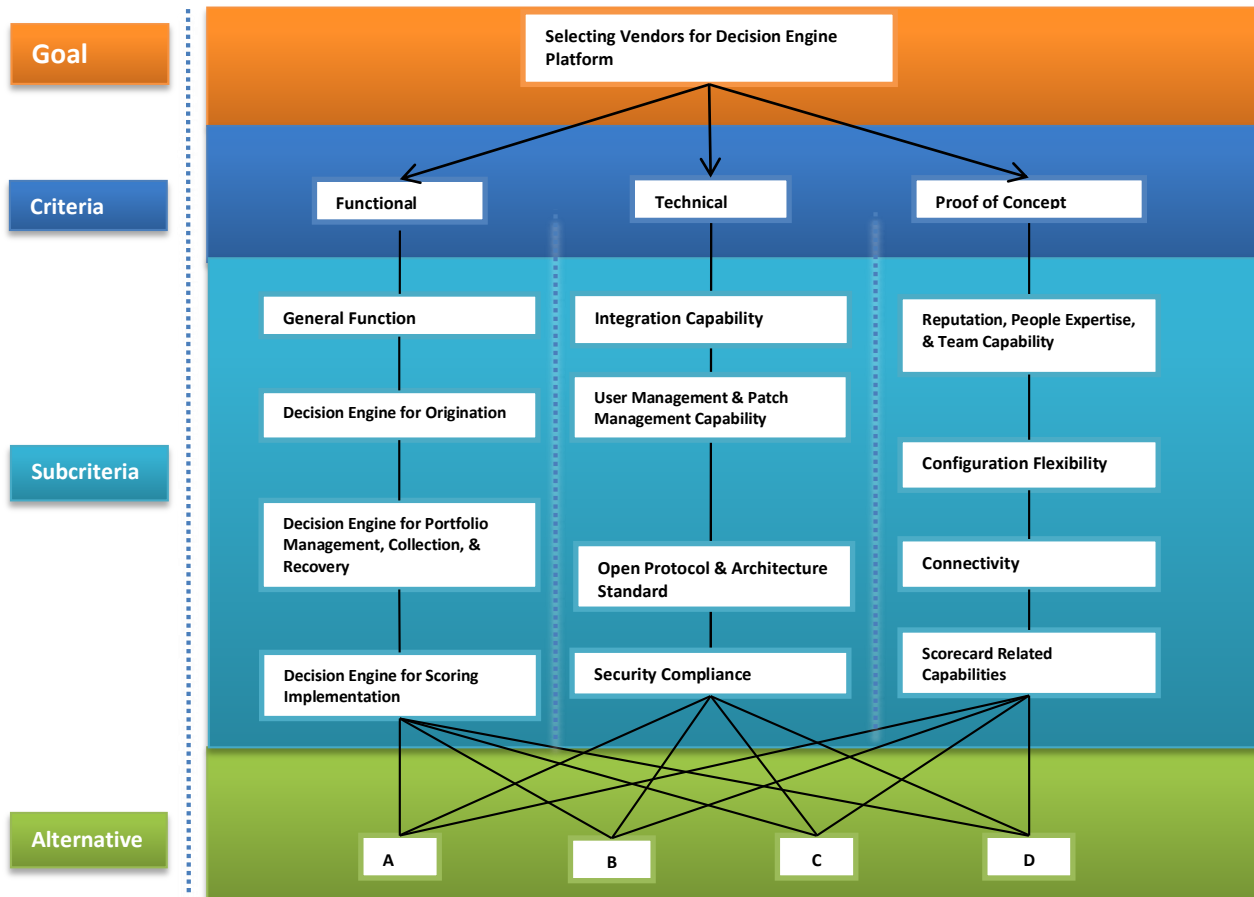
Figure 3. AHP Hierarchy Tree Structure Model

3.4. Method of Data Collection and Analysis

The primary data in this study were collected through a series of interviews and discussions with the project team who act as decision makers for the project. A questionnaire was also used as a source of primary data. Questions asked during the interviews and those listed in the questionnaire were carefully formulated to capture the concerns and interests of each respondents related to BTPN's project. Meanwhile, secondary data were obtained through a review of company research documents (details regarding functional, technical, as well as proof of concept requirements for the project) and response documents from alternative vendors.

3.4.1. Interview Summary & Conceptual Framework

A series of intensive interview process was conducted towards six respondents who are the key stakeholders of this project. Qualitative method was used for this interview in order to capture a detailed response regarding respondents' objective and expectation related to the decision engine platform. The details of their position and background are explained on Table 1 below. The six respondents were selected due to their positions as stakeholders of this project and that the success of the project depends on their expectations regarding the vendors to be chosen. In addition, they are also equipped with adequate knowledge, capability, and previous experience in similar projects at other banks.

ICMEM

Table 1. Profile of Respondents

Respondent & Position in BTPN	Working Experience & Job Description
Respondent 1, RA Business Risk Head	RA has been working in BTPN for approximately 2 years. Her specialties include risk management in relation to banking products as well as risk mitigation for the project. She will be an advisor from the business side in implementing business functionality to be defined within this platform.
Respondent 2, TE Analytics Decision Science Head	TE has been working in BTPN for approximately 2 years. The Analytics team works to analyze all business units as well as to optimize overall business revenue based on existing data. Her and her team's in this project is to ensure the newly developed platform will has a scoring engine implementation where each decision result will be mapped out to ensure an optimized decision making.
Respondent 3, LA Business Incubation Head	LA has been working in BTPN for approximately 1.5 years. Her responsibilities include defining new business lines that will generate future revenue for the bank. Her current role in the project is to create a core lending process system where the decision engine platform will be a sub part of.
Respondent 4, KA IT Business Enablement Head	KA has been working in BTPN for approximately 1.5 years. The department he works at holds a crucial role namely to translate business needs into technical matters and implement them into a product. His role and function in the current project is to help the implementation of the decision engine platform in accordance with the needs from the business function and to optimize the platform into a powerful one to accommodate every business process.
Respondent 5, NA IT Strategic Planning Head	NA has been working in BTPN for approximately 2 years. His responsibilities include defining short and long term IT strategic plan. His work is to define all future business needs in order to ensure they are aligned to the predetermined strategic plan. His role in the current project is to help define all corporate architectures to utilize how the decision engine platform can generate benefits to and be used by all business units.
Respondent 6, IV IT Data Management Head	IV has been working in BTPN for approximately 1.5 years. His work includes simplifying data, streamlining process, and strengthening data value. The resulted data are then used for faster decision-making and to accomplish more with less. His role in the current project is to map all of data sources that will be the input for the decision engine platform and how the data can be quickly distributed and processed to achieve better result.

Since the release of 'Jenius' product by BTPN, all development concerns towards the mobile platform and its surrounding system are very critical. Digital Push is one of the key elements of BTPN's initiative on "Reinvent Banking Transformation" (BTPN, 2017). The bank's management has now realized the tremendous opportunities presented by technology advancement and how it can enhance their pursuit towards excellence in customer satisfaction.

In BTPN, there are two main core functions in its banking business i.e. funding and lending. Among the two, technology adoption in funding function and process is considered good while in lending there are still rooms for improvements. Thus, BTPN has decided to further extend and enhance its decision management infrastructure platform particularly for the lending function and process of the business—which became one of the reason behind the development of the decision engine platform.

Based on interview result, it was found that each key stakeholder has his/ her own concerns regarding the project. Stakeholders from the business side (Business Risk Head, Analytics Decision Science Head, & Business Incubation Head) were concerned about the functionality of the platform itself and whether it could meet the existing needs of BTPN. The Business Risk Head was concerned about the platform's capability to conduct origination process. The Analytics Head was concerned about the implementation of scoring process done by the platform, while the Business Incubation was concerned about how the platform's capabilities will be able to support faster lending automation processes on the digital mobile apps. As for the technical matters, the above stakeholders entrusted them to the technical team and expected that the decision engine can be easily integrated to other platforms and a scale-out will be easy to carry should there are many transactions from mobile app users.

Key stakeholders from the technology side (IT Business Enablement Head, IT Strategic Planning Head, & IT Data Management Head) were more concerned about the technical capability and proof of concept of the decision engine platform. They all shared the same concern namely for the platform to be able to be easily integrated with all

ICMEM

surrounding systems currently operated by the bank. The IT Business Enablement Head was concerned about aspects related to the ease of use in operating the platform, patch management, cross systems communication, and the suitability of the platform's architecture with new mobile platform apps. The IT Strategic Plan Head ensured that the platform will be easy to scale out in the future. The ease of integration with other micro-service architectures is also important as all platforms will be built by using the same architecture model. The IT Data Management Head hoped and expected that the decision engine platform can be integrated with and receive data from the Data Lake & Data Warehouse as decision-making support within the platform. The results of this data processing must also be able to be directly used in analytic platform owned by the bank. In addition, the system to be built must be connected to the company database and other business applications.

In general, all respondents shared the same expectation that the project implementation will be successful and that it will support all the rules for the lending process that will be implemented to the bank's new platforms. Further supporting the project, all respondents also expressed their support for the tender and vendor selection process.

Complementary to the interview, a set of questionnaires was also distributed to the Business Risk Head, Analytics Decisions Science Head, Business Incubation Head, IT Business Enablement Head, IT Strategic Planning Head, and IT Data Management Head.

As a next step, a questionnaire containing the matrix of pairwise comparison was developed based on the AHP Hierarchy Tree Structure. The scale used for this pairwise comparison is elaborated in Table 3. The questionnaire contains a comparison matrix on the criteria, subcriteria, and the selection of alternatives for each of these criteria. Pairwise comparison will challenge the respondents to see their responses about the dominance of one element over another element with respect to criteria and subcriteria.

Table 2. Vendor Selection Criteria

Criteria	Subcriteria	Explanation
Functional Functional capability can be defined as any requirement which specifies what the system should do to meet the business requirement.	General Function	The system and solution have the capability to integrate and communicate with any of the bank's core banking or any relevant front-end and satellite systems as well as the bank's big data warehouse in regards to real time credit decision process. The solution has to be flexible for the bank's immediate current and future changes within the scope of process & decision flows, scores, and strategies changes with minimum to none of IT and/or vendor involvement.
	Decision Engine for Origination	The system and solution have the capability to perform and/or accommodate the implementation of risk-based pricing for real time credit decision. The system and solution also must has the capability to perform and accommodate simple to complex verification strategy and the capability to perform and accommodate any external third party system calling strategy (i.e. Bureau, Citizen Database)
	Decision Engine for Portfolio Management, Collection, and Recovery	The system and solution have the capability to perform and/or accommodate the implementation of limit assignment strategies for all consumers in all line of business, customized marketing strategies (including increasing/decreasing limit, top up, upsell, and cross sell strategies). The system and solution also must have the capability to perform pre-emptive collection & recovery strategies and the capability to perform and accommodate latest Basel & IFRS 9 implementation.
	Decision Engine for Scoring Implementation	The system and solution have new scorecard model/segmentation (risk & marketing) implementation, modification, calibration, in an instant and seamless manner (can be integrated with SAS, Python & R) and have the ability to maintain in an organized and versioned way a repository of different models and their collateral.
Technical	Integration Capability	The system and solution have to provide a feature to support the easy addition of new fields/attributes in the data model to be used

Technical capability can be defined as technical aspect requirement that the system must fulfill to meet the standard, high quality of services, availability of system, flexibility integration, and compliance.	(Hildreth, 2005).	from and to origination system, collections, and are able to provide output data for communications, analysis, etc. The system and solution should also be easily integrated with any big data technology platform and data warehouse platform. The system and solution have to provide back-end connectors. Also, the bank expects the system and solution to be integrated with the analytics platform in order to provide deeper insight about the channel utilization and user behavior.
	User Management & Patch Management (Hildreth, 2005).	The system and solution can be integrated with the LDAP system and active directory protocol for user authentication. This will make it easier to view/create/edit/delete user IDs. The system and solution must also provide granular user privileges on component level. The system and solution must allow access to the security event logs that are limited to the authorized security staffs and must record when any system security policy is modified (logical accounts and system access rights). The solution must have a mechanism for patch management.
	Open Protocol & Architecture Standard (Hildreth, 2005, p. 26)	The system and solution support open-standard protocol/ technology/ middleware between channels and back-end services (TCP/IP and/or socket communication, web services (SOAP/ REST/ JSON), message queue, data link, ODBC, etc.) The system and solution must provide open architecture standard, so that any development on application interface, business process, or integration point between the bank's channels and the solution can be developed internally by the bank without depending on vendor's service.
	Security Compliance	The system and solution must provide security managers and are able to provide enterprise level security layers to different type of channels connected to the back-end system. Vendor has to explain any type of encryption model and/or security protocol supported by the platform.
Proof of Concept Proof of concept can be defined as a demonstration to verify that certain proposal documents, concepts, and theories are developed as promised.	Reputation, People Expertise, & Team Capability	The vendor has to conduct a demonstration and explanation on their working experience by sharing cases found in vendor's other clients that are similar to the bank's current project. The vendor must have at least 1 client reference in Southeast Asia. The vendor must present an acknowledgement from accredited parties for product they are offering to the bank (for example: product stated in Gartner, etc.). The vendor must have SOW documents, project management documents, and other important documents. The vendor has to demonstrate bank's use case scenario provided.
	Configuration Flexibility	The vendor has to demonstrate that the addition/modification of particular product configuration can be conducted by the bank without the need of vendor involvement. The vendor has to demonstrate that the system and solution have the ability to accommodate new customer rapidly and no customization or development effort needed for the process, as well as have a simple process and a Graphical User Interface (GUI) to accommodate the production system (no source code, script or module to be migrated).
	Connectivity	The vendor has to demonstrate the easiness to call any API services (rest API, etc) and web services to obtain feedback directly from API and its web services for further application process. The vendor has to demonstrate application tiering preferably with the ability to plug the front-end component into any bank's wide web-based portal or other presentation components. The vendor must ensure and demonstrate that the systems are able to perform

	roll back scenario and keep being organized and versioned for all strategy.
	The vendor must ensure and demonstrate the load-balancing cluster (active - active model) which distributes the load among multiple back-ends so that the system and solution will not be down when processing a high number of transactions at once.
Scorecard Related Capabilities	The vendor has the capability to configure a scorecard from scratch using the solution GUI (Graphical User Interface) and can copy an existing scorecard and use it as a starting point instead of creating from scratch. In addition, the vendor has to be able to configure a decision table using a single scorecard or more than two scorecards, and generate decision (approve, reject, review) based on each matrix and can generate scorecard configuration report detailing the attributes, score ranges for each attributes, score grades, and etc. The vendor should test the scorecard behavior without the need to deploy the runtime.

Table 3. Saaty's Pairwise Comparison Scale (Saaty, 2008)

Intensity of importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgment slightly favor one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgment strongly favor one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favored very strongly over another, its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation

3.4.2.   Vendor Alternatives

In this research, four companies were used as candidates for potential vendor to test the AHP decision-making model. The testing was aimed to show which company will be the best candidate to provide the Decision Engine Platform to be used by BTPN.

Based on internal research and management discussion, four companies will be invited and evaluated as vendor alternatives in providing the Decision Engine Platform. All of them are global vendors with good capability and are well-known in this field. The four vendor alternatives are elaborated as follow:

a)   Vendor A

Vendor A is the leading provider in continental Europe of banking credit information, one of the key players worldwide providing integrated services and solutions for business and commercial information as well as credit and marketing management. Vendor A was established in 1998 in Bologna, Italia and is currently operating over four continents (Europe, America, Africa, and Asia) (Vendor A, 2017) Vendor A is pleased to provide the product called *StrategyOne* for BTPN requirement. Using *StrategyOne*, Vendor A expects to help BTPN achieve a quick and successful implementation.

b)   Vendor B

ICMEM

Vendor B was founded in 1956. The core strength of vendor B is in developing software related to analytics, risk, fraud, decision process, etc. The software they created today has been implemented in over 100 world's best companies in over 90 countries worldwide (Vendor B, 2017). Vendor B continuously conduct researches in various parts of the world to create products that can help clients quickly and accurately based on the utilization of mathematical algorithms and big data analytics. Platforms they currently create also have an open architecture capability with design or deployment on premise or in cloud. For the current project with BTPN, vendor B's proposed solution is vendor B Originations Manager (OM), which comprises of 2 key modules i.e. Blaze Advisor and APM.

c) Vendor C

Vendor C is one of the services companies known for the expertise in data and analytics, upholding the belief that data is a new power that can be optimized if analyzed quickly and precisely. They currently have around 17.000 employees spread over 37 countries (Vendor C, 2017). Vendor C currently has four business groups, namely credit services, decision analytics, marketing services, and consumer services. C's proposed solution for BTPN is the PowerCurve Strategic Management (PCSM), which is PowerCurve's industry leading decision engine module that provides real-time and ad-hoc decision-making throughout the customer lifecycle. Developing and improving decisions across the customer life cycle is deemed faster and easier with the PCSM enhanced strategy design capabilities and decision-ready data and analytics.

d) Vendor D

Vendor D was established in 1992 and stands as a startup that stems from risk analytics and decision-making solution services to small medium enterprise clients (Vendor D, 2017). They built an orchestration hub platform that can be integrated into any analytic platform and data services architecture. Vendor D proposes their platform as a solution for the decision engine, with key capabilities for end-to-end workflow, operationalized analytics, simplified integration, and agile configuration.

4. Result and Discussion

Results of Data Processing for Weighted Criteria, Subcriteria, & Alternatives

Table 4. – Combined Weight Criteria, Sub Criteria, & Alternatives

Level 0	Level 1		Level 2		Global Priorities	Alternatives			
Objective	Criteria	Local Weight	Sub criteria	Local Weight	Weight	A	B	C	D
To select the best vendor for Decision Engine Platform	Functional Capability	0.38	General Function Capability	0.24	0.09	0.009	0.033	0.028	0.022
			Decision Engine for Origination	0.34	0.13	0.014	0.035	0.054	0.026
			Decision Engine for Portfolio Management, Collection, & Recovery	0.17	0.07	0.007	0.022	0.024	0.013
			Decision Engine for Scoring Implementation	0.24	0.09	0.009	0.029	0.035	0.020
	Technical Capability	0.27	Integration Capability	0.42	0.11	0.010	0.040	0.037	0.026
			User Management & Patch Management Capability	0.21	0.06	0.007	0.017	0.022	0.012
			Open Protocol & Architecture Standard	0.25	0.07	0.007	0.026	0.016	0.019
			Security Compliance	0.12	0.03	0.004	0.009	0.010	0.008

Level 0	Level 1		Level 2		Global Priorities	Alternatives			
Objective	Criteria	Local Weight	Sub criteria	Local Weight	Weight	A	B	C	D
	Proof of Concept	0.36	Reputation, People Expertise, & Team Capability	0.31	0.11	0.010	0.038	0.044	0.018
			Configuration Flexibility	0.30	0.11	0.012	0.041	0.033	0.021
			Connectivity	0.15	0.05	0.005	0.019	0.016	0.014
			Scorecard Related Capabilities	0.25	0.09	0.008	0.026	0.036	0.018
					Total sum	0.105	0.335	0.355	0.216
					Rank	4th	2nd	1st	3rd

Table 4 exhibits the local weights for each criterion in each level. It shows that in the first level of criteria, functional capability with local weight of 0.38 is prioritized as the first criteria followed by proof of concept (0.36), and technical capability (0.27). The prioritization of subcriteria in the second level also depends on the local weights in the first level. The global weights are calculated by multiplying the local weights with criteria and subcriteria. The results for global weight priority are decision engine for origination (0.13), followed by integration capability (0.11) and reputation, people expertise & team capability (0.11). Meanwhile, the results of priority criteria's with local weight of each level are also shown in Table 4.

Based on the result of combined alternatives above, the best candidate to be the vendor for the Decision Engine Platform among the four alternatives is vendor C, which has the weight of 0.355. As for the overall ranking sequence based on combined weight, vendor C holds the first position and followed by vendor B, vendor D, and vendor A. As one of global players in the field of decision-making solution, vendor C has a notable footprint in the project implementation in various banks in Indonesia.

In summary, the reason and explanation behind the selection of vendor C as the best alternative are elaborated as follow:

- Despite the weak performance in technical scoring, C's overall functionality of the platform showed the best result. It was demonstrated by assessment from all respondents who emphasize the functional aspect of vendor C. During the proof of concept session, vendor C was also able to show that they are better than vendor B in terms of reputation, people expertise, team capability, and scorecard related capabilities. They have the best team in Indonesia with good composition of both local and foreign employees. They also have local representatives in Indonesia so that sustainability support can be maintained as long as the bank use their platform. They also have established a good reputation and good footprint in Indonesia compared to vendor B.

- On the technical part scoring, vendor C obtained a good scoring in user management and patch management indicating that their platform is easy to use both from UI (user interface) and UX (user experience) perspectives, and easy to use in terms of process in configuring rule/accessibility in rule and role management. They have good security management tools that may track all user activities that have led to changes, as well as strong protection against back door system activities that tries to enter the system to damage any existing configuration.

- On functionality part, vendor C scored decently in all important aspects of capability for origination, portfolio management, collection, recovery, and scoring implementation.

- Since the final scoring between vendor C and vendor B is very close, it is necessary to consider other factors in making recommendation of appointing vendor C as the tender winner. Among factors to take into account are a commercial proposal that is lower than what vendor B proposed, good company's sustainability showed by a good financial performance for the last 5 years, and compliance to laws and regulations in Indonesia especially those governed by the Financial Services Authority (OJK) and Bank of Indonesia (BI), as well as other financial regulators.

ICMEM

5. Conclusions and Recommendation

Vendor selection is a crucial process in a project and should be conducted in a proper and careful manner. Selecting an appropriate vendor that is suitable to the project needs may prove to be challenging and complicated due to the various interests of both internal and external parties. Without careful execution, it may negatively affect project implementation and future business performance. Wrong selection of vendor may cause a failure in meeting the expected standard for the platform. This process will be especially challenging with multiple criteria and subcriteria to be considered with the use of AHP model, a framework used to ensure that the final choice will represent the expectation of the platform being built. In this case, data from interviews and company's internal research documents become important as the input to determine what criteria and sub criteria to use.

The project's key stakeholders play a vital role in the determination of criteria and subcriteria for the vendor selection process. After determining the criteria and subcriteria to use, they are also responsible to weigh the questionnaires in the form of pairwise comparison. Data obtained from this process are then processed to show which criteria and subcriteria are deemed more important compared to others.

The whole calculation process of AHP Framework Model was conducted through the assistance of AHP template excel sheet from SCB Associates Ltd (Barnard, 2012), which was used to ease the complicated calculation and to prevent any miscalculation caused by human error. The excel sheet form had also helped in calculating the consistency ratio by not exceeding 10%. After obtaining the calculation result, the researcher then constructed the hierarchy, inputted the judgment value, and measured the consistency ratio by utilizing the excel sheet application.

Based on the data processing results, it is found that the criteria and subcriteria with the most important weighting in this project is *functional capability* for criteria and *decision engine for origination process (functional), integration capability (technical), reputation, people expertise, and team capability (proof of concept)* for sub criteria.

The final step after obtaining the result for criteria and subcriteria was to weigh the alternatives for vendor to be appointed to implement the project. Based on the score obtained, the final ranking of vendors are vendor C, vendor B, vendor D, and vendor A, consecutively.

In this research paper, AHP is proposed to solve the vendor selection problem. Illustrative example of vendor selection is presented to show the effectiveness of the proposed AHP method. AHP method and model can be used for vendor selection process that involves complex criteria and a large number of respondents from various units and background.

The application of a new framework will always come with a set of challenges, including resistance from decision makers and their team who are already used to the old ways of conducting vendor selection. The use of old vendor selection process does not see which criteria are more important than others, and thus the criteria and subcriteria prioritized by the project's team cannot be clearly captured during the selection process. In order to ensure an optimized and effective vendor selection process, this research proposes the following steps to accept AHP framework as a new framework to be used in vendor selection process:

- Socialize and introduce the benefits of AHP framework to all relevant parties in the selection process of vendors such as procurement process and governance, IT buyer, IT Service Management, etc.
- Run a pilot tender project using the AHP framework and monitor the tender on daily/weekly basis in order to continuously track the vendor selection process and see first-hand what the obstacles in the application of AHP framework are, and then seek for solutions.
- Gain support and assistance from high level management to make this framework a standardized model to use for the selection process of business partners or third-party vendors.

In future research, the used of AHP method needs to be increasingly perfected. Inconsistency measure should be check and further investigated. The proposed AHP method should be applied for other platform and solution services to further verify its effectiveness.

References

ICMEM

Bahillo, J. A., Ganguly, S., Kremer, A., & Kristensen, I. (2016, July). The value in digitally transforming credit risk management. In *McKinsey & Company*. Retrieved from https://www.mckinsey.com/business-functions/risk/our-insights/the-value-in-digitally-transforming-credit-risk-management

Barnard, S. (2012, September 26). Analytic Hierarchy Process, AHP Template. Retrieved from http://www.scbuk.com/AHP%20Template%20SCBUK.xls

BTPN. (2017). *2016 BTPN Annual Report*. Retrieved from https://www.btpn.com/btpn-annual-report-2016-en-.pdf

BTPN. (2018). *2017 BTPN Annual Report*. Retrieved from https://www.btpn.com/btpn-ar2017_eng.pdf

Cheraghi, S., Dadashzadeh, M., & Subramanian, M. (n.d.). Critical Success Factors for Supplier Selection: An Update. *Journal of Applied Business Research, 20*, 91-108.

Dickson, W. G. (1966). An Analysis of Vendor Selection Systems and Decisions. *Journal of Purchasing*, 5-20.

Fleming, R., & Fielding, J. (2015, December 15). Retail Banks Wake Up to Digital Lending. In *Bain & Company, Insights*. Retrieved from http://www.bain.com/publications/articles/retail-banks-wake-up-to-digital-lending.aspx

Forman, E., & Selly, M. A. (2006). *Decision By Objectives*. N.p.: Department of Decision Science, School of Business, The George Washington University. Retrieved April 15, 2018, from http://professorforman.com/decisionbyobjectives/dbo.pdf

Guler, M. E. (2008). Incorporating Multi-Criteria Considerations Into Supplier Selection Problem Using Analytical Hierarchy Process: A Case Study. *Journal of Yasar University*, *3* (12), 1787-1810. Retrieved from https://journal.yasar.edu.tr/wp-content/uploads/2012/05/no12_vol3_05_guler.pdf

Hildreth, S. (2005, May 23). Rounding Up Business Rules. *Computerworld*, *39* (21), 24-26. Retrieved April 16, 2018, from https://books.google.co.id/books?id=UENMJRkQB5sC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q=rule%20engines%20&f=false

Loppacher, J., Cagliano, R., & Spina, G. (2011). Key Drivers of Buyer-Supplier Relationships in Global Sourcing Strategies. *International Journal of Procurement Management*, 156-180.

Mukherjee, K. (2014). *Supplier Selection Criteria and methods: past, present, and future.* Department of Mechanical Engineering, Heritage Institute of Technology. India: Munich Personal RePEc Archive. Retrieved 2018, from https://mpra.ub.unimuenchen.de/60079/2/MPRA_paper_60079.pdf

Nangoy, F., & Diela, T. (2018). *Indonesia's fintech lending boom exploits shortfall in bank loans*. Jakarta, Indonesia: Reuters. Retrieved from https://www.reuters.com/article/us-indonesia-fintech/indonesias-fintech-lending-boom-exploits-shortfall-in-bank-loans-idUSKBN1FJ0F4

PwC. (2017). *Indonesia Banking Survey 2017*. Retrieved from https://www.pwc.com/id/en/publications/assets/financialservices/ibs-2017.pdf

Saaty, T., & Niemira, M. (2006). *A Framework for Making a Better Decision, How to Make More Effective Site Selection, Store Closing and Other Real Estate Decisions.* Research Review V.13 No.1. Retrieved from http://www.who.int/immunization/sage/2_Framework_Better_decision_Saaty.pdf

Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *Int. J. Services Sciences*, *1* (1), 83-98. Retrieved from https://www.colorado.edu/geography/leyk/geog_5113/readings/saaty_2008.pdf

Shpend Imeri, K. S. (2015). EVALUATION AND SELECTION PROCESS OF SUPPLIERS THROUGH ANALYTICAL FRAMEWORK: AN EMPRICAL EVIDENCE OF EVALUATION TOOL. *Management and Production Engineering Review*, 10-20.

Taylor, J. (2017). *Decision Management System Platform Technologies Report - Introducing Decision Management Systems*(Version 8.1 ed., p. 1). N.p.: Decision Management Solutions. Retrieved April 12, 2018.

Tracey, M., & Tan, C. (2001). Empirical Analysis of Supplier Selection and Involvement, Customer Satisfaction, and Firm Performance. *Supply Chain Management: An International Journal*, 174-188.

Vendor A. (2017). Real Time Decision Engine System Technical Proposal. Jakarta, Jakarta, Indonesia: Vendor A. Unpublished manuscript

Vendor B. (2017). Real Time Decision Engine System. Jakarta, Jakarta, Indonesia: Vendor B. Unpublished manuscript

Vendor C. (2017). Technical Proposal Response to Real Time Decision Engine RFP. Jakarta, Jakarta, Indonesia: Vendor C. Unpublished manuscript

Vendor D. (2017). Risk Decisioning Platform: RFP response for the Provision of Real Time Decision Engine System. Jakarta, Jakarta, Indonesia: Vendor D. Unpublished manuscript

ICMEM

The 3rd International Conference on Management in Emerging Markets

Forecast Demand & Aggregate Planning for El Farm's Healthy Juice Product

Zed Ridlo Ichsan Asyhari[a*], Desy Anisya Farmaciawaty[b]

*a,b*School of Business and Management Institut Teknologi Bandung

Abstract

El Farm is a start up company which sells healthy juice product. Currently El Farm is facing problem in determining their production level as well as reducing wastes in work in progress inventory and finish product, since they do not have proper forecast demand and production planning. Therefore, this research was aimed to generate a fit forecast potential demand and the suitable production planning with the current capacities in El Farm. El farm targeted market is people with age range from 20-49 years old that live in Bandung area, with total population 1,254,039. To forecast the demand, we distribute surveys to 252 respondents. The collected data then will be analyzed using statistical analysis to estimate the market demand. The estimated demand then will become data input for determining production level of healthy juice products in El Farm. Next, we will apply several aggregate planning methods to plan the production of healthy juice. We will compare the methods to find the most efficient cost then apply the method as the production planning strategy in El Farm. The result from this research are, we found that the market are very potential for healthy juice product, El farm design capacity is 42 bottles per day, and based on forecast potential demand and design capacity El Farm create two plan for aggregate planning. The result from this study will be used as reference to create production system that can minimize it cost and waste. This study also aimed to become reference for other research for healthy juice industry.

Keywords: Forecast Demand; Aggregate Planning; Inventory Management; Healthy Juice

1. Introduction

Indonesia is the world fourth largest population in the world with large area that have many resources and potential. One of them is agriculture, Indonesia is recognized as one among world largest agricultural producer. In 2012, there is more than 41% Indonesian population work in Agricultural Sector (Indonesia Invesrment, n.d.). Agricultural sector also contribute 14.4% for Indonesian gross domestic product (GDP) (Badan Pusat Statistik, 2009). Around 59% of Indonesian land was used for agricultural sector, from rice field, vegetables, fruit, staples, and cash crops, also foreign or private owned estate. (Badan Pusat Statistik, 1999). On other hand there are still many opportunities that can be catch to unleash more potential in this sector. Indonesia still cannot self-sufficient it domestic consume from agriculture product, In 2015 Indonesia total of fruit and vegetable import reached US$ 741,649 million (Australian Trade and Investment Comission, 2018). From consumer point of view, agribusiness especially vegetables is something important to Indonesia people, because vegetables is component for Indonesian diets (Takagi, 2010). Indonesia people also eat vegetables as their complementary or even main dishes. Under President Joko Widodo administration, government trying to prioritize this issue through Indonesia national development plans that aim to boost Indonesian farming capability, farming production, value added activities, and minimalizing commodity import.

There is also global shift trend for customer preferences toward healthy lifestyle that also affect Indonesia (Business Monitor International Ltd, 2017). Even there is just still small percentage of people possess healthy lifestyle,

---

* Corresponding author.

E-mail address: ridlo.ichsan@sbm-itb.ac.id

ICMEM

the increase growth can mitigated the risk in the industry. This also supported by populations of youth, underdeveloped food industry, and market that arouse interest for investment (Business Monitor International, 2011). Based on market intelligence agency Mintel's new research said that 75% Indonesian consumer aim to have healthier diet in 2017 (Mintel Press Team, 2017). The data show that improving health become focus of Indonesian consumer, thus it also show the opportunity for business to provide the demand. For customer preferences, price is still important purchasing factor for majority of Indonesia people, including people in upper class (Business Monitor International, 2011). Many retailer use strategy to combine convenience and premium product that fulfill value customer want like healthy, fresh food, low prices, and traditional (Business Monitor International, 2011).

One of the healthy lifestyle that become popular is organic vegetable because it offer healthy solution to gain more healthy life. Actually organic agriculture have been introduced and done in Indonesia since early 1980 by collaboration between non-governmental organization and small farmers (Surono, 2007). Secretariat of the Joint FAO/WHO Food Standard Programs (Codex CAC-GL 32/1999) defined organic agriculture as "holistic production management systems which promote and enhance agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, cultural, biological and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system". In Indonesia usually people recognize organic vegetable because it do not use any chemical fertilizer or pesticide.

El Farm itself is business engaging in organic vegetables delivery service to end user and until now El Farm not only do delivery and selling organic vegetable to customer but also producing healthy juice using cold press juicer and adding product line to organic rice. The value that El Farm offer is competitive price with supermarket, fresh, and delivery service. However El Farm face problem that resulted from absence of thoughtful operational design that cause ineffective operational planning and loss.

Through this research, the researcher want to solve El Farm operational problem in order to increase the El Farm effectiveness and efficiency. Limited storage and does not have production scheduling make El Farm have problem such as many raw material rotten before being processed and some juices expired before it can be sold. Therefore the raw material and juice become waste and loss, the amount of loss is depend on the raw material and for the juice the loss will be add by production cost and packaging cost. There is also loss in the opportunity from the loss of profit that El Farm can get. Moreover there also indirect loss like time used for production and the decrease of customer satisfaction level if El Farm can't fulfill customer order due to expired product.

El Farm also need planning and production scheduling so El Farm operation can be effective and efficient, by keeping the cost and loss as low as possible and increasing profit for El Farm. Beside problem that mentioned above, El Farms cannot predict the potential demand that caused on miss match of target demand, scheduling and production. This caused because miss judgment to estimate the demand and difficulty to analyze the demand pattern, it make El Farm supply order not match with the demand that caused waste on unsold product., inaccurate demand forecast also worsen El Farm probability of waste and loss. Furthermore it become cause for other problem like production planning.

Nowadays it's turning out that to make the right managerial decision, it should be based on accurate forecast demand (Hart, Rasner, & Lukoszova, 2012). The forecast demand also will affect the effectiveness of logistic management system and the supply chain. This show the importance of the forecast demand, especially in healthy juice industry due to short lifetime of the juices.

El Farm need more structured supply chain because fresh product also have more complex supply chain management due to product perishable nature, high fluctuation in demand and prices, increase of customer awareness for food safety (Van der Vorst & Beulens, 2002) and dependence of the product with climate (Salin, 1998). Majority of El Farm loss also from product who become rotten and waste, that can be resulted by several major such as not efficient storage, handling and transportation (Murthy & Gajanana, 2009). The absence of forecast demand also become cause for waste and inventory problem. In reality inventory management can affect business situation by

ICMEM

improving comprehensive competitiveness of enterprise, however before fix inventory problem first the company must have good forecast demand. More accurate demand planning will result more accurate inventory management (Jia & Pingba, 2014).

Therefore, to solve further problem such as supply chain and inventory management, this research is aim to create El Farm forecast potential demand for the healthy juice product and create aggregate planning for its production to increase effectiveness and decrease the amount of waste. The researcher want to create structured production scheduling that based on potential forecast demand that can increase operational contribution to the company that can lead to effectiveness, efficiency and increase of the company profit. In another hand agriculture fresh product have minimum attention for the supply chain management compared other product (Shukla & Jharkharia, 2013), therefore the researcher want that this research can become reference for other or future studies.

2. Literature Review

2. 1. Healthy Lifestyle

Healthy Lifestyle defined as an orientation to prevent health problems and the maximization of personal wellbeing (Bloch, 1984). From this definition healthy lifestyle can be interpreted from simple activities flossing or wash hand after meal until heavy activity such as exercise in gym, however most healthy lifestyle research focused on diet and exercise (Kraft & Goodell, 1993). Several impact of healthy lifestyle on the marketplace are:

a. Healthy lifestyle enthusiast are driving demand for healthier product and create large impact in number of industries (Divine & Lepisto, 2005). At 2003 and 2004 it show that five of seven health oriented food product experienced double degree revenue growth (O'Leary, 2005).
b. Some industries that related to unhealthy product start considering the healthy lifestyle consumer as a niche segment by creating product that more suitable with healthy lifestyle such as provide less carbohydrate product, etc (Divine & Lepisto, 2005),

2. 2. Cold Press Juice

Cold Press Juice is a name for juice that processed through pressure to squeeze the fruit (Amidor, 2014). Sometimes also recognize as Slow Juice because process with slow rpm to squeeze the water out of the fruit. This process aim to minimize heat on the juicing process that can damage vitamin or nutrient the contained on the fruit.

2.3. Demand Forecasting

Demand forecast are prediction of demand for a business's product or service (Heizer, Render, & Munson, Operation Management : Sustainibility and Supply Chain Management, 2017). Accurate and real information driven demand forecast will help manager to make better decision for business's aggregate planning, production, reduce inventory, input for financial, marketing and sales. This forecast can use historical data that will be process using quantitative models or if the business have lack of data they can used the qualitative models. For company that do not have historical data they can use qualitative technique for forecasting, one of the method is through market research. With this method forecast is obtain through market surveys and interview to get data like product preferences, competitive product, and customer information for future purchasing plan (Heizer, Render, & Munson, Operation Management : Sustainibility and Supply Chain Management, 2017). Market research also helping for design and planning of new product. The drawback for using this method is usually the result suffer over optimistic forecast from customer input.

2.4. Aggregate Planning

Aggregate planning is comprehensive planning that combine production scheduling, maintenance, and production capacity. The purpose of aggregate planning is to reach forecast demand while minimizing cost. But there also other issue more important than minimizing cost, such as smooth employment, keeping low inventory levels, reach high

ICMEM

level of service without considering to low the cost. (Heizer, Render, & Munson, Operation Management : Sustainibility and Supply Chain Management, 2017)

2.5. Transportation Model

When aggregate planning viewed as problem to adjust production capacity to reach forecast demand, it can be approached using linear programming model. The model is called Transportation model of linear programming, the model is not formulate for trial and error like graphical method but rather to find optimal plan with minimum cost (Heizer, Render, & Munson, 2017). There are several variable that can be adjusted such as number of regular and overtime production in each period, number of unit that as/are subcontracted, inventory holding cost, shortage cost and inventory stock.

2.6. Summary of Literature Review

After understanding about healthy lifestyle and cold press juice product, the writer used market research to estimate potential forecast in Bandung. Market research was used due to this method do not require historical data. The collected data would be used to create target demand that become based for aggregate planning. The method for aggregate planning that the writer used was transportation model because it produce plan with minimum cost as the result.

3. Methodology

To obtain forecast potential demand we were spread the survey to the respondent. The respondent itself is El Farm target market which are people who are age between 20-49 and life in Bandung area. Based on BPS Bandung data at 2015 there are 1.254.039 thus the writer must gain 252 respondent with 95% confidence interval and margin error 6.17% using convenience sampling where respondent selected because of the writer convenient accessibility and proximity to respondent. The survey are divided to two section, first section is respondent personal information and the second section is product information that consist of information whether the respondent ever consume cold press juice, subscribe to any juice brand, and intention of buyer for buying cold press juice every week.

From the survey we will obtain the market share proportion data that will be estimated to population using its confidence interval. From there the writer start to build the forecast data. For amount bottle that respondent want to buy in one week will be tested using non parametric test, because the data are categorized as discrete and not normally distributed. We used Wilcoxon test for amount bottle that respondent want to buy in one week to estimate population median and understand the confidence interval. From the forecast data the researcher will coordinate and align it with El Farm design capacity. The design capacity are calculated from observation on El Farm production process. After knowing El Farm capacity for each day, we create production planning for each week. Using capacity and production planning data, we create the aggregate planning every month for El Farm using Transportation model with objective to find minimum cost for production and minimizing cost by controlling the stock.

4. Finding and Argument

4. 1. Forecast Potential Demand

After we collect 252 respondents we clean the data to classify between potential customer and customer who had already have subscribing to other brand.

Table 1 Respondent Characteristics

Characteristic		Percentage	Cumulative percentage
Age	20-29	85.8%	85.8%
	30-39	4.3%	90.1%
	40-49	9.9 %	100%
Gender	Male	37.9%	37.9%
	Female	62.1%	100%

ICMEM

Outcome/month	1-2 million	54.5%	54.5%
	>2-3 million	23.7%	78.2%
	>3-4 million	9.1%	87.3%
	>4 million	12.6%	100%
How long respondent have been devote healthy lifestyle	Has not devote to healthy lifestyle	59.7%	59.7%
	<1 month	9.5%	69.2%
	1-3 month	6.3%	75.5%
	>3-6 month	3.2%	78.7%
	>6 month – 1 year	4.7%	83.4%
	>1 year	16.6%	100%

For the characteristic of respondent table, the majority of respondent age is 20-29 years old. 62.1 % of respondent are female and the rest is male. Most of the respondent have outcome/month around 1- 2 million rupiah. 59.7% has not start healthy lifestyle and 40.3% rest has already start to devote healthy lifestyle with range from less than one month until more than 1 year. Then using pivot table we manage the data to find the number of market share from respondent who willing to buy cold press juice.

Table 2 Respondent intention to buy healthy juice

Row Labels		Number of respondent	Percentage	Sum of bottle/ week	Percentage
No, I do not want to buy		101	40.08%	45	9.64%
Yes, I want to bay	Potential	128	50.79%	351	75.16%
	Not potential	23	9.13%	71	15.20%
Grand Total		252	100%	467	100%

From the table we know that 50.79% of respondent are potential for El Farm and willing to buy healthy juice. It is indicate that 632,926 people in Bandung are potential to become El Farm target market.

Table 3 Proportion test to potential respondent

Sample	X	N	Sample p	95% Confidence Interval	
Potential	128	252	0.507937	0.444451	0.571233

We 95% confident that the population proportion is greater than equal 0.444451 and less than or equal to 0.571233.
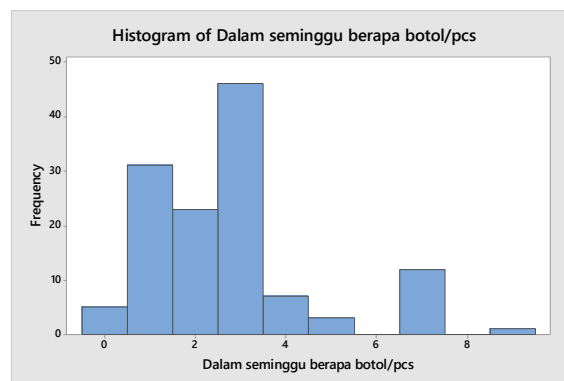
Figure 5 Bottle/week data histogram

From the histogram we can know that mainly people choose to consume healthy juice about 1-3 bottle per week.

ICMEM

Table 4 Descriptive Analytics for bottle/week

Variable	Bottle/week
N	128
Mean	2.742
SE Mean	0.163
St Dev	1.841
Variance	3.390
Minimum	0
Q1	1.000
Median	3.000
Q3	3.000
Maximum	9.000
Range	9.000
Mode	3
N for Mode	46

There just 128 respondent that are willing to buy cold press juice and potential for El Farm, with mean to buy 2.742 bottle/week. The standard deviation that show how dispersed the data have value 1.841. The mode from the data is 3 bottle per week.

Table 5 Wilcoxon test for bottle/week

	N	Estimated median	Achieved confidence	Lower confidence interval	Upper confidence interval
Bottle/week	128	2.50	95.0	2.00	3.00

Using Wilcoxon test we got result for the confidence interval which are $2.00 \leq x \leq 3.00$, which indicate that the potential demand are $1,265,852 \leq x \leq 1,898,778$ bottle per week in Bandung City area.

Table 6 variant data and percentage

Taste Variant	Count	Percentage
Watermelon	25	8.83%
Mango	63	22.26%
Apple	45	15.90%
Combination vegetables and fruit	68	24.03%
Fruit combination	82	28.98%
Total	283	100%

The most favourite taste are fruit combination, combination between vegetables and fruit, and mango.

Table 7 proportion test for watermelon taste

Sample	X	N	Sample p	95% Confidence Interval	
Watermelon	25	283	0.088339	0.057985	0.127643

We 95% confident that the population proportion for watermelon taste is greater than equal 0.057985 and less than or equal to 0.127643

Table 8 proportion test for mango taste

Sample	X	N	Sample p	95% Confidence Interval	
Mango	63	283	0.222615	0.175512	0.275629

We 95% confident that the population proportion for mango taste is greater than equal 0.175512and less than or

ICMEM

equal to 0.275629.

Table 9 proportion test for apple taste

Sample	X	N	Sample p	95% Confidence Interval	
Apple	45	283	0.159011	0.118410	0.206922

We 95% confident that the population proportion for apple taste is greater than equal 0.118410and less than or equal to 0.206922.

Table 10 proportion test for combination vegetables and fruit taste

Sample	X	N	Sample p	95% Confidence Interval	
Combination vegetables and fruit	68	283	0.240283	0.191690	0.294404

We 95% confident that the population proportion for combination vegetables and fruit taste is greater than equal 0.191690 and less than or equal to 0.294404.

Table 11 proportion test for fruit combination taste

Sample	X	N	Sample p	95% Confidence Interval	
Fruit combination	82	283	0.289753	0.237582	0.346388

We 95% confident that the population proportion for fruit combination is greater than equal 0.237582 and less than or equal to 0.346388.

Table 12 comparison between respondent who has not start healthy lifestyle and who already has start healthy lifestyle

Row Labels	Bottle/week	Price/bottle
Has not start healthy lifestyle	195	15.92948718
Has start healthy lifestyle	156	16.57
Grand Total	351	16.1796875

The data show that the respondent who has not start healthy lifestyle are willing to buy more bottle of cold press juice in 1 week, however the respondent who has start healthy lifestyle are willing to buy with higher price.
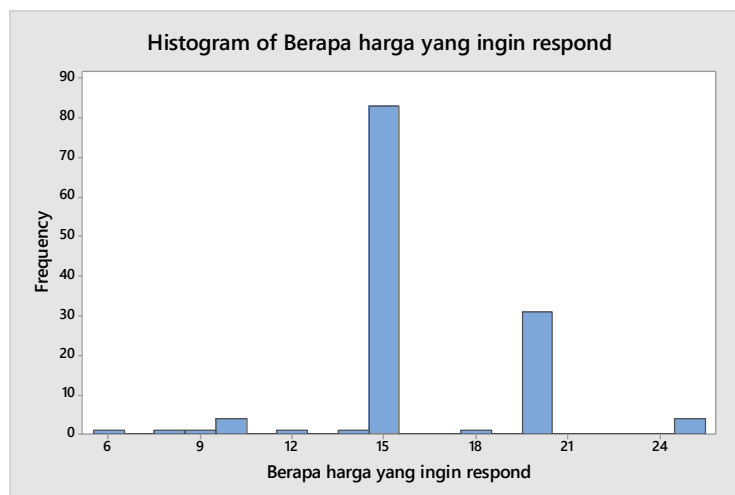
Figure 6 Histogram for price/bottle

ICMEM

From the histogram we know that majority of people chose 15.000 rupiah as a price for one bottle of healthy juice.

Table 13 wilcoxon test for price/bottle

	N	Estimated median	Achieved confidence	Lower confidence interval	Upper confidence interval
Price/bottle	128	15.000	95.0	15.000	17.500

Using Wilcoxon test indicate the reasonable price for people in Bandung is between 15.000 rupiah to 17.500 rupiah per bottle.

4. 2. *Production Capacity*

To calculate El Farm design capacity we observe El Farm operational process to know each step to create one bottle of juices and how much time needed to produce one bottle juice.
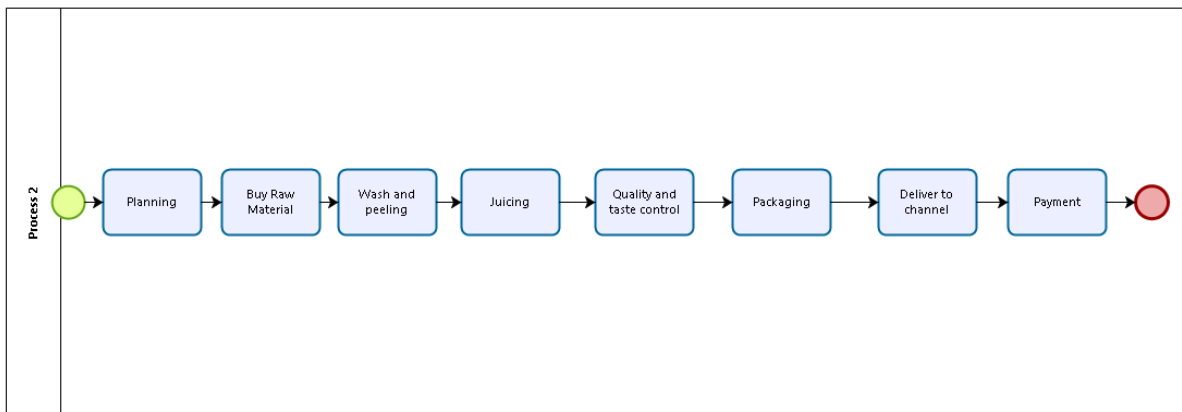
Figure 7 El Farm operational process

El Farm operational process started from planning, then buying juice raw material from supplier. After that the raw material will enter production process that consist of several step which are. Wash and peeling, juicing, quality and taste control, and packaging. After that the juice will deliver to channel and the management will arrange the payment process.

Table 14 El Farm production process

	Process	Time	Labour
Production process	Wash and peeling	3'	2
	Juicing	3'	1
	Quality and taste control	1'	1
	Packaging	2'	2
Total		9'	

From table 14 we know that the production process for each bottle consume 9 minutes, it is consist of wash and peeling for 3 minutes, juicing for 3 minutes, quality and taste control for 1 minutes, and packaging for 2 minutes.

Table 15 El Farm activity and time allocation

Activity	Time
Regular working hour	8 hour

ICMEM

Buy raw material	45 minutes
Delivery and payment	1 hour
Production process/unit	9 minutes
Regular working hour for production process	6.3 hour

With total working hour is 8 hours/day, time left for production process after reduced by 45 minutes to buy raw material and 1 hour for delivery and payment is only 6.3 hour or 6 hour and 18 minutes. Because El Farm need 9 minutes to produce one bottle, therefore the maximum output for El Farm is 42 bottle juice in one day, which mean in one week with only 6 working days, El Farm design capacity is 252 bottle/week or 0.02% from minimum potential forecast demand.

Table 16 El farm production planning example

Product	Proportion from forecast	quantity
Watermelon	0.0883	22
Apple	0.2226	56
Mango	0.1590	40
Combination vegetables and fruit	0.2403	61
Fruit combination	0.2898	73
Total	1	252

Table 16 show the example for production planning in one week for 252 bottle that already adjusted with variant proportion from previous calculation. According to the table El Farm need to produce 22 bottles of watermelon taste, 56 bottles apple taste, 40 bottles mango taste, 61 bottles combination vegetables and fruit taste, and 73 bottles fruit combination taste.

4. 3.   *Aggregate Planning*

For the aggregate planning, the writer create planning for demand every week that already adjusted with El Farm marketing plan in second and fourth week. Then using POM for Windows software, we calculate the most minimum cost using Transportation Method of Linear programming.

Table 17 El Farm cost for aggregate planning

Inventory carrying cost/holding cost	Rp 1.240/day
Average pay rate	Rp 10.417/hour
overtime pay rate	Rp 15.625/hour

Table 18 El Farm time allocation

labour minute to produce a unit	9 minutes/unit
Regular working hour for production process	6.3 hour
Maximum overtime working hour	2 hour

From table 17 the Inventory carrying cost is Rp 1.240/day that will be used to pay freezer electricity. Then average pay rate are calculated from monthly wages which are Rp 2.000.000 for 24 working days with 8 working hours/day. Then the overtime pay rate are calculated by multiply the average pay rate with 1.5 following government regulation for overtime wages.

ICMEM

Table 19 Week 1 and 3 expected demand

week 1 and 3	
Day	Expected demand
1	40
2	40
3	40
4	40
5	50
6	50

We expected demand for first and third week for each month is 40 with increase 10% in weekend (day 5 and 6), with assumption that in weekend there is increase people consuming juice after do sport or using it as detox.

Table 20 Week 1 and 3 aggregate planning

			week 1 and 3		
Day	Expected demand	Regular	overtime	total production	inventory
1	40	42	0	42	2
2	40	42	0	42	4
3	40	42	0	42	6
4	40	42	0	42	8
5	50	42	0	42	0
6	50	42	8	50	0

The result for production from transportation method calculation is by producing at day 1,2,3,4, and 5 according to design capacity which is 42 bottle and create stock in inventory for day 5. Then at day 6 we will produce 42 bottle in regular time and 8 bottles in overtime to fulfil expected demand.

Table 21 Week 1 and 3 Production Allocation

Optimal cost = Rp 417,472.60	day 1	day 2	day 3	day 4	day 5	day 6	Excess Capacity	Capacity
day 1 RegTime	40	2						42
day 1 Overtime							13	13
day 2 RegTime		38	4					42
day 2 Overtime							13	13
day 3 RegTime			36	6				42
day 3 Overtime							13	13
day 4 RegTime				34	8			42
day 4 Overtime							13	13
day 5 RegTime					42	0		42
day 5 Overtime							13	13
day 6 RegTime						42		42
day 6 Overtime						8	5	13
Demand	40	40	40	40	50	50	70	

ICMEM

From table 21, we can figure out that in day 1 we use regular time production to produce 42 bottle, 40 bottles to meet expected demand day 1 and 2 bottles are stocked for day 2. At day 2 we produce 42 bottles in regular time, 38 bottles to meet expected demand day 2 and 4 bottles stocked for day 3. At day 3 we produce 42 bottles in regular time, 36 bottles to meet expected demand day 3, and 6 bottles stocked for day 4. At day 4 we produce 42 bottles in regular time, 34 bottles to mrrt expected demand day 4 and 8 bottles stocked for day 5. At day 5 we produce 42 bottles in regular time to meet expected demand day 5. At day 6 we produce 42 bottle in regular time and 8 bottles in overtime to meet expected demand day 6.

Table 22 Cost calculation for week 1 and 3

Method	Units	Cost
Regular time	252	Rp 393,762.60
Overtime	8	Rp 18,750.00
Holding cost	4 days	Rp 4,960.00
Total cost		Rp 417,472.60

To meet expected demand for week 1 or week 3, El Farm must produce 252 bottles in regular time and 8 bottle in overtime. El Farm also must pay holding cost for 4 days with total cost Rp 417,472.60

Table 23 Week 2 and 4 expected demand

Day	Expected demand
1	42
2	42
3	42
4	42
5	60
6	60

We expected demand for second and fourth week for each month is 42 with increase 30% in weekend (day 5 and 6), with assumption that in weekend there is increase people consuming juice after do sport or using it as detox. The difference between week 1 and 3 is because at week 2 and 4 El Farm will implement it marketing and promotional program with aim to increase sales.

Table 24 Aggregate Planning for week 2 and 4

	week 2 and 4				
Day	Expected demand	Regular	overtime	total production	inventory
1	42	42	0	42	0
2	42	42	0	42	0
3	42	42	0	42	0
4	42	42	10	52	10
5	60	42	13	55	5
6	60	42	13	55	0

The result for production from transportation method calculation is by producing at day 1,2,3, according to design capacity which is 42 bottle. Then at day 4 El Farm will produce 42 bottle in regular 10 bottles in overtime and at day 5 and 6 will produce 42 bottle in regular time and 13 bottles in overtime to fulfil expected demand. El Farm also will have stock at day 4 and 5.

ICMEM

Table 25 Week 2 and 4 production allocation

Optimal Cost = Rp 480,617.60	day 1	day 2	day 3	day 4	day 5	day 6	Excess Capacity	Capacity
day 1 RegTime	42	0						42
day 1 Overtime	0						13	13
day 2 RegTime		42						42
day 2 Overtime							13	13
day 3 RegTime			42	0				42
day 3 Overtime							13	13
day 4 RegTime				42	0			42
day 4 Overtime					10		3	13
day 5 RegTime					42			42
day 5 Overtime					8	5		13
day 6 RegTime						42		42
day 6 Overtime						13		13
Demand	42	42	42	42	60	60	42	

From table 25, we can figure out that in day 1 we use regular time production to produce 42 bottle to meet expected demand day 1. At day 2 we produce 42 bottles in regular time to meet expected demand day 2. At day 3 we produce 42 bottles in regular time to meet expected demand day 3. At day 4 we produce 42 bottles in regular time and 10 bottles in overtime, 42 bottles for expected demand day 4 and 10 bottles stocked for day 5. At day 5 we produce 42 bottles in regular time and 13 bottles in overtime, 50 bottles to meet expected demand day 5 and 5 bottles stocked for day 6. At day 6 we produce 42 bottle in regular time and 13 bottles in overtime to meet expected demand day 6.

Table 26 cost calculation for week 2 and 4

Method	Units	Cost
Regular time	252	Rp 393,762.60
Overtime	36	Rp 84,375.00
Holding cost	2 days	Rp 2,480.00
Total cost		Rp 480,617.60

To meet expected demand for week 2 or week 4, El Farm must produce 252 bottles in regular time and 36 bottle in overtime. El Farm also must pay holding cost for 2 days with total cost Rp 480,617.60

5. Conclusion

From this research the writer conclude that there are potential forecast demand for healthy juice product are very large in Bandung, which around $1,265,852 \leq x \leq 1,898,778$ bottle/week. Then with current El Farm capacity to produce 42 bottle/day, El Farm plan to produce 22 bottles watermelon variant, 56 bottles Apple variant, 40 bottles Mango variant, 61 bottles Combination vegetables and fruit variant, and 73 bottles fruit combination variant in one week. The Aggregate Planning for El Farm are divided into planning for week 1 and 3 with 252 bottles produced in regular time and 8 bottles in overtime with 4 days to have stock in inventory. The other is week 2 and 4 plan to produce 252 bottles in regular time and 36 bottles in overtime with 2 days to have stock in inventory.

ICMEM

References

Amidor, T. (2014, August 8). *health.usnews.com*. Retrieved from usnews.com: https://health.usnews.com/health-news/blogs/eat-run/2014/08/08/cold-pressed-juice-is-it-worth-the-hype

Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2011). *Statistics for Business and Economics*. Mason: South-Western Cengange Learning.

Australian Trade and Investment Comission. (2018). *Agribusiness to Indonesia*. Retrieved from Austrade: https://www.austrade.gov.au/australian/export/export-markets/countries/indonesia/industries/agribusiness

Badan Pusat Statistik. (1999). *Statistical Pocketbook of Indonesia*. Jakarta.

Badan Pusat Statistik. (2009). *Statistical Pocketbook of Indonesia*. Jakarta.

Bloch, P. (1984). The Wellness Movement: Imperative for Health Care Marketers. *Journal of Health Care Marketing*, 9-16.

Business Monitor International. (2011). *Indonesia Food & Drink Report Q1 2012*. London: Business Monitor International.

Business Monitor International Ltd. (2017). *Indonesia Agribusiness Report Q3 2017*. London: BMI Research.

Chopra, S., & Meindl, P. (2013). *Supply Chain Management : Strategy, Planning, and Operation*. Harlow: Pearson.

Divine, L. R., & Lepisto, L. (2005). Analysis of the healthy lifestyle consumer. *Journal of Consumer Marketing*, 275-283.

Hart, M., Rasner, J., & Lukoszova, X. (2012). Demand Forecasting Significance for Contemporary Process Managament of Logistic Systems. *Carpathian Logistics Conference*. Jesenik.

Heizer, J., Render, B., & Munson, C. (2017). *Operation Management : Sustainibility and Supply Chain Management*. Pearson Education Inc.

Indonesia Invesrment. (n.d.). *culture*. Retrieved from https://www.indonesia-investments.com: https://www.indonesia-investments.com/culture/economy/general-economic-outline/agriculture/item378?

Jia, X., & Pingba, S. (2014). Research on Optimization of Inventory Management Based on Demand Forecasting. *Applied Mechanics and Materials*, 4828-4831.

Kraft, F., & Goodell, P. (1993). Identifying the Health Consicous Consumer. *Journal of Health Care Marketing*, 18-26.

Mintel Press Team. (2017, August 24). *Mintel Press Team*. Retrieved from Mintel: http://www.mintel.com/press-centre/social-and-lifestyle/healthy-lifestyles-growing-focus-for-southeast-asians

Murthy, D. S., & Gajanana, T. (2009). Marketing and Post-Harvest Losses in Fruits: its Implications on Availibility and Economy. *Indian Journal of Agricultural Economics*, 259-275.

O'Leary, N. (2005). Food sales: healthier. *Adweek*, 25.

Salin, V. (1998). Information Technology in Agri-food Supply Chains. *International Food and Agribusiness Maanagement Review*, 329-334.

Shukla, M., & Jharkharia, S. (2013). Agri-fresh Produce Supply Chain management: a state-of-the-art literature review. *International Journal of Operations & Production Management*, 144-158.

Surono, J. (2007). Country Case Study of Indonesia. *Power point document presented at the Regional Conference on Organic Agriculture in Asia*. Bangkok, Thailand.

Takagi, C. (2010). *Adoption of Organic Vegetable Production Practice in West Java and Bali, Indonesia*. Doctoral dissertation. Retrieved from Proquest database Umi number 3417834

Van der Vorst, J., & Beulens, A. (2002). Identifying Sources of Uncertainty to Generate Supply Chain Redesign Strategies. *International Journal of Physical Distribution & Logistics*, 409-430.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Tomato Supplier Sourcing Under Performance Measurement System Using Analytical Hierarchy Process Approach

Dania Sitadewi[a*], Pathmi Noerhatini[b], Dicky R. Munaf[c], Dermawan Wibisono[d], Gatot Yudoko[e], Liane Okdinawati[f]

[a,d,e,f]School of Business & Management, Institute Technology Bandung, Jl. Ganesha No. 10, Bandung 40132, Indonesia
[b,c]Faculty of Art & Design, Institute Technology Bandung, Jl. Ganesha No. 10, Bandung 40132, Indonesia .

Abstract

As a popular horticulture commodity that is widely cultivated in Indonesia, tomato producers face intense competition in the market due to oversupply. Differentiation strategy can be adopted through the adherence to GAP (Good Agricultural Practice) which resulted in safely consumable graded-tomato. However sustainable tomato suppliers are needed to continuously and consistently supply the market demand for graded tomato produce into local high-end supermarkets in Bandung. Using the study case of Lyco Farm, this study aims to identify the best tomato supplier among the farmers' group in Sumedang and Bandung regency based on its existing performance. The performance criteria of suppliers are based on literature review represented by quality, cost, and availability, compliance with contract farming, innovativeness and environmental performance. Based on the conceptual point of view, this paper helps to identify the performance measurement system (PMS) of tomato suppliers. While from the practical point of view, this paper demonstrates the utilisation of Analytical Hierarchy Process (AHP) for choosing the best tomato supplier from amongst the five farmers' groups in the study case based on its performance. The originality of this study came from the Indonesian context of performance measurement system (PMS) based on the real needs in the agricultural field.

Keywords: Performance Measurement System (PMS); Analytic Hierarchy Process (AHP); Sourcing

1. Introduction

Indonesia has an abundance of fertile soils which enables it to support its agriculture sector. Agriculture in Indonesia remains to be the major employment for people living in the rural area, employing around 41% of total population (Indonesia Ministry of Agriculture, 2015). Tomato (*Lycopersicon esculentum L.*) is a popular horticulture commodity that is widely cultivated in Indonesia aside from chili, cabbage and shallot (FAOSTAT, 2014).

Tomato supply in Indonesia fluctuates due to its price dependence on the seasonal availability. During harvest periods tomato price drops due to oversupply while the demand remains stagnant (Central Bureau of Statistics and Ministry of Agriculture, 2016). However during non-harvest season the available tomato crops could not consistently supply the existing market demand. In other words, there is fluctuation in quantity, quality and price from the products these farmers sell (Sutopo, Hisjam, & Yuniaristanto, 2012), which resulted in unfavourable bargaining position on the farmer's end when they negotiated the price to the market (Widyarini, Simatupang & Engelseth, 2016).

Market share can be obtained by explicitly targeting market segment which is concerned with food safety and healthy lifestyle. Competitive strategy through differentiation can be adopted through differentiation of tomato with high-lycopene content. Differentiation is a competitive positioning strategy in which the firm stand out by the deliverance of unique products or services, either through excellent quality, higher performance or other distinctive features (Porter, 1980). Porter (1996) defined needs-based orientation where the firm's activities are tailored based on the target customers' particular needs.

---

[*] Corresponding author

ICMEM

This research use Lyco Farm for its study case since Lyco Farm is one of the leading graded-tomato producers for supermarkets in Indonesia since 2005. In Lyco Farm case, the need-based differentiation strategy is achieved through the adherence to GAP (Good Agricultural Practice) which resulted in safely consumable graded tomato. GAP is the code of conduct for food safety assurance system at the field level (Fulponi, 2007). Anastasiadis & van Dam, (2014) research shown organic food purchase was motivated by the health-concern factor, environmental friendliness & naturalness.

Lyco Farm under the label of "Lyco Farm Tomato" has been a major graded-tomato supplier to supermarkets in Bandung and Cimahi area since 2007. Lyco Farm through its label, INAgreen, supplied prime graded-tomato to other Indonesian regions outside Java Island since 2009. From 2012, Lyco Farm supplied graded-tomato under the label "Pathmifresh" to Papua. However Lyco Farm is not alone in supplying graded-tomato produce, instead they enlist farmers' group in West Java to help supply graded-tomato to fulfill markets' demand. Figure 1 shows the supply chain map of Lyco farm agribusiness.
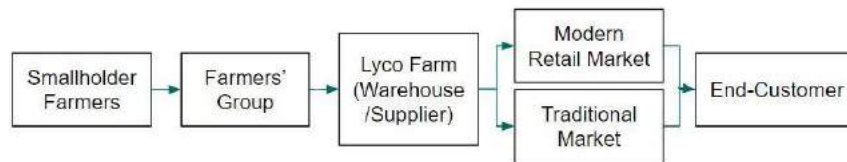
Fig 1. Graded-Tomato Agribusiness Supply Chain Map for Lyco Farm Study Case.

Most of the tomato producers' in West Java are smallholders farmers affiliated into farmers' group. These farmers lack the knowledge of graded tomato cultivation technique. Therefore since 2015, an essential partnership has been established between tomato farmers groups in Bandung and Sumedang regency, Lyco Farm, local university and government (agriculture department) to empower local smallholder tomato farmers by providing training in tomato cultivation, crop management techniques, and post-harvest process. In return, Lyco farm requested for harvesting priorities on the graded-tomato produced and offered premium pricing with a favourable term of payment as well as shipping and marketing channel to modern-channel markets. Principally, this social enterprise intent to improve the quality of the local tomato produce through practical training. In training, tomato farmers will be assisted and mentored in their daily routine for one tomato cultivation period (3 months), and tomato farmers will be monitored for two-year implementation until these farmers get the sense and skill on implementing tomato cultivation method. Among the farmers' groups engaged in the training, some showed various performance results. Tomato produced from these farmers' group will be collected by Lyco Farm in their warehouse where it will be sorted based on the quality. Graded-tomatoes will be sold to modern retail market on premium price, while tomato with lower or poor grade will be sold to the traditional market.

Performance Measurement System (PMS) is crucial for modern market retailer because they have a quality control and will only accept graded-tomato with the required quality standard in order to fulfill their customers' demand. This translate to Lyco Farm as supplier to modern market retailer to conduct evaluation on the farmers' group performance which correspond to the desired quality, quantity and GAP (Good Agricultural Practice) as required by modern market retailer. The performance criteria of suppliers are based on the literature review are represented by quality, cost, availability, compliance with contract farming, innovativeness and environmental performance.

This paper use Analytical Hierarchical Process (AHP) since there are various performance criterias, therefore the choice of supplier performance measurement system will be based on performance with the most priority weight from pairwise comparison in the AHP. This study will help to identify the best tomato supplier among the farmers' group in Sumedang and Bandung regency using AHP based on its performance matrix. This study will choose among farmers groups alternatives for sustainable tomato supplier in Sumedang and Bandung regency. These farmers groups are Ciliang, Tirta Mulia Tani, Madani, Rembulan Setia and Saluyu.

Based on the conceptual point of view, this paper helps to identify the performance measurement system (PMS) of tomato suppliers using the case study of Lyco Farm. While from the practical point of view, this paper demonstrates the utilisation of Analytical Hierarchy Process (AHP) for choosing the best tomato supplier from amongst the five farmers' groups in the study case based on its performance. The originality of this study came from the Indonesian

ICMEM

context of performance measurement system (PMS) based on the real needs in the agricultural field. The limitation of this paper is the use of a single case study of an agriculture company sourcing graded-tomatoes to five farmers' group in Bandung and Sumedang regency area. Therefore the conclusion of this research cannot be generalized.

The arrangement of the paper is as followed: introduction will be on the first part of this paper, followed by literature review as the second part. The next section will elaborate the methodology of performance measurement (PMS) system and Analytical Hierarchy Process (AHP) approach followed by the case study of Lyco Farm to choose the best tomato supplier. The focus of part four will be on the analysis of the result by highlighting the performance measurement relevant to choosing the tomato supplier as the result of the case study. The conclusion will be on research limitations and future studies.

2. Literature Review

2.1. Operation Strategy: Sourcing

Skinner (1969 & 1974) theorised that operation strategy could help firms to grow capabilities which allows it to performs in the area critical for customers and exploit new opportunities. SWOT (Strength, Weakness, Opportunity, Threat) analysis helps to assess the opportunities and threat presented in the external environment and by creatively match them with the company's existing strength and weakness to gain competitive advantage (Beckman & Rosenfield, 2008).

From operation strategy, a firm can develop infrastructure decision of operation, one of which is sourcing strategy (Skinner, 1969; Hayes & Wheelwright, 1984). To achieve competitive advantage, the way the company manage its' sourcing strategy plays an important role (Beckman & Rosenfield, 2008). According to Beckman & Rosenfield (2008) companies are advised to consider the following three steps in developing a sourcing strategy. First is to determine the products to be sourced. Second is to identify where to source the product. The third is to decide the number of suppliers. Fourth is to decide the supplier relationship with the firm. Fifth is to choose the level of engagement and risk management method. Sixth is to put contract of incentives for the relationships. Seventh is to determine the appropriate procurement management structure by setting up performance metrics through PMS (Performance Measurement System) to evaluate suppliers' performance. According to Beckman & Rosenfield (2008), the performance evaluation was necessary to support internal decision making and communicate proper information to suppliers.

2.2. Performance Measurement System

Wibisono, D., & Khan, M.K., (2010) proposed that the performance management system in Indonesian firms should be built based on its contextual approach instead of the direct adaptation of existing performance measurement system. Since Indonesian firms may have different cultures and business mechanism compared to Western or Japanese companies on which to base the existing performance measurement system (Wibisono, D., & Khan, M.K., 2010). The tailor-made approach of PMS in the Indonesian firms are more workable and more accessible to implement in the Indonesian environment. It answers qualitative questions such as which performance indicators to use, the benchmarking process, and how these approaches can be suitable for the non-profit organisation which aside from making profit, is also responsible for the development of social welfare (Wibisono, D., & Khan, M.K., 2010).

The formation of the performance measurement system (PMS) for this study is based on the following fundamental principles developed by Wibisono, D., & Khan, M.K., (2010). First, the performance of shop floor to company strategy should relate to the PMS. Second, it has to consist of well-defined and measurable criteria in the PMS. The third is the importance of performance standard for each criterion. Fourth, rather than monitor performance, the PMS should foster improvement. Finally, PMS should provide information on a timely basis.

Based on literature review, as well as based on the interview with owners of Lyco Farm we identified the internal processes which determine the sustainable supply performance of farmers groups, which are cost, quality, availability, innovativeness, fulfilment of contract farming and environmental performance. However, Lyco Farm may have a different definition of each performance criteria in contrast to the definition provided in the literature review. Thus as

ICMEM

shown in table 1 the definition of performance criteria based on literature review and definition provided by Lyco Farm was put side by side to identify the disparity between both definitions.

Table 1. Comparison Performance Criteria Definition.

Performance Criteria	Literature Review	Description by Lyco Farm
Cost	Cost of product production and distribution (Spring & Boaden, 1997)	Negotiable price or fixed-priced as per agreement as per contract farming.
Quality	Production & distribution in high-quality performance in (Spring & Boaden, 1997). The frequency of failure & the percentage of production defect (Fine & Hax, 1985)	The quality of the grade tomato produces in the form of size, colour, quantity & tomato type. The percentage of defective or rejected tomato produce.
Availability	Product delivery timeliness (Fine & Hax, 1985) The extent of control in the supply chain (Beckman & Rosenfield, 2008)	Product delivery shipment timeliness. The ability of the supplier to reach crop fields to maintain & harvest crops. The products as per agreed quantity and quality are delivered to Lyco Farm.
Innovativeness	Process knowledge and process capacity to deliver product or service (Fine & Hax, 1985).	Willingness to generate a new idea for better crops yield.
Contract Farming Compliance	A non-transferable contractual arrangement between farmers and firms in regards to the production and marketing conditions of agricultural product (Rehber, E., 2007). Types based on the detailed information mentioned in the contract farming: market-specification contracts, resource-providing contracts and production-management contracts (Prowse, M., 2012)	The willingness of the farmers' group to enter contract farming agreement to ensure volume and price consistency of the tomato products as agreed, as well as compliance with the tomato cultivation and crop management techniques as stated in the contract farming.
Environmental Performance	The degree to which the product is environmentally sound as well as manufactured & distributed with minimum environmental impact (Fine & Hax, 1985)	The degree to which farmers group is operating their agriculture procedure as per GAP (Good Agricultural Practice) and with minimum to no pesticide.

2.3. Analytical Hierarchy Process (AHP)

The Analytical Hierarchy Process is one of the most powerful methods in order to determine the selection of the most suitable improvement priorities in a multi-attribute and complex problem (Razmi, et al., 1998) According to Wibisono, D., & Khan, M.K. (2002) thus far the AHP application to performance management has been given little attention, especially for the Indonesian firm performance context. The following steps for AHP implementation is using recommendation given by Saaty (1980): 1) Problem statement; 2) Identification of criterias which influence the problem behaviour; 3) Arrange criteria hierarchy, sub-criteria, alternatives and the properties of alternatives; 4) Primary criteria prioritization in respect to their impacts on the overall objectives or focus; 5) Above each matrix, state the question for pair-wise comparison; 6) Prioritization of sub-criteria with respect to criteria; 7) Introduce the pair-wise comparison judgements and coerce their reciprocals; 8) Priorities calculation by adding elements of each column and dividing each entry by the total of column. On the rows of the resulting matrix, measure the average and obtain the priority vector. This research delve into the farmers' group performance measurement system, where it ultimately choose the best tomato supplier among farmers' group using Analytical Hierarchy Process (AHP) based on its existing

performance on supplying graded-tomato to Lyco Farm. The performance criteria to evaluate the suppliers are cost, quality, availability, innovativeness, fulfillment of contract farming and environmental performance.

3. Methodology

In order to analyse the performance measurement system of sourcing of agricultural company to farmers' group, we adopted a single case study design. The single case study design is an appropriate choice based on the rationale that the case is a revelatory case, which is when the researcher gained opportunity to study the previously inaccessible phenomenon to scientific investigation (Yin, 2003). As graded-tomato sourcing strategy is a proprietary information crucial to the company's competitive advantage, the researcher are limited in obtaining a study case on agricultural company. Lyco Farm actually represents a rich case for the reason that as an Indonesian agricultural company, we gained the Indonesian context of performance measurement system enabling them to evaluate supplier sourcing performance, in this case is the five farmers' group (Madani, Tirta Mulia Tani, Saluyu, Ciliang and Rembulan Setia).

For this research, two types of data are utilized and collected as the information source, they are primary data and secondary data. Primary data was collected through face-to-face interview with farmers' group, owners of Lyco farm and supermarket, as well as from survey from January to April 2018. The primary data was used in order to understand the graded-tomato business, production and performance. Secondary data was collected from literature review and mostly in pertains to the theoretical basis on AHP, and the necessity for performance measurement system to evaluate tomato supplier performance in West Java.

Based on the interview with owners of Lyco Farm, there are five farmers' group in West Java that have completed their graded-tomato cultivation training and are currently supplying graded-tomato to Lyco Farm to be sorted and distributed to supermarket in Bandung and Cimahi area. They are Ciliang, Tirta Mulia Tani, Madani, Rembulan Setia and Saluyu. Ciliang farmers group located in Sukosan district, Sumedang regency. Tirta Mulia Tani farmers group located in Genteng Village, Sumedang regency. Madani farmers group located in Tenjolaya village, Bandung regency. Rembulan Setia farmers group located in Tenjolaya village, Bandung regency. Saluyu farmers group located in Pasirjambu district, Bandung regency.

Memberships among these farmers group are around fifteen to twenty farmers. Several representatives of each farmers group, one supermarket manager and two owners' of Lyco Farm are interviewed to capture the graded-tomato production and their performance criteria. Later the AHP survey was conducted with two owners and senior managers of Lyco Farm with more than 15 years of experience in the tomato agriculture industry. The limitation to this research was the limited access for conducting AHP survey to the participants in supermarket and farmers' group.

4. Analysis & Discussion

4.1. SWOT Analysis

The study case of Lyco Farm has been adopted into SWOT (Strength, Weakness, Opportunity, Threat) analysis in order to assess the opportunities and threat presented in the external environment and by creatively match them with the company's existing strength and weakness in order to gain competitive advantage (Beckman & Rosenfield, 2008). From the external appraisal side, the identified industry threat is the high competition in the wholesale market for tomato produce in Indonesia in which many farmers resulted to price war in order to gain market share. The opportunity is the existence of the demand for graded-tomato which are safe to consume from market segment which are concerned with food safety and healthy lifestyle (Lyco Farm, 2018). Based on the internal appraisal of the firm, the company strength lies at their positioning strategy on differentiation by producing safe to consume graded-tomato and the resource-based strategy on implementing GAP (Good Agricultural Practice) on their produce and suppliers. The identified weakness is the company is in need in securing sustainable graded-tomato suppliers who will adhere to the performance criteria set by Lyco Farm. Aside from securing a sustainable tomato supplier, the Lyco Farm social enterprise intent to empower local smallholder tomato farmers by improving the quality of the local tomato produce through practical training assistance.

ICMEM

Based on the following SWOT analysis, sustainable supply of graded-tomato strategy has been assembled based on the external and internal appraisal of the company. The first step of this operation strategy is to arrange sourcing strategy for graded-tomatoes. Later, the company will evaluate farmers' group performance as the supplier based on the Performance Measurement System (PMS). On the final step is the identification of the best performing supplier amongst the farmers' group using Analytical Hierarchical Process (AHP) to assist the company in decision making and communicate to suppliers for improvement.
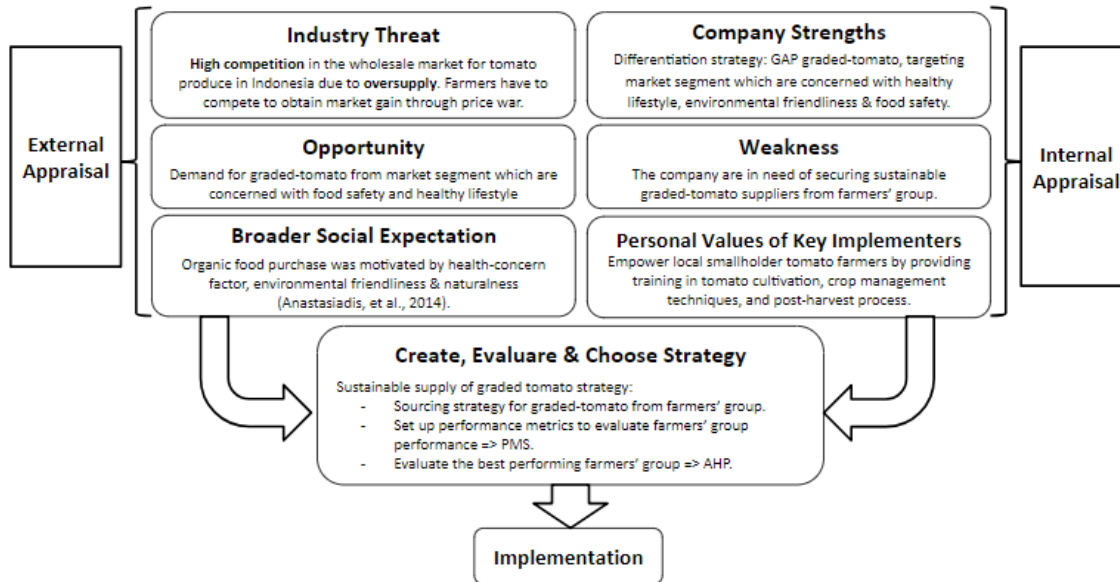
Fig 2. SWOT Analysis Approach (Porter, 1980) to Strategy Design for Study Case

4.2. Sourcing Strategy Development Process

From operation strategy, firm can develop infrastructure decision of operation, one of which is sourcing strategy (Skinner, 1969; Hayes & Wheelwright, 1984). In order to achieve competitive advantage, the way the company manage its' sourcing strategy plays an important role (Beckman & Rosenfield, 2008).

4.2.1. Stage 1: Determine Sourced Product

The first step is to determine the product to be sourced, which is graded tomato with GAP (Good Agricultural Practice). GAP is code of conduct for food safety assurance system at the field level (Fulponi, 2007).

4.2.2. Stage 2: Identify the Location of the Sourced Product

The second step is to identify the location to source the product, which are farmers' group in Sumedang regency and Bandung regency. The farmers' group in Sumedang regency are Ciliang and Tirta Mulia Tani, while the farmers' group from Bandung regency are Madani, Saluyu and Rembulan Setia. These two locations are chosen based on it suitability in soil and elevation, as well as compatible climate in growing tomato according to the interview with owners of Lyco Farm (2018).

4.2.3. Stage 3: Determine Number of Suppliers

On the third step, the number of suppliers will be determined in order to choose the best suppliers amongst the five farmers' group: Ciliang, Madani, Saluyu, Rembulan Setia, and Tirta Mulia Tani. These five farmers' group are used in this study case based on their existing relationship supplying graded tomato with Lyco Farm. This research will use Analytical Hierarchy Process (AHP) implementation given by Saaty (1980) for supplier evaluation and chose the best supplier based on its performance.

ICMEM

4.2.4. Stage 4: Determine the Organizational Relationships

In this stage, the supplier relationships with Lyco Farm will be evaluated to determine the governance structure in managing the suppliers. According to Bensaou (1999) the empirical research given evidence that a set of product or service characterised a different type of relationships. A Based on the description provided by Lyco Farm (2018) as shown in table 2 below, the relationship between five farmers' group and Lyco Farm are categorised into market exchange relationships. Market exchange relationships are more relevant to leverage simple, mature technologies for highly standardised items that are relatively stable in demand (Bensaou, 1999).

Table 2. Market Exchange Relationship (Bensaou, 1999).

Market Exchange (Bensaou, 1999)	Case Study of Lyco Farm
Product Characteristics	Product: Tomato w/ High Lycopene-Content
Highly standardized products.	Highly standardized product: PRIMA3 Certified Horticulture produce.
Technically simple product, low innovation.	Low innovation: Lycopene-content in tomato.
No customization on final product.	GAP (Good Agriculture Process)
Low engineering effort	
Market Characteristics	Market: Wholesale to High-end Retailer, i.e.: Griya, Riau Junction.
Stable demand.	Stable demand from wholesale retailer,
Highly competitive market	High competition in retail shelf.
Many capable suppliers.	
Supplier Characteristics	Suppliers: Farmers' Group.
Small suppliers.	Smallholder farmers joined in farmers' group.
No proprietary technology	Farming technology owned by buyer (Lyco Farm).
Low switching costs & low bargaining power	Livelihood of farmers heavily depend on horticulture sales.
Strong economic reliance on industry sector business.	

4.2.5. Stage 5: Determine Level of Engagement & Risk Management Method

On the fifth stage, firm is to choose the level of engagement and risk management method. For this study case, Lyco Farm can adopt low risk, low investment in supplier and buyer. The justification is due to the market exchange relationship between farmers' group and Lyco Farm in step four. As stated by Beckman & Rosenfield (2008), the market exchange relationship are classified close to the arms-length relationship spectrum, which are characterized by traditional, cost-based, free-market, short-duration, purchase-order-driven relationships. This rings true to the current supplier relationship between farmers' group and Lyco Farm, where the relationship are short-term farming contracts thus, they made little investment to one another aside from the training and cultivation technique assistance from Lyco Farm.

4.2.6. Stage 6: Determine Contract & Incentives for the Relationship

The sixth stage is to put contract and incentives into the relationships. According to Beckman & Rosenfield (2008) basic contracts includes pricing, the quantity and quality of the products, while more sophisticated contracts provide flexibility to deal with uncertainty and to optimize performance on the overall supply chain. For the case study, the contract provided are basic contract with production-management farming contract specification. According to Prowse (2012) production-management farming contract specified the farmers' group agricultural practice must comply with the production process requested by Lyco Farm, in this case is GAP (Good Agriculture Process), as per stated in the contract farming.

ICMEM

4.2.7. Stage 7: Establish the Procurement Management Structure

On the final stage, is to determine the appropriate procurement management structure by setting up performance metrics through PMS (Performance Measurement System) in order to evaluate suppliers' performance. According to Beckman & Rosenfield (2008) the performance evaluation was necessary in order to support internal decision making and communicate proper information with suppliers.

4.3. Performance Measurement System

The conceptualization of PMS framework was arranged using the recommended procedure by Wibisono, D., & Khan, M.K (2010), where the PMS should be built based on contextual approach of the firm's environment. Based on the literature review as well as interview with owners of Lyco Farm, they identified six performance measurement system criteria in order to evaluate the performance of farmers groups, which are as followed: cost, quality, compliance to contract farming, innovativeness, availability and environmental performance.

Figure 3 visualised the PMS model framework for Lyco Farm sustainable supplier**igure 4** with links among performance measures at one level to the other levels. Farmers group, sustainable supply performance in the Business Result Perspective (Level 1), is influenced by the performance in the Internal Process Perspective (Level 2). Performance in Level 2 is affected by performance in Level 3 (Resources Capabilities Perspective).

It can observe that cost, quality, availability, innovativeness, fulfilment of contract farming and environmental performance are crucial to the farmers' group sourcing performance capabilities. Therefore, there is an inter-relation of factors that affect the supplier performance of farmers group, which should be taken into account in the PMS model. The following are the description which elaborates on figure 3.
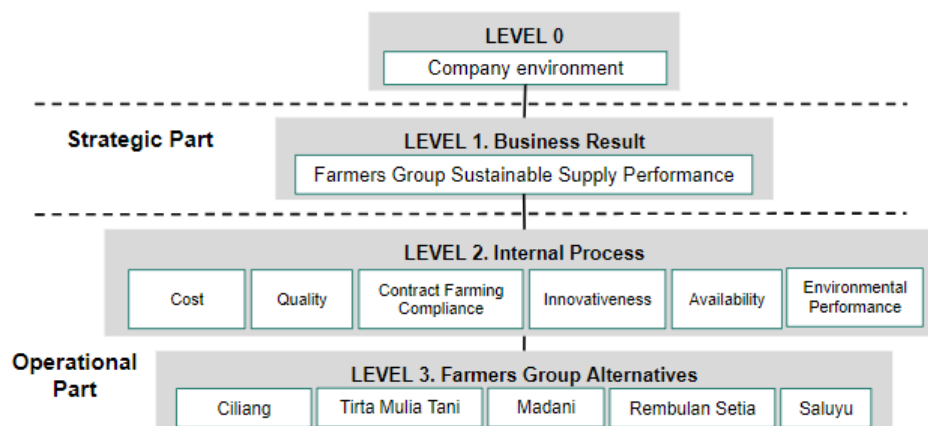
Fig 3. The PMS Model Framework for Farmers Group

4.3.1. Level 0: Company Environment Perspectives

This level determines the particular setting the company is operating which determines the performance standards and the map of the industry environment, therefore a crucial stage to identify. According to Wibisono, D., & Khan, M.K (2010), the information needed in this module are the type of industry, the number of employees, the age of the company, competitors and business life cycle.

Lyco Farm is in the organic tomato industry with Lyco farm acts as intermediaries between tomato farmers and retailers. Lyco farm provides training to tomato farmers on graded-tomato cultivation technique and market channel of wholesale and retailers in Bandung. Established in 2004, Lyco farm with around 100 employees and around 14 years in the industry. Currently, Lyco farm has been supplying horticulture products aside from tomato to around 27 supermarkets in Bandung.

4.3.2. Level 1: Business Result Perspectives

ICMEM

In this model the Business Result Perspective assess the farmers group sustainable business performance through specific performance criteria. Additionally, the farmers group sustainable business performance served as the center of the objectives and measures of Internal Process Perspectives. Thus the objective for this level is to identify the best performing farmers' group as sustainable supplier of graded-tomato.

4.3.3.   Level 2: Internal Process Perspectives

This level represent the effectiveness and efficiency of internal operation performance and competitiveness. The performance criteria of suppliers are based on literature review represented by quality, cost, availability, compliance to contract farming, innovativeness and environmental performance.

4.3.4.   Level 3: Farmers' Group Alternatives Perspectives

In the proposed PMS model, this level consists of five farmers group alternatives to be assessed. These five farmers' group have been chosen since they have completed their training on graded-tomato cultivation and are currently supplying graded-tomato to Lyco Farm to be sorted and distributed to supermarket in Bandung and Cimahi area.
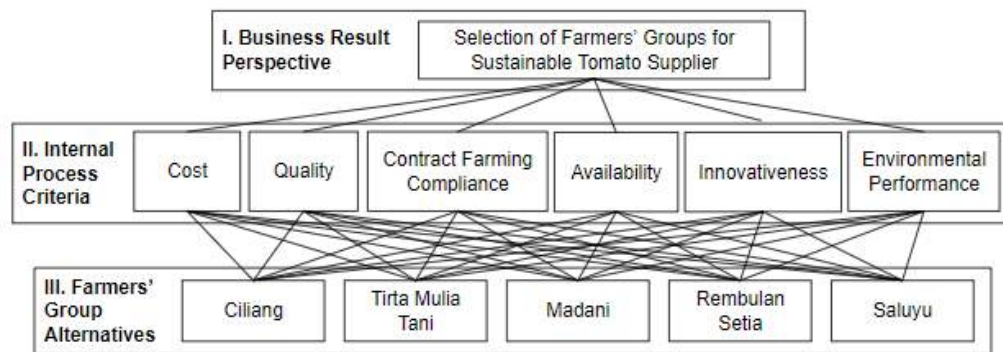
Fig 4. The AHP Structure of Farmers Group selection based on Performance Criteria

4.4.   Analytical Hierarchy Process (AHP)

Referring to the PMS model for farmers group depicted in figure 4, and through the consideration of the AHP steps recommended by Saaty (1980), the AHP structure for within the PMS farmers group model is depicted in figure 3. For this case study, we will use AHP questionnaires to our respondents. Using judgemental sampling, we have chosen the owners and the CEO of Lyco farm as our respondents. Our justifications are they have been in the tomato agriculture business for more than fifteen years with hands-on experience on the operation and the growth of Lyco Farm business. Therefore, qualified to understand better on the organic tomato industry and evaluate the tomato suppliers.

As per figure 3, the AHP is a three-level hierarchical structure model in which the business result perspective showed the relative performance among farmers group for sustainable tomato supplier. The Internal Business perspective can influence the Business Result Perspective in which to identify performance and competitiveness among Farmers Group Alternatives.

The pairwise comparison start from Level 2 of the AHP, which is the Internal Process Criteria consisting of performance measurement system. Later the AHP module determines the most suitable farmers' group alternatives for tomato supplier sourcing based on the interactive user's answers to each sub-module to assist in the decision-making process.

The model aims to identify the selection of farmers group for sustainable tomato supplier in the business result perspective criteria (Level 1). The first step is to compare the performance criteria that belong to subjective process criteria (level 2), thus constructing six pairwise comparison matrices for cost, quality, availability, fulfilment of contract farming, innovativeness and environmental performance. According to Saaty (1987) in the use of AHP pairwise comparisons are fundamental. Lyco Farm must decide where to put their priorities among the supplier

ICMEM

performance criteria by judging them in pairs for their relative importance, therefore creating a pairwise comparison matrix as shown in table 3.

Table 3. Pairwise Comparison and Priority Vector Result for Internal Process Criteria Perspectives

Factors	Quality	Cost	Availabi lity	Contract Farming Compliance	Innovative ness	Environmental Performance	Total	Priority Weight	Multi -plier	Eigen value (λ)
Quality	1.00	1.00	2.00	3.00	3.00	0.50	10.50	1.75	11.18	6.39
Cost	1.00	1.00	4.00	2.00	3.00	5.00	16.00	2.67	19.87	7.45
Availability	0.50	0.20	1.00	1.00	2.00	1.00	5.70	0.95	5.88	6.18
Contract Farming Compliance	0.33	0.50	1.00	1.00	2.00	0.33	5.17	0.86	5.25	6.10
Innovativeness	0.33	0.20	0.50	0.50	1.00	0.33	2.87	0.48	3.07	6.42
Environmental Performance	2.00	0.20	1.00	3.00	3.00	1.00	10.20	1.70	10.70	6.29

The judgement of Lyco Farm was represented in numbers from the major scale (Saaty, 1987) to make comparisons. For this case study the sample of the questionnaires as per attached in the Appendix. The number represents the intensity of importance on an absolute scale, ranging from one to nine (Saaty, 1987). The number one defined as equal importance. Number three defined as the moderate importance of one over another. Number five defined as of substantial importance. Number seven defined as extreme importance. Number nine defined as extreme importance. Meanwhile, the number two, four, six, eight defined as intermediate values between the two adjacent judgements.

According to Saaty (1987), the next step is to put the number into the formulation in the pairwise comparison matrix as per stated formula as quoted:

"The number of judgments needed for a particular matrix of order n, the number of elements being compared is n(n - 1)/2 because it is reciprocal and the diagonal elements are equal to unity."

Thus as shown in table 3, this step has been done through the usage of pairwise comparison questionnaire (see Appendix) with respondents in Lyco Farm. Using judgemental sampling, we have chosen the owners and the CEO of Lyco farm as our respondents for the questionnaires. Our justifications are they have been in the tomato agriculture business for more than fifteen years with hands-on experience on the operation and the growth of Lyco Farm business. Therefore, qualified to understand better on the organic tomato industry and evaluate the tomato suppliers.

Afterwards, we calculate the average of the pairwise comparison score number to evaluate the priority weight, multiplier and eigenvalue (Saaty, 1987). Lyco Farm puts price as the biggest priority for performance evaluation as shown in its eigenvalue the highest amongst other performance criteria. The best step is to calculate the Consistency Index (CI) and Consistency Ratio (CR). We use the Consistency Index and Consistency Ratio formula from Saaty (1980) as shown in table 5.

Kindly note, since there are six performance criteria evaluated, thus the random index we choose n = 6 (RI: 1.24), in which later to be incorporated into the Consistency Index in the formula below to calculate the Consistency Ratio. As stated by Saaty (1987), when the consistency ratio exceeds 0.10 appreciably the judgments often need reexamination. For this study case, the consistency ratio is equal to 0.08, therefore consistent and no need to be reexamined.

Table 5. Pairwise Comparison Result of Farmers Group selection based on Performance Criterias

ICMEM

Eigenvalue (λ) = $\dfrac{Multiplier}{Priority\ Weight}$	Consistency Index (CI) = $\dfrac{\lambda max - n}{n - 1}$	Consistency Ratio (CR) = $\dfrac{CI}{RI}$	Info
6.47	0.09	0.08	Consistent since CR<0.10

The next step is for Lyco Farm to compare the subcriteria that belong to each of the main criteria, thus constructing five more pairwise comparison matrices for the level of farmers group alternatives, which are: Ciliang, Tirta Mulia Tani, Madani, Rembulan Setia and Saluyu. The final step is to weight or synthesise the results to obtain the final performance of the five farmers' group as shown in table 6.

Table 6. Priority Weight Calculation of Farmers Group selection based on Performance Criterias

Factor	Quality	Cost	Availability	Contract Farming Compliance	Innovativeness	Environmental Performance	Total Priority Weight
Ciliang	0.46	0.36	0.46	0.37	0.40	0.44	3.45
Tirta Mulia Tani	2.04	1.31	1.87	2.44	2.04	2.60	16.32
Madani	3.80	4.20	3.20	4.80	4.60	1.13	29.15
Rembulan Setia	1.01	1.51	1.15	1.19	0.97	2.47	12.56
Saluyu	1.17	2.47	1.12	1.34	1.64	1.13	13.54

As per table 6, the farmers' group with the highest total priority weight is Madani, followed by Tirta Mulia Tani, Saluyu, and Rembulan Setia, with Ciliang the farmers' group with the smallest priority weight value. The total priority weight value shows the farmers' group comparable existing performance as a supplier. Thus the farmers' group with the highest total priority group are the farmers' group with the highest relative comparison of performance. Thus it suggested collaborating with Madani farmers' group as the main supplier for sustainable graded-tomato supply.

5.   Conclusions

This paper found that by using pairwise comparison on the performance factors, the buyer company discovers which performance factors has the most priority weight. Based on Table 3, the performance criteria with the most priority weight is cost, followed by quality, environmental performance. Meanwhile the remaining performance factors such as availability, contract farming compliance and innovativeness have lower priority weight. Therefore, buyer company should measure the tomato supplier performance measurement system using cost, quality and environmental performance criterias, where later followed by availability, contract farming compliance and innovativeness. Through these performance measurement criteria, this paper discovers that Madani has the highest total priority weight compared to the other farmers group. Therefore, Madani was chosen as the tomato supplier based on the AHP result.

This study can be example to help other agriculture intermediaries in the Bandung area to select tomato supplier based on the performance measurement system utilised in this paper. The originality comes from the performance measurement system using the Indonesian context to analyse the a single study case using an agriculture company which is sourcing graded-tomatoes to five farmers' groups originated from Bandung and Sumedang regency area. The limitations acknowledged by the present study is its narrow focus on the case study of a single agriculture company and farmers groups in Bandung and Sumedang regency area only thus precludes the generalisations of findings to other agriculture company and farmers groups in Indonesia as well as other sectors that may benefit from PMS. The future research is hoped to include the study of farmers group in other area and regions in Indonesia which predominantly cultivate and harvest tomatoes to develop a complete picture. The data validation was through review by the owner and senior executive of a major agriculture company with fifteen years of experience in the industry. In future studies, data collection should be obtained from multiple informants as well as from multiple agriculture

ICMEM

companies and farmers groups to circumvent this response bias problem. Future studies are recommended to integrate other agriculture PMS criteria such as farm size and revenue.

References

Anastasiadis, F., and van Dam, Y.K., (2014) Consumer-driven supply chains: the case of Dutch organic tomato.

Beckman, S. L. & Rosenfield D. B. (2008) Operations Strategy: Competing in the 21st Century. New York: McGraw-Hill.

Bensaou, M. (1997) Interorganizational Cooperation: The Role of Information Technology. An Empirical Comparison of US and Japanese Supplier Relations. Information System Research 8, no. 2 (1997), pp. 107-124.

Bensaou, M. (1999) Portfolios of Buyer-Supplier Relationships. MIT Sloan Management Review 40, no. 4 (Summer 1999), pp. 35-44.

Central Bureau of Statistics and Ministry of Agriculture (2016) Central Bureau of Statistics and Ministry of Agriculture Report, Indonesia, 2016

Fine, C.H. & Hax, A.C., (1985) Manufacturing Strategy: A Methodology and an Illustration. Interfaces 15, no. 6 (November-December 1985), pp. 28-46.

Fulponi, L. (2007). The globalisation of private standards and the agri-food system. In J. F. M. Swinnen (Ed.), *Global supply chains, standards, and the poor: How the globalisation of food systems and standards affects rural development and poverty* (pp. 5–18). Wallingford, UK: CABI.

Hayes, R.H., & Wheelwright, S.C., (1984) Restoring Our Competitive Edge: Competing through Manufacturing. New York: John Wiley and Sons, 1984.

Hernández, R., Reardon, T., Natawidjaja, R., & Shetty, S., (2015) Tomato Farmers and Modernising Value Chains in Indonesia. Bulletin of Indonesian Economic Studies, 51:3, 425-444.

Porter, M.E., (1980) Competitive Strategy: Techniques for Analyzing Industries and Competitors. New York: The Free Press, 1980.

Porter, M.E., (1996) What is Strategy?. Harvard Business Review 74, no. 6 (November-December 1996), pp. 61-78.

Prowse, M. (2012). *Contract farming in developing countries - a review*. A Savoir, Institute of Development Policy and Management, University of Antwerp.

Razmi, J., Rahnejat, H. and Khan, M. K. (1998), Use of Analytic Hierarchy Process Approach in Classification of Push, Pull and Hybrid Push-Pull System for Production Planning. International Journal of Operations and Production Management. Vol 18, No. 11, pp. 1134-1151.

Rehber, E. (2007). Contract farming: Theory and practice. Hyderabad, India: ICFAI University Press.

Saaty, T. L. (1980) The Analytical Hierarchy Process. New York: McGraw-Hill.

Saaty, T. L. (1987) The Analytic Hierarchy Process-What is is and how it is used. Math Modelling Vol. 9, no. 3-5, pp. 161-167, 1987.

Skinner, W., (1969) Manufacturing-Missing Link in Corporate Strategy. Harvard Business Review 47, no. 3 (May-June 1969), pp. 136-145

Skinner, W., (1974) The Focused Factory. Harvard Business Review 52, no. 3 (May-June 1974), pp. 113-121.

Skinner W., (1996) Three Yards and a Cloud of Dust: Industrial Management at Century End. Production and Operations Management 5, no. 1 (Spring 1996), pp. 15-24.

Sutopo, W., Hisjam, M., & Yuniaristanto, Y., (2012) An Agri-Food Supply Chain Model to Enhance the Business Skills of Small-Scale Farmers Using Corporate Social Responsibility. Makara Journal of Technology vol. 16, no. 1 (2012), pp. 43-50.

Wibisono, D., (2016) How To Create World Class Company: Panduan Bagi Direktur dan Manajer, Edisi Ke-2. Bandung: Penerbit ITB.

Wibisono, D., & Khan, M. K., (2010) The Conceptual Framework of a Knowledge-Based Performance Management System, Gadjah Mada International Journal of Business. September-December 2010, Vol. 12, No. 3, pp. 393-414.

Wibisono, D., & Khan, M. K., (2002) A Hybrid Knowledge-Based/ Analytic Hierarchy Process (AHP) Performance Measurement System for Manufacturing. Advances in Business Paradigms and Supporting Technologies. Proceedings of the 18th International Conference on CAD/CAM, Robotics and Factories of the Future, 3-5 July, Porto, Portugal.

Yin, R.K., (2003) Case Study Research, Design and Methods, third ed. Sage, Newbury Park.

Quincieu, E., (2015) Summary of Indonesia's Agriculture, Natural Resources and Environment Sector Assessment. ADB Papers on Indonesia No. 8, October 2015, Asian Development Bank.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Business Strategic Plan to Reduce the Non-Performing Loan of a Bank (Case Study at Private Bank in Bandung, West Java)

Everlin Novia Liea[a*], Uke Marius Siahaan[b]

[a,b] *Jl. Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

Bank ABC is a national bank which facing the problem of high number of Non-Performing Loan from year to year. Since the year of 2014 until 2017, the number of Non-Performing Loan keeps increasing to almost reach the maximum limit which has been set up by the regulation of Otoritas Jasa Keuangan. The maximum limit for NPL rate is as of 5% net. The high number of NPL can affecting the bank's credibility and reputation. In relation to that issue, it is crucial for Bank ABC to find solution in decreasing and overcoming NPL's problem.

This thesis intends to help Bank ABC to overcome NPL's problem, by taking samples of 30 NPL's debtors from each group of Commercial Loans and SME Loans. Author then calculates all of data samples from each group using calculation of Altman Z-Score Theory and Time Interest Earned. Author also conducted calculation using US Index as a supplement method of analysis. The financial reports gathered for data process of each debtor are on the year of 2014, 2015, and 2016. In its theory, The Altman Z-Score is a tool used in credit analysis that includes few financial ratios at a time (profitability, leverage, liquidity, solvency and activity ratio) to predict whether a company has a high degree of probability of being insolvent. The theory of Time Interest Earned uses the calculation of Earnings before Interest and Taxes, divided by interest charges. The calculation is used to determine to what extend debtor is able to fulfill its obligation to bank, using its business income. Meanwhile, US Index is can be used as a tool to determine debtor's capacity to be given loan at bank.

It is also recommended that Bank ABC should asses the debtors and charge interest rates accordingly, as ineffective interest rate policy can increase the level of interest rates and consequently NPL. The central bank should apply stringent regulations on interest rates charged by banks as to regulate their interest rate spread. Bank should apply efficient and effective credit risk management that will ensure that loans are matched with ability to repay, no or minimal insider lending, loan defaults are projected accordingly and relevant measures taken to minimize the same.

Keywords: Altman Z-Score; Bank; Credit Analysis; Non-Performing Loan; US Index

1. Introduction

Bank ABC formerly established on July 1989, began its operation on retail section as national bank. In its progress to serve more customer and to increase its banking service, it then began to expand through export and import transaction and foreign currency transaction, becoming foreign exchange bank on the year of 1994. On the year of 2000, based on Extraordinary General Meeting (RUPSLB) on September 15th, 2000, Bank ABC changing its company's status to become a listed company. On December 17th, 2007, the majority ownership of Bank ABC's stock has moved to Japanese-based financial company.

The business scope to be discusses in this thesis is loan. The recent composition of loans as of December 2017 at Bank ABC are as follows:

Table 1. Composition of Loans at Bank ABC as of December 2017

---

[*] Corresponding author

ICMEM

No	Loan Type	Percentage
1	Retail Loan (SME)	12.84%
2	Commercial Loan	12.63%
3	Home Loan	8.57%
4	Consumer Loan (other than Home Loan)	8.26%
5	Micro Loan	8.15%

Bank ABC has been facing a lot challenging competition from banking institution all around Indonesia. Most banks in Indonesia providing similar basic services such as loan, time deposits, clearing services, safe deposit box, and remittances. Besides fee and interest charge, what makes customer choose certain bank is accessibility, easy and fast transaction procedures, also the bank health level. The recent issue occurs in Bank ABC is that the bank health level is worsening, along with the increase number of Non-Performing Loan (NPL). Below are the information of NPL growth at Bank ABC :
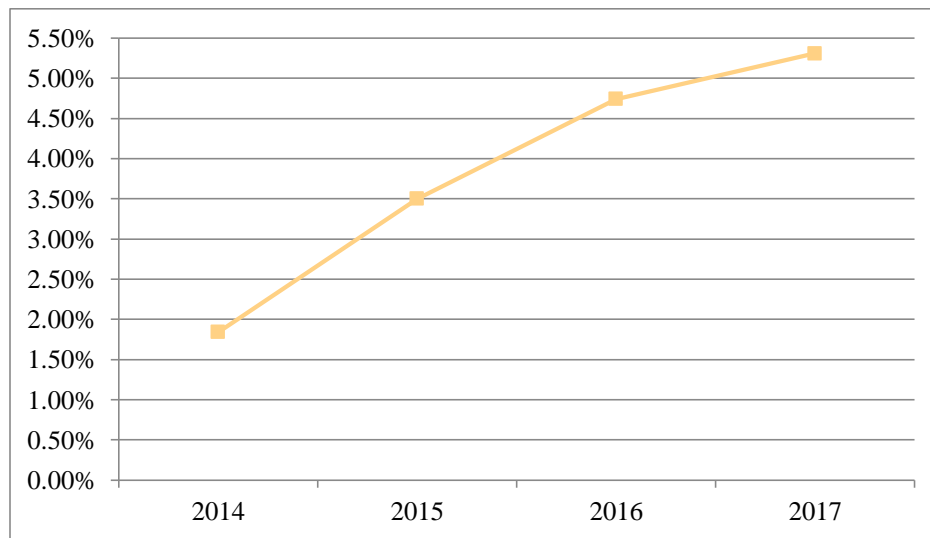
Fig 1. NPL growth at Bank ABC

Above is the graph of NPL growth at Bank ABC each of December 31 on each year. The value is on gross value. On December 2014, NPL number is in 1.84%. While in the 2015, the number is increased almost twice its origin value, becoming 3.5% and keeps going up on 2016 become 4.74%. On position of December 2017, the gross value of NPL is 5.31%, which is a red flag for Bank ABC. With the status of Buku II, Bank ABC only allowed to have a maximum number of NPL on 5% (net value). If the number continues goes up, Bank ABC is in danger of decreasing its status to become Buku I, which can lead the company to lose its credibility and reputation to its customer and shareholders.

At the moment, Bank ABC is concentrating in decreasing the NPL number by thinking on a way to handle it in a best profitable way for the company, also to prevent more NPL occur in the near future.

2. Methods

2. 1.   Conceptual Framework

ICMEM

Below is the conceptual framework which will be used to explain the phenomenon understudy and identify the boundaries of the study.

```
                    ┌─────────────────────────────┐
                    │  High NPL Figures at Bank ABC │
                    └─────────────────────────────┘
                                  │
                                  ▼
                    ┌─────────────────────────────┐
                    │           Problem            │
                    └─────────────────────────────┘
                                  │
                                  ▼
                    ┌─────────────────────────────┐
                    │    Data review and analysis  │
                    └─────────────────────────────┘
                                  │
                                  ▼
                    ┌─────────────────────────────┐
                    │        Sample review         │
                    └─────────────────────────────┘
```

High NPL Figures at Bank ABC

Problem

Data review and analysis

Sample review

30 SME NPL's debtor   30 Corporate NPL's debtor

Implementing on 2 Methods of Analysis
with 1 Supplement Methods

Altman   Time Interest Earned — US Index

Compare

Conclusion

Problem Solving Proposal   New Solicitation System

Implementation for Recovery   Bank New Credit Policy

Fig 2. Conceptual Framework

2. 2.   *Method of Data Collection and Analysis*

The data collected in this research is the existing debtor's data in Bank ABC, whose loans are classified as Non-Performing Loan, with the time period of financial statements in three years' period (2014, 2015 and 2016). The data samples are 30 NPL's debtors from each group of Commercial Loans and SME Loans. Author then calculates all of data samples from each group using calculations on Altman Z-Score, Time Interest Earned and US Index..

ICMEM

2. 3.   Analysis of Business Situation

POJK 15/POJK.03/2017 in clause number 3 point D, determine that bank is considered to have potential difficulties that endanger the continuity of it business, if it has NPL ratio above 5%.

Paul Embrechts, Hansjorg Furrer and Roger Kaufmann (2006) in the book entitled *"Different Kind of Risk"* defines credit risk as the risk of default or change in the credit quality of issuers of securities to whom a company has an exposures. More precisely, default risk is the risk of loss due to a counter-party defaulting on a contract. Traditionally, this applies to bonds where debt holders are concerned that the counterparty might default. Rating migration risk is the risk resulting from changes in future default probabilities. For the modelling of credit risk, the following elements are therefore crucial :

- Default probabilities: probability that the debtor will be in default condition on its obligations to repay its debt;
- Recovery rate: proportion of the debt's par value that the creditor would receive on a defaulted credit, and
- Transition probabilities: probability of moving from one credit quality to another within a given time horizon

Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Bank should also consider the relationship between credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking operation (Basel Committee on Banking Supervision, 2000: 1).

Lawrence J. Gitman and Chad J. Zutter (2014) in their book *"Principles of Managerial Finance"* explains that the financial ratios can be divided for convenience into five general categories: liquidity, activity, debt, profitability, and market ratios. Liquidity, activity, and debt ratio primarily measure risk. Profitability ratios measure return. Market ratios capture both risk and return.

1. Liquidity Ratio: is a firm's ability to satisfy its short-term obligations as they come due.
2. Activity Ratio: measure the speed with which various accounts are converted into sales or cash, or inflows or outflows.
3. Debt Ratio: the debt position of a firm indicates the amount of other people's money being used to generate profits. In general, the more debt a firm uses in relation to its total assets, the greater its financial leverage. Financial leverage is the magnification of risk and return through the use of fixed-cost financing, such as debt and preferred stock. The more fixed-cost debt a firm uses, the greater will be its expected risk and return.
4. Profitability Ratio: there are many measures of profitability. As a group, these measures enable analysts to evaluate the firm's profits with respect to a given level of sales, a certain level of assets, or the owner's investment.
5. Market Ratio: relate the firm's market value, as measured by its current share price, to certain accounting values. These ratios give insight into how investors in the marketplace believe that the firm is doing in terms of risk and return.

Article on Kontan Newspaper as of 03 April 2018, titled "Hope Consumer's Purchasing Power Recovers" shows that consumer's purchasing power shows improvement on March 2017, indicated from core inflation that shows enhancement. Consumer's purchasing power expected to be increase in relation with fasting and Eid Mubarak 2018's celebration. Statictic Center Bureau explains that March 2018's inflation rate is 0.20%, while its year on year rate is 3.4%. Meanwhile, year on year's center inflation on March 2018 is increasing up to 2.67% compares to the same period on previous year (which is 2.58%). The Head of Statistic Center Bureau Suhariyatno analyze that the increase of center inflation as good sign for economic improvement, that by this center inflation it can be said that demand is seen again.

Article on Kontan Newspaper as of 19 April 2018, titled "Economy More Prospective from Quarter II year 2018" stated that Indonesia's economic growth on the first quarter of year 2018 expected to be slightly increase compares to the fourth quarter or first quarter of year 2017. The increase of export and the purchasing power's being better, is considers to be its main reason. The economic growth in Indonesia predicted to be significantly increase on second

quarter of year 2018. According to the prediction of Finance Minister Sri Mulyani Indrawati, Indonesia's economic growth on first quarter of year 2018 is reach to 5.2%, caused by the increase of domestic consumption.

Article on Bisnis Indonesia's Newspaper on 24 April 2018, titled "Bank Indonesia is Ready to Stabilize Rupiah" stated that Rupiah's value is significantly weakened so that Bank Indonesia is asked to creatively keep rate exchange stabilized, along with the strong economic fundamental of Indonesia. Based on Bloomberg's data on closing as of 23 April 2018, Rupiah's weakened 0.59% on position of Rp. 13,975 per US dollar. Bank Indonesia insisted that Rupiah's being weakened is caused by external factor, while the movement of US debenture is reaching the level of 3%. The Deputy of Bank Indonesia Dody Budi Waluyo said that Bank Indonesia will keep pushing on monetary policy and financial system, also support increase through acceleration of banking intermediation.

Article on Kontan Newspaper as of 27 April 2018, titled "The Signal of Increasing Interest Rate from Central Bank" shows that the pressure to Rupiah's exchange rate is still on going. Bank Indonesia even stated that the world financial market is leading to new balance point. To keep Rupiah's exchange rate fundamentally, Bank Indonesia stated to not be bashful on increasing the reference of interest rate. The Governor of Bank Indonesia Agus Martowardojo said that the weakening Rupiah is also suffers by other currencies. It is caused by US dollar being strengthen to almost every currency in the world, after the increase of US Treasury's yield that reach to the point of 3.0% which are the highest since 2013.

Article on Bisnis Indonesia's Newspaper on 30 April 2018, titled "Bank Indonesia has Twice the Chance of Increasing 7 Days of Days Reverse Repo" stated that the country's central bank is estimated to increase interest rate minimum twice its origin value to get rid of pressure on Rupiah as the increase of US Treasury's interest rate and increase projection of Fed Fund Rate. The increase of 7 Days Reverse Repo (7-DRR) potentially increase more than beginning estimation where the increase is estimated to be happening on May 2018. The Director of Center of Reform on Economy (CORE), Research Pieter Abdullah Redjalam stated that along this year there is a possibility of Bank Indonesia doing an adjustment on interest rate.

The Altman Z-Score is the output of a credit-strength test that gauges a publicy traded manufacturing company's likelihood of bankruptcy. The Altman Z-Score is based on five financial ratios that can be calculated from data found on a company's annual 10K report. It uses profitability, leverage, liquidity, solvency and activity to predict whether a company has a high degree of probability of being insolvent.
The Altman Z-Score is calculated as follows:

$$\text{Z-Score} = 1.2A + 1.4B + 3.3C + 0.6D$$

The definitions of each components are:
- A = Working Capital / Total Assets
- B = Retained Earnings / Total Assets
- C = Earnings before Interests & Taxes / Total Assets
- D = Market Value of Equity / Total Liabilities
- E = Sales / Total Assets

The interpretation of Altman Z-Score is:
- $Z > 2.99$ → "Safe" Zone, which means the company will not likely to go bankrupt
- $1.81 < Z < 2.99$ → "Gray" Zone
- $Z < 1.81$ → "Distress" Zone, which means the company is probably headed for bankruptcy

By knowing the Z-Score of a company, bank can assess the financial soundness of the company. If the value of Z of a company is in the "Gray" or "Distress" zone, bank can anticipate as early as possible (acts as an early warning system) before the company suffered financial failure or bankruptcy, which can lead to failure in fulfilling its repayment obligations to bank.

Time Interest Earned (TIE) Ratio is a metric used to measure a company's ability to meet its debt obligations. The formula is calculated by taking a company's earnings before interest and taxes (EBIT) and dividing it by the total interest payable on bonds and other contractual debt. Time Interest Earned indicates how many times a company can cover its interest charges on a pretax earnings basis.

ICMEM

$$\text{Time Interest Earned} = \text{EBIT} / \text{Interest}$$

Failing to meet these obligations could force a company into bankruptcy. Time Interest Earned is also referred to as the interest coverage ratio. Generating cash flow to make principal and interest payments and avoiding bankruptcy depends on a company's ability to produce earnings. A company's capitalization refers to the amount of money it has raised by issuing stock or debt, and choices about capitalization impact the Time Interest Earned's ratio. Businesses consider the cost of capital for stock and debt, and they use that cost to make decision about capitalization.

According to Brigham (2012:144) "TIE is a ratio to measure in what extend does operating profit can be decreased before the company not being able to pay its annual interest charges". The low TIE shows bad performance in company's ability to pay its obligations. If the TIE is decreasing over and over, it will cause failure in fulfilling its obligation to bank that leads to company's being bankrupt.

The US Index Theory is a theory that is introduced by Dr. Ir. Uke Marius Siahaan, MBA., a lecturer of Investment Analysis Course in Master of Business Administration Program at School of Business Management – Institute of Technology Bandung. The US Index Theory can be used as a reference during credit review process and it is being one of financial parameters for assessing repayment capacity of a company.

The idea of the US Index is to assess the company's repayment capability by comparing its Basic Business Profitability (BBP) to Loan Interest Rate (I). It is formulated as below:

$$\text{US Index} = \text{Business Basic Profitability} / \text{Loan Interest Rate}$$

Basic Business Profitability is profit margin of a company that resulted from its business activities were financed by either its equity or by loan. BBP is formulated as below:

$$\text{BBP} = (\text{Earnings before Interest and Taxes} / \text{Total Assets}) \times 100\%$$

In doing business, company needs capital to finance its assets or its working capital, in order to generate Operational Profit. If its capital source is from debt / loan, the company has an obligation to pay interest expense in return of the bank loan. The loan should generate Basic Business Profit (BBP) a minimum of Loan Interest Rate (I) so that the company could cover its loan interest obligation to bank.

The Conceptual Framework of US Index based from the explanation from Dr. Ir. Uke Marius Siahaan, MBA as lectured in Investment Analysis Course, can be developed as follows figure:

ICMEM
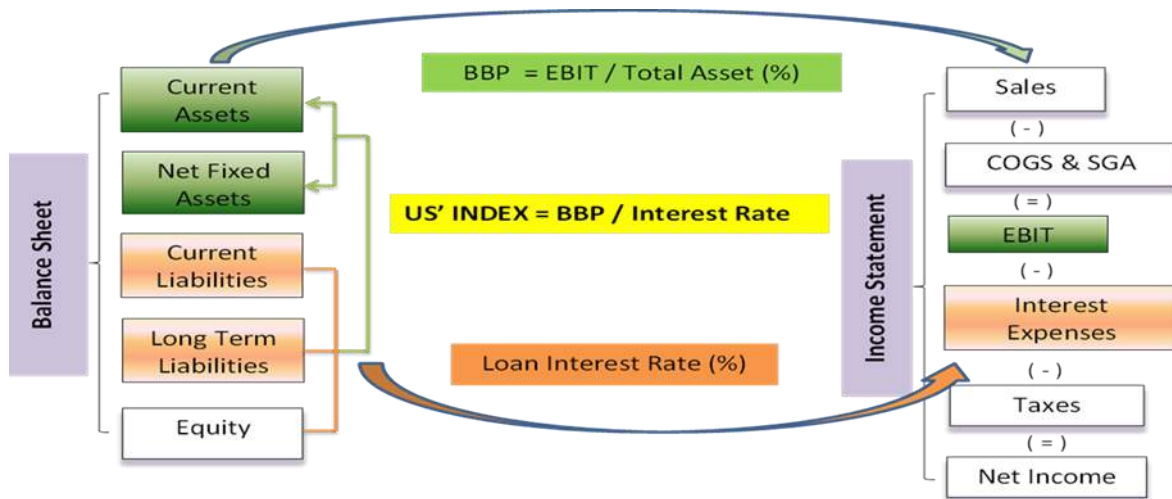
Fig 3.Conceptual Framework of US' Index Theory

Company should take the right decision on its capital structure, whether to be financed by debt of equity, in order to maximize its Operating Profit. Those financing should be able to generate greater profit than its operating costs and financial costs, that's why it is called as leverage. According to the US Index Theory, the interpretation of US Index values is as follows:

US Index > 1 → company should go leverage

US Index < 1 → company should go equity

US Index = 1 → company free to choose either to go leverage or go equity on financing its assets or its working capital, depending on its financing appetite

A company with higher leverage may earn higher returns but in the other side, it has higher financial cost than lower leverage company. The relationship between leverage and profitability has been a topic of interest among finance scholar for many years. Some found in their studies that there is a positive relationship between leverage and profitability. On the other side, some studies have found negative relationship between leverage and profitability. As being discussed in the journal "The Use of US' Index Theory to Enhance Quality of Loan within Banking Industry and Financial Institutions, Case Study:Bank ABC" by Eriza Amir Chan. Referring to all those journals, it ca be concluded that the influence of leverage on profitability were varied depending on many factors such as company size, industrial sectors, and the condition of the countries.

2. 4. Data Calculations

A. Altman Z-Score Calculations

Commercial NPL's Debtor

Table 2. Altman Z-Score Calculation Table of Commercial NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	C1	5.66	5.07	4.28	-0.59	-0.79
2	C2	3.64	3.55	3.26	-0.08	-0.29

3	C3	4.06	2.70	2.82	-1.37	0.12
4	C4	5.11	5.23	4.50	0.12	-0.73
5	C5	12.47	10.08	6.26	-2.39	-3.82
6	C6	3.58	3.42	3.14	-0.16	-0.28
7	C7	1.49	0.64	0.51	-0.86	-0.13
8	C8	4.58	6.91	5.85	2.33	-1.06
9	C9	1.99	2.04	2.27	0.05	0.23
10	C10	1.33	1.55	1.48	0.22	-0.07
11	C11	1.47	2.15	3.51	0.69	1.36
12	C12	5.46	5.00	3.85	-0.47	-1.15
13	C13	6.25	4.42	5.03	-1.83	0.62
14	C14	7.00	5.79	5.12	-1.21	-0.67
15	C15	4.61	3.41	3.83	-1.20	0.42
16	C16	5.13	5.47	3.46	0.34	-2.01
17	C17	3.80	3.85	3.73	0.05	-0.12
18	C18	2.04	2.32	2.52	0.28	0.20
19	C19	4.66	4.40	3.79	-0.25	-0.61
20	C20	4.69	3.80	4.55	-0.89	0.75

SME NPL's Debtor

Table 3. Altman Z-Score Calculation Table of SME NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	S1	5.40	6.60	5.39	1.20	-1.21
2	S2	7.53	5.74	6.42	-1.79	0.68
3	S3	3.91	4.62	3.97	0.71	-0.65
4	S4	10.50	24.60	27.71	14.09	3.11
5	S5	4.37	3.73	3.91	-0.64	0.19
6	S6	6.93	6.22	5.66	-0.71	-0.57
7	S7	5.03	5.17	5.29	0.14	0.12
8	S8	35.90	10.88	6.96	-25.01	-3.92
9	S9	6.10	5.77	7.54	-0.32	1.76
10	S10	16.74	6.53	5.58	-10.21	-0.95
11	S11	4.71	5.57	6.87	0.86	1.30
12	S12	15.48	9.13	7.68	-6.34	-1.46
13	S13	6.63	5.89	5.40	-0.74	-0.50

ICMEM

14	S14	6.84	5.84	4.51	-0.99	-1.34
15	S15	3.84	4.36	4.81	0.52	0.45
16	S16	3.87	4.85	6.01	0.98	1.16
17	S17	7.87	4.48	3.17	-3.39	-1.31
18	S18	5.00	6.14	5.37	1.14	-0.77
19	S19	7.94	6.08	6.70	-1.86	0.62
20	S20	8.25	8.70	5.24	0.45	-3.46
21	S21	57.99	8.88	10.01	-49.11	1.13
22	S22	7.18	7.48	11.78	0.30	4.30
23	S23	8.34	4.72	4.94	-3.61	0.22
24	S24	5.97	6.31	5.87	0.35	-0.45
25	S25	9.99	10.50	11.28	0.51	0.77
26	S26	4.37	4.27	4.65	-0.10	0.37
27	S27	3.39	4.28	4.48	0.89	0.20
28	S28	6.11	6.26	4.53	0.15	-1.73
29	S29	3.94	3.36	3.29	-0.58	-0.07
30	S30	5.77	4.13	4.46	-1.64	0.33

The Altman Z-Score calculation for all samples from both group Commercial and SME Loan is all in the safe zone, which means all debtors will not likely to go bankrupt. If seeing from the data alone, all debtors seem to be in good business performance. It is in contrast with the fact that all debtors taken for this thesis' sample are all non-performing one.

B. *Time Interest Earnings Calculations*

Commercial Debtors

Table 4. Time Interest Earnings Calculation Table of Commercial NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	C1	24.30	31.39	21.58	7.10	-9.82
2	C2	4.57	3.97	3.10	-0.59	-0.87
3	C3	6.38	4.38	2.84	-2.00	-1.54
4	C4	8.77	10.13	4.85	1.36	-5.28
5	C5	84.91	6.84	4.80	-78.07	-2.04
6	C6	5.01	3.96	2.56	-1.05	-1.41
7	C7	1.32	1.32	1.34	0.00	0.02
8	C8	6.42	10.29	7.15	3.87	-3.14
9	C9	1.04	1.05	1.26	0.01	0.21
10	C10	1.99	2.87	1.65	0.88	-1.22

ICMEM

11	C11	2.01	2.17	6.69	0.16	4.52
12	C12	16.49	6.38	2.00	-10.11	-4.38
13	C13	41680	8.52	10.42	-41671.48	1.90
14	C14	16.98	13.27	9.77	-3.71	-3.50
15	C15	2.19	2.71	2.75	0.52	0.05
16	C16	13.93	14.67	3.17	0.73	-11.50
17	C17	19.92	7.41	2.79	-12.50	-4.63
18	C18	1.89	1.80	2.02	-0.09	0.22
19	C19	4.59	42.86	2.72	38.27	-40.14
20	C20	5.25	3.14	6.71	-2.12	3.57
21	C21	4.65	4.90	18.84	0.26	13.94
22	C22	5.71	5.97	5.09	0.26	-0.88
23	C23	45.52	3.28	2.64	-42.24	-0.64
24	C24	12.84	9.86	9.66	-2.97	-0.20
25	C25	48.50	27.00	29.72	-21.51	2.72
26	C26	2.62	2.13	1.75	-0.49	-0.38
27	C27	8.05	5.41	3.83	-2.65	-1.57
28	C28	9.67	8.95	9.66	-0.72	0.71
29	C29	695	568	587	-127.00	19.00
30	C30	8.50	7.98	7.31	-0.51	-0.68

SME Debtors

Table 5. Time Interest Earnings Calculation Table of Commercial NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	S1	4.28	7.02	3.56	2.74	-3.46
2	S2	14400	10.89	18.61	-14389.11	7.72
3	S3	56.77	56.50	12.11	-0.27	-44.39
4	S4	1011	556	556	-455.00	0.00
5	S5	3.83	1.62	11.42	-2.22	9.80
6	S6	1333	1430	5.33	97.00	-1424.67
7	S7	4.31	6.78	9.79	2.47	3.01
8	S8	366	17.44	7.58	-348.56	-9.87
9	S9	14.13	19.13	4.32	5.01	-14.81
10	S10	165	18.48	5.36	-146.52	-13.12
11	S11	3.68	4.81	11.10	1.14	6.29
12	S12	59.78	17.90	8.92	-41.89	-8.98

ICMEM

13	S13	14.20	8.28	6.64	-5.93	-1.63
14	S14	13.85	6.63	3.85	-7.21	-2.78
15	S15	4.04	4.93	4.30	0.90	-0.63
16	S16	5.63	11.57	18.52	5.94	6.95
17	S17	33.86	9.99	2.46	-23.88	-7.52
18	S18	3.64	3.79	1584	0.15	1580.21
19	S19	51.13	24.50	26.95	-26.63	2.45
20	S20	29.53	18.87	6.00	-10.66	-12.88
21	S21	1224	673	1481	-551.00	808.00
22	S22	8.90	10.26	2.95	1.36	-7.32
23	S23	8.74	16.52	7.15	7.78	-9.37
24	S24	13.54	10.72	9.79	-2.81	-0.93
25	S25	4.37	4.74	4.89	0.37	0.15
26	S26	11.15	9.18	9.42	-1.98	0.24
27	S27	7.13	7.33	7.36	0.20	0.03
28	S28	3.64	3.79	2.34	0.15	-1.45
29	S29	7.90	4.97	2.91	-2.93	-2.06
30	S30	7.31	5.01	4.75	-2.30	-0.26

C. US Index Calculations

Commercial Debtors

Table 6. US Index Calculation Table of Commercial NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	C1	1.67	1.26	1.16	-0.40	-0.10
2	C2	1.49	0.83	0.77	-0.66	-0.06
3	C3	1.64	1.29	1.18	-0.35	-0.11
4	C4	1.57	1.79	0.83	0.23	-0.96
5	C5	2.05	1.38	1.01	-0.68	-0.36
6	C6	1.03	0.99	0.67	-0.05	-0.32
7	C7	0.14	0.10	0.09	-0.03	-0.01
8	C8	1.61	3.19	2.25	1.57	-0.94
9	C9	0.69	0.73	0.70	0.04	-0.03
10	C10	0.46	0.70	0.23	0.24	-0.46
11	C11	0.72	0.86	1.15	0.14	0.29
12	C12	1.57	1.40	0.20	-0.17	-1.20

13	C13	3.52	2.50	2.59	-1.02	0.08
14	C14	4.10	2.82	2.20	-1.28	-0.62
15	C15	0.55	0.62	0.62	0.07	-0.01
16	C16	2.92	3.14	0.66	0.22	-2.48
17	C17	1.90	1.27	0.71	-0.63	-0.56
18	C18	0.32	0.30	0.48	-0.01	0.18
19	C19	1.40	1.23	0.55	-0.17	-0.68
20	C20	0.85	0.33	1.02	-0.52	0.69
21	C21	0.83	0.87	0.86	0.04	0.00
22	C22	5.02	2.55	1.79	-2.47	-0.76
23	C23	1.68	1.41	0.87	-0.27	-0.55
24	C24	2.73	2.04	1.84	-0.68	-0.21
25	C25	5.20	3.83	2.96	-1.37	-0.87
26	C26	0.51	0.39	0.31	-0.13	-0.07
27	C27	1.23	1.00	0.79	-0.23	-0.21
28	C28	2.02	1.92	1.61	-0.10	-0.31
29	C29	0.55	0.52	0.47	-0.04	-0.05
30	C30	1.46	1.44	1.43	-0.02	-0.01

SME NPL's Debtor

Table 7. US Index Calculation Table of SME NPL's Debtors at Bank ABC

No	Name	Year			Differences	
		2014	2015	2016	2014 - 2015	2015 - 2016
1	S1	1.33	1.54	0.79	0.22	-0.75
2	S2	1.40	1.06	1.11	-0.34	0.05
3	S3	1.78	1.94	1.89	0.16	-0.05
4	S4	3.55	2.55	2.07	-1.00	-0.48
5	S5	1.72	0.48	0.91	-1.23	0.43
6	S6	2.09	1.99	1.38	-0.11	-0.61
7	S7	1.50	1.58	1.57	0.07	0.00
8	S8	0.92	2.07	1.44	-1.15	-0.63
9	S9	1.97	1.18	0.66	-0.78	-0.53
10	S10	2.34	1.62	1.11	-0.72	-0.51
11	S11	2.15	2.34	2.85	0.19	0.52
12	S12	2.71	2.17	1.13	-0.53	-1.05
13	S13	2.11	1.51	1.26	-0.60	-0.25

14	S14	2.90	2.59	1.91	-0.31	-0.68
15	S15	0.81	0.87	0.77	0.06	-0.10
16	S16	2.58	2.36	2.05	-0.22	-0.32
17	S17	2.32	1.79	0.93	-0.53	-0.86
18	S18	0.74	0.76	0.90	0.02	0.14
19	S19	4.46	3.14	2.64	-0.32	-0.51
20	S20	5.64	4.95	2.72	-0.69	-2.23
21	S21	4.40	2.78	2.33	-1.61	-0.45
22	S22	2.25	2.12	2.12	-0.13	-0.01
23	S23	2.31	2.40	2.15	0.10	-0.26
24	S24	2.98	3.03	2.35	0.05	-0.67
25	S25	1.28	1.21	1.16	-0.07	-0.05
26	S26	2.33	1.42	1.39	-0.91	-0.03
27	S27	1.37	1.06	0.81	-0.31	-0.25
28	S28	1.02	1.03	1.06	0.01	0.03
29	S29	1.71	1.31	0.62	-0.40	-0.70
30	S30	1.45	1.09	1.07	-0.37	-0.01

3. Results and Discussion

By theoretical implication it can be stated that Altman Z-Score is being a widely-used tool in financial courses as part of teaching financial analysis and ratio analysis. The Altman Z-Score can predicts corporate bankruptcy in two years. Altman also recognized that there is "Gray" area wherein future bankruptcy cannot be accurately determined; in other words there is the possibility of error.

Time Interest Ratio is being more reliable in detecting debtor's ability to fulfill its obligations to bank. Time Interest Ratio gives information about how well a company's paying for its annual interest obligation. Low Time Interest Rate shows bad performance of debtor's in fulfilling its obligations. If the number of Time Interest Earned is continuously decreasing, it can cause problem of financial failure.

As a supplement methods, US Index Theory can be a references during credit review process to determine debtor's being able to be given loan or not and to what extend does debtors is still being able to be given loan.

Time Interest Earned being a monitor in analyzing debtor's performances & problematics in his business, is the same with Altman Z-Score. The value of Z above 2.99 means that debtor will not likely to go bankrupt, while if the value below 1.81 then it means that debtor is probably headed for bankruptcy. If the value is in between, then it can be used as an early warning signal for bank to anticipate debtor before suffering financial failure.

4. Recommendation

4. 1. For Existing NPL's Debtors

Summary review of existing Non-Performing Loan's debtors are :
- Some debtors do not have enough repayment capacity to fulfill its debt's obligations. Most of the cases are that if being calculated from debtor's financial statement, the repayment capacity is enough while if being calculated by sensitivity analysis it is not sufficient to pay its debt to bank.

ICMEM

- Most debtors have bank financing up to 80% or more. The fair bank financing of working capital and investment is 80%. It is not advisable for bank to give bank financing more than 80% its working capital or investment's need. Debtor can be given bank facility that has more than 80% of total bank financing, but with the exception that the debtor is given credit facility in form of installment (Time Loan Sliding).
- Debtors have a tendency of low sales reflection. If debtor's bank statement to sales reflection is below 70%, it is mandatory to enclose other sales data such as invoice or purchase order. It is also important to identify debtor's business cycle so that credit review will know the type of payment debtor's made (cash to cash or being given period).
- Financial ratios such as profitability ratio and activity ratio are similar to those in the same industries. It is important to identify the same business net cycle so that credit reviewer can know what makes the differences in it.
- Financial ratio being stable from year to year.
- Debtor's BI Checking is in Pass condition.
- Full usage of existing loan facility, including credit card facility and non-collateral facility.
- Debtor's being too optimistic about sales projection. It is important to compare debtor's business with similar business, and do an industrial analysis on macroeconomics.
- Loan to Value (LTV) Ratio is fair, according to its policy. For collateral in form of land maximum LTV is 70%, for collateral in form of house or warehouse or shop-house maximum LTV is 80%, for collateral in form of cash or time deposit LTV is 100%, etc.

Related to problem solving proposal, the recommendations to solve the existing non-performing loan are as follows:

- For debtor that still within collectability 1 (Pass), need to be regularly maintained so that when collectability is worsen it can be recognized by bank. If possible, bank does a phase out strategy by diverting risk in form of take over loan facility to other bank.
- For debtor whose collectability is 2 (Special Mention) and 3 (Substandard), bank is recommended to do restructuring on loan. Restructuring has to be done by considering debtor's cooperation, debtor's repayment capacity at the moment and the time needed to amortize all debtor's loan. By doing restructuring, it is also important to improve debtor collectability or at least not worsen it.
- For debtor whose collectability is 4 (Doubtful) and 5 (Non-Performing Loan), bank has to do below action:
  1. Sell collateral

     In selling collateral, besides debtor's own willingness to sell his collateral bank also cooperate with property agents. At this moment, Bank ABC is working closely with Ray White, Century, and Sinar Anugrah Properti in marketing the NPL debtor's collateral.
  2. Auction
  3. Forced payment of all loans

Important things that need to be focused are:

- Debtor's repayment capacity.
- Debtor's willingness to be cooperative in resolving loan.
- Doing a regular trade checking on debtor's supplier and buyer. What currently is implemented at Bank ABC is trade checking only on new loan and additional loan, if loan renewal no need to be done trade checking. Trade checking result can be one effective monitoring tools in detecting whether debtor's business is still good or not.
- Do a Know Your Customer (KYC) Process by giving complete information about related debtor. It is important so that when debtor is problematic in the future the WORD specialist does not have difficulty in analyzing debtor's business from the beginning of loan proposal until current condition.

ICMEM

4. 2.   For New or Prospects Debtor

For new or prospects debtor, besides doing usual analysis it is recommend to use Time Interest Earned as a monitoring tool of assessing whether debtor is capable of fulfilling its obligation to bank by its business income. Time Interest Earned can be used as standard value to what extend each debtor still compatible to be given loan by bank The existing criterion of repayment capacity at Bank ABC is 1.2. Due to the uncertain economic conditions, it is advisable to do a review on minimum value of debtor's repayment capacity.

US Index also can be used as a tool for helping the decision of debtor being given loan or not. US Index. The calculation of US Index differs from one debtor to another, also depend on current interest rate. If the US Index value is larger than 1, bank can do calculations to what amount of loan debtor can still be financed by bank. If the US Index is less than 1, it is not advisable to approve debtor loan proposal.

It is important for Bank ABC to analyze and do more thoroughly analysis on upcoming loan proposal. The problematic existing debtors at Bank ABC tend to have business on textile industry, material industry (construction, building and material trading), and food and beverages (restaurant, café). It is important to adjust bank's industry taste and updated trend on the industry.

It is recommended that Bank ABC should asses the debtors and charge interest rates accordingly, as ineffective interest rate policy can increase the level of interest rates and consequently NPL. The central bank should apply stringent regulations on interest rates charged by banks as to regulate their interest rate spread. Bank should apply efficient and effective credit risk management that will ensure that loans are matched with ability to repay, no or minimal insider lending, loan defaults are projected accordingly and relevant measures taken to minimize the same.

Increase in NPLs rate is referred often as the failure of credit policy. Increases in NPLs' rate are the main reason for reduction in earnings of banks. The reason behind the bad debts is low repaying capacity of borrowers, which in turn is the result of uneconomic use of loans, low per capita, and high interest rate.

Bank ABC is advisable to review the existing credit policy, considering high NPL number in current period.

5.   Implementation

The Proposed time table implementation plans for each stage are :
a)   Gathering detailed data of NPL number at Bank ABC in 2014, 2015 and 2016 – 2 week
b)   Cooperation with WORD specialist gathering sample of NPL debtor and its credit review proposal – 2 weeks
c)   Credit review policy review – 2 month
d)   Loan committee's opinion on existing credit policy, related to increasing NPL issue – 2 months
e)   Doing meeting with credit review, WORD specialist and loan committee, gathering data about issue related to NPL – 2 weeks
f)   Doing meeting with OJK – 1 month
g)   Credit review policy being updated – 2 months
h)   Trial implementation of the new credit policy for filtering, monitoring and reviewing credit – 1 month
   The proposed time table for implementation can be seen in the following table:

ICMEM

Table 8. Time Table Implementation

	2018					2019				
	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Gathering detailed data of NPL number at Bank PNB in 2014, 2015 and 2016	■									
Cooperation with WORD specialist gathering sample of NPL debtor and its credit review proposal	■									
Credit review policy review		■	■							
Loan committee's opinion on existing credit policy, related to increasing NPL issue				■	■					
Doing meeting with credit review, WORD specialist and loan committee, gathering data about issue related to NPL						■				
Doing meeting with OJK							■			
Credit review policy being updated							■	■	■	
Trial implementation of the new credit policy for filtering, monitoring and reviewing credit									■	■

From the time table above, it can be concluded that the proposed implementation will begin on June 2018 and planned to be finished by the second week of May 2019.

References

Basel Committee on Banking Supervision, 2000, Principles for the Management of Credit Risk, Basel

Bendekovic, Jadranka & Vuletic, Dora, 2011, Development Opportunities of Port Rijeka in The Future, *2nd International Scientific Conference Economic and Social Development*, 79

Bhamornsathit, Slisa & Katawandee, Punthumadee, 2016, An Analysis of Thai Listed Hotels: Financial and Operational Performance, *Journal of Business and Behavioral Sciences Vol 28, No. 2, Fall 2016,* 55-57

Collins, Ng'etich Joseph & Wanjau, Kenneth, 2011, The effects of interest rate spread on the level of non-performing assets: A case of commercial banks in Kenya., *International Journal of Business and Public Management (ISSN: 2223-6244), Vol. 1(1):58-65*

Chan, Eriza Amir & Siahaan, Uke Marius, 2016, The Use of US' Index Theory to Enhance Quality of Loan Within Banking Industry and Financial Institutions, Case Study : Bank ABC, *The Indonesian Journal of Business Administration,* 4-6

Dasari, Sandhyarani, 2017, Profitability in Punjab National Bank and Andhra Bank in the Changing Bank Environment, *Splint International Journal of Professionals, Vol. –IV, Issue-3, March 2017*, 31

D'Hulster, K., Letelier, R & Salomao-Garcia, V, 2014, *Loan Classification and Provisioning : Current Practices in 26 Countries*, 40:10

Embrechts, P, Furrer, H & Kaufmann, R, 2006, *Different Kind of Risk*, 22:8

Gitman, Lawrence J. & Zutter, Chad J., 2014, *Principles of Managerial Finance (14th ed.)*, Pearson

https://en.m.wikipedia.org/wiki/SME_finance

https://search.proquest.com/docview/1660960994?accountid=31562

https://www.investopedia.com/terms/a/altman.asp

https://www.investopedia.com/terms/i/interestcoverageratio.asp

https:www.investopedia.com/terms/t/tie.asp

https://www.mbda.gov/news/blog/2010/08/5-cs-credit-analysis

https://www.tarleton.edu/academicassessment/documents/Samplesize.pdf

Khan, Wajid, Naz, Arab, Khan, Madika, Khan, Waseem Khan Qaiser & Ahmad Shabeer, 2013, The Impact of Capital Structure and Financial Performance on Stock Returns "A Case of Pakistan Textile Industry", *Middle-East Journal of Scientific Research 16(2): 289-295, 2013*

Merkevicius, Egidijus, Garsva, Gintautas & Girdzijauskas, 2006, A Hybrid SOM-Altman Model for Bankruptcy Prediction, *V.N. Alexandrov et al. (Eds.): ICCS 2006, Part IV, LNCS 3994, pp. 364-371, 2006*

Otoritas Jasa Keuangan Republik Indonesia, 2017, *Peraturan Otoritas Jasa Keuangan Nomor 15 /POJK.03/2017 Tentang Penetapan Status Dan Tindak Lanjut Pengawasan Bank Umum*, Jakarta, Indonesia

ICMEM

Platt, Harlan & Platt, Marjorie, 2013, Risks to Auto Sector Recovery: Bankruptcies of Auto Suppliers in East Asia and the USA, *Journal of Asia Business Studies, Vol. 7, No. 3, 2013*, 231-233

Rosenberg, Jerry M., 1985, Dictionary of Banking and Financial Services (2nd ed.), John Wiley & Sons.

Saba, Irum, Kouser, Rehana & Azeem, Muhammad, 2012, Determinants of Non Performing Loans: Case of US Banking Sector, *The Romanian Economic Journal, Year XV, No. 44, June 2012*

Setiyawan, Indra & Pradiman, Drs., 2014, Pengaruh Current Ratio, Inventory Turnover, Time Interest Earned dan Return on Equity Terhadap Harga Saham pada Perusahaan Manufaktur Sektor Barang Konsumsi yang Terdaftar di BEI Periode 2009-2012, *Jurnal Nominal, Volume III, Nomor 2, 2014*

Scott, Jr., David F. & Johnson, Dana J., 1982, Financing Policies and Practices in Large Corporations, *Financial Management (pre-1986), Summer 1982, 11, 2, ABI/INFORM Collection pg.51*

Sharma, Dr. Vivek & Sharma, MS. Prerna, 2013, Capital Structure Analysis of Media and Entertainment Companies of India : A Case Study, *Summer Internship Society Volume IV, Issue-2, December 2013*, 70-71

Sherbo, Dr. Andrew J. & Smith, Andrew J., 2013, The Altman Z-Score Bankruptcy Model at Age 45: Standing the Test of Time?, *ABI Journal, December 2013*

Thai, Siew Bee, Goh, Han Hwa, Teh, Boon Heng, Wong, Jia Chian & Ong, Tze San, 2014, A Revisited of Altman Z-Score Model for Companies Listed in Bursa Malaysia, *International Journal of Business and Social Science, Vol. 5, No. 12, November 2014*, 197-206

Vlasicova, E. & Naglova, Z., 2015, Differences in the Economic Situation of Organic and Conventional Winemaking Enterprises, *Agris on-line Papers in Economics and Informatics, Volume VII, Number 3, 2015*, 90-91

www.ojk.go.id

Xu, Kun, Ding, Huiping, Bao. Xinzhong, 2016, SMEs Credit Evaluation on the E-Commerce Supply Chain Financing Model, *Iberian Journal of Information Systems and Technologies*, 42-44

ICMEM

The 3rd International Conference on Management in Emerging Markets

Proposed Strategy for New Home Furnishing Business in Indonesia

Festy Lalita Niramaya[a*], Dona Saphiranti[b]

[a,b]Master of Business Administration, School of Business and Management, Jl. Gelap Nyawang no.1 Bandung, Indonesia

Abstract

Nowadays people become aware on how to furnish their home. With many information on interior design home products, online and offline, consumers have a lot of choice. The growing numbers of population in Indonesia and the increasing number of productive age has made a great contribution on the growth of home furnishing business. Productive age people specifically in the age range of 25 – 45 years old are people who have the buying power. The people in this age range are considered the appropriate target market for home furnishing business.
The positive growing of new businesses especially in home furnishing business, whether it is a small scale or a big chain has created competition to build and introduce a new home furnishing business to the market. The idea of this research is to propose a strategy to enter and define a position and brand value in the market.
To achieve the insights from target consumers, a survey in the form of questionnaire has conducted. The result is discussed and the outcome is analyzed to get the appropriate insights on the home furnishing brand and products. Conclusion on the survey result become the proposed strategy for new home furnishing business in Indonesia.

Keywords: Home furnishing; Brand value; New business; Strategy

1. Introduction

1. 1.Background

The modern life especially in urban area is mostly related with activities outside the house, whether for work, commuting, and other kind of social activities. With such a big pressure and a tiresome activity, there is an increasing need of having the comfortable and relaxing place of living. No matter how spacious or how small the house is, people always want to make their place of living look good and comfortable at the same time. Because one of the essential needs is a home that reflects the personality and becomes a place to refresh the energy. As stated by Mariko Hirasawa, a Tokyo-based illustrator during her interview with Kinfolk Magazine in Volume Eleven, 2014: "*Creating a home is about really knowing what makes you feel good. It's about knowing yourself and what your priorities are: That is what's important*". To support the value creation of home and help the home owners to define what make them feel good, there are many home furnishing business being developed in the past years.

Home furnishing is closely related with individual personality because it represents personal products through which consumers can express themselves. With many information on interior design and home furnishing products, people have a lot of choices and options.

1. 2.Problem Statement

Indonesia's development on the economic sector has created a good environment for the small business to grow. Small business and medium enterprises have become one of an important factor to level-up the economy condition of

---

* Corresponding author. Tel.: +62-811-823330
*E-mail address:*festy.lalita@sbm-itb.ac.id

ICMEM

the country (IFC Market Research Study, March 2016). The growth of the local businesses creates a competition among the new players. The pressure to make a breakthrough introduction in order to be acknowledged by the potential consumers and to compete with the big players has put small business to a challenging situation. This condition is also happened in home furnishing business. A great deal of investment and a good strategy should be prepared to launch a new business in this area. Having the appropriate strategy for a new business to enter the market helps set-up the solid foundation and become a stepping stone for a good transition from initial phase to the more mature business in the future.

1. 3.Home Furnishing Business

Home furnishing business are categorized under Household goods category, and fall under sub category of furniture and furnishings and also household textiles (BMI Research, 2017) are one of the growing business, especially in urban areas. Household textiles are defined as bed linens such as sheets and pillowcases, other bedding products such as bedspreads, blankets, comforters, and pillows, toilet and kitchen linens, table linens, curtains and draperies, and handwoven and needle-worked tapestries and other wall hangings (US International Trade Commission, 1999). As seen in Fig. 1, furnishing and homes are positioned in the fifth rank of the total household spending. It is even slightly above the education household spending.
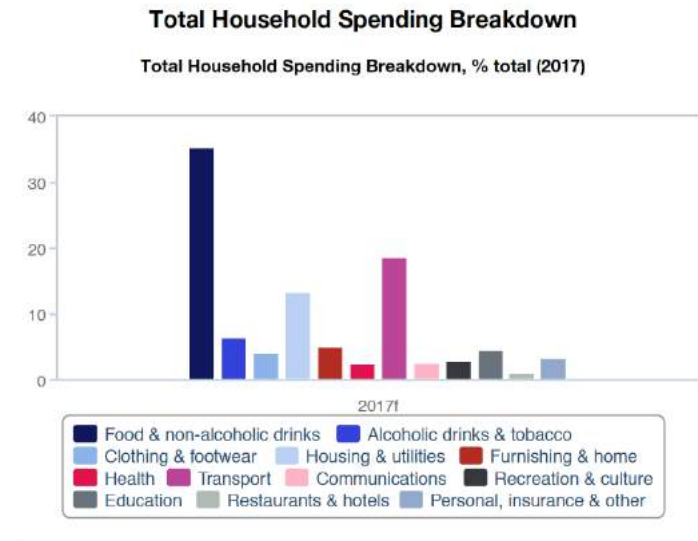
Fig. 1. Total Household Spending Breakdown

According to the PR Newswire on September 26, 2017, Indonesia furniture market by revenue is expected to reach USD 5,000 million by the year 2021. With the domination of big players such as IKEA, Informa, Fabelio, VIVERE, Wisanka Indonesia, and many other, the home furnishing market is growing in terms of demand and revenue due to the increasing number of customer base across the country. Over the year, due to the green living trends, home furnishing consumers are now starting to look for green furnishings such as upcycle the old wood or using natural eco-friendly materials.

1. 4.Demography Data

ICMEM

It is important to define the detail customer segmentation and customer persona. The customer segment chosen is in a middle to affluent class with age range from 25 – 45 years old. Considerations of customer behavior is very important aspects before making a brand strategy for this products, because in home furnishings purchase decisions the consumer's strong motivation in different level of life stages drives the intention to buy. Life stages changes such as leaving home for college or work, first home, marriage, family member addition, larger home purchase, empty nest, and so on. Related to the growing Indonesia's urban population specifically in age range 25 – 45, the need to furnish home in different life stages becomes opportunity for home furnishing business.

Fig. 2 . Middle-Class and Affluent Consumers in Indonesia

1. 5.New Business Opportunity

With the increasing demand for home furnishing products, there is an opportunity to open a new home furnishing business in a smaller scale that pay attention on specific demand such as green living trends and focus on the use of natural materials. Uniqueness and authenticity of a brand and its product will become a positive differentiation to face the competition with the big players as well as another small scale player.

Based on Fig. 2 about the middle-class and affluent consumers in Indonesia, it could be seen that the growth of this class helps to create demands that could be fulfilled by the new business that focus on the specific interest and preferences. In order to get the insights on the specific interest and preferences, it is necessary to conduct a survey dedicated to the potential target consumers. But before conducting a survey, a clear characteristics of potential target consumers should be defined first.

The potential target consumers are defined as person who starts to have a place for living and consider to purchase home furnishing products, and have an interest in interior design and home furnishing products with a concern on the quality and durability of products. According to the age group and persona, the potential target consumers are between 25 – 45 years old, a young family or an individual in middle-class and affluent with a buying power to purchase home furnishing products.

1. 6.Brand Strategy

The first thing to do as a new business is to introduce the brand and deliver the value of the brand to the market. The purpose of this action is to set a position and get the attention from the potential target, and at the end create a revenue stream and a long-term strong relationship with consumers.

The term brand in general is defined by American Marketing Association:

A Brand is a name, term, symbol, design, or combination of them which is intended to signify the goods and services of a seller or a group of sellers and to differentiate them from those of competitors.

The overall presentation that is perceived and experienced by the consumers made the brand. It is all about the familiar feelings and the consumers' awareness of the brand that influenced the purchase intention and decision. If consumers feel satisfied by the products, they will become loyal and help the brand to grow by advertising through their word of mouth. With more than one channel involved in product marketing, it is vital to manage and deliver a

ICMEM

duplicative brand experience across all channels. Managing the brand is a very important task to do, otherwise customers will create a brand. It is estimated that consumers are bombarded with more than 4,000 marketing messages a day (Boyle, 2007). Consumers have more choices, and the competition is about who can offer the most efficient time. The uniqueness of a brand, the differentiation, and owning a single attribute become the key success in the multichannel world.
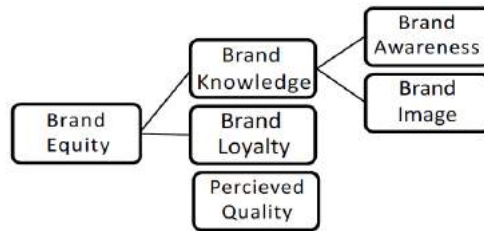
Fig. 3. Brand Equity

Consumer knowledge drives the differences that manifest in terms of brand equity. Brand itself is a reflection of the past and a direction for the future. Consumers' identification of a brand could affect the memory to associate a brand with themselves and at the end create a purchase intention. Purchase intention is a plan to buy a good or attain a service. The brand knowledge consists of brand awareness and brand image. Brand awareness is strength of the brand trace in memory. It means that the brand was recognized and consumer could recall performance and associate the brand with the positive value. Brand image is consumer's perception that is reflected by brand association in memory. In other words, brand image is the meaning of the brand for consumers.

Online channel or digital media gives consumers the ability and opportunity to understand the true personality of something, and can be used as a guide in decision-making processes (Rowles, 2014). From a consumer's point of view, digital media enable consumer to access all of the information related to a brand, including other consumer's experience about related brand. The existence of digital media is changing the brand measurements from just a name, logo, perception, and other visual identity, to also includes more important and influential touchpoints such as social media interactions and online reviews from consumers. In a short sentence, digital branding is the personality of product or service created by the sum of all experiences that an individual has with that brand.

As part of digital branding, social media plays an important role in creating brand awareness, including new business who want to be acknowledged and acquire a position in the market. "*Social media has fundamentally changed how we engage and interact between brands and consumers and has led to the fundamental shift in branding*" (Rowley, 2014). The shift is in the way of communication between brands and consumers and empowerment of the consumer. The engagement between brands and consumers could establish if the value is provided first.

1. 7.Product Design Theory

In order to deliver a solid brand and getting a positive perception from consumers, it is crucial to pay close attention towards the products being offered. One of the important factor in a product is the design of the product and the presentation. The term design itself is explained by John Heskett, who defines design as "... *the human capacity to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning in life*" (Heskett, 2002 : 6). Heskett explains that it is important to study design because as he said, "*design is one of the basic characteristics of what it is to be human, and an essential determinant of the quality of human life. It affects everyone in every detail of every aspect of what they do throughout the day*" (Heskett, 2002 : 4).

Product design is related with product and brand-related design such as logo, tagline, packaging, and else. The importance of product design is in order to deliver the brand and product and fulfill the needs of target consumers. For the future strategy, product design is needed to create and plan the next development and to

ICMEM

1. 8.SWOT Matrix

Brand strategy or any other business strategy aims to generate, select, and evaluate strategy to determine alternatives that could enable the organization or the business to achieve its mission and objectives (David, 2011).

SWOT Analysis is a tool to understand the Strength, Weakness, and to identify the Opportunity, and Threats of a person, a product, or a brand. SWOT is considered one of the powerful tool to specify the strength and weakness and to identify the possible options of development, opportunities to improve the performance, and threats that may persist (https://www.mindtools.com/pages/article/newTMC_05.htm)

Referring to SWOT Analysis ebook from www.free-management-ebooks.com, SWOT Analysis is: *a business analysis technique that your organization can perform for each of its products, services, and markets when deciding on the best way to achieve future growth. The process involves identifying the strengths and weaknesses of the organization, and opportunities and threats present in the market that it operates in.* The SWOT matrix is an important matching tool that helps organization or business owners develop four types of strategies: SO (strengths-opportunities) Strategies, WO (weaknesses-opportunities) Strategies, ST (strengths-threats), and WT (weaknesses-threats) Strategies (David, 2011). The good judgment should always be conducted while doing matching key internal and external factors, since it is the most difficult part of developing the SWOT matrix.
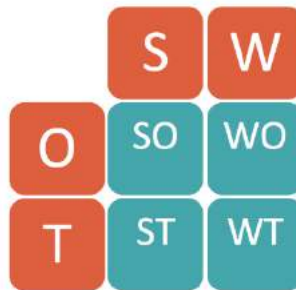
Fig. 4 . SWOT Matrix

1. 9.New Business Case

In order to achieve a better analysis about a new home furnishing business, one business has been chosen. Established in the end of 2017, Kamalita launched its first collection of throw pillow cases. The materials are chosen carefully to ensure the comfort of natural fabrics. This first collection uses natural cotton fabrics only without the additional polyester. This is in line with Kamalita business value, to deliver the best quality of home furnishing products that focus on the consumer's satisfaction guarantee and build a strong long-term relationship.

Kamalita is currently on the initial phase to introduce the brand and the products to target consumers. In order to introduce the brand and its product, Kamalita uses social media channel Instagram. The main reason to choose Instagram is because Instagram is widely used by the target consumers. The other reason is because Instagram has features that enables business owners to post photos or feeds based on their own timeline and Instagram provides advertising tools that can be adjusted depend on the purpose of advertisements and the target consumers. Kamalita's target consumer is person in age group of 25 – 44 years old. This age group is a productive age group, who just start to work or already in a more stable economic condition and have a concern in home furnishing products. The person in this age group is mostly start to live independently, whether lives in a boarding house, an apartment, or rent and own a landed house.

ICMEM

2. Research Methodology

2. 1. Research Methodology

In order to achieve the goal, the research will be conducted using theoretical foundation and case study towards a new business or a new product launch. The consideration of SWOT analysis towards the core issue will become the basic foundation and a stepping stone to acquire the business strategy for brand and product development using digital media, by using SWOT Matrix to analyze. Key factors included in the SWOT Matrix are acquired from the questionnaire sent to the respective respondents. The result of SWOT analysis will be the proposed strategy based on SWOT of the new business in home furnishing business. To get the consumers' insight, the survey has conducted using questionnaire. The targets of the respondent are person around the age of 18 – above 55 years old. Analysis of the survey result has been done after data collection in order to get the insights on consumer's profile, behavior, product development, and purchase channel.

2. 2. Questionnaire Requirement

The survey conducted must fulfill the requirement of the minimum sample size in order to achieve the sufficient data analysis. The use of Slovin's Formula aims to get the number of minimum sample size appropriate with potential target market of a new home furnishing business.

Slovin's formula can be seen as follow:

$$n = \frac{N}{1+Ne^2} \qquad (1)$$

n = sample size; N = population size; e = margin of error

This research use confidence level 90%, hence the margin of error (e) is equal to 1 – 0.9 = 0.1.

By using Hierarchy Market Size and various data from Biro Pusat Statistik, Indonesia Consumer and Retail Report Q4 2017, and published research papers, the number of Total Available Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtained Market (SOM) could be calculated as follow:

- Indonesian population is approximately 271 million by the year of 2020
- 56.7% of Indonesian population approximately lives in urban area by the year 2020
- Age range 24 years old – 35 years old are millenials generation. In year 2020 it is approximated that Indonesian population will consist of 34% millennials (TAM)
- By approximating the number of Indonesian population that falls between age range of 24 years old – 55 years old, live in Jakarta and Bandung area, the calculation of Serviceable Available Market (SAM) is 4.5 million consumers
- Considering the new brand who want to enter the home furnishing business will take around 2% of the available market in the initial phase, the Serviceable Obtained Market (SOM) is around 1,800 consumers.

The confidence level used is 90%, which means that e = 1 – 0.9, resulted in e = 0.1. By using the population size of 1,800 consumers, the sample size will as follow:

$$n = \frac{1800}{1+(1800*0.1^2)}$$
$$n = \frac{1800}{19}$$
$$n = 94.736 \infty 95$$

The result of minimum sample size is 95 respondents to represent the overall target market for a new home furnishing business.

3. Result and Analysis

3. 1. Result Findings

The result findings are the overall analysis of the market condition, consumer's preference and behavior insights, as well as data collected from questionnaire survey. The result is divided into three parts as follow:

- Consumer Analysis: The target consumers are between the age of 25 – 45 years old who live in urban area and have concerns on good quality home furnishing products. Most of the respondents of the questionnaires work as employee and entrepreneurs. These potential consumers consider word of mouth information or testimony important for them to decide whether to purchase a product from certain brand or not. They tend to use digital media in the daily life to get information of the brands and the products. So, the attractive presentation on digital media is important and could shape their perspective on the brand and the products.
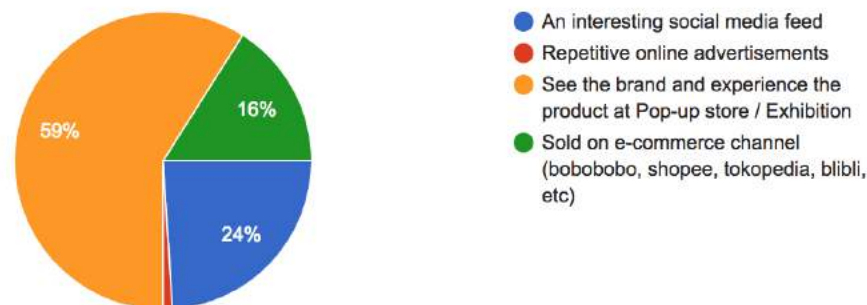
Fig. 5 . Reason to Purchase from New Brand

- Product Design Development: In order to get a good position in the market, a brand must have a specific value that is offered to the consumers. And consumers will associate the brand with a specific product and a positive value. One important finding regarding the specific value is that consumers consider pattern design and color choice as a unique distinction between one brand and another brand, besides the basic function of a product. To develop a product for future references, it is necessary to do the research about upcoming trends first.
- Channel of purchase: Although the target consumer seeks information on a brand and a product from digital media such as Instagram or websites, they prefer to purchase products in offline stores such as concept store and department stores, as could be seen in Fig. 6. The main reason is because they need to experience the product first before make a decision to purchase the product. As seen in Fig. 5, the main reason for consumers to purchase from new brand when they already experience the product and see the brand directly at offline stores such as pop-up store or exhibitions.

ICMEM
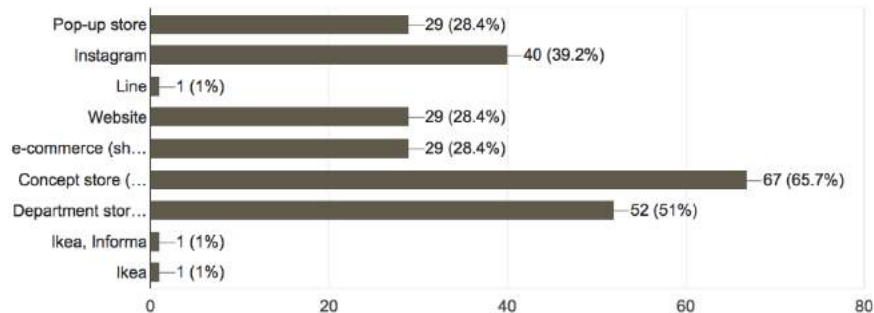
Fig. 6 . Channel of Purchase

- Kamalita Current Strategy: Kamalita already conducted a strategy to introduce the brand to the market. The strategy was to do the promotional activity through Instagram as a social media platform and use social media influencer to promote the brand through the influencer's Instagram feed. The result of the promotional activity was the increasing number of followers and the reach number that represents the number of potential consumers. From 75 followers before the promotion become 209 followers after the promotion.

3. 2. Analysis

Based on the consumer's insight from the questionnaire analysis and based on the current strategy that has conducted by Kamalita, there are important analysis that become the proposed strategy for a new home furnishing business. The points are as follow:

- Consumer's profile and insights are one of the first things to learn for a new business, so that the brand could deliver the product to the right target market and could fulfill the requirements of the potential consumers.
- The strategy to promote a new home furnishing business could be conducted using two channels, online and offline. Online channel is important to reach millennials consumers who use digital media in their daily life and to create a brand's perception and position in the market. Offline channel is important to deliver the actual products and helps potential consumers to experience the product and learn about the brand directly.
- Collaborations with product designers or craftsmen as well as with other brand to create unique and creative products that have specific characters and become a good representation of a brand's value.

4. Conclusion and Recommendation

4. 1. Conclusion

The conclusions of the research results are as follow:

- The first thing to do before launching a new home furnishing business is to set up a specific potential consumer and to profile the characteristics of the target in order to deliver the appropriate product and have a positive association of the brand in the market.
- Create a brand strategy and a product development strategy to introduce the brand and the products to the market.
- Do collaborations with product designers, craftsmen, and other brands to create unique experiences and authentic products.
- Continuously conduct a research for the upcoming trends and new technology related with the production and

ICMEM

design.

4. 2.   *Recommendation*

The recommendation for the future research is to conduct a survey in a larger scale so that the insight acquired is more detail and represents the actual profile of the consumers as well as the market condition in home furnishing business. Another recommendation is to use different tools to analyze so that the comparison could be done in order to learn the best tools to do the analysis of a home furnishing business, especially the one in the initial phase.

References

BMI Research (2017). Indonesia Consumer & Retail Report. *Q4 2017*

Zarlish Shahid, Tehmeena Hussain and Fareeha Zafar (2017). The Impact of Brand Awareness on the Consumers' Purchase Intention. *Journal of Accounting & Marketing*, *Volume 6 Issue 1*

Erfan Severi, Kwek Choon Ling, & Amir Nasermoadeli (25 July 2014). The Impacts of Electronic Word of Mouth on Brand Equity in the Context of Social Media. *International Journal of Business and Management*

Lois Boyle (March 2007). The Brand Experience. *Trade Journal*

Gavin W. Jones. (2010). The 2010 – 2035 Indonesian Population Projection

International Financial Corporation (March 2017). Women-owned SMEs in Indonesia: A Golden Opportunity for Local Financial Institutions

Kinfolk Magazine, Volume Eleven, 2014

David Aaker (2009). Managing Brand Equity

David Aaker (2014). Aaker on Branding – 20 Principles That Drive Success

Kevin Lane Keller (2013). Strategic Brand Management – Building, Measuring, and Managing Brand Equity

Lilik Purwandi (April 2016). Indonesia 2020: The Urban Middle Class Millenials. *Alvara Research Center*

https://www.entrepreneur.com/article/279271

Daniel Rowles (2014). Digital Branding, A Complete Step-By-Step Guide to Strategy, Tactics, and Measurement

John Heskett, 2002, Toothpicks and Logos: Design in Everyday Life

www.admecindia.co.in

www.j6design.com.au/6-principles-of-design/

http://acasadisimi.com/2062/house-design-principles-28-11-2016/trend-house-design-principles-best-design-ideas/

DR. Dina Dellyana (2017). New Venture Management Lecture Presentation

https://www.mindtools.com/pages/article/newTMC_05.htm

https://www.bcgperspectives.com/content/articles/center_consumer_customer_insight_consumer_products_indonesia_rising_middle_class_affluent_consumers/?chapter=3

https://www.prnewswire.com/news-releases/indonesia-furniture-market-by-revenue-is-expected-to-reach-usd-5000-million-by-2021-ken-research-647864533.html

http://instagram.com/kamalita/

ICMEM

The 3rd International Conference on Management in Emerging Markets

Halal Hotel Indonesia: Concept, Practice, Prospects, and Challenges

Alya Varian[a*], Fitri Aprilianty[b]

[a,b]School of Business Management, Bandung Institute of Technology, Jl. Ganesha No. 10 Bandung 401342, Indonesia

Abstract

The growth of Muslim population in world made a significant change in halal demand of products and services. Beside of that, halal lifestyle predicted have a huge potential market because in Indonesia itself Muslim population reach 88% from the total population. Sharia and halal label become more interesting nowadays. There are no exceptions for tourism sector. In these few years Indonesia shows its sharia tourism potential, evidenced by the awards achieved and its 3rd position in Global Muslim Travel Index (GMTI) 2017.

One thing that becomes Muslim consumer consideration to travel around is hotel, then established halal hotel. Halal hotel is developing because the market is exist and increasing too. There are 50-100 halal hotels, but only few of them that have halal certifications. The main challenge is different interpretation of halal hotel as an accommodation because of that there must be a gap between the concept and practice. Halal hotel is one of important accommodation in tourism sector that use sharia principles in their practice that give easiness for Muslim tourists to gain spiritual benefit and suitable for halal lifestyle. This research is an attempt to assemble a comprehensive a set of guidelines and recommendation for hoteliers in Indonesia to implement.

Using quantitative approach, the data for this research was obtained from some sources. The questionnaire having the main role were done to hotelier, halal center institutions, and customers in order to have different point of views that complement and validate each other producing a more complete perspective.

Keywords: Halal Hotel; Halal Tourism; Muslim; and Indonesia

1. Introduction

Halal industry in Indonesia is growing in recent years because around 88% of Indonesia's 250 million people are Muslims, which is why Indonesia called as Muslim-majority country. There are halal food, finance, cosmetic, travel, until fashion. Halal itself means following sharia laws and according to the dictionary, halal is religiously acceptable according to Muslim law (Angel, 2017). However, travel and tourism industry produced total impact of $US 80 billion of Indonesia's GDP in 2014, which is larger than automotive manufacturing, education, banking, financial services, retail, and chemicals manufacturing sectors. It also causes industry GDP expanded 67% between 1995 and 2014 while the total economy extended 117% for the growth trends. Travel and tourism GDP is expected to evolve at an annual average of 4.8% over the next ten years (World Travel and Tourism Council, 2015). Arief Yahya as Minister of Tourism of The Republic Indonesia stated that tourism is the easiest and the cheapest contributor to GDP, foreign exchange earning, and employment. Halal tourism is a new approach to promote Indonesia's tourism to support the cultural and Islamic principles without losing the uniqueness and originality of that area (Jaelani, 2017). Indonesia is referring Global Muslim Travel Index (GMTI) as the standardization of Halal tourism industry (Pratiwi, 2016).

GMTI separates the index into two categories; Organisation of Islamic Cooperation (OIC) destinations and Non-OIC destinations. For seventh year in a row, Malaysia is always on the top of GMTI. The second position is United Arab Emirates, which retained its position from previous year, and then Indonesia enhanced its position from the fourth to the third. GMTI scored the destinations based on four key strategic areas; access, communications, environment

---

* Corresponding author. Tel: 081224505877
E-mail addres: alya.varian@sbm-itb.ac.id

ICMEM

and services. These key strategic areas divided again to be more specific and develop into more Muslim friendly travel destination. Here are the results, the top 10 ranking OIC and Non-OIC destinations for Muslim travelers in 2017. It shows the potential and opportunity of Halal tourism in Indonesia is quite big. Other terms for Halal tourism are Sharia Tourism, Islamic Tourism, Halal Friendly Tourism Destination, Halal Travel, Muslim-friendly Travel Destinations, or halal lifestyle (Republika, 2017). In International Seminar on Halal tourism 2016, Arief Yahya release the annual target of halal tourist and the projections for Indonesia tourism in 2019 are 5 million of international Muslim tourists to Indonesia, reach the top position in Global Muslim Travel Index (GMTI), and 242 million domestic Muslim tourist trips. The annual target of international and domestic Muslim travelers in Indonesia table can be seen below.

Table 27. Annual Target of Muslim Traveler

Year	International Muslim Traveler to Indonesia	Domestic Muslim Traveler Trips (million)
2014	2,005,311	220
2015	2.212.000	224.4
2016	2,579,000	228.8
2017	3,108,000	233.2
2018	3,849,000	237.6
2019	5,000,000	242

As an attempt to develop and promote Halal tourism in Indonesia, Minister of Tourism and Creative Economy established Kelompok Kerja (POKJA) that undertake several programs like discussion, observation, and studies to other countries that already developed Halal tourism (Perkumpulan Pariwisata Halal Indonesia, 2017). One of business related to Halal tourism is halal hotel. The first sharia hotel in Indonesia is Sofyan Hotel, it changed from conventional into halal in 1994, begin with closed the bar and also the nightclub. In 2002 it imposed guest selection rules, thus who can stay at Sofyan Hotel are only couples that can show their marriage certificate. Halal hotel is a new phenomenon that developed since the 1990s and become a trend 20 years later (Yuswohady, 2015).

Currently, it is estimated there are hundreds of halal hotel in Indonesia supported by the large Muslims consumer market which aware of the Halal Lifestyle, especially for the tourism sector. The potential that associated with the large number of tourists who come to Indonesia including the example mentioned earlier hence the standardization of halal hotel business is drawn up. The regulation of the Minister of Tourism and Creative Economy Republic of Indonesia number 2 of 2014 managed about the guidelines for halal hotel business. In the Article 1 Number 3 stated halal hotel business is hotel business, which operations must meet the criteria of halal hotel business as referred to this Ministerial Regulation. It followed by Article 1 Number 4 stated the criterion of halal hotel business is a formulation of qualification and/or classification covering aspects of product, service, and management.

Furthermore, to be stated as Halal hotel, the hotel should have Halal certification. Rajagopal, Ramanan, Visvanathan, and Satapathy (2011) have done a research about halal certification, which the result said halal certification could be use as marketing tool in promoting Halal products or services. Halal certification is also needed as the standard of procedure. Actually, there are two kinds of sharia certification for hotel industry. The first one stands for hotel restaurant certification that apprised by The Assessment Institute for Foods, Drugs, and Cosmetics MUI (LPPOM MUI) and the second one stands for hotel management certification that appraised by National Sharia Council MUI (DSN MUI). However, the hotel restaurant and management certifications are complementary although both are still under MUI institution, but the object that examined are obviously different.

To test weather the Halal Hotel in Indonesia already fulfill the Halal standard in the customers point of view, researcher will test Halal hotel customer satisfaction and purchase intention. Nowadays, the customer satisfaction and purchase intention is a definite need for hotel services and increasing profits, therefore maintaining and measuring customer satisfaction and purchase intention is the most important aspects of quality improvement because at that state customer feels that the specifications of a service is fixed attached to his expectations. In 1983, three researchers as Parasuraman, Berry and Zethaml started a vast research on the issue of service quality. They had concluded that the

ICMEM

criteria which is counted in the estimation of the service quality is valued only by the customers and the rest of the evaluations are invalid by any other people rather than the customers. To evaluate the aspect of service quality in Hotel business, Parasuraman et al. (1988), designed "LODGSERV" model. This model includes a set of measurements related to customer's expectations and to customer's perceptions of services and in this study will focuses on customer satisfaction and customer loyalty of Halal hotel in Indonesia on the basis of LODGSERV model.

2. Literature Review

2. 1. Halal Concept

The report from United Nations stated that Islam is the second largest religion after Christianity. There is an expectation that the global Muslim population will grow by about 35% over the next 20 years and could grow until 2.2 billion by 2030, and 2.6 billion by 2050, which is almost 30% of the global estimated population (Fleishman-Hillard Majlis). Therefore Muslim presents a great global market for halal products and services since Muslim in general comply strongly with religious principles and more sensitive about the *halalness* of their lifestyle (Elasrag, 2016). There are two main categories in Islamic law; halal and haram. In the simple way, Halal is lawful or allowed and haram is unlawful or not allowed. According to Halal Haram in Islam book by Dr. Yusuf Qardhawi, Halal means something that breaks down harmful knots that God permits it and Haram means something that is strictly prohibited by God. It has been explained clearly in the Quran, Allah said in the verse al-Baqarah: 168, "Oh Mankid, eat from whatever is on earth (that is) lawful and good and do not footsteps of Satan. Indeed, he is to you a clear enemy". There is also something called makrooh, which is lower than Haram in the Islamic Law levels, hence person who did it is will not be punished by Haram law. The Halal concept presents the guidance for Muslims in all conditions of consumerism and consumption of products and services (Angel, 2017).

Halal Hotel

Muslim consumer is growing and also the demand by Muslim travelers makes the concept of Islamic hotel is welcomed and has increased (Razalli, Yusoff, & Roslan, 2013). Standing Committee for Economic and Commercial Cooperation of the Organization od Islamic Cooperation (COMCEC) held a research about Muslim Friendly Tourism (MFT): Regulating Accommodation Establishments in the OIC Member Countries. Same with halal tourism, halal hotel also must be in accordance with Islamic values. Halal hotel defined as accommodation, which the business is suitable with Islamic guidelines or sharia principles (Nurhidayati, Umardiono, & Edi, 2017). The research clearly highlights that Muslim tourists value of MFT accommodation standard (the hotel is certified to offer these services). COMCEC have identified 680 Muslim-friendly travel accommodation, this projection includes certified hotels and hotels that identify themselves as halal hotel without external verification. Indonesia identified has 35 hotels that can categorize as Muslim-friendly accommodation. The growth of halal hotel is marvelous, but this industry faces any issues and challenges, the lack of consensus about this indicates ambiguities. There are no exact characteristics or written rules for halal hotel (Samori & Rahman, 2013).

The terms of sharia and halal hotel are the same. Sofyan as the owner of Sofyan Hotel said in the early times, the ministry used "sharia" term because there was exist sharia bank. In 2015, there was FGD with the new minister, marketing expert, and branding expert recommend the term of "halal". They said the definition of sharia is more directed to Islamic law while tourism more directed to service and entertainment, hence the term of halal is more appropriate for tourism sector (Suaidi, 2017). As mentioned before, there are two classes of halal hotel; Hilal 1 and Hilal 2. Hilal 1 can be likened to a semi halal hotel, it defined as halal hotels are considered to meet all the criteria of halal hotel business needed to serve minimal needs of Muslim travelers. Hilal 2 is halal hotel that considered meeting all the halal hotel business criteria required to serve the moderate needs of Muslim travelers. Overall, conventional with halal hotel has no significant differences in the facilities, but halal hotel has extended service for Muslim guests, which is suitable for halal lifestyle and also gives spiritual benefit.

ICMEM

2. 2.   Halal Hotel Certification in Indonesia

The regulation of the Minister of Tourism and Creative Economy Republic of Indonesia number 2 of 2014 has decided and set guidelines for the implementation of the halal hotel business. Stipulation of Hilal at halal hotel is based on the assessment result of the fulfillment of absolute criteria applicable to halal hotel business, covering product, service, and management aspect. Article 7 number 3 discussed that Hilal 1 has 8 elements and 27 sub elements for product aspect, 6 elements and 20 sub elements for service aspect, and 2 elements and 2 sub elements for management aspect. Then article 7 number 4 declared that Hilal 2 has 11 elements and 40 sub elements for product aspect, 10 elements and 28 sub elements for service aspect, and 3 elements and 6 sub elements for management aspect. This regulation also set the absolute sub-elements that halal hotel must meet. Article 8 number 3 mentioned, hotel that can not meet the absolute criteria on the Hilal 1 and 2 then can not be classified and can not postulates itself as halal hotel business.

Ministry and Majelis Ulama Indonesia (MUI) jointly conduct guidance and supervision on the implementation of halal hotel business. Majelis Ulama Indonesia (MUI) is an institution that take care and responsible for the issuance of halal certificates in Indonesia. The authority body of MUI that assess hotel restaurant is The Assessment Institute for Foods, Drugs, and Cosmetics MUI (LPPOM MUI) and hotel certification is National Sharia Council MUI (DSN MUI). As the name implies, LPPOM MUI has a role in effectively defining the halal-haram status of foods, drugs, and cosmetics, while the role of DSN MUI is to develop the application of sharia values in economic activities. MUI claimed that halal certification is a written fatwa that stated the halal of a product according to the sharia law in order to give the clear status therefore convincing people who consume it. Halal certification is voluntarily submitted, but MUI encourages it to keep Indonesia from lagging behind in the current halal industry development. There are several steps that must be passed by business owners (company, slaughterhouse, catering service, restaurant, and distributor) that will register and receive halal certification as mentioned on the Figure 2 below.
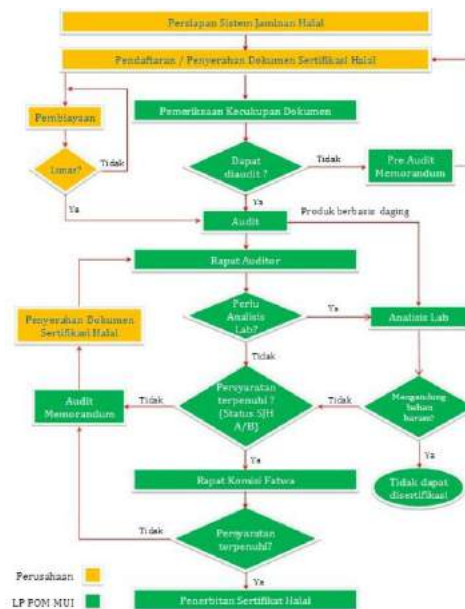
Figure 8. Halal Certificaton Procedure (Lembaga Pengkajian Pangan Obat dan Kosmetika Majelis Ulama Indonesia)

2. 3.   Service Quality

Goods or product quality can easily describe and measure, while the quality in service is not. It happened because the characteristics of service, which are intangibility, heterogeneity, and inseparability (Parasuraman, Zeithaml, &

ICMEM

Berry, 1985). Other characteristics that different from those mentioned before are simultaneously and perishability (Salazar & Costa, 2010). On the 'A Conceptual Model of Service Quality and Its Implication for Future Research (SERVQUAL)' paper, written the most important insight from their executive interviews. There is written; A set of essential differences or gaps are related to the perception towards service delivery, these gaps can be major problem in providing services that are considered high quality by customers (Parasuraman, Zeithaml, & Berry, 1985). Customer's expectation can be defined as what they feel service provider should propose and this is impacted by their personal needs, past experience, word-of-mouth, and service provider's communications (Parasuraman, Zeithaml, & Berry, 1985) while customer's perception is what they actually experience (Parasuraman, Zeithaml, & Berry, 1988). If what customer perceived is below their expectation they will judge it as low quality whereas if they perceived is meets or even exceeds their expectation they will judge it as high quality (Daniel & Berinyuy, 2010).

Hence, it is important to regularly acquire information about consumers also non-consumer's expectations and perceptions because they are the ones who assign the quality. A service provider can realize their strength and weakness from their consumers whereas they also can gather other information about competitor's performance from non-consumers that can be used as standard comparison (Salazar & Costa, 2010). The concern to keep improving the quality to service provider is for their survival and growth as it can help them overcome the challenges they face in competitive market (Daniel & Berinyuy, 2010). In the beginning of service quality research in 1985, the key determinants or dimensions are divided into 10; responsiveness, reliability, competence, access, courtesy, credibility, communication, tangible, security, and understanding. Because there are some determinants that are considered overlapping, then in 1988 it reduced into 5 key determinants of service quality, that are tangible, responsiveness, reliability, assurance, and empathy.

The model that uses these key determinants to understand the gap between customer's expectations of service offering and perceptions of service received is known as SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988). SERVQUAL model is the most well known systematize questionnaire to measure service quality (Akbaba, 2006). As one of service provider, hotel is also need to measure their quality. Quality of service is an imperative measure for the success of a hotel and the outstanding way to measure it by using LODGSERV. The usefulness of LODGSERV is the same with SERVQUAL, the point LODGSERV model used for measure the quality of service that provided by hotel and lodging (Knutson, Wullaert, Steven, & Yokohama, 1990). LODGSERV was developed based on the 5 key determinants of service quality in SERVQUAL, but the difference is in attributes. SERVQUAL has 22 attributes while LODGSERV has 26 attributes that are more detailed and directly addressed to hotel's guests. Research indicates that service quality leads to customer loyalty and attraction of new customers, employee satisfaction and commitment, positive word-of-mouth, improve corporate image, reduced costs, and escalated business performance (Berry, Bennett, & Brown, 1989). The higher the perception of service quality, the more likely guests will return to the hotel, spreading good word-of-mouth and increasing brand loyalty (Keith & Simmers, 2013).

2. 4.   *Customer Satisfaction*

Customer satisfaction defined as a feeling resulting from evaluation process about what they has been received towards what was they expected, involve the purchase decision itself and their needs and wants correlated with the purchase (Kotler & Armstrong, 1996). Quality enhancement is the essential factor that influences customer satisfaction and customer purchase intention in manufacturing and even service industries (Meesala & Paul, 2016). Actually, customer satisfaction has the same vital position with service quality. Both of them are very crucial approach that businesses should understand so that they will be survive in competitive market and therefore become larger. There is a way to better understand it by measuring customer's perspective (expectations and perceptions) towards the service offered by service provider in order to satisfy them (Daniel & Berinyuy, 2010).

Satisfaction is a post-purchase situation of customer's mind after experiencing the service that shows how much they like or dislike it (Woodside, Frey, & Daly, 1989). That statement strengthened by a lot of researches, one of the most recent research is 'Less is More: A New Insight for Measuring Service Quality of Green Hotels'. The researchers said customer satisfaction considered as the indicator of service quality because it is the last output set up by the

ICMEM

service. They also said, hotels as one of service industry that provide accommodation need to maintain and improve their service quality hence necessarily affects customer satisfaction and repurchase intent (Lee & Cheng, 2017).

2. 5.   Customer Loyalty

Customer loyalty can defined as the extent to which the customer exhibits repetitive purchasing behavior of the service provider, has a positive attitude disposition towards the provider, and considers using only that provider when they need this kind of service (Gremler & Brown, 1996). Service loyalty is probably one of the most important constructs in service marketing and the ultimate impact on repurchase by customer (Caruana, 2002). Caruana also revealed that the concept of service quality, customer satisfaction, and service loyalty are related each other. In 1999, Hansen and Bush has mentioned about the relationship between these three concepts. Service quality is assumed as an essential component affecting customer satisfaction and loyalty (Hansen & Bush, 1999). Magi and Julander also was proved it in a research about grocery stores in Sweden that customer satisfaction come from high perceive service quality and that makes the customer loyal (Daniel & Berinyuy, 2010). The high competitions in service industry exceptionally hotel maintenance makes it difficult for these groups to retain guests; therefore to attract loyal customers, businesses need to offer guests with appropriate service quality (Hosseini, Zainal, & Sumarjan, 2015).

5.   Research Framework

The research framework presented on the next page correlates to the research questions and objectives found in the first chapter. It also explains the fundamental process that used guide this research. Hence the research framework contained all concepts of data and the results that were acquired. This research framework is based on (Daniel & Berinyuy, 2010) titled 'Using The SERVQUAL Model to Assess Service Quality and Customer Satisfaction' to find out how suitable the SERVQUAL model in grocery stores and empirically, illustrate how customers (guests) perceived service quality and either they are satisfied with the services offered.

This research framework is also based on (Caruana, 2002) paper titled 'Service Loyalty: The Effects of Service Quality and The Mediating Role of Customer Satisfaction' to examine the relationship between service quality towards customer satisfaction then customer loyalty and the relationship between service quality straight to the customer loyalty in retail banking. The result from that paper is service quality has been found to be a substantial input to customer satisfaction, which the customer satisfaction has direct impact on loyalty of service. 'An Analysis of Library Customer Loyalty: The role of Service Quality and Customer Satisfaction, A Case Study in Indonesia' paper also used the same research framework but of course for different target, which is library. The result is service quality has a straight influence into customer satisfaction then directly guide to library customer loyalty, but there is no a significant direct effect from service quality to customer loyalty. The LODGSERV model is acceptable for assess service quality in lodging industries, including halal hotels that offered service using the service quality key determinants but with an additional; halal communication. The reason is some different service delivery between conventional hotels with the halal one. On the next page attached framework that support this research.

ICMEM
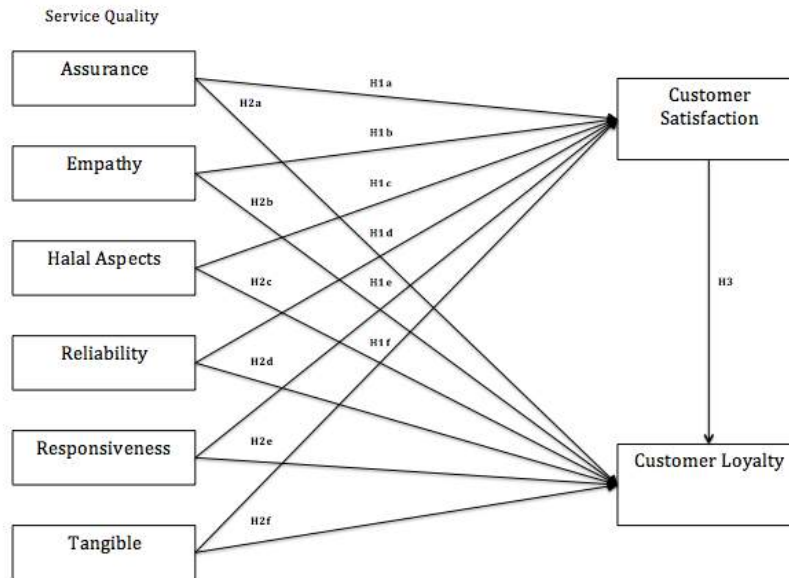
Figure 9. Research Framework

H1   : Service quality has directly influence customer satisfaction
H1a   : Assurance has directly influence customer satisfaction
H1b   : Empathy has directly influence customer satisfaction
H1c   : Halal aspects has directly influence customer satisfaction
H1d   : Reliability has directly influence customer satisfaction
H1e   : Responsiveness has directly influence customer satisfaction
H1f   : Tangible has directly influence customer satisfaction
H2   : Service quality has directly influence customer loyalty
H2a   : Assurance has directly influence customer loyalty
H2b   : Empathy has directly influence customer loyalty
H2c   : Halal aspects has directly influence customer loyalty
H2d   : Reliability has directly influence customer loyalty
H2e   : Responsiveness has directly influence customer loyalty
H2f   : Tangible has directly influence customer loyalty
H3   : Customer satisfaction has directly influence customer loyalty

6. Methodology

The qualitative and quantitative approaches in this research are complementary because the concept, practice, prospects, and challenges are obtained from the, hoteliers, halal experts from Halal Center and Center of Tourism, and Halal hotel's guests. The qualitative is done to explore how the informants describe the phenomenon and obtain new information to develop quantitative data collection instruments (questionnaire), because of that it consider as exploratory sequential design. Hence, this research used questionnaire as data collection instrument for guests in halal hotel. Questionnaire is a set of questions in order to record respondent's answer (Sekaran, 2003). The population for this research is people who are visiting or staying in halal hotel. In this case the halal hotel that we use as the objects are Ruby Hotel, Noor Hotel, and Pesonna Hotel. This research uses non-probability sampling and the sample size that collected for this research is around 200 people. This sample size was chosen because the previous service quality

research in hotel was distributed 250 questionnaires but 16 were not included because of incompleteness (Akbaba, 2006). The researcher chooses respondents who had already spent the night in the halal hotel because they also already know the service quality that delivered by halal hotel, their satisfaction, and their loyalty. This research used questionnaire as data collection instrument. The questionnaire divided into two parts, the first one constructed for respondent's profile and the second part designed to measure halal hotel service quality, customer satisfaction, and customer loyalty. There are 32 attributes for service quality adapted from LODGSERV and guidelines for the implementation of halal hotel business by the Minister of Tourism and Creative Economy Republic of Indonesia. Customer will rate the adapted attributes also satisfaction and loyalty statements on a seven-point likert-scale, (1) represent "strongly disagree" and (7) "strongly agree". Researcher analysed the data by PLS analysis. Thus, this technique will reduce the bias caused by multiple regressions and construct the relationship between halal hotel service quality, customer satisfaction, and customer loyalty.

Interview is one method of collect data to acquire information on the topic of interest (Sekaran, 2003). Interview can be in structured, semi-structured, or unstructured, but for this research uses semi-structured interviews. Semi-structured interviews need a list of subject matters and questions to be containing although it can vary from interview to interview, it is possible to reduce and add questions also change the order of questions depending on the flow of the conversation (Saunders, Lewis, & Thornhill, 2007). Non-probability-judgmental sampling technique is uses in this research interview. This sampling technique supports many alternative techniques to choose sample based on researcher's subjective judgment (Saunders, Lewis, & Thornhill, 2007). Judgmental sampling is the only practicable sampling method for gaining the type of information that needed from very exact people who have the facts and information sought (Sekaran, 2003). Researcher decides to interview Halal Hotel Manager and Halal Experts because they can provide sensible answer of the research questions. In this research researcher interviewed:
  a) Halal Hotel Manager
     - Zaky Makoto as Operational Manager of Ruby Hotel
  b) Halal Experts from Halal Center and Center of Tourism
     - Budi Faisal as Head of Tourism Planning and Development Center at ITB, Board of Experts Salman ITB Halal Center, and Board of Trustees Daarut Tauhiid Foundation
     - Dina Sudjana as Daily Director of Salman ITB Halal Center
     - Wisnu Rahtomo as a Coordinator of Center for Tourism Destination Studies and Tourism Education Senior Lecturer at Sekolah Tinggi Pariwisata Bandung (CTDS STPB) to gather detailed information related to halal tourism, especially for halal hotel industry.

The data that gathered from interview is analyzed by phenomenology process in order to understand the halal hotel in Indonesia phenomenon. The data were coded for mentioning something that related to the Halal hotel concept, practice, prospects, and challenges. Then, the researcher continues to code the data and analyse mentionable statements that represent the topic. Triangulation in this research process by comparing information or the data in the different way and in order to increase the validity, the confirmation of informant's interpretation of their words was done appropriately during the interview.

7. Result and Discussion

7. 1. *Quantitative Approach*

Partial Least Square (PLS)-SEM

This research used Partial Least Square (PLS) to identify the causal modeling stated in conceptual framework. The calculation is done through SmartPLS application to identify the relationship between all variables in service quality (tangible, reliability, assurance, responsiveness, empathy, and halal aspects), customer satisfaction, and customer

ICMEM

loyalty in the reflective measurement model. The calculation process requires some important steps to be completed before continue for further analysis including internal consistency reliability, indicator reliability, convergent validity, and discriminant validity. The result of calculation model is as shown below in Figure 3.
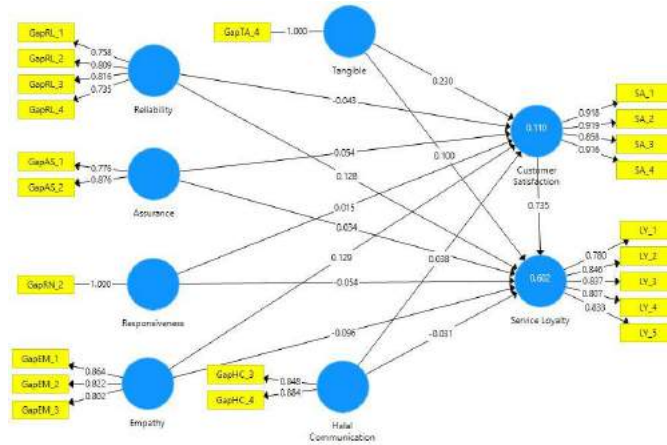
Figure 10. PLS Result
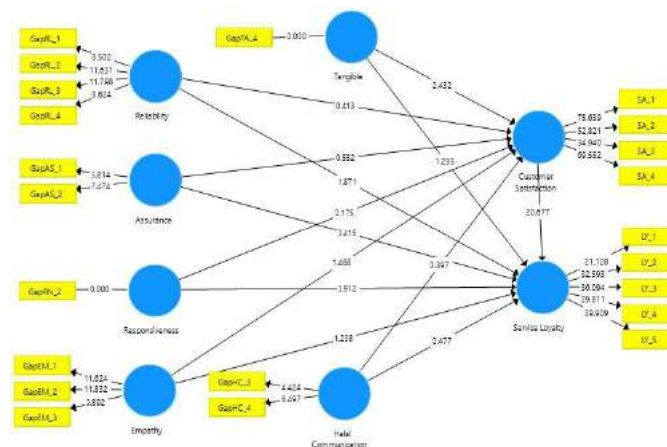
Figure 11. Bootsrapping Result

The Figure 4 above shows that outer is highly significance because it shows that the T Statistics values is all greater than 1.96. Therefore, it can be concluded that the model is supported empirically. The values vary from 0 to 1 with 1 describing perfect predictive accuracy. The R^2 value for customer satisfaction is 0.110 meaning that the six latent variables (tangible, assurance, reliability, assurance, halal aspects, and empathy) explain 11% of the variance in customer satisfaction. Then, the R^2 value for customer loyalty is 0.602 meaning that the six latent variables (tangible, assurance, reliability, assurance, halal aspects, and empathy) explain 60.2% of the variance in customer loyalty. If R^2 values should be equal to or greater than 0.10 in orders for the variance explained of a particular endogenous construct to be deemed adequate (Falk & Miller, 1992).

Stone-Geisser test (Q^2) is used to evaluate the predictive relevance and this stage aims to determine the extent to which the predictions are favorable. Stone-Geisser test (Q^2) can be obtained by performing blindfolding procedures in SmartPLS. The Q^2 results for customer satisfaction and customer loyalty are 0.209 and 0.841 consecutively. A positive

ICMEM

Q^2 score confirms the predictive relevance with respect to a particular construct. Gaining a value of GoF is 0.313, which is greater than 0.1 means that the model has the ability to explain empirical data and the saturated model (SRMR) value is 0.075, which is below 0.08 means it can be concluded that it is good model fit and the model formed can be considered quite valid.

7. 2.   *Hypothesis Testing*

This part will be presenting the PLS calculation to explain the hypothesis test result according to the inner model path coefficient and significance indicated by the t-values. The result is shown below.

Table 28. Hypothesis Testing

Hypothesis	Structural Path	T-Values	Result
H1a	Assurance → Customer Satisfaction	0.528	Rejected
H1b	Empathy → Customer Satisfaction	1.351	Rejected
H1c	Halal Aspects→ Customer Satisfaction	0.377	Rejected
H1d	Reliability → Customer Satisfaction	0.407	Rejected
H1e	Responsiveness → Customer Satisfaction	0.168	Rejected
H1f	Tangible → Customer Satisfaction	2.467	Accepted
H2a	Assurance → Customer Loyalty	0.432	Rejected
H2b	Empathy → Customer Loyalty	1.262	Rejected
H2c	Halal Aspects→ Customer Loyalty	0.489	Rejected
H2d	Reliability → Customer Loyalty	1.822	Rejected
H2e	Responsiveness → Customer Loyalty	0.895	Rejected
H2f	Tangible → Customer Loyalty	1.326	Rejected
H3	Customer Satisfaction → Customer Loyalty	19.757	Accepted

The phenomenon of the rise of halal hotels supports the development of halal industry and tourism industry in Indonesia. For that reason, an understanding is needed to find out the guest's view as the market's point of view of their expectations and perceptions regarding the elements of service quality in lodging businesses during their stay that has significant impact on customer loyalty and customer satisfaction that mediate the relationship between those variables. The elements and the model that used for this research were adapted from previous research by Lee & Cheng (2017).

The first relationship to discuss in this model is the relationship between service quality and customer satisfaction with 6 hypotheses tested. Based on calculation, only H1f that accepted. Tangible is the physical evidence of the service, thus making it easier to assess the service provider of what is visible for the guests. On the opposite, they do not think that assurance, responsiveness, reliable, empathy, and halal aspects are affecting their satisfaction. Evaluating the perceptions and expectations of customers, it can be seen that no dimension of service quality brings customer satisfaction. Their positive opinion towards Halal hotel can strengthen this fact because most of them answered "easiness to pray" which refers prayer or worship facilities. This is in line with a previous research since all the SERVQUAL dimensions do not equally impact people's satisfaction (Meesala & Paul, 2016).

Second, it will be about the relationship between service quality and customer loyalty with 6 hypotheses was tested. Based on calculation, all of the hypotheses (H2a, H2b, H2c, H2d, H2e, and H2f) are rejected. The result indicates that assurance, tangible, reliability, halal aspects, empathy, and responsiveness are does not guaranteed guests will come again to the hotel and be loyal guests. This relates because the hotel is a place of accommodation that is adjusted

ICMEM

availability based on our current location. This result is consistent with previous research with findings the stronger relationship between service quality perception and intention to recommend rather than intention to return (Salazar & Costa, 2010).

The third thing is the relationship between customer satisfaction and customer loyalty with a hypothesis tested. Based on calculation, the hypothesis (H3) is accepted. Guest's satisfaction is critical to building loyalty since they will visit the halal hotel again if their satisfaction with the service quality is high. This result is consistent with previous research or study named title 'Service Quality, Customer Satisfaction, and Loyalty in Hospitals' (Meesala & Paul, 2016).

Another findings to discuss are presence of mediating and indirect effect found in the research. Comparing the significance score of the mediating test result, it can be declared that customer satisfaction has a quasi-mediating effect. Then, although most variables of service quality do not significantly affect service loyalty, those properties are still giving influence indirectly through the mediating variables. According to the calculation, tangible giving indirect effect by 2.4% through customer satisfaction. Thus the result is in line with previous research by Caruana (2002) that stated customer satisfaction does play a mediating role in effect of service quality on customer loyalty.

7. 3.   Qualitative Approach

This qualitative analysis is obtained from the informant's statements then divided into four main common subjects that suitable with the title of this research, which are concept, practice, prospects, and challenges.

- Concept
    1. Description of Halal Hotel
        Halal hotels is a hotel that applying the sharia system, hence it not provides facilities for immoral, illicit, or haram activities, only provide halal foods and beverages, and other things that can fulfill Muslim needs.
    2. Certification in Halal Hotel
        Halal certificates for hotels and restaurants are equally valid for 2 years, if there is a change in the business then MUI will check back from the beginning, otherwise it will be checked periodically, then the result will be determined through *sidang fatwa*.
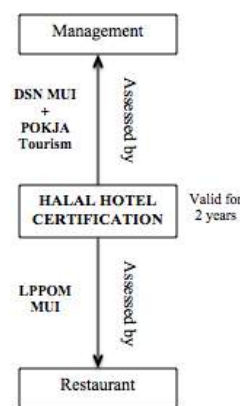
Figure 12. Halal Hotel Certification

The Figure 5 above presents there are two kinds of certification that can be owned by the Halal Hotel.
1. Hotel Management Certification
    Halal hotel certification is assessed by DSN MUI and assisted by POKJA Tourism that chaired by Riyanto Sofyan.
2. Hotel Restaurant Certification
    LPPOM MUI assesses hotel restaurant certification until the end of 2018 before finally will handled by BPJPH.

ICMEM

3. Hilal

Ministerial regulations made during the reign of Mrs. Mari Elka Pangestu as the main reference of the halal hotel's regulation, it is the rule that mentions the hilal as the result of certification, it can see in the Figure 4.2 below.

Figure 13. Hilal System in Halal Hotel

1. The first hilal hotel
   The first hilal hotel is considered as Muslim friendly hotel and one of the well-known characteristics is still allow non-halal foods and beverages with separate kitchen.
2. The second hilal hotel
   The second hilal hotel is supposed to lead sharia hotel (implements totally sharia law) hence it only provide halal foods and beverages.

- Practice
  1. Certification in Halal Hotel
     There is some halal hotels that feel do not require halal certification due to economic factors or they are frightened then avoid it because of their ignorance and misperception of halal certification itself. The length of the certification process depends on the distance of the business location to the MUI's experiment place, the longest process is 3 months and the fastest can be in a matter of weeks before the final result is decided by the *sidang fatwa*. Halal certification is purely from the hotel desire, but if hotels must have certification, it must be a requirement from the government to support the development of halal tourism. The hotels are dared to guarantee even without the certification everything provided in the hotel is halal.
     1. Hotel Management Certification
        Halal hotel management certification no longer exists because the current Minister of Tourism Indonesia has not signed PERMEN or ministerial regulation related to halal hotels, therefore only 5 hotels that have halal certification or got hilal to date.
     2. Hotel Restaurant Certification
        Hotel restaurant certification is still running because many people find it more sensitive and important.
  2. Guests Review
     Most of guests admitted that they feel helped by the worship facilities, but the facility could adjust as well if the guest is non-Muslim such as turn down the sound of *adzan* in their room.
- Prospects
  1. Awards
     Indonesia got three awards, two of them are Bali-Lombok as Best Halal. Destination and Honeymoon Destination, and so many people can better know the name of Indonesia.
  2. Asian Games 2018
     The Asian Games will soon be held in Indonesia, from a total of 45 participating countries, 25 of them are Muslim majority countries.
  3. Muslim Population is still growing as well as its market
     Initially not too many who come to the halal hotels, but the condition has turned away although still far when compared with the conventional hotels. Now people who know halal hotel is quite a lot so guests who come very diverse ranging from Muslim, non-Muslim, local, and foreigner travelers, but most guests who come are family because they feel comfortable and the hotel is family friendly. Halal tourism is growing rapidly in Lombok because foreigners though not Muslims, they know halal is healthy and not only identical with Muslims, therefore it can be used as another reason to market halal tourism. MUI or even halal centers often get visits also invitation from foreign governments because they want to learn about halal, it shows that foreign countries also have a concern about halal, but Indonesia is much more potential with the natural

ICMEM

wealth and as Muslim majority country.
4. The growth of halal tourism
In some certain cities, halal hotel can be found almost anywhere. Halal Center tries to make 'Halal in Bandung' as the results of cooperation with Bandung Tourism Office or Dinas Pariwisata Kota Bandung, including promote halal facilities, no exception for halal hotel.

- Challenges
  1. Halal Hotel Certification
  Arif Yahya as Indonesia Tourism Minister has not signed PERMEN or ministerial regulation about halal tourism.
  2. Competitors
  There are also many guesthouses that impose the principles of sharia, so it can be an alternative to halal hotels.
  3. Low of Awareness of halal hotel
  Something that Indonesians believe is not a guarantee of foreign Muslims travelers, such as the awareness of the halal logo in the food when that is the most important because directly digested by the body. Many people are not yet in favor and interested of halal hotel because several factors regardless they are doing or not doing immoral acts. The market, especially foreigners, requires a halal certificate while the related regulation has not been continued so many businesses have not been certified halal.
  4. Privacy meters in check in process
  The implementation of sharia rules is sometimes considered to interfere with the guest's privacy as in terms of knowing the marital status of a guest because some of them have done *siri* or illegitimate marriage.
  5. Misapplication of halal label
  The diversity of guests can be a challenge as well because some guests often make a halal or sharia label for their profit, one of them is like asking for a discount with alms as their reason, the habits want to be served by pay less want more.

8. Conclusion and Research Limitation

The objective of this research is to explore and define halal hotels concept, practice, prospects, and challenges in Indonesia. Researcher has analyzed the required data that was collected with an interview on various sides whose work is directly related to the halal hotels and a survey through questionnaire spread to halal hotel's guests. The quantitative data analyzed using the PLS analysis, meanwhile the quantitative data analyzed using phenomenology analysis. In the end, this research comes up with more than just describing the concept, practice, prospects, and challenges of halal hotel in Indonesia, but also providing practical suggestions on how halal hotels should run their business to maximize the benefits of using it.

After interviewed four informants who related to halal hotels and reviewed previous study and literature explain that halal hotel is a hotel that applying sharia system in their business. Halal hotels should be fulfilling the basic needs of Muslim travelers;

- Halal foods and beverages
- Prayer facilities
- Avoids the things that are consider as immoral or haram activities, and
- Get added value from travel

The ideal condition of Halal hotels in Indonesia is whenever the hotels can gain two certificates; halal hotel certificate and halal hotel restaurant certificate. That certificates will generate standardized halal hotel because it has been assessed and proven by DSN MUI for halal hotel management and LPPOM MUI for halal hotel restaurant.

The practice of halal hotel in Indonesia identified has 35 hotels that can categorize as Muslim-friendly accommodation (COMCEC, 2017), but only 5 of them have halal hotel certification and hilal. Halal certification is purely from the hotel desire, but if hotels must have certification, it must be a requirement from the government to support the development of halal tourism. Actually, there are 2 main factors that cause this to happen. The first one comes from Ministry of Tourism because the current Minister of Tourism Indonesia has not signed PERMEN or

ICMEM

ministerial regulation related to halal hotels, hence halal hotel certification are no longer exists since the reign of Mrs. Mari Elka Pangestu ended. The second reason comes from halal hotels itself because of their ignorance and misperception of halal certification itself. The solution that the government can offer is getting a restaurant certification. MUI claimed that halal certification is a written fatwa that stated the halal of a product according to the sharia law in order to give the clear status therefore convincing people who consume it.

PLS analysis result shows that tangible is service quality dimension, which drives to customer satisfaction. It shows that is important for halal hotel to put more efforts on providing the better tangible to gain customer's satisfaction. Providing better prayer facilities, an attractive hotel design, and other facilities can gain customer's satisfaction. Customer satisfaction is the mediating variable that influences customer loyalty between service quality and customer loyalty. Thus, putting concerns on that factor is important for halal hotel in order to have loyal customers. However, it is proven that the other element of service quality can still affect the service loyalty indirectly through customer satisfaction.

Now people who know Halal hotel is quite a lot so guests who come very diverse ranging from Muslim, non-Muslim, local, and foreigner travelers, but most guests who come are family because they feel comfortable and the hotel is considered family friendly. Halal tourism is growing rapidly in Lombok because foreigners though not Muslims, they know halal is healthy and not only identical with Muslims, then Asian Games will soon be held in Indonesia, from a total of 45 participating countries, 25 of them are Muslim majority countries. Therefore it can be used as another reason to market halal tourism. But the diversity of guests can be a challenge as well because some guests often make a halal or sharia label for their profit, one of them is like asking for a discount with alms as their reason, the habits want to be served by pay less want more. There are many guesthouses and air b&b becomes a challenge for both conventional and halal hotels, but the development of halal guesthouses is challenge for halal hotel because it is cheaper and more homey rather than hotel. Accessing service quality in halal hotel with the different LODGSERV dimensions as the main variable might be conducted to future research. Researcher has modified LODGSERV in this research by adding 'Halal aspects' as a new dimension, meanwhile for the indicator researcher used the Ministry of Tourism regulation about halal hotel, but did not rule out the possibility there are other factors that are more suitable to be used as indicator or dimension in the next halal hotel research. Using another method besides LODGSERV model can also be considered because of the number of rejected variables, which are 11 out of 13 variables.

References

Angel. (2017, October 25). Halal Certification Registration in Indonesia. Retrieved November 11, 2017, from EMERHUB: https://emerhub.com

World Travel and Tourism Council. (2015). *How does Travel and Tourism compare to other sectors?* Benchmarking, World Travel and Tourism Council, London.

Republika. (2017, March 16). *Apakah Sesungguhnya Pariwisata Syariah?* (F. Rahadi, Producer) Retrieved November 7, 2017, from Republika: http://www.republika.co.id

Mastercard & Crescentrating. (2017). *Global Muslim Travel Index 2017.* Index, Singapore.

Yuswohady. (2015). *Marketing to The Middle Class Muslim.* Jakarta, DKI Jakarta, Indonesia: Gramedia Pustaka Utama.

Perkumpulan Pariwisata Halal Indonesia. (2017, October 19). *Soft Launching Pengembangan Wisata Halal Dunia.* Retrieved March 3, 2018, from Perkumpulan Pariwisata Halal Indonesia: http://pphi.id

Suaidi, S. (2017, October 17). *Hotel dan Restoran Halal Berpotensi Besar.* (Sindo Weekly) Retrieved November 17, 2017, from Sofyan Hotel: http://sofyanhotel.com

Kompas. (2017, November 14). *Begini Rumitnya Dapat Logo Halal dari MUI.* Retrieved March 5, 2018, from Jateng Tribun News: http://jateng.tribunnews.com

Michwan, A. (2015, June 26). *Rendahnya Kesadaran Konsumen Muslim akan Pangan Halal.* Retrieved March 5, 2018, from Kompasiana: https://www.kompasiana.com

Fleishman-Hillard Majlis. *The Next Billion: The Market Opportunity of the Muslim World.*

Elasrag, H. (2016, January 13). Halal Industry: Key Challenges and Opportunities.

ICMEM

Zamani-Farahani, & Henderson. (2009). Islamic tourism and managing tourism development in Islamic societies: The cases of Iran and Saudi Arabia. *International Journal of Tourism Research* .

Ajija, S. R., & Umi, S. C. (2017, November 20). *Gotong Royong untuk Wisata Halal*. Retrieved March 13, 2018, from REPUBLIKA: http://republika.co.id

Razalli, M. R., Abdullah, S., & Hassan, M. G. (2012). Developing a Model for Islamic Hotels: Evaluating Opportunities and Challenges.

Nurhidayati, S. E., Umardiono, A., & Edi, N. (2017). The Prospects of Sharia Hotel Business in Indonesia (Case Study in Surabaya City) . *Asia Pacific Journal of Advanced Business and Social Studies , 3* (2).

Pusat Komunikasi Publik. (2013, October 30). *Indonesia Bidik Wisatawan Muslim Melalui Pengembangan Wisata Syariah* . Retrieved November 28, 2017, from KEMENPAR: http://kemenpar.go.id

Samori, Z., & Rahman, F. A. (2013). Establishing Shariah Compliant Hotels in Malaysia: Identifying Opportunities, Exploring Challenges. *West East Journal of Social Sciences , 2* (2).

Dewan Syariah Nasional MUI. (n.d.). *Beranda DSN MUI*. Retrieved March 21, 2018, from DSN MUI: https://dsnmui.or.id

Jaelani, A. (2017). Halal Tourism Industry in Indonesia: Potential and Prospects . *International Review of Management and Marketing , 7* (3), 25-34.

Razalli, M. R., Yusoff, R. Z., & Roslan, M. W. (2013). A Framework of Halal Certification Practices for Hotel Industry. *Asian Social Science , 9* (11).

LPPOM MUI. (n.d.). *LPPOM MUI About Us*. Retrieved March 23, 2018, from LPPOM MUI: http://e-lppommui.org

Lembaga Pengkajian Pangan Obat dan Kosmetika Majelis Ulama Indonesia. (n.d.). *MUI Halal Certification Procedure*. Retrieved December 2, 2017, from LPPOM MUI: http://www.halalmui.org

Salazar, A., & Costa, J. (2010). A Service Quality Evaluation Scale for Hospitality Sector. *Emerald , 2* (4), 383-397.

Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implication for Future Research. *Journal of Marketing , 49*, 41-50.

Keith, N. K., & Simmers, C. S. (2013). Measuring Hotel Service Quality Perceptions: The Disparity Between Comment Cards and LODGSERV. *Academy of Marketing Studies Journal , 17* (2), 119-131.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing , 64* (1), 12-40.

Berry, L. L., Bennett, D. R., & Brown, C. W. (1989). *Service Quality: A Profit Strategy for Financial Institutions.* Dow Jones-Irwin.

Daniel, C. N., & Berinyuy, L. P. (2010). *Using The SERVQUAL Model to Assess Service Quality and Customer Satisfaction.* Umeå University, Umeå School of Business.

Akbaba, A. (2006). Measuring Service Quality in The Hotel Industry: A Study in a Business Hotel in Turkey. *International Journal of Hospitality Management , 25*, 170-192.

Knutson, B. J., Wullaert, C., Steven, P., & Yokohama, F. (1990). LODGSERV: A Service Quality Index for The Lodging Industry. *Hospitality Research Journal , 14* (2), 277-284.

Lee, W.-H., & Cheng, C.-C. (2017). Less is More: A New Insight for Measuring Service Quality of Green Hotels. *International Journal of Hospitality Management , 68*, 32-40.

Meesala, A., & Paul, J. (2016). Service Quality, Consumer Satisfaction, and Loyalty in Hospitals: Thinking for The Future. *Journal of Retailing and Consumer Services , 40*, 261-269.

Woodside, A., Frey, L., & Daly, R. (1989). Linking Service Quality, Customer Satisfaction, and Behavioral Intention. *Journal of Health Care Marketing , 9* (4), 5-17.

Kotler, P., & Armstrong, G. (1996). *Principles of Marketing.*

Caruana, A. (2002). Service Loyalty: The Effects of Service Quality and The Mediating Role of Customer Satisfaction. *European Journal of Marketing , 36* (7/8).

Hansen, E., & Bush, R. J. (1999). Understanding Customer Quality Requirements: Model and Application. *Industrial Marketing Management , 28* (2), 119-130.

Gremler, D., & Brown, S. (1996). Service Loyalty: Its Nature, Importance and Implications. *Proceedings American Marketing Association* , 171-180.

Hosseini, R. S., Zainal, A., & Sumarjan, N. (2015). The Effects of Service Performance of Hotel Customers on Quality of Experience and Brand Loyalty in Iran. *Asian Conference on Environment-Behaviour Studies. 201*, pp. 156-164. Science Direct.

ICMEM

Bakti, I. G., & Sumaedi, S. (2012). An Analysis of Library Customer Loyalty: The role of Service Quality and Customer Satisfaction, A Case Study in Indonesia. *Library Management , 34* (6/7), 397-414.

Chen, C.-P., Deng, W.-J., Chung, Y.-C., & Tsai, C.-H. A Study of General Reducing Criteria of Customer Oriented Perceived Gap for Hotel Service Quality. *The Asian Journal on Quality , 9* (1), 113-133.

Lokken, A., Nayar, M., & Runering, M. (2012). *Brand Equity – Measuring Corporate Brand Strength in the Swedish Smartphone Market.* Swedish Smartphone Market.

Yasin, N. M., Noor, M. N., & Mohamad, O. (2007). Does image of country-of-origin matter to brand equity? *Journal of Product & Brand Management , 16* (1), 38-48.

Sahin, A., Zehir, C., & Kitapci, H. (2011). The Effects of Brand Experiences, Trust and Satisfaction on Building Brand Loyalty; An Empirical Research On Global Brands. *7th International Strategic Management Conference ,* 1288-1301.

Patton, M., Steven, P., & Knutson, B. (1994). Internationalizing LODGSERV as A Measurement Tool: A Pilot Study . *Journal of Hospitality and Leisure Marketing , 2* (2), 39-55.

Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach 4th Edition.* USA: Hermitage.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students 4th Edition.* England: Pearson.

Malhotra, N. K. (2010). *Marketing Research: An Applied Orientation 6th Edition.* Pearson.

Minister of Tourism and Creative Economy Republic of Indonesia. (2014). *Kriteria Mutlak dan Kriteria Tidak Mutlak Usaha Hotel Syariah.* Jakarta: Minister of Tourism and Creative Economy Republic of Indonesia.

Sidik, A., & Mulya, B. W. *Pendekatan Analisis Data Menggunakan NVivo-software untuk Penelitian Desain Logo Museum Nasional Jakarta .*

Budi. (210, August 11). *Partial Least Square Regression.* Retrieved May 16, 2018, from Statistika Komputasi: https://statistikakomputasi.wordpress.com/2010/08/11/partial-least-square-regression/

Hussein, A. S. (2015). *Penelitian Bisnis dan Manajemen Menggunakan Partial Least Squares (PLS) dengan smartPLS 3.0.* Manajemen, Fakultas Ekonomi dan Bisnis.

Hasbiansyah, O. (2005). Pendekatan Fenomenologi - Pengantara Praktik Penelitian dalam Ilmu Sosial dan Komunikasi. *9* (1), 163-180.

Urbach, N., & Ahlemann, F. (2010). Structural Equation Modeling in Information Systems Research Using Partial Least Squares. *Journal of Information Technology Theory and Application (JITTA) , 11* (2).

Wong, K. K.-K. (2013). Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS . *Marketing Bulletin , 24*.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM).* USA.

Hilton, P. R., McMurray, I., Brownlow, C., & Cozens, B. (2004). *SPSS Explained.*

Falk, R. F., & Miller, N. B. (1992). *A Primer for Soft Modeling.* Akron, Ohio, USA: The University of Akron Press.

Chin L, e. a. (1996). *A Partial Least Square Latent Variable Modelling Approach for Measuring interaction.*

Ahmad, H. (2017, July). Pedoman Usaha Hotel Halal. *Pedoman Usaha Hotel Halal .* Lombok, Indonesia.

Ahmad, H. (2016, June 22). *Memahami Pariwisata Halal .*

Kementerian Pariwisata. (2016, April 12). Sosialisasi Kriteria Destinasi Wisata Halal. *Sosialisasi Kriteria Destinasi Wisata Halal .* Bandung.

Ministry of Tourism. (2018, March 16). *Indonesia Dominates World Halal Tourism Awards 2016 Winning 12 Top Categories.* Retrieved July 7, 2018, from Indonesia Travel: http://www.indonesia.travel/sa/en/news/indonesia-dominates-world-halal-tourism-awards-2016-winning-12-top-categories

COMCEC. (2017). *Muslim Friendly Tourism: Regulating Accommodation Establishments In the OIC Member Countries .* COMCEC Coordination Office.

Sindwani, R., & Goel, M. (2016). The Relationship between Service Quality Dimensions, Customer Satisfaction and Loyalty in Technology based Self Service Banking . *International Journal of E-Services and Mobile Applications , 8* (2), 54-70.

Pratiwi, F. (2016, April 20). *GMTI Jadi Acuan Kriteria Wisata Halal.* (I. E. Alamsyah, Editor) Retrieved July 8, 2018, from Republika: https://www.republika.co.id/berita/koran/financial/16/04/20/o5xd0810-gmti-jadi-acuan-kriteria-wisata-halal

ICMEM

The 3rd International Conference on Management in Emerging Markets

Evoking Nostalgic Feeling of Gen Y through Marketing Communication Tools: Nostalgic Marketing and Viral Intention.

Cut Putri Pohan[a*], Sri Rahayu Hijrah Hati[b]

[a,b]University of Indonesia, 16424, Depok, Indonesia

Abstract

Everyday, consumers are exposed to hundreds of advertisements from various brands. It certainly makes the messages delivered by marketers are not easy to remember by the consumers. Therefore, the marketers must continue to develop creative ideas so that their advertising can be outstanding in the eyes of consumers. Nostalgic marketing in advertising is one way of marketing communication approach that recently attracted the attention of consumers in Indonesia. Nostalgic marketing has been proven empirically can evoke consumers' positive feelings and interest towards the advertisement. In addition, other research mentioned that people's interest in an advertisement would encourage them to spread the advertisement. In this digital era, sharing can be done easily using social media and can be viral. However, studies examined the relationship of nostalgic marketing with viral intention have not been conducted. In fact, viral advertising can help consumers in terms of communicating the products and resulting in purchasing. This study aims to test whether nostalgic marketing can lead to viral intention mediated by the attitude towards the advertisement and brand. If nostalgic ads are proven to cause viral intention, then this study can be a new insight into the world of marketing.

Keywords: Nostalgic Marketing; Advertising; Attitude; Viral; Purchase Intention

1. Introduction

The increasing number of brands that perform marketing communications causes clutter on media communication. It encourages marketers to think harder in finding interesting ideas to create an outstanding ads. Nostalgic ads is one of an interesting concept that recently attracted consumers' attention in Indonesia. Nostalgia is a feeling that leads to the emergence of memories (Muehling, 2004) and usually will evoke positive emotions (Holak and Havlena, 1998). Hence, nostalgia becomes an interesting and appropriate thing to be used as content in the ads communication of a brand (Vincent et al., 2002). In order to attract consumer's response and positive emotions.

However, not all brands can create nostalgic ads. Only a brand that is familiar for consumers that are usually successful in performing nostalgia ads. The brand has to be nostalgic brand, the criteria of it are; brand has at least been established for a long time but still survive until now; the brand must also be famous among its target market; it is known by more than one generation; the brand is usually consumed by family or relatives, and suitable for both men and women (Kessous and Roux, 2010).

The expectation of making nostalgic ads is to evoke consumer's emotion in order to make them having a positive attitude toward ads and brand, then willing to share the ads. Study has found that if an individual interest to an ads, they would likely to share the ads to others and sometimes end up viral. In this digital era, sharing an information can be done easily by the existence of social media. If the information keep spreading by another social media user, then

---

ICMEM

it potentially goes viral. If this information is positive information of a brand, it would be very beneficial for the brand. Therefore, many brands produce creative advertising to trigger social media user to make it viral.

Social media also cannot be separated with millennials (Gen Y) in Indonesia. Gen Y is also a generation that experiences a transition from the conventional era to digital one. It causes Gen Y easily to get hooked on nostalgic content because they are missed about a lot of things from the past. It is indicated that Gen Y in Indonesia seems to be the right market for nostalgic ads.

The previous studies have been much discussing about the relationship between nostalgic ads and the attitude toward ads, attitudes toward brand, as well as purchase intention (Vincent et al, (2002), Sierra and Saun (2007), Sachse and Gierl (2009), Kessous and Roux (2010)). However, studies examined the relationship between nostalgic ads and viral intention have not been conducted. Whereas, in this social media era, an outstanding video content like nostalgic ads is very potential to become viral. Therefore, the aim of this study is to test the influence of nostalgic ads toward attitude toward the ads, viral intention and purchase intention. If the hypotheses are supported, this study contribute to give a new insight for marketing both academic and managerial.

1. 1.Theoretical Framework: research hypotheses and conceptual model

A. Nostalgic Brand

Nostalgia is an individual's sense of pleasure or positive response toward an object that has a connection with the memory of the past (Hirsch, 1992). An individual will only give nostalgic respond to something if they have memories of it, either by having personal experience or learning from other sources such as books or stories of others (Braun, Ellis, and Loftus 2002; Fairley 2003). The nostalgic response can usually be stimulated by using things such as music, photos, movies, events, advertisements, fashion, someone's presence, or cultural heritage (Goulding, 2001).

A brand which able to evoke consumer's positive feeling, consider as nostalgic brand. Nostalgic brand usually very famous among consumers since the past time until now, but it also has a strong bond with the consumers (Kessous & Roux, 2014). This nostalgic brand is also closely related to the childhood memory of the consumers because it has been used or consumed since childhood. It has been through several generations but still in the market to date (Bartier, 2014). According to Kessous & Roux (2014), a brand may be referred to as a nostalgic brand if meets the qualifications as follows:

Table 1. The Characteristics of Nostalgic Brand

No	Notes	Explanatory
	The brand's age	The brand should be aged, but it is still sold in the market until now
	The brand's fame	The brand must be quite popular among people and purchased by consumers with different backgrounds.
	Trans generational	The brand must have been through several generations (X, Y and Z Gen) to cause nostalgic effects.
	Consumed by family or relatives	The brand is something that is often consumed or shared by family or relatives.
	Suitable for all genders	The brand must be used or consumed by both men and women.

In this study, authors used "Indomie" as the object, due to Indomie meets all the qualifications in table 1. However, we will be doing a pre-test to ensure that Indomie also considered as nostalgic brand for consumers. The pre-test will be conducting online by using item indicators in the table 1.

B. Attitude Toward Ads

An advertisement is one of marketing communication tools that most often used to evoke consumers' nostalgic feelings. The way to generate consumers' nostalgia is by raising the childhood memories, family and memory of the past through advertising (Vignolles & Pinchon, 2014). Nostalgic ads is able to transfer positive emotions to consumers (Vignolles & Pichon, 2014). If consumers have a positive emotion while watching an ads, it will influences their

evaluation toward the ads. Hence, a nostalgic ads is able to generate attitude toward the ads.

H₁: Nostalgic Ads positively influence Attitude toward Ads.

C. Attitude toward Brand

More than 30 studies have proven that there is a direct positive influence between the attitude toward the ads and attitude toward the brand. After consumers are exposed to an advertisement, they will evaluate the ads and evaluate attitude toward the ads, it could be positive or negative. When an individual has a positive evaluation of an advertisement, it will generate a positive attitude toward the advertised brand, and vice versa (Muehling and McCann, 1993). Consumers who like an ads will probably like the brand too (Korgaonkar, 2016).

H₂: Attitude toward Ads positively influence Attitude Toward Brand.

Moreover, when people have a good evaluation about an ads, they would likely to share that ads to their peers. The emotional feeling they have about an ads is called social sharing (Berger and Milkman, 2012). The brand has to create an attractive ads in order to generate the desired electronic word of mouth. When consumers keep sharing the advertised brand on their social media, it will leads to viral. In order to make the consumers have the viral intentions, an ads has to be attractive and able to evoke consumer's positive emotion or feelings.

H₃: Attitude Toward Ads positively influence Viral Intention.

Their liking toward an ads not only end up at social media, they usually also have the willingness to purchase more when they have a good attitude toward an ads. Many studies have found that nostalgic ads also able to increase consumers' positive attitude toward the brand and make the consumers purchase the brand repeatedly (Sugimori et al., 2011; Muehling & Sprott, 2004; Sachse & Gierl, 2009).

H₄: Attitude toward Ads positively influence Purchase Intention.

D. Viral Intention

As mentioned on the previous section, when consumers watch an ads, they evaluate the ads and generate the attitudes toward the ads. After having an attitude toward ads, the consumers will also be generating the attitude toward the advertised brand. When the attitude toward the brand is positive, the consumers would likely to spread the ads (Berger and Milkman, 2012) to their peers started from word of mouth (WOM). In this digital era, WOM can easily be done by sharing it on social media, moreover in case many of social media users keep sharing the ads, then it will goes viral. Therefore, the authors add the variable of viral intention in this study. We indicate that any relationship between nostalgic ads and viral intention.

H₅: Attitude Toward Brand positively influence Viral Intention.

E. Purchase Intention

A viral ads is certainly give a profit to the company in terms of raising awareness, increasing consumer's interest to try and re-purchase the brands. And it makes a financial gain for the brand (Kirby and Marsden, 2006). In addition, when consumers keep sharing the ads, it will helps the brand role to spread the positive information about their brand since the brand become able to reduce the advertising cost (Fattah, 2000). Viral ads is the most effective way to acquire new customers (Park and Kim, 2014). Moreover, consumers are expected to have more desire to buy the brands whose viral ads (Korgaonkar, 2016).

H₆: Viral Intention positively influence Purchase Intention.

In addition to viral intention, the previous studies have confirmed that attitude toward brand could affect the purchase intention directly. The consumers who have a positive evaluation toward a brand will also have an interest to purchase the product, not only once but repeatedly (Biehal et al., 1992). It has also been empirically tested by

ICMEM

Vincent et al. (2002) that found attitude toward the brand has positively affect purchase intention.

H7: Attitude toward Brand positively influence Purchase Intention.

G. Research Framework

Based on the justification aforementioned, the research model of this study is designed as follows:
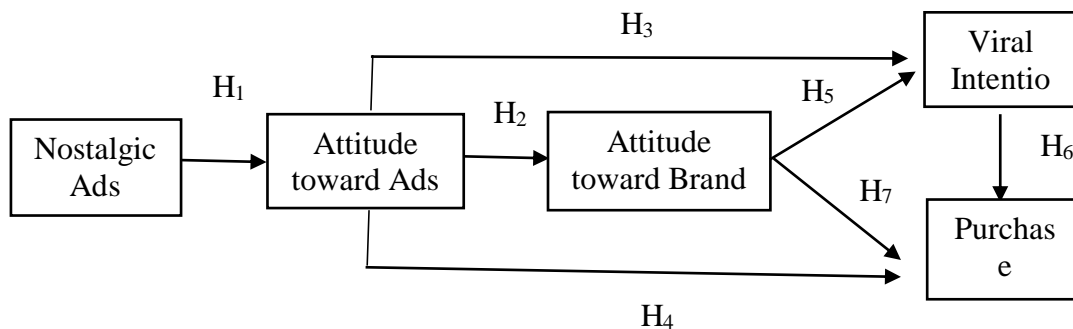
Figure 1. The Study Model
Source: **Vincent et al., (2002)**, "*The Influence of Evoked Nostalgia on Consumers' Responses to Advertising* ", **Korgaonkar, et al. (2016)** "*Hispanic and Viral Advertising*".

2. Methodology

2.1 Pretests

The authors conducted pretest to ensure that Indomie, as the object of this research is a nostalgic brand. We utilized nostalgic brand's criteria on table 1 for items questionnaire. Pretest has been done through online form and followed by 30 respondent. The result shows that Indomie is considered as nostalgic brand, all the respondent very familiar with Indomie, the majority of them also already knew and consumed Indomie since 10- 15 years ago, consumed it alone and with family/ peers.

2.2 Main Study

The sampling technique for this study is purposive sampling with criteria of respondents as follows: (1) Aged 20 - 40 years old; (2) Familiar with Indomie instant noodle brand; (3) Ever consumed Indomie. We collected the data through online questionnaire within Indomie ads attachment in order to make the respondents watch the ads again and become recall to the ads. 189 respondent has been collected, however we eliminated 12 respondent since they failed to answer the "re-check" question. We provided one question to ensure that all the respondent already watched the Ads attached before answering the questionnaire, the question is "How many bowl of Indomie which is asked by the actor to be made by his wife on the Ads?". If the respondent opt the wrong option, we concluded that they did not watch the Ads before answering questionnaire and exclude them as a respondent. The demographic of respondent can be seen in Table 2.

ICMEM

Table 2. Respondent demographic distribution

	Frequency	Percentage
Gender:		
Male	46	26%
Female	131	74%
Age:		
20-25	114	64.4%
26-30	43	24.2%
31-35	19	10.8%
36-40	1	0.6%
Occupation:		
College Student	63	35.5%
Civil Servant	23	13.1%
Private Employee	60	33.9%
BUMN Employee	7	3.9%
Self-employed	14	7.9%
Etc.	10	5.7%
Monthly Income:		
< 3.000.000 IDR	81	45.7%
3.000.001– 6.000.000 IDR	62	35.4%
6.000.001– 9.000.000 IDR	17	9.7%
> 9.000.000 IDR	16	9.2%

2.3 Measures

Questionnaire items in this research are adapted from several previous studies pertaining to nostalgic ads, consumers' attitudes and viral intention such as *Vincent et al (2002), Sachse and Gierl (2009), Korgaonkar (2016)*. The question items are selected based on the needs of this study. The entire constructs are measured by using 5-point scale Likert, 1 for "strongly disagree" to 5 for "strongly agree" statement.

3. Results and Discussion

3.1 Results

The result of factor analysis for scales of measurement can be seen in table 3. As expected, all items loaded > 0.5 and all scales obtained Cronbach alpha are above 0.8.

Table 3.

Items	Factor Loadings
Nostalgic Marketing	
2. Adapted from Vincent et al, 2002	
3.	0.88
4. Reminds me of the past	0.95
5. Makes me feel nostalgic	0.93
6. Makes me reminisce about a previous time	
7. Total variance explained: 89%; Eigenvalue: 2.6; Cronbach's Alpha: 0.943	
8.	

ICMEM

Attitude Toward Ads
Adapted from Sachse and Gierl (2009), Korgaonkar (2016)

	0.88
9. The ads is favourable	0.96
10. I like this ads	0.92
11. This ad is interesting	

12. Total variance explained: 89%; Eigenvalue: 2.6; Cronbach's Alpha: 0.944

13.

Attitude Toward Brand
Adapted from Sachse and Gierl (2009), Korgaonkar (2016)

14. I will share this Ads	0.86
15. I will share positive WOM about this Ads	0.94
16. I will recommend this Ads to be watched by others	0.90

17. Total variance explained: 87%; Eigenvalue: 2.6; Cronbach's Alpha: 0.926

18.

Viral Intentions
19. Adapted from Korgaonkar (2016)

20. I will share this Ads	0.91
21. I will share positive WOM about this Ads	0.94
22. I will recommend this Ads to be watched by others	0.91

23. Total variance explained: 89%; Eigenvalue: 2.6; Cronbach's Alpha: 0.939

24.

Purchase Intentions
25. Adapted from Korgaonkar (2016)

26. I would likely to buy this brand after watching this ads	0.95
27. I would possibly to buy this brand after watching this ads	0.98
28. I would probably buy this brand after watching this ads	0.95

29. Total variance explained: 94%; Eigenvalue: 2.8; Cronbach's Alpha: 0.971

To test the overall model and check the relationship between variable, we conducted a structural equation modeling procedure by using LISREL. Table 4 is the result of measurement model and goodness-of-fit.

Table 5. CFA result

Items	CR > 0.7	VE > 0.5
30. **Nostalgic Marketing**	0.95	0.85
31. Reminds me of the past		
32. Makes me feel nostalgic		
33. Makes me reminisce about a previous time		
34.		
Attitude Toward Ads		
35. The ads is favorable	0.94	0.85
36. I like this ads		
37. This ads is interesting		
Attitude Toward Brand		
38. I will share this Ads	0.93	0.81
39. I will share positive WOM about this Ads		
40. I will recommend this Ads to be watched by others		
41.		
Viral Intentions		
42. I will share this Ads	0.94	0.85
43. I will share positive WOM about this Ads		
44. I will recommend this Ads to be watched by others		
45.		

Purchase Intentions

46. I would likely to buy this brand after watching this ads		0.97	0.92
47. I would possibly to buy this brand after watching this ads			
48. I would probably buy this brand after watching this ads			

Notes: **Goodness-of Fit Statistics:** p-value=0.00562; NFI=0.97; NNFI=0.99; CFI=0.99; IFI=0.99; RFI=0.97; GFI= 0.92; SRMR= 0.033; RMSEA=0.050

As can be seen on table 5, RMSEA < 0.08; GFI, NFI, NNFI, CFI, IFI, RFI > 0.9; and SRMR < 0.05. We can conclude that the measurement model has a good fit. Moreover, we also test the reliability. All VE values are higher than 0.5 and all CR values are above 0.7. It means all items used in this study is reliable.

The next step is to test the hypothesized model, as can be seen in Table 5. The result shows that 6 of 7 hypotheses in this study are supported. We found a positive relationship between Nostalgic Ads and Attitude toward ads, attitude toward ads and attitude toward brand, attitude toward ads and viral intention, viral intentions and purchase intentions. Purchase intention has the strong relationship with viral intention, whilst viral intention has strong relationship with attitude toward the ads and attitude toward the ads also has strong relationship with nostalgic ads.

The interesting part is, we found different result with the previous research since we confirmed that in this study the relationship between attitude toward ads and purchase intention, attitude toward brand and purchase intention are supported. However the relationship between attitude toward brand and viral intentions is not supported. These will be further explained on the discussion section.

Table 6. SEM Path Coefficient Results

Path	Standardized	T-value	Hypotheses Results
49. Nostalgic Ad → Aad	0.57	7.58	Supported
50. Aad → Abrand	0.36	4.69	Supported
51. Aad → Viral Intentions	0.54	6.83	Supported
52.			
53. Aad → Purchase Intentions	0.33	4.38	Supported
54.			
55. Abrand → Viral Intentions	-0.04	-0.47	Not Supported
56.			
57. Abrand → Purchase Intentions	0.13	2.10	Supported
58.			
59. Viral Intentions → Purchase Intentions	0.43	6.01	Supported

Notes: **Goodness-of Fit Statistics:** p-value=0.0049; NFI=0.97; NNFI=0.99; CFI=0.99; IFI=0.99; RFI=0.96; GFI= 0.91; RMSEA=0.058

3.2 Discussion

In this digital era, everyone has the opportunity to spread an information easily by using social media. They would likely to share every single information that seems interesting for them. In case the information keep spreading by another social media user, it potentially goes viral. If they spread the positive information of a brand, it would be very beneficial for the brand. Therefore, many brands eager to create positive information about their brand through creative advertising to trigger social media user to make it viral.

The previous study has been confirmed that humorous advertising influences viral intention. The social media user shared humorous video since they feel so relatable to the video. This also applicable for nostalgic Ads. It has been scientifically proven that an individual will give a positive response if they have memories and feel nostalgic of something (Braun, Ellis, and Loftus 2002). Hence, if an advertised brand create an nostalgic ads, it is predicted will evoke consumer's reaction to share it.

ICMEM

This is an original study trying to enlighten the relationship between nostalgic ads and viral intention. The result of this study make contributions both academic and managerial practice. First, the influence of nostalgic ads on attitude toward ads, attitude toward brand, viral intention and purchase intention with Indonesian consumers has not been conducted before. Second, the interesting finding is we found that attitude toward ads influences viral intentions and purchase intention directly. It is indicated that when the consumers have positive attitude toward nostalgic ads, they will have viral intentions and also will increase their purchase intention even without having a positive attitude toward the brand. This study confirmed that a new brand that has not been recognized by the consumers also welcome to create nostalgic ads, in order to be viral and increase purchase intention. This finding in reverse with Kessous and Roux (2010) statement that only a brand that is familiar for consumers that are usually successful in performing nostalgia ads.
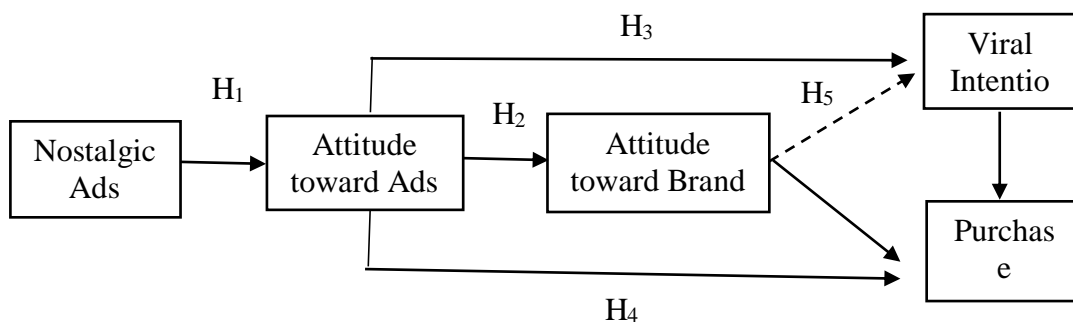
4. Limitations and Recommendation

This study finding is limited to consumer's perception without comparing the effort of brand side. We did not analyze the spending of this campaign. Based on the finding, 65.5% of respondent have not watched this ads before. The next study is expected able to analyze deeper understanding from the brand side and evaluate the campaign. This nostalgic ads supposed to be viral, however in fact more than a half did not know the ads. Interestingly, even they watch the ads for the first time in this study they still willing to share the video. Therefore, knowing the campaign spending and reach is becoming important.

Another limitation of this study is also the media communication tool used, which is advertising. The further research might be able to analyze the influence of another marketing communication tools in implementing nostalgic marketing, such as store environment or product packaging and comparing all the tools to find out the best marketing communication tools for nostalgic marketing.

Appendix A

On its 45th anniversary, Indomie released a TVC with a vintage theme that played back actors and TVC Indomie settings in the 70s.

ICMEM

Gambar 2.3 Scene Indomie's TVC "45 Tahun Menemani Indonesia".

References

Bambauer-Sachse, S. & Gierl, H. (2009). Effects of Nostalgic Advertising through Emotions and the Intensity of the Evoked Mental Images. *Advances in Consumer Research,* 36, 391-398.

Bartier, A.-L. (2014). New insights on consumers' perceptions of brand-induced nostalgia and its role in the formation of consumer-based brand equity. *Louvain School of Management,* Université Catholique De Louvain, Belgium.

Baumgartner, H., Sujan, M., & Bettman, J. R. (1992). Autobiographical Memories, Affect, and Consumer Information Processing. *Journal of Consumer Psychology,* 1(1), 53-82.

Biehal, G., Stephens, D., Curlo E., (1992). Attitude Towar The Ad And Brand Choice. *J. Advert.* 21 (3), 19-37.

Braun, Kathryn A., Rhiannon Ellis, and Elizabeth F. Loftus (2002), "Make My Memory: How Advertising Can Change Our Memories of the Past," *Psychology & Ads,* 19 (1), 1–23.

Datta, P. R., Chowdhury, D. N., Chakraborty, D, R., (2005). Viral Ads: New Form of Word Of Mouth Through Internet. Bus. Rev 3(2), 69-75.

Fairley, Sheranne (2003), "In Search of Relived Social Experience: Group-Based Nostalgia Sport Tourism," *Journal of Sport Management,* 17 (3), 284–304.

Fattah, H.M., (2000), Viral Ads Is Nothing New. Technol, Mark. Intell. 20 (10), 1-4.

Goulding, Christina (1999), "Contemporary Museum Culture and Consumer Behaviour," *Journal of Ads Management,* 15 (7), 647–671.

Hair, J.F., *et.al*. 2006. *Multivariate data analysis. (6th edition)*. New Jersey : Pearson Education Inc.

Hemets Berger, A. and Pirker, C. (2006). Images of Nostalgia - Effects of Perceived Authenticity and Nostalgia on the Evaluation of Visual Images. *Society for Consumer Psychology conference,* Miami.

Hirsch, Alan R. (1992), "Nostalgia: A Neuropsychiatric Understanding," in Advances in Consumer Research, vol. 19, Brian Sternthal and John Sherry, eds., Provo, UT: *Association for Consumer Research,* 390–395.

Holak, Susan L. and William J. Havlena (1998), "Feelings, Fantasies, and Memories: An Examination of the Emotional Components of Nostalgia," Journal of Business Research, 42 (July), 217-226.

Kessous, A. and Roux, E. (2010). Brands Considered as "Nostalgic": Consequences on Attitudes and Consumer-brand Relationships. *Recherche et Applications en Ads,* 25(3), 29-55.

Kirby, J., Marsden, P. (2006). Connected Ads, The Viral, Buzz, Word of Mouth Revolution. *Elsevier,* Oxford, Burlington.

Korgaonkar, et al., (2016). Hispanic and Viral Advertising. *Journal of Retailing and Consumer Services.*

Muehling, D. & Sprott, D. (2004). The Power of Reflection: An Empirical Examination of Nostalgia Advertising Effects. *Journal of Advertising,* 33(3), 25-35.

Muehling, D., Sprott, D., Sultan, A. (2013). Exploring the Boundaries of Nostalgic Advertising Effects:A Consideration of Childhood Brand Exposure and Attachment on Consumers' Responses to Nostalgia-Themed Advertisements. *Journal of Advertising,* 43(1), 73–84.

ICMEM

Park, H., Kim. Y-K. (2014). The Role of Social Network Website In The Consumer's Brand Relationship. *J Retail. Consum. Serv.* 21, 460 – 467.

Sierra dan Shaun (2007). Attitudes and Emotions as Determinants of Nostalgia Purchases: An Application of Social Identity Theory. *Journal of Ads Theory and Practice,* 15:2, 99-112.

Sugimori , E. , Matsuda, K., Kusumi, T. (2011). The contradictory effects of nostalgic advertisements on nostalgia for products and on remembering advertisements. *Japanese Psychological Research,* 53(1), 42–52.

Vignolles, A. and Pichon, P-E. (2014). A taste of nostalgia. Links between nostalgia and food consumption. *Qualitative Market Research: An International Journal,* 17(3), 225238.

Vincent J. Pascal , David E. Sprott Ph.D. & Darrel D. Muehling Ph.D. (2002): The Influence of Evoked Nostalgia on Consumers' Responses to Advertising: An Exploratory Study, *Journal of Current Issues & Research in Advertising,* 24:1, 39-47.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Strategic Analysis of Gross Split PSC Regulation in Indonesia's Oil and Gas Industry Upstream Sector

Alliya Rahmania[a*], Harimukti Wandebori[b]

[a,b]SBM ITB, Jalan Ganesha No.10, Bandung, 40132, Indonesia

Abstract

Oil and gas industry is one of the Indonesia's backbone because its contribution to the non-tax state revenue. Currently, Indonesia has to do exploration in mature basins (deep water and frontier) and government should seek more favorable terms to attract investors. Cost Recovery PSC is regulated by PP no. 79 Tahun 2010 which summarized as all the costs that incurred in the exploration and production activities are cost recoverable by the states. On the other hand, Gross Split PSC is regulated by Permen no. 8 Tahun 2017 and revised by Permen no. 52 Tahun 2017 and Gross Split PSC summarized as all the operational cost will be bear by the contractor hence, government will gain the share without recovers any costs. The purpose of this research is to formulate a proper strategy so that Indonesia can increase its Gross Split PSC performance and get the right track to accomplish its vision. To formulate the proper strategy, in this research the author performed 1. External environment analysis using PEST Analysis; 2. Industry environment analysis using Resource-based View; 3. Problem solving strategy using IE Matrix and TOWS Matrix. To reach the Government's objectives of Gross Split PSC, further strategy needs to be formulated in order to get the best win-win solution for both Government and Contractors. The best strategy chosen is cutting down the stages of upstream oil and gas business process time by create the business process timeline. The reason of this strategy has been chosen is because it aligns with gross split objective which is maximize the efficiency and effectivity as well as it will be one of the way to enhance the transparency of the oil and gas business processes as well as it could be a guideline for both government and contractor to cope with the predefined time targets. By applying this strategy, it also could improve the time value of money and improved economics.

Keywords: Oil and Gas Regulation, Strategic Analysis, Production Sharing Contract, Indonesia's Oil and Gas Industry.

1. Introduction

Indonesia is one of the countries that has a lot of oil and gas reserves which as stated by PWC in their Oil and Gas Guide research (2017), the oil and gas reserves in Indonesia is proven holds 3.7 billion barrels and it makes Indonesia as a top 20 of the world's oil producers. Regarding the world gas producers, in 2016 Indonesia gas reserves is proven around 102 Trillion Cubic Feet (TCF) and it makes Indonesia as a top 10 global gas producers Oil and gas industry is in dramatic volatility because the decline of crude oil price as well as dynamic changes in the oil and gas environment globally, Government made a breakthrough by changed its oil and gas fiscal terms from Cost Recovery PSC into Gross Split PSC in early 2017. Gross Split PSC is regulated by Permen no. 8 Tahun 2017 and revised by Permen no. 52 Tahun 2017. The main objective of the regulation changes is government want to enhance the investment climate of Indonesia oil and gas sector. This objective driven by the declines of oil and gas investment in Indonesia for several years. The declines caused by unattractiveness of Indonesia's fiscal and regulatory environment for Exploration activities while, Indonesia's fields is already in the mature producing stage and should move to explore in marginal and frontier area in Eastern Indonesia.

Currently, Indonesia is at a critical juncture with increasing energy demand countered by decreasing production and reserves replacement rates. According to Indonesia Fiscal Terms Transition to Gross Split by IHS Markit for SKK Migas, "Indonesia crude imports in 2014 is around 350,000 – 400,000 boe/d and Indonesia crude imports in 2011 is

---

* Corresponding author

250,000 boe/d."(Darner, 2017). It is apparent that to fulfill the increasing energy demand, Indonesia has to increase the amount of imported crude oil.

Indonesia's fiscal terms and regulatory environment including the bureaucracy currently is not conducive for investment in exploration activities. Many of the investors complained that a series of administrative procedures led to unattractiveness investment. Therefore, Indonesia needs to adapt its fiscal terms to steer clear of risk losing further investment to other countries. However, the improvement of the fiscal terms is not solely to increase the value of investments but rather it considers in terms of Government revenue take (PNBP) from oil and gas sector which declines every years and even Government experienced deficit. The latest issue happened in 2016 due to the cost recovery amount was approximately US$11.4 billion while the Government intake was only US$9.29 billion (Roach & Dunstan, 2018). The evolution of Gross Split PSC is a response from Government to eliminated the over budget of cost recovery which created by the contractors. So, under the Gross Split PSC, Contractor's revenue will be obtained merely from its share of gross production and deducted by income tax to the Government in respect of this revenue.

According to the facts that elucidated above based on the observations and interviews, there are several issues that encountered which are:

- Declining investment rate in oil and gas sector.
- Declining oil and gas production rates.
- Unattractiveness of Indonesia oil and gas fiscal terms and bureaucracy.

5. Literature Review

External Environment

General environment is composed of dimension in the broader society that influences an industry and the firms within it (Hitt, 2006). The objectives of identifying the opportunities is to help investors reach strategic competitiveness while the objectives of identifying the threats is to provide an overview of hindrances of oil and gas environment (Hitt, 2006). There are four environmental segments, which are Political/Legal segment, Economic Segment, Sociocultural Segment, and Technological Segment which derived from the external environment analysis above.

Resource-Based Approach

Resource Based approach consists of three elements which are resources, capabilities, and core competencies. Those elements emphasize internal capabilities of the industry or organization to formulate the strategy in terms of obtain a sustainable competitive advantage in its market and industries (Henry, 2011). To examines the weaknesses and strengths of the oil and gas industry in Indonesia, the resource-based view analysis help to determine the future of the industry which can be done by comparing measures of the industry past performance, industry's key competitors, and industry as a whole.

SWOT Analysis

SWOT (Strength, Weakness, Opportunity, and Threat) Analysis is a common tool for many people. SWOT analysis is a tool that examines the key factors of an industry in terms of formulating its competitive advantages. It is an attractive tool because of its simplicity, yet its use can lead to vague discussions because its openness offers little direction concerning which aspects of an industry to examine (Porters, 1985).

ICMEM

IE Matrix

IE Matrix consists of nine quadrant cells that divided into three regions which are Grow and Build (1, 2, 4); Hold and Maintain (3, 5, 7); and Harvest pr Divest (6, 8, 9). David (1999) stated there are several alternative strategies that can be utilized for each region:

- Grow and Build SEP
    - o Intensive Strategies: Market penetration, market development, product development
    - o Integrative Strategies: Backward integration, forward integration, horizontal integration
- Hold and Maintain: Market penetration and product development SEP
- Harvest or Divesture

3. Methodology

To validate the accuracy of findings as well as make an interpretation of the data, this research using qualitative and quantitative approaches. The primary data and secondary data is used in this research which is the primary data gather through interviews and observation. The secondary data gather from literature review as well as the desktop research.

To obtain more credible primary data, the interviews conducted with Kepala Pusat PSDMBP, Dirjen Migas, and Humas SKK Migas. The data gained form interviews are used in both external and industry analysis. Mainly the results of the interviews are used for identifying business issues, Gross Split PSC Analysis and Indonesia oil and gas condition as a whole. To eliminate biases from the interview, author collecting secondary data which is mainly used in both external analysis for global oil and gas condition as well as industry analysis specifically Indonesia's oil and gas condition.

The quantitative approaches are used to observe and measures information numerically. In this research, the quantitative method gained through secondary data which used in Feasibility Studies Analysis. In the External Factor Evaluation and Industry Analysis Evaluation are using quantitative method by applying Analytical Hierarchy Process to gain the weight and rating with most accurate data.

The desktop research and literature review are used mostly in this research gained from government website, professional consultant company website, and media website which may provide data to help the analysis.

4. Findings and Arguments

External Environment

To identify the opportunities and threats of oil and gas industry, general environment analysis is a must do step in terms of formulate the strategy. General environment is composed of dimension in the broader society that influences an industry and the firms within it (Hitt, 2006). The objectives of identifying the opportunities is to help investors reach strategic competitiveness while the objectives of identifying the threats is to provide an overview of hindrances of oil and gas environment (Hitt, 2006). There are four environmental segments, which are Political/Legal segment, Economic Segment, Sociocultural Segment, and Technological Segment which derived from the external environment analysis above.

- **Political/Legal Segment**
    Opportunity
    The replacement of Cost Recovery PSC into Gross Split PSC would be more favorable in terms of profits share between government and contractor as well as under this new terms, it will shortened the administrations which would reduce the cycle time between exploration and production and it benefits both parties (government and contractor). Hence, it would boost investment in Indonesia oil and gas industry.

Threat

Gross Split PSC is quite rarely used in other countries as well as there is not much evidences that it is beneficial for investment hence, investors afraid with the changes of the new fiscal terms.

- **Economic Segment**

Opportunity

The opportunity of economic segment in oil and gas industry is high because, Indonesia oil and gas demand is increasing every year. This condition driven by the high consumption of oil and gas in Indonesia which influenced by increasing Indonesia economic growth and population. Regarding the Gross Split PSC scheme, it will also enhance state revenue of Indonesia (PNBP).

Threat

According to World Bank, the crude oil price is decline from $50,8/bbl in 2015 to $42,8/bbl in 2016 and in 2017 Quarterly Average of the crude oil price is $49,4/bbl (World Bank, 2017).

These one of the causes that influence the economic value condition of oil and gas project. As currently the crude oil is oversupply the price of crude oil is decrease. Indonesia prospective exploration area is mainly in East Indonesia which is the area consists of deep water and frontier (SKK Migas, 2017). Deep water and frontier is a marginal area which costly and risky because the limited of infrastructures availability. When the project needs an extra costs as well as risky, but on the other hand it is not supported by the great crude oil price, investors would be uninterested to invest in Indonesia oil and gas industry.

- **Sociocultural Segment**

Opportunity

Oil and gas market in Indonesia would be mainly stable in the future because, Indonesia is a country with one of the largest oil and gas consumption.

Threat

In terms of oil and gas global market, it would be unpredictable because the dynamic changes in its industry.

- **Technological**

Opportunity

To enhance the investment climate in oil and gas sector, currently Indonesia government start to move its system from the manual system to automatic system which is a web-based system. Therefore, the approval would be more on time as well as more accountable.

Threat

The stakeholders within Indonesia oil and gas industry is not ready with the technology-based transformation

The EFE analysis consists of several factors that mentioned in the PEST analysis which categorized as opportunities and threats. Those factors then calculated by weighting and rating to know how well oil and gas industry in Indonesia responds to the external environment (Hunger & Wheelen, 2000).

To get the weight and ratings of each factors, Analytical Hierarchy Process (AHP) are used and conducted through interviews with the Ministry of Energy and Mineral Resources of Indonesia as well as SKK Migas. After that, the weight and ratings of every factor are applied and multiplied to obtain the total weighted scores. The importance of each factors is weighted and must be total to 1.00 and as for the ratings are arranged from 1 (Poor) to 5 (Outstanding).

ICMEM

Stability Factor	Weight	Rating	Score	Description
A Opportunity				
1 Investor anticipated of the new Indonesia fiscal terms	0.11	4	0.44	Government already arranged the new fiscal terms which is Gross Split PSC
2 High oil and gas consumption domestically and globally	0.12	2	0.24	Government hardly keep pace with this opportunity due to decreasing oil and gas production in several years
3 increasing oil and gas demand domestically and globally	0.13	2	0.26	Government has been imported oil and gas for several years to fulfill the domestic demand but hard to fulfill the global demand due to low reserved rates of oil and gas
4 Increasing Indonesia economic growth	0.09	3	0.27	Several development programs has been established to support Indonesia economic growth, but in terms of oil and gas sector, government needs to enhance the oil and gas programs
5 Increasing Indonesia population	0.05	2	0.1	Government has not fully maximize the quality of Indonesia manpower
6 Web based system is trending in countries	0.02	2	0.04	Government has not fully maximize the digital bureaucracy system
Stability Factor	**Weight**	**Rating**	**Score**	**Description**
B Threats				
1 Investor needs more certainty in the changes of Gross Split PSC terms	0.11	4	0.44	Government has several programs to socialize and negotiate with the contractors
2 Decreasing world crude oil price	0.16	2	0.32	Government does not have a capability to control this issue except trying hard to improving their oil and gas field prospectivity
3 Dynamic changes in oil and gas global market	0.15	3	0.45	Recently, Government try to keen up with the changes by creating several strategies
4 Doubtedly Stakeholder readiness of technology transformation	0.06	1	0.06	No countermeasure for this issue
Total	**1**		**2.62**	

Fig. 1. EFE

Based on the Fig. 1, the opportunities and threats that gained the higher scores are:

1. Opportunities
   a. Investor anticipated of the new Indonesia fiscal terms.
   b. Increasing Indonesia economic growth.
2. Threats
   a. Dynamic changes in oil and gas global market.
   b. Investor needs more certainty in the changes of Gross Split PSC terms.

Internal Environment

Resource Based approach consists of three elements which are resources, capabilities, and core competencies. Those elements emphasize internal capabilities of the industry or organization to formulate the strategy in terms of obtain a sustainable competitive advantage in its market and industries (Henry, 2011). To examines the weaknesses and strengths of the oil and gas industry in Indonesia, the resource-based view analysis help to determine the future of the industry which can be done by comparing measures of the industry past performance, industry's key competitors, and industry as a whole.

Grant (1991) stated on his book that there are five steps need to be done in terms to formulate strategy which are; analyzing the firm's or industry resource -based, appraising the industry or firm capabilities, analyzing the profit potential of the firm or industry resources and capabilities, selecting a strategy, as well as extending and upgrading the form or industry pool of resources and capabilities

Tangible Resources	
Resources	**Explanation**
Physical Resources	- Indonesia has many high reserve rate fields waiting to be explored
	- High quality oil and gas equipments
Financial Resources	- By usingGross Split PSC, all investment source for the exploration and production comes from the investors
Human Resources	- Indonesia has many qualified TKDN
Intangible Resources	
Resources	**Explanation**
Culture Resources	- Maintain good relationship between Government and Contractors
Intellectual Resources	- Indonesia's government owns many oil and gas programs and systems that influence other countries
Reputational Resources	- Indonesia oil and gas industry gas a good reputation as oil and gas producer in the world

Fig. 2. Indonesia's Oil and Gas Resources

Resources categorized as tangible and intangible which means the tangible resources is refer to physical assets such as physical resources, financial resources, and human resources. While intangible resources is refer to intellectual or technological resources and reputation such as organization reputation, culture, knowledge, and brands. Here are the following resources concept of Indonesia oil and gas industry.

Based on its resources, Indonesia oil and gas industry capabilities as follow:

1. Able to provide proven and potential conventional energy reserves of more than 7 billion barrels of oil and about 150 trillion cubic feet of gas.
2. Able to be drivers of economic activity in Indonesia.
3. Able to optimize the utilization of domestic labors in Indonesia.
4. Able to provide new fiscal terms that more favorable for investors.
5. Able to provide ease of permitting processes.

Fig. 3. Indonesia's Oil and Gas Competencies

Criteria of Value	Competencies		
	Indonesia has many high reserve rate fields that ready to be explored	Has a good reputation as oil and gas producer country	Gross Split PSC as Indonesia new fiscal terms that more favorable rather than Cost Recovery PSC
Value	Yes	Yes	Yes
Rareness	Yes	Yes	Yes
Imitability	Yes	Yes	No
Organized	Yes	No	Yes
Core Competencies	Yes	Yes	Yes

Based on VRIO analysis above, Indonesia oil and gas industry core competence that can be its competitive advantage is the fact that Indonesia has many high reserve rate fields. As for the competence of has a good reputation as oil and gas producer country is not organized well, this competence cannot be Indonesia oil and gas industry competitive advantage. This issue happened because Indonesia currently experienced declines in oil and gas production for several years, so Indonesia's ranks as top oil and gas producer also declines.

The Gross Split PSC is categorized as temporary competitive advantage due to its chance to be imitated by other countries is high. But, regarding the Gross Split PSC term details is cannot be imitate 100%, due to every countries have different conditions, the changing of countries fiscal terms is not costly to imitate.

Industry Factor Evaluation (IFE) Analysis is similar to the External Factor Evaluation (EFE) Analysis. The difference is IFE examines current responses to its industry condition and environment. This analysis requires Government to include factors that obtains from the result of industry analysis and categorized it as strengths and weaknesses.

Stability Factor	Weight	Rating	Score	Description
C Strengths				
1 Gross Split PSC terms	0.14	4	0.56	Government consider its as their competitive advantage so, they keep socialize the terms to the investors
2 Government oil and gas promotion programs	0.12	4	0.48	Government keep up their oil and gas promotion programs to enhance the investment
3 Indonesia oil and gas industry prospectivity	0.16	4	0.64	This strength is taken seriously by Government that is why Government condust several programs and strategy to maintain this strength
Stability Factor	**Weight**	**Rating**	**Score**	**Description**
B Weaknesses				
1 Decreasing oil and gas reserve replacement rates	0.13	4	0.52	This weakness push Government to formulate the strategy such as incentivizes for contractor to boost the exploration and exploitation
2 Decreasing oil and gas production	0.14	3	0.42	Government still trying to find the best way to enhance the oil and gas production even though, recently it is already increase slightly
3 Declining in share of exploration investment	0.15	4	0.6	Government try their best to improves the investment by starting to cut the bureaucracy, fiscal terms changing, incentivizes contractor
4 Oil and gas field is in the mature stage	0.16	3	0.48	Government has been trying to push contractors to explore frontier area in Eastern Indonesia
Total	**1**		**3.7**	

Fig. 4. IFE

From the analysis above, the strengths and weaknesses that gain the higher scores are:

ICMEM

1. Strengths
   a. Indonesia oil and gas industry prospectivity.
   b. Gross Split PSC terms.
2. Weaknesses
   a. Declining in shrae of exploration investment.
   b. Decreasing oil and gas reserve replacement rates.

Value Chain Analysis

According to the analysis of value chain by Farid (2007) and crude oil and natural gas value chain analysis by MOGA (2017), there are some potential problems that may occur. Those problems potentially will occur in Exploration Phase and Shipment process of primary processes orders. In the exploration phase, there are several activities which are: Geophysical Evaluation and Design; Field Development; and Drilling Operations. These activities are costly because it takes most of the time in the whole processes. Hence, it needs to be supported by good drilling contracts and fast bidding process time by process simplification.
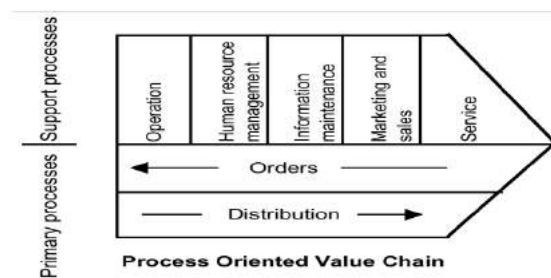
Fig. 5. Indonesia's Oil and Gas Value Chain

Another issue that may occur is in the shipment process of primary processes orders which is the lead time of equipment shipment that mostly takes a lot of time and unpredictable. Therefore, Indonesia oil and gas industry needs to develop its value chain by implement integrated strategic supply chain management. The integrated strategic supply management will not only reduce the uncertainty of lead time shipment, but it will increase performance of all processes (plan, execution, enable).

ICMEM

		Opportunities (O)		Threats (T)
EFAS **IFAS**		1 Investor anticipates Indonesia new fiscal terms	1	Investors need more certainty on Indonesia Production Sharing Agreement (PSA)
		2 High oil and gas consumption domestically and globally	2	Decreasing world crude oil price
		3 Increasing O&G demand domestically and globally	3	Dynamic changes in oil and gas global market
		4 Increasing Indonesia population	4	Stakeholder readiness of technology transformation
		5 Web based system is trending in countries		
Strength (S)		**SO**		**ST**
1	Gross Split PSC	●Develop government policies of bureaucracy system to attract investors (S1, S4, O4, O5)		●Socialization program to inform investors and contractors about O&G regulations (S1, S2, T1, T4)
2	Government O&G promotion program	●Seminar program to promote new Gross Split PSC fiscal terms to investors (S1, S2, O1)		
3	Indonesia oil and gas industry prospectivty	●Development program for human resource quality in oil and gas sector to maximize TKDN (Tenaga Kerja Dalam Negeri) capability (S3, O4)		●Enhance efficiency and effectivity in O&G activities (S1, S3, T2, T3)
4	High economic growth rate	●Open bidding for high reserve rate fields (S3, O2, O3)		●Establish FGD to maintain communication between investors and government (S3, T3)
Weaknesses (W)		**WO**		**WT**
1	Decreasing O&G replacement rates			
2	Decreasing O&G production			
3	Declining in share of exploration investment	●Encourage investors to explore Eastern Indonesia through attractive fiscal terms (W1, W2, W3, O1, O2, O3)		●Cutting down the stages of upstream oil and gas business process time by create the business process timeline (W3, T1)
4	O&G field is in the mature stage			

Fig. 6. SWOT Analysis

Regarding the uncertainty of oil and gas industry, actually it is really high. Investors either government need a great strategic formulation to match Indonesia oil and gas industry strengths with the opportunities in the environment, while overcoming the weaknesses and minimizing the threats. A SWOT analysis allow an organization or industry to determine the extent of the strategic fit between its capabilities and the needs of its external environment. The strengths and weaknesses in the SWOT analysis below are taken from IFE table and the opportunities and threats are taken from EFE table.

EXTERNAL			
OPPORTUNITIES		**THREATS**	
1	Investor anticipated of the new Indonesia fiscal terms	1	Investors need more certainty on Indonesia Production Sharing Agreement (PSA)
2	High oil and gas consumption domestically and globally	2	Decreasing world crude oil price
3	Increasing O&G demand domestically and globally	3	Dynamic changes in oil and gas global market
4	Increasing Indonesia population	4	Stakeholders readiness of technology transformation
5	Web based system is trending in countries		
INDUSTRY			
STRENGTHS		**WEAKNESSES**	
1	Gross Split PSC: · Transparency · Accountable · Quicker approval process · More efficient and effective	1	Decreasing O&G replacement rates
2	Government O&G promotion program	2	Decreasing O&G production
3	Indonesia oil and gas industry prospectivity	3	Declining in share of exploration investment
4	High economic growth rate	4	O&G field is in the mature stage

Fig. 7. TOWS Matrix

To obtain the main objective of Gross Split PSC, the strategy that could not lead with the objective should be eliminated. According to pros and cons analysis above, some of the alternatives are quite similar, so to avoid vague results in functional strategy analysis below, author eliminated those alternatives

ICMEM

No	Main Strategy	Division in Charge	Functional Strategy	
1	Develop government policies of bureucracy system to attract investors	Ministry of Energy and Mineral Resources, Ditjen Migas, SKK Migas	Initiate research and development to make an integrated web-based bureaucracy system, conduct Regulatory Impact Assesment to examines whether the regulation effective or not, enhance the transparency of the processes	Research and Development
2	Open bidding for high reserve rate fields	Ministry of Energy and Mineral Resources & Ministry of Finance	Fields with a high prospectivity is on the marginal area (Eastern Indonesia), hence, government especially Ministry of Energy and Mineral Resources should push NOC and FOC to explore those areas by open more bids in those marginal area and by maximizing the incentive, it could make the bids more attractive	Marketing and Finance
3	Seminar program to promote new Gross Split PSC fiscal terms to investors	Ditjen Migas	Establish seminar and join international conference & seminar to inform investor about Indonesia;s oil and gas prospectivity as well as the advantages of using Gross Split PSC as production sharing agreement.	Marketing
4	Cutting down the stages of upstream oil and gas business process time by create the business process timeline	Ministry of Energy and Mineral Resources, Ditjen Migas, SKK Migas, NOC, FOC	Speeding up approvals by creating business process timeline and supported by NOC/FOC with provides well-prepared proposal and data	Operation and Human Resource

Fig. 8. Alternative Strategies

5. Conclusions

The best strategy chosen is cutting down the stages of upstream oil and gas business process time by create the business process timeline. The reason of this strategy has been chosen is because it aligns with gross split objective which is maximize the efficiency and effectivity as well as it will be one of the way to enhance the transparency of the oil and gas business processes as well as it could be a guideline for both government and contractor to cope with the predefined time targets. By applying this strategy, it also could improve the time value of money and improved economics. Here is the following proposed stages of upstream oil and gas business process timeline based on stages given by Ministry of Energy and Mineral Resources.

By considering the time to conduct each strategy by discussing with Ministry of Energy and Mineral Resources to find the most possible and effective strategy to be implemented around 2 years. The best strategy chosen is cutting down the stages of upstream oil and gas business process time by create the business process timeline.

References

Agustinus, M. (2017) *Skema Gross Split Direvisi, Ada 8 Inesntif Baru Buat Kontraktor Migas.* Retrieved from: https://finance.detik.com/energi/3635391/skema-gross-split-direvisi-ada-8-insentif-baru-buat-kontraktor-migas

David, Fred R. (1999). Strategic Management: Concepts (7th ed.). Upper Saddle River, NJ: Prentice-Hall, Inc.,

Direktorat Jenderal Minyak dan Gas Bumi Kementerian Energi dan Sumber Daya Mineral. (2016). Lapora Tahunan: Capaian Pembangunan 2016.

Direktorat Jenderal Minyak dan Gas Bumi Kementerian Energi dan Sumber Daya Mineral. (2015). Lapora Tahunan: Capaian Pembangunan 2015.

Ernst & Young. (2017). Driving Operational Performances in Oil and Gas. Retrieved from: http://www.ey.com/gl/en/industries/oil---gas/ey-driving-operational-performance-in-oil-and-gas-1-low-oil-price-highlights-the-need-for-operational-excellence.

Farid, A. (2007). Strategic Supply Chain Management in the Upstream Indonesian Oil and Gas Industry. Retrieved from: https://nanopdf.com/download/strategic-supply-chain-management-in-the-upstream-indonesian-oil_pdf

Gibson Dunn. (2017). Indonesia Legal Alert: The Indonesian PSC The End of an Era. Retrieved from: https://www.gibsondunn.com/wp-content/uploads/documents/publications/The-Indonesian-PSC-The-End-of-an-Era.pdf

Gitman, L. J., & Zutter, C. J. (2002). Principles of Managerial Finance. Financial Planning. http://doi.org/10.4324/9780080938196

Grant, R. M. (1991). *The Resource-based Theory of Competitive Advantage: Implications for Strategy Formulation*. California Management Review, University of California. Retrieved from https://books.google.co.id/books?id=pahyGwAACAAJ

Hitt, M., Ireland, R. D., & Hoskisson, R. (2006). *Strategic Management: Concepts and Cases*. Cengage Learning. Retrieved from https://books.google.co.id/books?id=gZ60WQm54CoC

ICMEM

Hunger, J. D., & Wheelen, T. L. (2000). *Strategic Management*. Prentice Hall. Retrieved from https://books.google.co.id/books?id=YBO7AAAAIAAJ

Investopedia. (2017). Oil Price Analysis: The Impact of Supply and Demand. Retrieved from: https://www.investopedia.com/articles/investing/100614/oil-price-analysis-impact-supply-demand.asp

Jones Day. (2017). Indonesia's New Gross Split Production Sharing Contracts for the Oil and Gas Industry. Retrieved from: http://www.jonesday.com/files/Publication/345ea525-57eb-43cb-8edf-540564fe2fbf/Presentation/PublicationAttachment/3458966d-6b35-4577-9743-5dc9f960e4c2/Indonesia%20New%20Gross%20Split%20Production.pdf

Kementerian Energi dan Sumber Day Mineral. (2017). *Peraturan Menteri Nomor 08 Tahun 2017 Tentang Kontrak Bagi Hasil* Gross Split.

Kementerian Energi dan Sumber Day Mineral. (2017). *Peraturan Menteri Nomor 52 Tahun 2017 Tentang Perubahan atas Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 08 Tahun 2017 Tentang Kontrak Bagi Hasil* Gross Split.

Livemint. (2014). India Plans to Map its Hydrocarbon Resources. Retrieved from: https://www.livemint.com/Industry/xv8YzFNtLQ8RNmPVtltDQM/India-plans-to-map-its-hydrocarbon-resources.html

MOGA. (2017). Oil and Gas Value Chains. Retrieved from: http://moga.saoga.org.za/resources/oil-gas-value-chains

OPEC. (2017). Brief History. Retrieved from: http://www.opec.org/opec_web/en/about_us/24.htm

Organization for Economic Cooperation and Development. (2006). Determinants of Quality in Regulatory Impact Analysis. Retrieved from: https://www.oecd.org/gov/regulatory-policy/42047618.pdf

Osama, R. (2017). The Driving Forces Behind Today's Oil Makets. Retrieved from: https://www.usatoday.com/story/money/2017/10/02/driving-forces-behind-todays-oil-markets/717203001/

Pinsent Mason. (2017). Indonesia's New Gross Split PSC: Right structure, wrong split?. Retrieved from: https://www.pinsentmasons.com/PDF/2017/Asia%20Pacific/Indonesias-new-Gross-Split-PSC.pdf

Porter, M. E. (1996). What is Strategy? *Harvard Business Review*, *74*(6), 61–78. http://doi.org/10.1098/rspb.2008.0355

Price Water House. (2016). Is the Drum Half Full or Half Empty. Retrieved from: https://www.pwc.com/id/en/energy-utilities-mining/assets/May%202016/pwc%20indonesia-oil%20and%20gas-survey-2016.pdf

Price Water House. (2017). Oil and Gas in Indonesia. Retrieved from: https://www.pwc.com/id/en/energy-utilities-mining/assets/oil%20and%20gas/oil-and-gas-guide-2017.pdf

Roach, B and Dunstan, A. (2018). The Indonesian PSC: the end of an era. Retrieved from: https://www.gibsondunn.com/wp-content/uploads/2018/04/Roach-Dunstan-The-Indonesian-PSC-the-end-of-an-era-Journal-of-World-Energy-Law-and-Business-April-2018.pdf

Sen, A. (2014). Out of Gas: Empirical Analysis of the Fiscal Regime for Exploration in India, 1999-2010. Retrieved from: http://www.usaee.org/usaee2014/submissions/OnlineProceedings/ANUPAMA%20SEN%20Online%20Proceedings%20Paper%20%20IAEE%202014%20NY.pdf

The Boston Consulting Group. (2017). Indonesia's $120 Billion Oil and Gas Opportunity. Retrieved from: https://www.bcg.com/publications/2017/upstream-oil-gas-energy-environment-indonesia-billion.aspx

US EIA. (2018). What Drives crude oil price. Retrieved from: https://www.eia.gov/finance/markets/crudeoil/reports_presentations/crude.pdf

World Bank. (2017). World Bank Commodities Price Data (The Pink Sheet). Retrieved from: http://pubdocs.worldbank.org/en/375121504637019355/CMO-Pink-Sheet-September-2017.pdf

Worldometers. (2018). Indonesia Population. Retrieved from: http://www.worldometers.info/world-population/indonesia-population/

ICMEM

The 3rd International Conference on Management in Emerging Markets

Strategic Holding Scenario for State-Owned Enterprises in Indonesia Mining Sector towards International Market Competition

Tri Putri Lenggogeni[a]*, Yudo Anggoro[b]

*a,b*Majoring General Management, School of Business Management, Bandung Institute of Technology
Graha Irama, Gedung Graha irama Lt. 12, Jl. H. R. said Kav. 1 – 2, Kuningan Timur, Kota Jakarta Selatan, DKI Jakarta 12950, Indonesia

Abstract

In order to maximize the role of State-Owned Enterprises, Government creates a strategy to form a super holding company. The implementation of the super holding itself started with the establishment of State-Owned Cement Industry Holding in 1995. Furthermore, early 2014 marks the year of government's ambition to form another holding company, started with established State-Owned Forestry Industry Holding and Mining's area in November 2017. This research will discuss more details about State-Owned Mining Industry Holding. The scheme is PT Indonesia Asahan Aluminum (INALUM) appointed as Parent Company of State-Owned Mining Industry Holding, and PT Aneka Tambang (ANTAM) Tbk, BUKIT ASAM Tbk, and TIMAH Tbk become subsidiaries. This form of structure is known as Operating Holding, which has been experienced first by State-Owned Cement and Fertilizer Industry Holding. The author uses Scenario Planning framework by Goodwin and Wright (2003). The author created four possibilities scenarios and conducts benchmarking of two previous State-Owned Enterprises Holdings, in order to provide a valid comparison. The authors also conducted an interview by using Delphi Methods which continued with the analysis using Kepner-Tregoe Approach Analysis. The result, the authors suggest State-Owned Mining Industry Holding should immediately restructure and implement a scenario called Absolute Strategic

Keywords: Absolute Strategic Holding; Mining; Scenarios; State Owned Enterprises; and Super Holding

1. Introduction

Indonesia has huge reserves of natural resources, including those managed by the Government. However, the control of resources and reserves by state-owned companies in the mining sector is still relatively low compared to national and foreign private players. According to (Savas, 1997) State-Owned Enterprises in developing countries have the following disadvantages: 1) Experiencing inefficiency of overstaffing and low productivity; 2) Have low quality of goods and services; 3) Continuing losses and rising debt, 4) Lack of managerial skill or sufficient managerial authority; 5) Obsolete practice or products and little marketing capability and 6) Underutilized and underperforming assets. In order to maximize the role of State-Owned Enterprises, the strategy to form a super holding company has been carried on the State-Owned Enterprises Roadmap 2015-2019. The implementation process of the holding company concept was started with the establishment of State-Owned Cement Industry Holding in 1995 and Fertilizer (PTPN) in 1998. Furthermore, early 2014 was marked as the year of government's ambition to form another holding company, started with the establishment of State-Owned Forestry Industry Holding (Perum Perhutani). This was indicated by the establishment of State-Owned Industry Holding in Plantation's area and Mining's area in November 2017. This research will discuss State-Owned Mining Industry Holding in detail. On 28th November 2017, Rini M. Soemarno as Minister of State-Owned Enterprises has signed an approval for State-Owned Mining Industry Holding with final scenario as follows; PT Indonesia Asahan Aluminum (INALUM) as the Parent Company, and PT Aneka Tambang (ANTAM) Tbk; BUKIT ASAM Tbk; and TIMAH Tbk, to become the holding members.

---

* Corresponding author.
E-mail address: tri.lenggogeni@sbm-itb.ac.id

ICMEM

Many scholars have their own definition of holding company. According to Hosseini et al. (2013), holding company is an investment company and the only difference is that it seeks to manage subsidiary companies. Subsidiaries of holdings such as merged companies do not lose their legal entity. The purposes are to create a new value and to increase the competitive advantages. Heppelmann and Hoffleith (2009) claimed that holdings are typically valued with marked reductions on capital market. Kennon (2017) states that holding company is a company that does not have any operation, activity or other active business itself. From these definitions, it is concluded that holding company is an investment company which does not have any operation, consists of some subsidiaries that support each other to create a new value and to increase the competitive advantages. Goold and Campbell (2002) has their named for Holding Company, called Corporate Parenting Strategy. Corporate Parenting Strategy is a strategy which only a single company exists as a parent company and there are several companies as subsidiaries with main business.

Indonesia already has four super holding, excluding State-Owned Mining Industry Holding. Two of them are benchmarking for the writer, State-Owned Cement Industry Holding (est. 1995) and Fertilizer (est. 1997).

1. 1. Benchmarking to Previous State-Owned Enterprises Holding

Semen Indonesia

State-Owned Cement Industry Holding has been underway since 1995, marked by the merger of three state-owned cement companies namely Semen Gresik, Semen Padang, and Semen Tonasa with Semen Gresik appointed as the holding company. The two main factors driving the decision to establish a state-owned cement company were: Firstly, due to the limited production capacity of the three state-owned cement companies in Indonesia while the target of infrastructure development continues to arise. This condition caused national cement supply deficit which is one of the strategic sectors. Secondly, the expansion of the national private cement industry was relatively faster compared to the expansion of the state-owned cement industry. Concluding from both factors, the holding company was formed to create value added and improve the competitiveness of state-owned cement company. However, through the process of holding state-owned cement formation, several issues were raised at the management level as well as from employees of the three state-owned cement companies. The first problem was the regional issues due to each cement company was perceived as the community's pride and identity. Secondly, there was a silo issue in which all three SOEs run their operations as three separate companies. Third, concerns over changes in HR policies, especially those related to remuneration and career path. The problem were solved with the appointment of Dwi Soetjipto as President Director of Semen Gresik in 2005. The main strategy used was the synergy between state-owned cement which was done gradually from operating holding company to strategic holding company in order to achieve satisfactory preparation. The initial stage of the SOEs Cement synergy process was to "force" people to want to synergize (human approach). So that in 2009, Semen Gresik began to explore the system approach among others by reviewing the form of holding company, operating system, and the ideal strategy. The review was completed in 2011, and starting from 2012 PT. Semen Indonesia, Tbk formed and started operating as a strategic holding.

Pupuk Indonesia

The State-Owned Fertilizer Industry Holding was established in 1997. One of the factors driving the establishment of this Holding was due to coordination difficulty faced by the government due to the presence of state-owned Fertilizer Companies were quite large. Similar to State-Owned Cement Industry Holding, the process of forming a State-Owned Fertilizer Industry Holding was also accompanied with resistance and rejection. The government was considered incompetent in designing adequate communication plan. Issues that were rolling on the implementation of this holding, among others:

1. The role of Pupuk Sriwidjaya as Operating Holding
   The Structure above makes the existence of overlapping activities run between the parent company and its members. As Pupuk Sriwidjaya also still run the production and distribution activities, other holding members considered the holding parent as unfavorable.
2. Pupuk Sriwidjaya Position is Weak
   In this case, Petrokimia Gresik, Pupuk Kujang, Pupuk Kaltim and Pupuk Iskandar Muda stated that they were

ICMEM

not part of the Holding. All activities were still carried out separately and there were no significant changes, hence no difference occurred between the condition as subsidiary and as an independent company.

3. Complicated Bureaucracy

The problems continued to roll, and culminated in the time of appointment and dismissal of directors directly issued by the Ministry of SOEs, not from the holding parent. In addition, if there was an issue that needs to be settled by a holding member, the directors of a subsidiary would be directly confronted by the central government.

From the experience of both State-Owned Fertilizer and Cement Industry before, a repetition of mistakes against the formation of a State-Owned Mining Industry Holding Industry was observed. Although it has been regulated in writing in Government Regulation Number 72 Year 2016, the transition conditions that will occur are very likely to trigger an internal conflict.

2. Literature Review

Author attempts to find out factors that assumed to be the root of business issue by analysing factors found in such conceptual framework. *First,* is Scenario Planning framework. According to Goodwin and Wright (2003) scenario planning is an alternative way of overcoming uncertainty rather than being shown in some decision analysis. In Figure 1.1, Lindgren and Bandhold (2003) illustrated the dimensions that have been discovered over the years using scenario techniques in various projects. There are several functions of scenario planning: 1) to clear scenarios used for planning reasons with explicit objectives to develop practical results; 2) scenarios can serve as inspiration to generate ideas and to filter new ideas and projects. 3) scenarios can be used for evaluation purposes, for example to test existing business concepts, strategies or products. 4) scenarios can also be used to study or to encourage change. Here is a dimension to consider before planning scenarios planning:

ICMEM
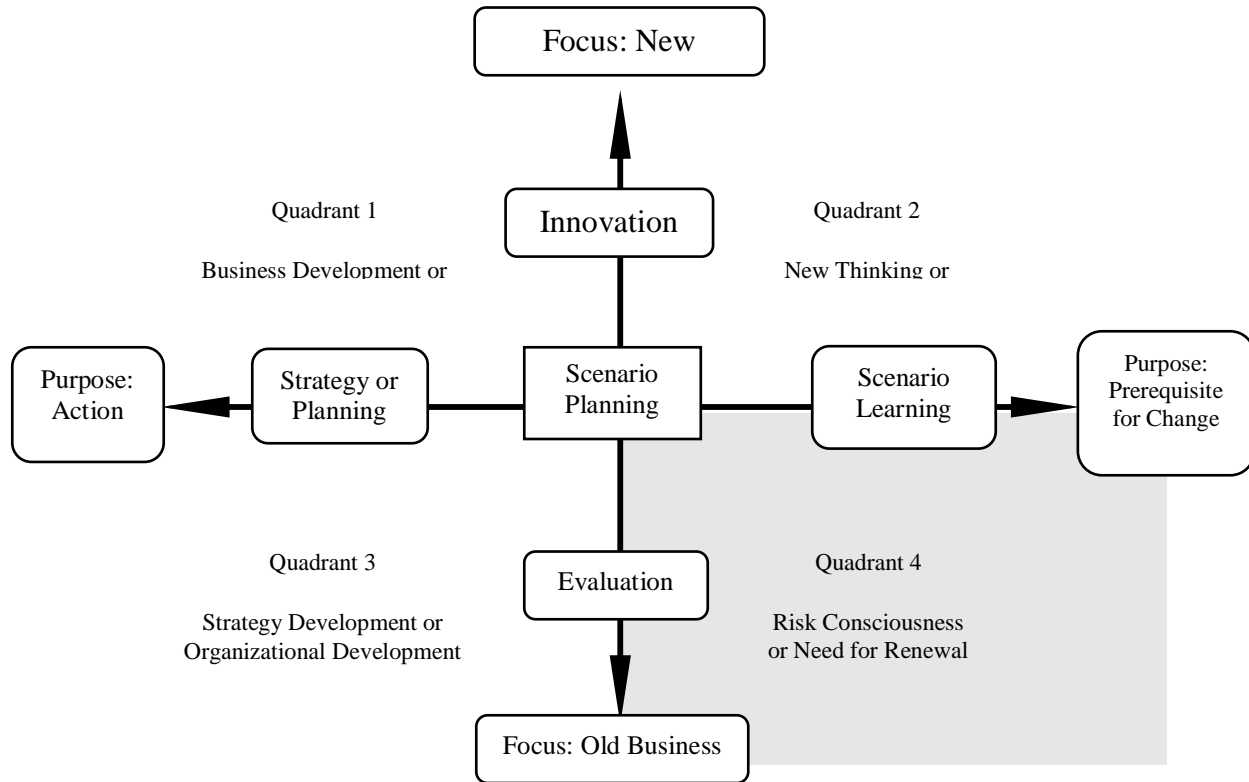
Figure 1. Scenario Planning Dimensions
Source: Lindgren and Bandhold (2003)

Based on the diagram above, the authors decided that the right dimension in following up this case study is on Quadrant 4. Thus, the output produced by this paper is to offer a change in the form of renewal the previous structure. After the diagram for the focus is determined, the next step is to propose a scenario planning framework. Scenario Planning concept created by Lindgren and Bandhold (2003) called TAIDA is used. TAIDA itself is an abbreviation consists of five processes namely; Tracking, Analysing, Imaging, Deciding and Acting. TAIDA is also the name of the framework has been developed and used by Lindgren and Bandhold (2003) for over ten years in the scenario planning projects for businesses as well as public and private organizations. *Second,* author used Value Chain Analysis frameworks analysing the internal assessment. Thus, author can see the similarities that each company has. Later on, these similarities will lead author to the efficiency of the division so as to create the right lean organization.

This research is intended to anticipate the mistakes that have been experienced by both holding companies before. This error takes a dozen years, hence a huge number of time; energy and expenses were simply thrown away. To do so, after performing external and internal analyzes, the root causes of business problems is explained in Table 1.1 below:

Table 1. Root Causes Analysis's Result

No	Root Cause	Domain	Basis of Analysis
1.	Too Much Government Interference	Government (External)	Benchmarking
2.	Overlapping Roles	Marketing; Information Technology (Internal)	Value Chain Analysis

ICMEM

3.	No Sense of Belonging as One United	People / Human Resources (Internal)	Value Chain Analysis

Source: Edited by Author (2018)

3. Research Methodology

Data will be collected and analyzed with qualitative method. Through direct access to company internals, the data will be supported by annual reports, articles or internal bulletins, and other resources. The data will also be completed with interviews with related parties. Author had a chance to interviewed representatives of each company involved: PT. Timah, PT. Bukit Asam, PT Antam (Persero) Tbk and PT. Indonesia Asahan Alumunium (Holding). After author collected all the data, author will use Kepner-Tregoe Approach (1960) to analyze the summary of interviews. The Kepner-Tregoe Approach will involve for several decisions within giving a rating or weight for each alternatives and valued by author and all the representative's company. The author also had the opportunity to interview Mr. Dawn Harry Sampurno as Deputy Minister of Mining Business, Strategic Industries Ministry of State-Owned Enterprises as a source of information coming from external parties. After author choose the best decision, then author will use research from The Boston Consulting Group (2012). In that research, they mentioned about several things in making Corporate Parenting Strategy can provide the overall value of group business. They are five elements: Financial Benefits, Business Strategy, Operational Engagement, Corporate Resources and Functions, Strategy Development. This research will help author to resume how much value creation that can be done per each element.

4. Result and Discussion

4. 1. Tracking

The first stage in doing scenario planning is tracking. According to Lindgren and Bandhold (2003), tracking is about finding trends, drivers, and uncertainties to consider in a job, as it affects the future. One way to look at trends is to use media analyze, it can be summerize by the figure below:
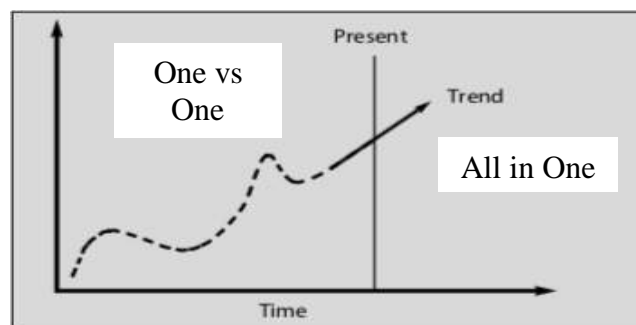
Figure 2. Trend Curve's Analysis
Source: Lindgren and Band hold (2003)

According to previous super holding, author conducted synergy as a new trend. Companies tend to cooperate with other companies to reduce production rates in order to create greater income.

4. 2. Analysing

The second stage, author will identify the things that support and the consequences of each trend in detail using the elements that mentioned in Value Chain Analysis. The result only a few activities are similar in these four companies. First, in inbound logistics which is exploration. Although INALUM does not do activity mining, but the main ingredient that INALUM needs in making Aluminium is Bauxite. Bauxite is one of the ending products that ANTAM

ICMEM

produces. Second, on marketing and sales activities. Third on the activities of in-house employee training on the overall mining. Fourth on procurement activities, where every company needs almost similar equipment (such as diesel, bolt, nut) for operational activities. Holding companies will then be able to accommodate the purchasing needs of the entire company, so the purchase will be in a very large number and expected discounts on purchase costs will also be obtained larger. At this stage, author also will input the scenario planning framework. Scenario planning is an alternative way of overcoming uncertainty rather than being shown in some decision analysis (Goodwin and Wright, 2003). To be emphasized, scenario planning is not the same as the forecast for the future. The scenarios formed by imaging of reasonable probabilities. To determine the business solution, several alternatives are developed to be then analyzed in determining one optimal solution for the Company's business issue. So that, based on the results of the combined research, here is a Scenario Planning that the authors created:
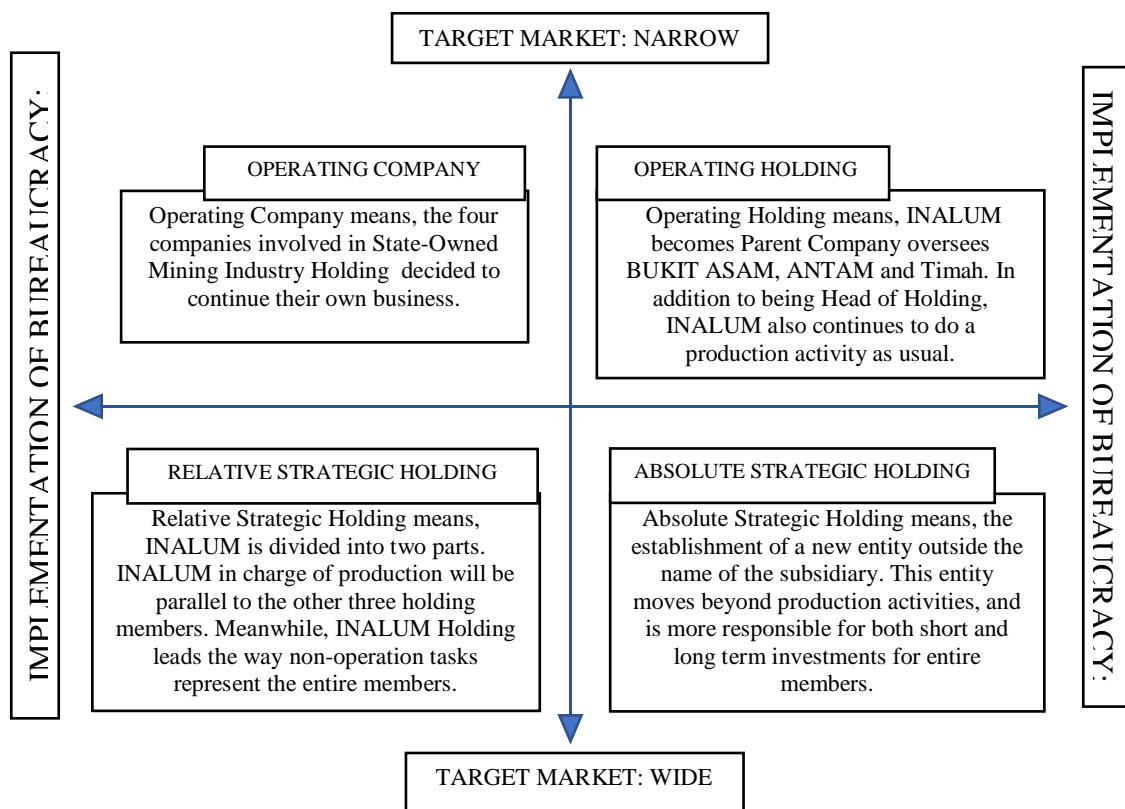
Figure 3. Four Scenario on Future State-Owned Mining Industry Holding
Source: Edited by Author (2018)

The *first* scenario is the Operating Company. The point in this scenario is when each company will run its operations up to its own marketing, just as it was. The *second* scenario is Operating Holding. This is similar to the holding established by the Government when incorporated the Cement Holding and Fertilizer Holding. So, in this Operating Holding INALUM was appointed Head of Holding in accordance with the decision of the Ministry. But besides being Head of Holding, INALUM still run its operational activities. The applied structure follows the structure that INALUM has run before the establishment of the holding. The *third* scenario is Relative Strategic Holding. This term is made by author. This structure illustrates the separation of the structure between Operation and Holding for INALUM, and there is no creation of a newly formed one entity. The *fourth* scenario is Absolute Strategic Holding. This term is also made by author. The difference of this scenario with the previous scenario is the creation of new entities outside the four companies that became the initial holding formation. Despite its status change, the third member of the holding

ICMEM

remains to be treated equally with other state-owned enterprises regarding matters of a strategic nature. It is stated in PP 72 2016;

> *"A branch of state-owned enterprises as referred in paragraph (2) shall be treated equally with state companies as follows: a) To obtain assignment of the Government or to perform public service; and / or b) To obtain country-specific policy and / or the Government, including the management of natural resources with a particular treatment as applied to SOEs,"*

So, author does not include about the pros and cons regarding the decision of State-Owned Mining Industry Holding but will analyse a deeper discussion regarding the structures that have been published, and provide alternative solutions to create a value as much as it can.

Imaging

After tracking environmental changes, analysing them and creating alternate future scenarios the next stage is to create the desired future image. Regarding to Sofjan Assauri (2016), the vision of the company is a simple statement that describes the direction of the company's goals as well as the company's accurate dreams, and is able to sustain it for a sustainable future. Author will use five levels of strategy formulation by Huff et all. (2009) to imaging the future image of this holding. First is Network Strategy which developed within a

group of business organizations, formed to achieve the overall goals of group goals without taking sides or trying to help one particular business organization. For the author, the entry of this State-Owned Mining Industry Holding to the Global Fortune 500 is a feasible and realistic dream for Indonesia. Second, Corporate Strategy. For author the establishment of this State-Owned Mining Industry Holding will make Indonesia has a big chance to become a country that producing the largest mining in Southeast Asia. Third is Business strategy. In author opinion, this strategy is closely related to the results of the scenario decision that the author will choose. According to the author, the right Business Strategy is how we chart the right organizational structure as well. So that will create a sleek and efficient integration, minimal overlapping and giving clear job desk. Fourth is Functional Strategy which is the coordination between several business strategies in several fields that already author explained using Value Chain Analysis. Fifth is Individual Strategy which is the direct effort of related individuals to improve their own welfare. One thing that needs to be embedded in each employee who works is a sense of togetherness.

Deciding

At this stage author will summarize through summary interviews that author has done. Key Informant 1 (KI 1) represent INALUM. As a Head of Corporate Communication and Government Relations, he said the establishment of a *State-Owned Mining Industry Holding* was a representation or an answer whereby the state must safeguard and maximize the reserves of state resources. Because if alone then their financial ability for expansion and efficiency more limited. He also added that about the structuring, nothing will change. State-Owned Mining Industry Holdin*g* will form a different structure with previous holding (Semen Indonesia and Pupuk Indonesia). INALUM will stay remain a Parent Company, which will be divided into two directors: holding and operating functions. In his opinion, the structure never causes a bias because for terms of income it will be submitted to each company. Second, the holding function is also more strategic that we ensure the member holding to carry out its activities. The holding will not go into operation. But, until the date when interview had conducted (May 2017) the vision and mission for this holding has not been created.

Key Informant 2 (KI 2) represent BUKIT ASAM. As a Director of Business Development, he very pleased to welcome this holding decision. Logically, access to expand business is getting stronger, as access to funding and business development asks will be even greater. Secondly, there is a holding mandate that controls the state strategic reserves. About the structuring, reminds that we are companies that has a different product, so he prefers if each company takes care of its own operating but still has a strategic holding on it. So, if he (not represented himself only, but the whole company) think it's better that the holding is a strategic holding and we're moving towards that. If we want to be more specific, for him (personal) there is no harm in running the third or fourth scenario, he thinks we BUKIT ASAM will be ready. Although he thinks it is better if New Company formed outside of Operating Holding, so that the subsidiaries can more focus into production only.

Key Informant 3 (KI 3) represent ANTAM. As a Corporate Secretary, he thinks that State-Owned Mining Industry Holding was *a* different thing if we compare with previous holding (Semen Indonesia and Pupuk Indonesia), because we are a combination of companies that have different products. But he thinks, there are a lot of benefits that they can achieved together. For example in short term, they already did a cooperation for build an alumina grade, using ANTAM's exploration units together and appointed Indometal as a joint subsidiary. For medium term, they also had a plan to create a synergy for the construction of a power plant located in East Halmahera. The last for long-term is get in the list of Fortune Global 500. Meanwhile, for him it's impossible to create a new structure like Pupuk and Semen's experience. The possibility of establishing a holding entity itself will be in charge of all operational companies. INALUM will operate on its own, parallel to other companies.

Key Informant 4 (KI 4) represent TIMAH. As one of the Commissioner he explained that this concept has been in existence since 2004. In his opinion, this holding conglomerate is quite unique. It has multi product, multi market, multi business, multi district. He explained the consideration why "we" choose INALUM because they owned 100% of its shares by the Government. Why not PTBA? Because PTBA 35% of its shares owned by public. If getting a share transfer from another company is the same as enriching the public shareholders. He also added for the next stage, State-Owned Mining Industry Holding should be formed New Entity. But the next stage should not take too long. Because INALUM is not solely Investment Holding but Operating Holding. They also do production, then INALUM should later be aligned with the other three companies. The weakness of Operating Holding is the absence of a detailed corporate performance recap. Operating Holding has its own revenue, as well as absorbing assets from the bottom. New Co has no income, only from dividends from subsidiaries only. New Co set the policy to buy land, invest, buy coal mines. While the action will give to Operating by Each Member. The establishment of this holding almost the same as divestment, but the profit is done to SOEs as well. Fear is, diverted by certain parties. For example, secretly sold to foreign countries.

Kepner-Tregoe Approach

After that, author using KT Approach (Kepner-Tregoe Approach) for deciding the course of action. Based on that, first thing we have to do after collected all data was divide the objectives into two categories *must* and *wants*. Must are mandatory to a successful solution. For this objective, author choose word '*change'* then solution is a building a new entity's name. If the solution is stay for the current structure then the solution is a *"no change"*. Meanwhile for second objectives, author will input a scenario two, three and four as a desirable. In this part, author will assign weights (1-5) based on author own values. Then, author also input rating (1-5) as to how well it satisfies valued by each informant. A score for the solution can be seen by multiplying the rating by the weight.

Table 2. Kepner-Tregoe Approach Analysis

MUST		(KI 1)		(KI 2)		(KI 3)		(KI 4)		
Modification of Holding Structure		No Change		Change		Change		Change		
WANTS										
Scenario	Weight	Rating	Score	Rating	Score	Rating	Score	Rating	Score	TOTAL SCORE
Operating Holding	1	2	2	3	3	2	2	2	2	9
Relative Strategic Holding	3	4	12	4	12	3	9	4	12	45
Absolute Strategic Holding	5	2	10	4.5	22.5	4	20	5	25	77.5

Source: Edited by Author (2018)

So, based on that constraint then author decided Scenario 4 as the best choice for Holding State-Owned Mining Industry.

ICMEM

Acting

At this stage, there are two possible activities that can be done in the last step of scenario planning process. One of them is putting the strategy that has been decided into action. Secondly, it does not describe the application of selected strategies but continues the scenario planning process: monitoring environmental changes, defining processes for continuous environmental scanning, scenario planning and so on. The author decided to run the putting the strategy that has been decided into a real action. One of the real actions is to describe the position of the board of directors who will fill the structure of this holding organization. Author has a visualization that author create as herself for the ideal structure of State-Owned Mining Industry Holding as follows:

```
                        ┌─────────────────────┐
                        │  President Director  │
                        └─────────────────────┘
      ┌────────────┬────────────┬────────────┬────────────┐
┌──────────┐ ┌──────────┐ ┌──────────────┐ ┌──────────┐ ┌──────────────┐
│ Finance and │ │ Marketing │ │ Business Dev. │ │ Human Res. │ │ Safety and   │
│ Investment  │ │ Director  │ │ and Innovation│ │ Director   │ │ Environment  │
│ Director    │ │           │ │ Director      │ │            │ │ Director     │
└──────────┘ └──────────┘ └──────────────┘ └──────────┘ └──────────────┘
```
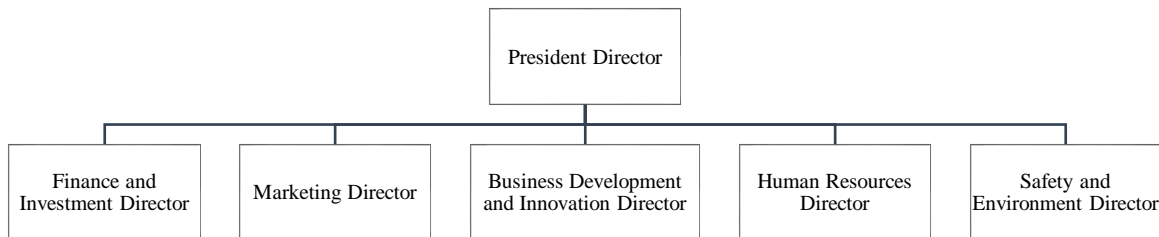
Figure 4. Author's Visualization for State-Owned Mining Industry Holding's Organizational Structure

Source: Edited by Author (2018)

The President Director is responsible for stewardship and long-term holding success. Through independent supervision of employees, customers, suppliers, and other stakeholders. The Director of Finance and Investment is responsible for monitoring decisions and processes designed to ensure the integrity of financial reporting, internal control systems and sound risk management. The Marketing Director is in charge of managing the supply and demand in and out of Indonesia. Marketing Director must have a good strategy in selling the product and appropriate in strategic decision making through market insight. Marketing Director must have a detailed understanding of company goals. Namely in creating long-term shareholder value through the discovery, acquisition, development, and marketing of natural resources. Human Resources Director's duty to ensure that the ranks of directors who run the operational activities was an individual capable to carry out responsibilities properly. operations with the parent holding goes well, also always pay attention to the highest standards of governance, code of ethics and principles of Good Corporate Governance. Industrial and Mining Areas is a very risky business. In terms of safety, the business is also vulnerable to casualties if the company does not have strict regulation in the conduct of operational activities. In the case of the environment, this business also has a negative value if the company is not fast in taking action. For that, according to the author required Safety and Environment Director who oversees the responsibility of all members of the holding.

5. Conclusions

This paper examines the organizational structure of State-Owned Mining Industry Holding *should immediately restructure and implement a scenario called Absolute Strategic Holding.* According to The Boston Consulting Group (2012) there are several things in making Corporate Parenting Strategy can provide the overall value of group business. *First,* Financial Sector. Corporate Parenting Strategy has an advantage in having greater capital access. So, State-Owned Mining Industry Holding expected to be able to reverse the sovereignty of the mine to Indonesia itself, but not by nationalization but by corporation. This is called Leverage. In the future, in this new restructuring the government hopes that by merger legally it can immediately conduct financial consolidation. Second, Strategy Development Sector. With the Corporate Parenting Strategy, the business unit is only focused on conducting operational activities as well as possible. Meanwhile, Parent Company is more focused on developing the whole business strategy. So, Capital Market Pressure will be more easily controlled. *Third,* Corporate Resources and Functions Sector. Corporate Parenting Strategy can provide an opportunity to utilize company assets owned by each company. For example, efficiencies that are capable of cutting costs in areas of Information Technology, Marketing and Human Resources Management. *Fourth,* Operational Engagement Sector. Corporate Parenting Strategy is to encourage cooperation

ICMEM

among business units to using a horizontal synergy. In conjunction of using Geomin Unit from ANTAM together. It is an operating unit to manage and develop exploration and search activities for new reserves and mineral resources. *Fifth,* Business Strategy Sector. Corporate Parenting Strategy can also increase sales through product bundling, through cross selling activities, or through sharing experiences and capabilities. For example, the approval of the use of overseas representative offices planned to be placed in the United Kingdom, China and Singapore.

Based on references from The Boston Consulting Group (2012), the authors will also sort the Value Adding Activities based on the most influential activities on the formation of this holding. Here is the scheme:

THE RANK OF VALUE ADDING ACTIVITIES

Activity	Value
Business synergies	5
Corporate resources and functions	4
Financing advantages	3
Strategy development	2
Operational engagement	1
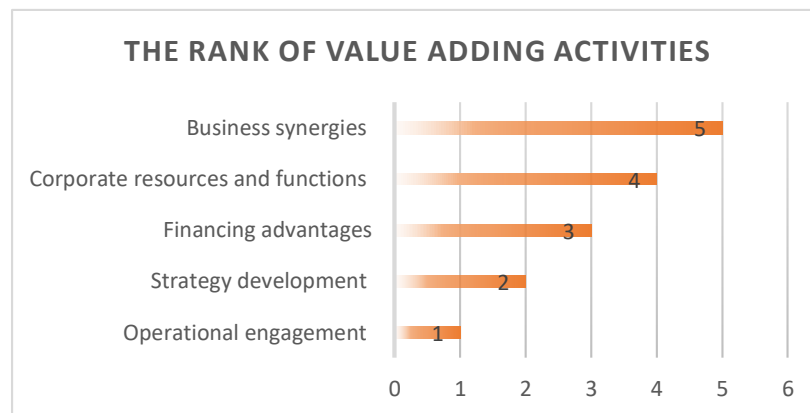
Figure 5. Value Adding Activities
Source: Edited by Author (2018)

The biggest value creation of the establishment *State-Owned Mining Industry Holding* was a Business Synergies and the activities that could contribute. This sequence is determined by the authors' personal assumptions. The scheme is based on data obtained by Value Chain and the results from in-depth interviews.

References

Boston Consulting Group. (2012.) *First Do No Harm: How to Be Good Corporate Parent* (PDF Document) Available from http://www.bcg.ma/documents/file100745.pdf [Downloaded on 2nd January 2018]

Carpenter, Mason A and W.M. Gerard Sanders (2009) *Strategic Management: A Dynamic Perspective 2ⁿᵈ Edition*. New Jersey: Prentice Hall, Pearson International

Gamble. 1A and AA. Thomposn Jr (2009) *Essentials of Strategic Management: The Quest for Competitive Advantage.* New York: Mc Graw-Hill Irwin

Goold, Michael and Campbell, Andrew (1987) *Strategies and Styles; The Role of the Centre In Managing Diversified Corporations.* New York: Basil Blackwell Inc.

Goold, Michael and Campbell, Andrew (2002) *Do You Have a Well-Designed Organization?* Harvard Business Review Published. Available from https://hbr.org/2002/03/do-you-have-a-well-designed-organization [Accessed on 8th March 2018]

Goodwin, Paul and Wright, George (2003). *Decision Analysis for Management Judgment: Third Edition.* United Kingdom: TJ International, Padstow, Cornwall.

Hambrick, D.C. and 1W. Fredrickson (2001) *Are You Sure You Have a Strategy?* Academy of Management Executive.

Heppelmann, Steffan and Hoffleith, Marco. Holding Structure – From Conglomerate Discount to Management Value Added. Available from http://www.sternstewart.com/files/ssco_studie36_en.pdf [Accessed on18th March 2018]

Huff, AS., S.W. Floyd, H.D. Sheman and S. Tejersen (2009) *Strategic Management: Logic and Action*. New Jersey: Hoboken, John Willey and Sons

ICMEM

Kennon, Joshua. 2017 Understanding a Holding Company: A Basic Introduction to Holding Companies and How They Work. Available from https://www.thebalance.com/understanding-a-holding-company-357341 [Accessed on 2nd April 2018]

Kepner, Charles H and Tregoe, Benjamin B. (1960) Kepner-Tregoe Methodology: Skorkovský Department of business economy. Available from http://mathscinotes.com/wp-content/uploads/2016/03/Kepner-Tregoe_Methodology_version_2_20130307.pdf [Accessed on 25th July 2018]

Kowalski, P et al. (2013) State-Owned Enterprises: Trade Effects and Policy Implications. OECD Trade Policy Papers. Available from http://dx.doi.org/10.1787/5k4869ckqk7l-en [Accessed on 2nd February 2018]

Lindgren, Mats and Bandhold, Hans (2003) *Scenario Planning: The link between future and strategy*. Norwich: Curran Publishing Services.

Pranoto, Toto (2017) *Holding Company BUMN: Konsep, Implementasi dan Benchmarking.* Jakarta: Lembaga Management Fakultas Ekonomi dan Bisnis Universitas Indonesia.

Pranoto, Toto and Makaliwe, Willem. A. Restrukturisasi BUMN Menjadi Holding Company. Available from http://www.lmfeui.com/data/Restrukturisasi_Holding_Company%20Revisi%202.pdf Jakarta: Lembaga Management Fakultas Ekonomi dan Bisnis Universitas Indonesia. [Accessed on 2nd April 2018]

PWC (2013) State-Owned Enterprises: Catalysts for Public Value Creation? Available from http://www.psrc.pwc.com [Accessed on 2nd April 2018]

Sofjan Assauri (2016) *Strategic Management: Sustainable Competitive Advantages 2nd Edition*. Jakarta: PT Raja Grafindo Persada.

Wicaksono, Agung (2009) *Corporate Governance of State-Owned Enterptises: Investment Holding Structure of Government-Linked Companies in Singapore Malaysia and Applicability for Indonesian State-Owned Enterprises*.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Business Sustainability Analysis of Telkom Indonesia through Alternative Selection for Fixed-Line Business (Case Study of PT. Telekomunikasi Indonesia Tbk)

Rizky Amalia Sinulingga[a*], Asep Darmansyah[b]

[a,b]*MBA-ITB, Gelap Nyawang 1st, Bandung 40132, Indonesia*

Abstract

Telkom Indonesia faced problem of decreasing demand on fixed voice market. Badan Pusat Statistik showed the downtrend on number of households which using fixed-line telephone showed from 2011 to 2015. The downtrend happened because of shifting from fixed-line phone to mobile phone, now smartphone, whereas smartphone is easier and more practical in daily activity. The shifting and declining in households with fixed-line telephone lead to future concerns that fixed-line business are no longer viable. This research aims to analyze financial strategy for fixed-line business sustainability. External and internal analysis was used to see threat and opportunity that company had. Fixed-line business sustainability was analyzed by financial performance and cost and revenue differential. Analysis result showed fixed-line business might be continue operated by terms bundling with other services. Digital transformation had promising solution to increase fixed-line revenue. The company should make an IT investment model which can make improvement in IT systems and processes and also support the digital transformation. IT investment model is started by evaluating the capabilities of companies capital and resource of the fund, followed by making a recommendation for IT investment and some implementation roadmaps. Expanding infrastructure and service improvement are the main focus on IT investment.

Keywords: Financial Performance; Cost and Revenue Differential; Digital Transformation; IT Investment

1. Introduction

In the first quarter 2017, information and communication's sector showed the highest growth based on Indonesia's economic growth report. The key factors that supporting the growth of the telecommunication's sector at 2017 is the vast internet penetration space, the rapid development of the digital economy, the rapid growth in particular smart mobile phone uses, the expansion of telecommunication's companies, easily access communication in eastern Indonesia, and the declining of inter-network phone call rates.

From 2011 until 2015, the trend of Information and Communication Technology (ICT) by households in Indonesia showed a significant result. Based on Figure 1, internet users have increased significantly from 2011 to 2015. This is driven by an increase in mobile phone users, households with internet access and households using computers. However, different circumstances occurred in fixed line services that actually decreased showed in percentage number of households using fixed line telephone that decreased.

---

[*] Corresponding author

ICMEM
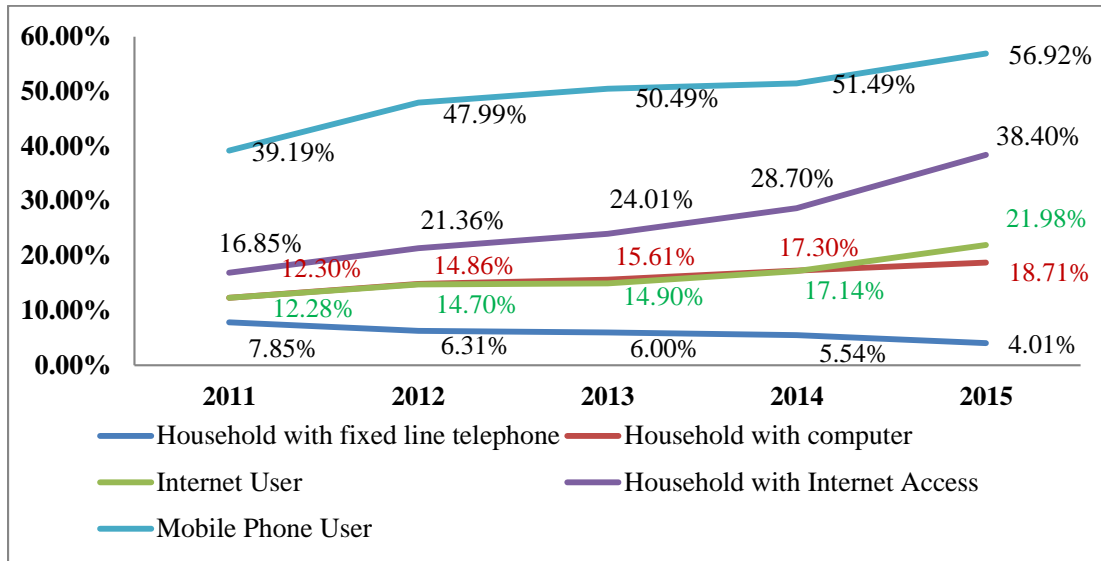
Fig. 1 Trend of ICT Indicators in Indonesia, 2011 – 2015

Advances in technology and the significant growth of telecommunication services that are practical and easy to use resulted in a changed of telecommunications services. Telecommunications by using fixed telephone cable switching into a mobile phone. Besides confronted with a shift from the fixed line into a mobile phone, the problem also faced with the rapidly increasing internet. The shift in the fixed line business and the decline in households with fixed-line telephone lead to future concerns that fixed line business are no longer viable and will be eliminated with ever-changing technological change.

Telkom Indonesia as one of the telecommunication company in Indonesia that offer services in the fixed voice market and message service faced the problem of decreasing demand on fixed voice market. Data from Annual Report PT. Telkom Indonesia showed the revenue from fixed line telephone goes through declining value from 2011 until 2016. Based on **Figure 2**, as can see in 2011 to 2016, the fixed lines revenue decrease as much as 8.23% (2011-2012), 10.94% (2012-2013), 11.17% (2013-2014), 7.14% (2014-2015), and 3.72% (2015-2016).
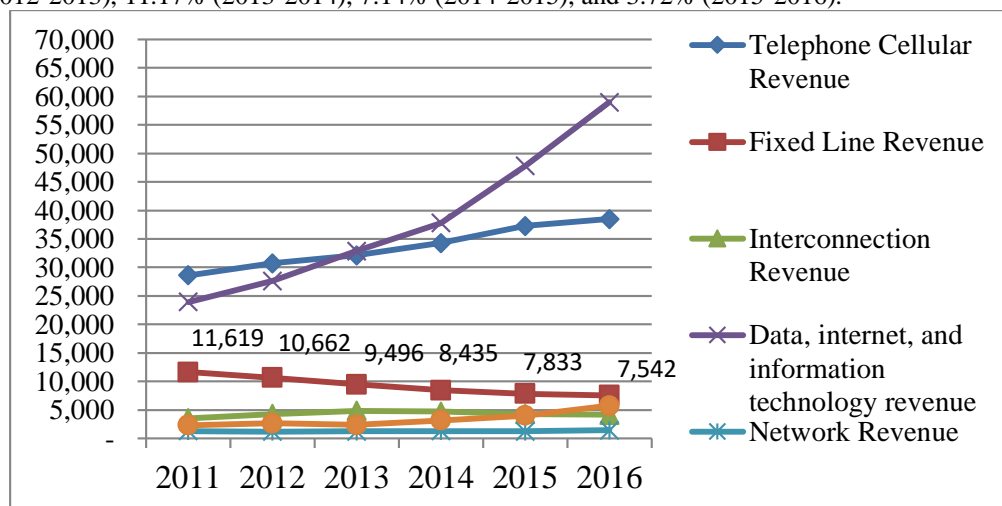
Fig. 2 Revenues of Telkom Indonesia 2011-2016

ICMEM

2. Methods and Data Collection

The objective of this research is to provide the sustainability analysis of fixed-line business in the future years and give a suggestion and recommendation for the strategy that should be doing in the future. For reaching the objective research, the basic concept framework for business must be known.

The conceptual framework begins with the finding of problems that faced by the company. After that, analyzing the business situation and the company business environment. Business environment should identify both of internal and external environment to ensure that the environment are aligned with company strategic goals. The external environment analysis analyzed by PEST analysis and Five Forces Porter's analysis. The internal environment analysis will be analysing by SWOT analysis.

In the financial analysis step, this research will provide an overview of company financial performance. Financial performance will analyze using financial ratio analysis as a tool to measure the financial condition company. After that, this research will analyzed differential revenue and cost approaches to see the differences if the fixed line business will be stopped or continue to run.

Proposed business solution in the last chapter III will be using internal growth rate and sustainable growth rate to know the maximum rate that company can do to expand within fund from internal or external capital. This research will do cash flow projection for five years (2017-2021) using cash flow projection method. The result will be summarizing into conclusion and solution for the result will be mapping in the implementation plan

Business Analysis

The business analysis is used to get a broad view of the business environment that will face by the company. Business environment should identify both of internal and external environment of the company to ensure that the environment is aligned with company strategic goals. This research used PESTL analysis and SWOT analysis as tools of business analysis.

PESTL Analysis

PESTL analysis in short of political, economical, social, technological, and legal. This analysis describes marco-environmental factors for strategic management.

Political/Legal

Political condition in Indonesia is quite stable, but there is the ongoing event of new local elections in 2019. In 2017, there were no changes laws and regulations that significantly affected the company's business. The government has issued a new adjustment tariff formula which is stipulated in the Decree No. 15/PER/M.KOMINFO/4/2008 dated April 30, 2008, of the MoCI concerning "Mechanism to Determine Tariff of Basic Telephony Services Connected through Fixed Line Network". Under the Decree, tariff structure for basic telephone services connected through fixed line network consists of the following activation fees, monthly subscription changes, usage changes, aadditional facilities fee. This regulations will impact to tariff structure that charged for customers and makes the company consider to increase service price of fixed-line business.

Social

Bappena's projection of Indonesia's total population in 2035 showed that the total population in Indonesia will reach to 305.6 million people. The increasing trend for the total population and young age will make a demand for the telecommunication industry that will increase too. This condition can affect the fixed line business that expected to grow.

Economic

Bank Indonesia stated that Indonesia's economic growth will grow between 5.1% - 5.5% in 2018 and grow as much as 5.3% - 5.7% in 2019. After the election in 2019, expected Indonesia's economic growth will increase above 6% in 2020 and 2021. The increasing growth affected by the increasing investment as much as 6% - 7%, and the increasing export as much as 4%. Indonesian households spent budget for telecommunication has increased from 2013. In 2015, there were about 87.17% of households spent their budget for telecommunication and in the average consumption for telecommunication per month reached Rp 107,632. This showed an opportunity for telecommunication sector because of the strengthening power of buyer telecommunication services.

ICMEM

Technology

The Internet has the biggest portion of the people need in this digital age. The prediction leads to the significant growth of the internet as a component that united all devices and can be called the Internet of Things (IoT). Refers to **www.forbes.com**, in 2020 there will be over 26 billion connected devices whereas the (IoT) will connect the relationship between people-people, people-things, and things-things. The developments of the Internet of Things bring the increasing opportunity in the E-commerce industry. Based on Asosiasi Jasa Penyelenggara Internet Indonesia (APJII) in the beginning 2017, the number of people that purchasing via e-commerce reached 24.74 million from a total population of Indonesia and the total value of national e-commerce market in 2016 as much as $5.6 billion. The development in E-commerce industry affected the need for digital services and internet will grow up in the future. It makes a threat to fixed-line business.

SWOT Analysis

SWOT is an acronym used to describe the particular Strengths, Weaknesses, Opportunity, and Threat. Strengths help the company to take advantage of external opportunities or overcome external threats. Weaknesses have the potential to prevent a company from taking advantage of external opportunities or succeeding in efforts to overcome external threats. Opportunities are conditions that appear to have the potential to contribute to a firm's success. Threats are a condition that appears to have the potential to prevent a firm's success (Hitt, Ireland, and Hoskisson, 2003: cviii).

Strength

1. Telkom's revenue was increased by 63.3% from Rp 71,253 billion in 2011 to Rp 116,333 billion in 2016. The strong financial performance enables the company to pursue their growth plans effectively.
2. Telkom offers many various of telecommunication services. Strong product portfolio enables the company to serve a wide customer base which in turn help improve their financial performance.
3. Indonesia's dominant national local fixed-line operator, and through Telkomsel as a subsidiary with number one mobile operator in the country.
4. Strong cash flow position, could take advantage of acquisition opportunities.
5. Broadband unit is reporting strong subscriber growth, with the operator to invest in related network and services.

Weakness

1. Declining net income from home segment
   60. Net income from home segment was declining by 85% from Rp 1,737 billion in 2011 to Rp 260 million in 2015. This was primarily due to decline in wireline revenue which affected to decreasing in local usage.
2. Telkom faces stagnant fixed-line subscriber numbers, partly due to the difficulty of deploying wireline infrastructure in Indonesia.
3. The economic slowdown has led Telkom to consider raising prices of fixed-line services.

Opportunity

1. Demographic incentives
2. Strategic expansion initiatives
3. Investment in a country-wide fiber-optic network infrastructure will drive the growth of high-value services.
4. Broadband market remains underdeveloped compared to the rest of the industry, providing an outlet for Telkom to capitalize on its dominant fixed-line position.
5. Increasing focus on delivering IPTV, VoIP services as demand for fixed line wanes.

Threat

1. Fastest Development of innovative
2. High of substitutable services
3. A government order to open up the domestic long-distance market to rival Indosat will cause further loss of revenue.
4. Attorney General's Office rule against network/spectrum sharing agreements struck by many operators and service providers. Telkom could be hit with a hefty fine as a result.

Root Cause Analysis

The business issue of fixed-line business in Telkom Indonesia is the declining revenue from this line from 2011 until 2016. The root cause of this issue must be defined further by using the 5W diagram. The result of five why's question will be presented below.

ICMEM
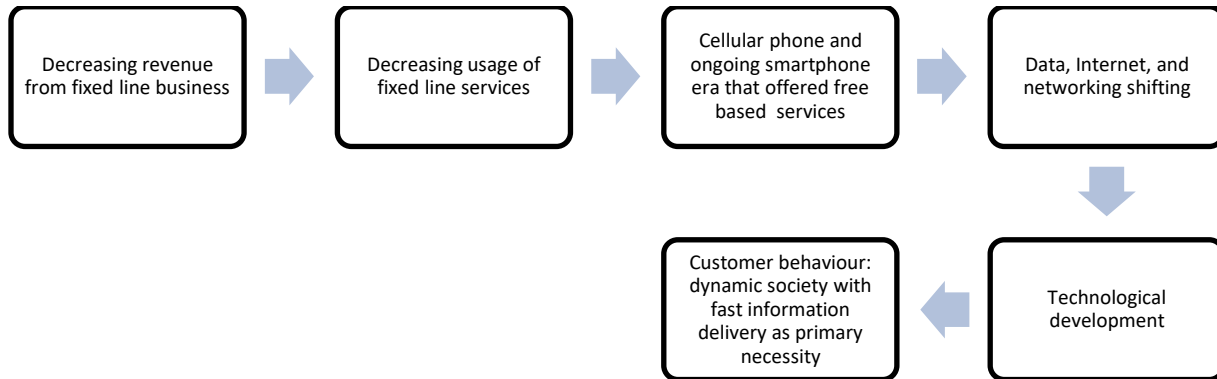
Fig. 3 Five Why's Diagram

3. Results and Discussion

3.1. Financial Performance

Financial performance help to measure the health well companies over a given period time and how the asset, liabilities and equity that companies have can generate revenues. Ratio analysis was used to know the companies financial performance.

Table 1 Overall Financial Ratios

	2011	2012	2013	2014	2015	2016
Liquidity Ratio						
Current Ratio	0.96	1.16	1.16	1.06	1.35	1.20
Quick (Acid-Test) Ratio	0.92	1.14	1.15	1.05	1.34	1.18
Long Term Solvency Ratio						
Debt Ratio	40.8%	39.9%	39.5%	39.4%	43.8%	41.2%
Debt to Equity Ratio	69.0%	66.3%	65.3%	64.9%	77.9%	70.2%
Activity Ratio						
Average Collection Period (days)	25.2	24.7	26.5	28.5	26.8	23.1
Total Asset Turnover	69%	69%	65%	63%	62%	65%
Profitability Ratio						
Operating Profit Margin	30.4%	32.8%	31.3%	31.8%	32.1%	35.2%
Net Profit Margin	21.7%	23.8%	24.5%	23.7%	22.8%	25.1%
Earning Per Share (EPS)	112.21	134.17	147.42	148.13	157.77	196.19
Return on Total Assets (ROA)	15.0%	16.5%	15.9%	15.0%	14.0%	16.2%
Return on Equity (ROE)	25.4%	27.4%	26.2%	24.7%	25.0%	27.6%

In the overall condition, PT. Telkom Indonesia have a good condition. From liquidity ratio PT. Telkom Indonesia show the value greater than 1 that indicate the company have ability to pay their short term liabilities. From solvency ratio, PT. Telkom Indonesia financed their asset through equity rather than debt and it's showed that the company have the strong capital structure. From activity ratio, PT. Telkom Indonesia showed a good performance in their operation activity because the company can manage their collection fastest than before and can optimalization their asset to

ICMEM

generate revenue within efficiently. From profitability ratio, PT. Telkom Indonesia showed a positive value in all profitability ratio. This positive value showed that the company is more effective to convert their revenue into actual profit within optimalization asset and equity and also can manage their expense every years.

3.2. Cost and revenue differential

The difference in the cost of alternative choices is defined as differential cost. The determination of incremental revenues, costs and margins of alternative choices is at the heart of differential cost analysis. Areas of appropriate use of this methodology include accepting additional business (special orders), make or buy decisions, scrap or rework decisions, sell now or process further decisions, and eliminating a product line or division.

PT. Telkom Indonesia have 4 business operation segment there are corporate, home, personal and others segment. In evaluating whether home segment should sustain or stop will be analyzed with the differential cost analysis. Here are the step to calculate the differential cost analysis :
  1. Determine what decision is to be made: to keep or eliminating home segment.
  2. Determine of which items of revenue, cost and profit are relevant to the decision: for the calculation, expense will be united both of variable and fixed expense.
  3. Solve for the differential cost: average differential cost and revenue from 2011 until 2016 can be conclude in

Table 2 Income Statement Per Segment 2016

2016	Overall	Business Operation per Segment (Rp Billion)			
		Corporate	Home	Personal	Others
Revenue	159,204	56,852	12,880	86,714	2,758
Expense	(114,773)	(48,345)	(12,576)	(51,303)	(2,549)
Net Income	44,431	8,507	304	35,411	209

From table 2, in 2016 the highest net income obtain from personal segment. Home segment in the third position with net income as much as 304 million.

Table 3 Expense from Home Segment 2016

Expense	2016	
Personnel	105.48	Avoidable Cost
O&M	10,212.88	Unavoidable Cost
Interconnection	-	-
General and Administration	736.80	
GA	259.77	Avoidable Cost
Penyisihan	477.03	Avoidable Cost
Marketing	1,520.83	Avoidable Cost
Total	12,576	

Analysis of eliminating home segment business are :
Loss of Contribution Margin   12,880
Avoidable Cost   (2,363.11)
Total   10,516.89

A decision to shut down an operation or switch resources to a different activity should result in some costs being avoided that would otherwise be incurred. Avoidable cost can be reduced from personel expense, general and

administration expense and marketing expense. From analysis, eliminating home segment coukd make the company occured more loss rather that the benefit from the eliminating. Loss that occured is as much as 10,516.89 billion. Because of that, home segment should continue to operate.

3.3. Proposed solution

Based on cost and revenue differential analysis, the result showed that home segment might be continue operated. In this digital era, Telkom Indonesia must change their bussiness orientation. Some of strategy that already done by Telkom Indonesia is make a bundling services between fixed line telephone and other services. The other service that has been bundled by fixed line is a form of digital transformation.

Digital Transformation

$\downarrow$

Customers Experience

$\downarrow$

Benefits to drive Profit
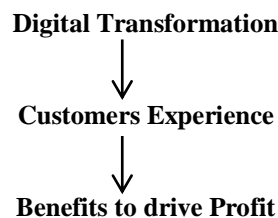
Fig. 4 Digital Transformation Purpose

There are several key drivers for digital transformation, there are technological advancement, new breeds of firms provide digital services that utilize the infrastucture of communications service providers, customer expectations, and commoditization of traditional communication services.

In 2016, PT. Telkom Indonesia make some strategy for fixed line business by bundling some additional value added services in the IndiHome program. IndiHome program offer triple play services that consists of Fixed Broadband Internet, Fixed Phone and UseeTV. This program has made a slight incease in fixed line business revenue. This fact showed that fixed line business already expand into digital transformation services. Digital transformation had promising solution to increase fixed line revenue, so the company should make an IT investment model which can make improvement in IT systems and processes and also support the digital transformation itself.

The figure below is the strategy map for IT investment

Reccommend IT investment   Alternative Fund

Availability Budgets   Implementation roadmaps and oversight
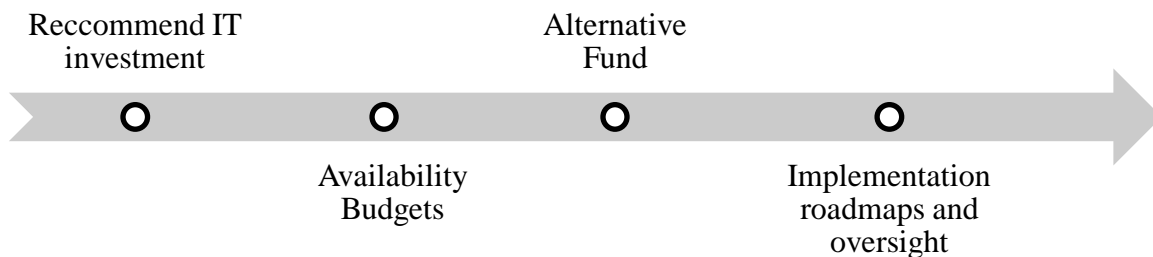
Fig. 5 IT Invetsment Strategy

- **Recommend the IT investment**

  IT investment that can doing by Telkom Indonesia is from the side infrastucture and services. Infrastructure investment had purposed to build network. Indonesia as an archipelago country has many undeveloped area. This is the opportunity that can take by Telkom Indonesia to expand their business, and also a challenge to build infrastructure network in such unique geological structure. The step to do for infrastructure investment are mapping of network location, mapping potential areas, and strategic partnership. Besides infrastructure investment, Telkom Indonesia has to build a new services that can be bundled to fixed line business. This services will make an additional value. Software development like over the top application can be also done in purpose to compete with other over the top provider.

ICMEM

- **Availability budgets**

Making invetsments in the field of IT technology should be cosidered capital required to invest. The first thing to look as is the capital structure that the company has to see how big the company's financing capability. Effective capital structure decisions can lower the cost of capital, resulting in higher NPVs and more acceptable projects and thereby increasing the value of the firm. The basic breakdown of total capital debt capital and equity capital (Gitman, 2015:576). Capital structure of PT. Telkom Indonesia showed in the **table 4**.

Table 4 Capital Structure of PT. Telkom Indonesia 2014-2016

Capital Structure (in Billion Rp)	2016	2015	2014
Current Liabilities	911	602	1,810
Non – Current Liabilities	30,888	34,010	21,642
Equity	84,384	75,136	67,721
Total Assets	111,183	109,748	91,173

From **table 4** we can see that equity have the largest portion for capital to invest. Equity from the company can be used for invested capital and to pay debt of companies. The company has ability to invest through internal funds.

- **Alternatives Fund**
  a. **The Calculation of Internal Growth Rate**

  The internal growth rate means the maximum growth rate that can be achieved by firm without external financing of any kind. This growth is the rate of the firm can maintain with internal financing only (Roos *et all*, 2009:73).

  Retention ratio (b) get from divided net income and retained earning the firm on the current year. The calculation internal growth rate show in the table 5.

Table 5 Internal Growth Rate of PT. Telkom Indonesia

Year	ROA	b	Internal Growth Rate
2011	15.01%	1.00867184	17.84%
2012	16.49%	1.19723544	24.59%
2013	15.86%	1.32294451	26.55%
2014	15.00%	1.38710308	26.27%
2015	14.03%	1.52031036	27.12%
2016	16.24%	1.9020669	44.70%

The internal growth rate from 2011 to 2016 has a fluctuative value. In 2016, the company's internal growth is 44.70% this value is the highest value from the other year. This value give a descriptive that PT. Telkom Indonesia can expand at a maximum rate of 44.7% per year without external financing.

  b. **The Calculation of Sustainable Growth Rate**

  Sustainable growth rate means the maximum growth rate that can be achieved by firm with external equity financing while maintaining a constant debt to equity ratio. Sustainable growth rate more valuable because combination from operating and financial elements in one comprehensive measurement. The firm used sustainable growth rate to give the firm's future growth planning based on current performance and policy (Roos *et all*, 2009 : p.74).

  Retention ratio (b) get from divided net income and retained earning the firm on the current year. The calculation sustainable growth rate show in the table 6.

Table 6 Sustainable Growth Rate of PT. Telkom Indonesia

ICMEM

Year	ROE	b	Sustainable Growth Rate
2011	25.37%	1.00867184	34.39%
2012	27.41%	1.19723544	48.86%
2013	26.21%	1.32294451	53.07%
2014	24.74%	1.38710308	52.24%
2015	24.96%	1.52031036	61.14%
2016	27.64%	1.9020669	110.85%

Based on **table 6**, as can see the sustainable growth rate from 2011 to 2016 has a fluctuative value. In 2016, the company's sustainable growth is 110.85% this value is the highest value from the other year. This value give a descriptive that PT. Telkom Indonesia can expand at a maximum rate of 110.85% per year with external equity financing.

Based on calculation from internal growth rate and sustainable growth rate, PT. Telkom Indonesia can expand at maximum rate within external financing. The sustainable growth rate give a higher growth rate rather than internal growth rate. So, the external financing that the company receive from the stakeholder can maintain the sustainability operation for the company in the future years. The result from sustainable growth rate accordance with capital structure from the company. The higher equity that the company have the higher sustainable growth rate will be. To expand the business, external financing will be important role as a invested capital.

The capital structure is the proportion of expenditure in determining the needs of corporate investment where the funds obtained using combination of sources derived from internal funds and external funds. In 2016, Telkom has spent 25% of capital expenditure from revenue as much as Rp 29,2 billion. From the capital expenditure that spent by Telkom Group, Telkom as the parent company has the proportion 35% and Telkomsel has the proportion 43%. Capital expenditure that spent by Telkom will be used to strengthen network infrastucture for the needed to increase services. In the future years, Telkom will spent between 23%-25% from revenue for capital expenditure.

- **Implementation Roadmaps and Oversight**

  Improved services from fixed line business will be doing by make IT invetsment that will give value added service for customer. IT invetsment will be doing from side infrastucture and services. The fund that will be used for this expansion obtained from income allowance that earned in the current year. This will be used as the company's capital expenditure.

- **Cash Flow Projection**

  The statement of cash flow is one of the most important financial for business or project. The project cash flow projection is derived from an execution plan and estimated expenditure. Here are some assumptions that will use to make cash flow calculation.

  1) Revenue growth is estimated increase 9.6% in the next five years (2017-2021). This assumption is referred to projection of the increasing number of subcribers from fixed line product, cellular services and broadband internet.
  2) The author use average growth from historical data 2011 until 2016 as growth factor of expenses.
     a. Average growth operation, maintanance and telecommunication service expenses is 14.06%
     b. Average growth personnel expenses is 10.07%
     c. Average frowth interconnection expenses 0.16%
     d. Average growth general and adinistrative expense is 10.28%
     e. Average growth marketing expenses is 5.29%
  3) Income tax is 25% from the company's profit. The tariff of tax rate refers to the income tax regulation (PPh Pasal 25) article 25 for corporate tax = **Penghasilan Kena Pajak (PKP) x 25% (Tarif Pasal 17 ayat (1) huruf b UU PPh).**
  4) According to Undang-undang No. 36 Tahun 2008 concerning income tax, depreciation of expenditure fro obtaining tangible property and amortization of expenditure to obtain rights and other expenses which have a

ICMEM

useful lifetime of more than 1 year is one component of the cost that can reduce taxable income. The company depreciation method using straight line method. Depreciation expense projections for PT. Telkom Indonesia will be used average growth depreciation and amortization expenses as much as 4.63%.

5) The growth of capital expenditure is 25% from revenue.

Based on **table 7**, the free cash flow projection in the next five years of Telkom Indonesia is going to increase year by year. It's give a positive signal that the company will have a chance going to expand the business. Free cash flow calculated by operating cash flow minus capital expenditure. The free cash flow (FCF) measures a company's ability to generate cash for expansion, develop new products, buy back stock, pay dividends or reducing debt. The positive cash flow is often a sign of a healthy company that is thriving in the current enviroment.

Table 7 Operating Cash Flow Projection of PT. Telkom Indonesia, Tbk 2016-2021

(in Million Rp)	2016	2017f	2018f	2019f	2020f	2021f
Revenue	116,333,000	127,500,968	139,741,060	153,156,202	167,859,198	183,973,681
Operations, maintenance and telecommunication service expenses	31,263,000	35,659,556	40,674,406	46,394,501	52,919,020	60,361,091
Depreciation and amortization	18,532,000	19,390,439	20,288,642	21,228,453	22,211,797	23,240,691
Personnel expenses	13,612,000	14,983,101	16,492,310	18,153,537	19,982,095	21,994,840
Interconnection expenses	3,218,000	3,223,231	3,228,472	3,233,721	3,238,978	3,244,244
General and administrative expenses	4,610,000	5,084,062	5,606,873	6,183,447	6,819,312	7,520,566
Marketing expenses	4,132,000	4,350,451	4,580,451	4,822,612	5,077,575	5,346,017
Earning Before Interest and Tax	40,966,000	44,810,125	48,869,903	53,139,929	57,610,417	62,266,229
Tax (25%)	10,241,500	11,202,531	12,217,475	13,284,982	14,402,604	15,566,557
Net Operating Profit After Tax	30,724,500	33,607,594	36,652,427	39,854,947	43,207,813	46,699,672
Add : Depreciation and Amortization Expense	18,532,000	19,390,439	20,288,642	21,228,453	22,211,797	23,240,691
Operating Cash Flow	49,256,500	52,998,033	56,941,070	61,083,400	65,419,610	69,940,363
Capital Expenditure	29,199,000	31,875,242	34,935,265	38,289,050	41,964,799	45,993,420
Free Cash Flow	**20,057,500**	**21,122,791**	**22,005,805**	**22,794,349**	**23,454,811**	**23,946,943**

Table 8 Revenue Projection of Home Segment 2016-2021

2016-2021	(in Million Rp)					
	2016	2017f	2018f	2019f	2020f	2021f
Revenue	12,880,000	14,045,640	15,316,770	16,702,938	18,214,554	19,862,971
Expense	12,576,000	13,726,001	14,981,164	16,351,104	17,846,316	19,478,258
Net Income	**304,000**	**319,638**	**335,606**	**351,834**	**368,237**	**384,712**

Based on **table 8**, it can be seen revenue projecton from home segment in the next five years. Within capital

ICMEM

expenditure that spent by Telkom will generate the growth revenue from home segment as much as 9.05%. The growth rate revenue for the home segment based on projection of the increasing subscribers of broadband internet as the bundling product with fixed line.

4. Conclusions

In the overall condition from ratio analysis of PT. Telkom Indonesia have a good condition. From liquidity ratio PT. Telkom Indonesia show the value greater than 1 that indicate the company have ability to pay their short term liabilities. From solvency ratio, PT. Telkom Indonesia financed their asset through equity rather than debt and it's showed that the company have the strong capital structure. From activity ratio, PT. Telkom Indonesia showed a good performance in their operation activity because the company can manage their collection fastest than before and can optimalization their asset to generate revenue within efficiently. From profitability ratio, PT. Telkom Indonesia showed a positive value in all profitability ratio. This positive value showed a good sign that the company more effective to convert their revenue into actual profit within optimalization asset and equity. And also, the company can manage their expense every years.

Based on cost and revenue differential analysis, the result showed that home segment might be continue operated. From analysis, eliminating home segment will have give impact the company occured the more loss rather that the benefit from the eliminating. If we shut down the business, loss from contribution margin greater than avoidable cost that can be reduced. Based on data and reports that have found and analysis, fixed line might be continue operated by terms bundling with other services in order to increasing the profit. Digital transformation had promising solution to increase fixed line revenue. Along with digital transformation, the company should make an IT investment model which can make improvement in IT systems and processes and also support the digital transformation itself.

The strategy map for IT investment, can be started within see the capabilities of capital in the company, and see the resource of fund for the IT investments. The last make the recommendation for IT investment and some implementation roadmaps. IT investment is from the side infrastucture and services. Infrastucture can be doing by mapping of network location, mapping potential areas and strategic partnership. Services can be doing by developing value added services and over the top application.

Implementation plan is an important part of the strategic planning process. Implementation plan of solutions provided is expected to be useful for fixed line services. In implementation plan will be describe proposed solution can affect business activity and how the company plans to implement it.

Table 9 Implementation Planning

Activity	Responsible Party	2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Implementation and Roadmaps									
IT investment Planning									
Planning Activity									
- Mapping of Network Location	Corporate Strategic Planning Division	▮				▮			
- Mapping Potential Areas		▮				▮			
- Strategic Partnership		▮				▮			
Develop Service									
- Value Added Services			▮				▮		
- Over the Top Application			▮				▮		
Availability Budget	Corporate Finance								
Review Financial Performance									

ICMEM

- Valuation Capital Structure   Division
- Current Financial Condition

Find Alternative Fund

- Assessment Retained Earning   Strategic
- Source of Fund   Investment
- Formulation of new invested capital   Division

Process Implementation

- Planning Activity
- Budget Availability
- Operation Schedule   All entity in
- Operation Process   the company
- Controlling and Evaluating
- Review

References

Anthony, Robert N., David F. Hawkins and Kenneth A. Merchant, 2011, *Accounting: Text and Cases (13th ed)*, New York: McGraw Hill.

Badan Pusat Statistik, 2017, Pertumbuhan Ekonomi Indonesia Triwulan I-2017, *Berita Resmi Statistik*, No. 45/05/Th.XX.

Badan Pusat Statistik, 2016, *Statistik Indonesia 2016*, Jakarta: CV. Dharma Putra.

Badan Pusat Statistik, 2015, *Statistik Telekomunikasi Indonesia 2015*, Jakarta: CV. Dharma Putra.

BMI Research, 2017, *Indonesia Telecommunication Report Q3 2017*, London : Business Monitor International, Ltd.

Direktorat Jendral Pajak Republik Indonesia, 2013, *Undang-Undang PPh dan Peraturan Pelaksanaannya*, Jakarta: Kementerian Keuangan Republik Indonesia.

Gitman, L.J. & Zutter, C.J. 2015. *Principles of Managerial Finance (15th ed.)*, Bonton: Pearson.

Grant, G., Lowell Broom and Ralph Rozell, 1989, *Differential Cost Analysis: A Case in Point*, The National Public Accountant p. 12.

Hitt, Michael A, R. Duane Ireland and Robert E. Hoskisson, 2015, *Strategic Management : Competitiveness and Globalization*, Mason: South – Western College Pub.

PT. Telkom Indonesia, Tbk., 2016, *Annual Report* PT. Telkom Indonesia 2016, Jakarta: Indonesia.

PT. Telkom Indonesia, Tbk., 2015, *Annual Report* PT. Telkom Indonesia 2015, Jakarta: Indonesia.

PT. Telkom Indonesia, Tbk., 2014, *Annual Report* PT. Telkom Indonesia 2014, Jakarta: Indonesia.

PT. Telkom Indonesia, Tbk., 2013, *Annual Report* PT. Telkom Indonesia 2013, Jakarta: Indonesia.

PT. Telkom Indonesia, Tbk., 2012, *Annual Report* PT. Telkom Indonesia 2012, Jakarta: Indonesia.

PT. Telkom Indonesia, Tbk., 2011, *Annual Report* PT. Telkom Indonesia 2011, Jakarta: Indonesia.

Sekaran, Uma, 2011, *Research Methods for Business,* Jakarta: Salemba Empat.

Sujata, Joshi., *et al*, 2015, Impact of Over the Top (OTT) Services on Telecom Service Providers, *Indian Journal of Science and Technology*, Vol 8(S4), 145–160.

Ross, *at all.* 2009. Modern Financial Management. New York : McGraw-Hill.

Undang-Undang Republik Indonesia Nomor 36 Tahun 2008 Tentang Perubahan Keempat Atas Undang-Undang Nomor 7 Tahun 1983 Tentang Pajak Penghasilan.

Wheelen, Thomas I and David Hunger. 2012. *Strategic management and business policy toward global sustainability (13th ed.)*, United States of American: Pearson.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Determinants of Point of Sales System Adoption Perceived by Micro Small Medium Enterprises in West Java

Tarindra Raditya[a*], Sylviana Maya Damayanti[b]

School of Business and Management, Bandung Institute of Technology, Indonesia

Abstract

Innovative technology adoption within a business acknowledged as noteworthy subject and became supporting tool to solve business problems. Presently, technology innovation has encompassed in many sectors including financial sector, which is known as financial technology (*Fintech)*. One form of *fintech* which commonly used by enterprises to deliver financial issues is point of sales (POS) .
On the other hand, the number of micro small medium enterprises (MSME) in Indonesia is 59,2 millions which contributes to 57% to the total Gross Domestic Product and represents 90% of business entities. However, despite this substantial number, the number of failing MSMEs are also increasing either in which financial management constraint presumed as one of the cause.
This research examined the role of POS in addressing certain constraint by determining factors of POS system adoption among MSMEs in West Java and also its organization level. It used a modified Technology Acceptance Model 2 (TAM) to hypothesize affecting factors and Binary Logistic Regression as methodology. The result showed that Image and Perceived Usefulness have influence toward the adoption while Subjective Norms and Perceived Ease of Use do not. Small sized enterprise with venture less than 5 years are the majority POS adopters.

Keywords: Point of Sales System, Financial Technology, Micro Small Medium Enterprises, Financial Management, Technology Acceptance Model

1.   Introduction

The growth of financial technology or fintech in Indonesia has become an emerging issue in the last several years. A sum of 40 fintech company have been registered officially in Indonesia Financial Authority (OJK) by 2018 (OJK, 2018). The technology innovation is aimed to deliver financial solution regarding financial constraints, whether to manage personal finance or to solve business obstacles. Fintech acknowledged as one of the most important innovation in financial industry which evolving in rapid speed, forced by economy, favorable regulation and information technology (Lee & Shin, 2018). The innovation of particular technology is adopted in all level of business, ranging from corporate level to micro small medium sized enterprise, depend on its function and capability. Fintech comes in many forms, specifically, there are eight types of fintech operating in Indonesia, such as personal finance and investments, Payments, Point of Sales, Lending, Accounting, Comparison, Crowdfunding and Cryptocurrency (Teja, 2017).

Point of Sales as one type of fintech, offers solution for business in carrying out financial management subject. The fintech offers an application system which mainly focuses on the transaction activity within a business, specifically, transaction recordings and reports creating (Dian & Faisal, 2015). Moreover, an advanced POS application system provide additional features such as Inventory Management, Customer Relationship Management (CRM), Cloud based storage as their competitive advantage to help business entities. Nowadays, there are some firms which are considered as big players in this industry in Indonesia, such as Moka POS, Pawoon POS, Deal POS, Omega POS, Deal POS. The

---

* Corresponding author.

 E-mail address: Tarindra.raditya@sbm-itb.ac.id

ICMEM

robust growth of POS firms is caused likely by the emerging growth of Micro Small Medium Enterprises (MSMEs) , since it has potential growth to expand (Gilles, 2006).

In 2018, the total number of Micro Small Medium Enterprises (SMEs) in Indonesia is 59,2 million which account for more than 90% of business entities. MSMEs are acknowledged as job creator, GDP contributor, Socio-economic growth and plays significant role on entrepreneurship-innovation sector for both developed and developing countries (Karadag, 2015). In fact, the business entities contribute 57% to the total Gross Domestic Product (GDP) by 2018. Nevertheless, despite its substantial number, the number of failing MSMEs are increasing either which in most cases they are having bankruptcy on their first and second year. Poor financial management and financial capabilities of certain business are hypothesized as one of the main cause. Lack of financial management and capabilities most likely influence the growth and performance of MSMEs in Indonesia (Suryani, et al., 2017). Reflecting to this issue, a solution to the particular subject is preferred to be undertaken.

The Existence of POS fintech is expected to become the answer for MSMEs to deal with financial management constraints in the business. Considering vital role and substantial contribution of MSMEs to the country, an improvement on its supporting environment is preferred. Through this research, researcher aimed to determine which significant factors influencing MSMEs to adopt particular technology. In terms of hypothesizing the affecting factors, researcher adopted a modified Technology Acceptance Model (TAM) 2 framework from previous study by Omotayo and Dahunsi (2015). The preceding study revealed that Business Organization characteristics (Age and Size), Image, Perceived Usefulness factors have negative relationship toward the adoption of POS system while Subjective Norms and Perceived Ease of Use factors have moderate and positive influence toward the implementation among MSMEs in Nigeria. As another reference, the original TAM 2 literature from Venkantesh and Davis (2000), stated that Subjective Norms and Perceived ease of Use also influenced technology, not to mention POS system adoption.

Business organization level was also examined in this research as the second research objective. The purpose of determining business organization level is to reveal the size of the business who have been already adopting POS system according to their revenue and years of venture with its business industry background. Bankole (2010) stated that age and size of an enterprise are determining variables in adoption decision. The purpose of determining this research objective is to have finding and useful consideration for another MSME in adopting POS system.

Therefore, through this research, researcher aimed to investigate which influencing factors from adoption of POS framework affect the adoption and also gain insight about their business organization level. Hence, this research is aimed to yield useful outcome for MSMEs to adopt particular technology and also as improvement stage for the business to achieve sustainability and longevity.

2.   Literature Review

2. 1.   Financial Technology

Financial technology or Fintech refers to the intersection between financial services and technology fields where technology based start-ups try to give innovation and breakthrough to the current financial products (Price WaterHouse Cooper, 2016). Fintech plays role as a solution in delivering financial constraints. According to the data received from Accenture (2016), global investment in Fintech has reached $ 5.3 billion by the first quarter of 2016. In Indonesia itself, the growth of Fintech has huge potential since it is well assisted by banks and government. The Fintech supports individuals and business entities to manage their finance.

Point of Sales

Point of Sales (POS) is one type of Fintech that offers financial management solution for business entities. Point of Sales refers to all of the activities that involves two components, hardware and software, in which those components are used within transaction process (Dian & Faisal, 2015) . Nowadays, most POS firms in Indonesia are offering application systems or software for small enterprises which include many features that able to help enterprises maintain its business.

ICMEM

2. 2.   *Micro Small Medium Enterprises*

Micro Small and Medium Enterprises (MSMEs) are acknowledged as the main driver of economic activities in both developed and developing countries whose support for more than half of total gross domestic product and also employ workforce two third of total world population. More than 95% of firms and businesses around the world belong to MSMEs which account 60% on private sector employment (Edinburgh Group , 2012). According to the data provided by the ministry of Cooperatives and SMEs, in 2018, the total number of MSMEs in Indonesia are 59,2 million units which represents to 90% of business performers. From this number, MSMEs in Indonesia contributes 57% to the total GDP of Indonesia, and employ 107 million of workforce. The classification of size of the businesses is regulated by the Indonesia constitutional law number 20 year 2008 based on the enterprises revenue or assets. The Businesses are divided into three categories, micro, small and medium sized. As for the industry, MSMEs are diverse, ranging from products to services, with culinary, Fashion and Craft as the three top subsectors according to Bekraf (2017).

However, despite its substantial numbers and significant growth, SMEs are still facing challenges in its process. SMEs are not vulnerable towards major external issues such as economy crises, but they are susceptible toward minor issues from internal, such as financial management and financial capabilities. A lot of SMEs don't have a proper and comprehensive financial management system as well as many other disadvantages (Sularto, et al., 2015). In Indonesia, the lack of financial capability among MSME owners are most likely to be the cause of slow growth and poor performance which consequently hinder them to obtain opportunities and trigger them to loss their competitive advantage (Suryani, et al., 2017). The financial management and capability issues can be addressed easier, if the business has simple and practical financial application system which can facilitates transaction recording, creates reports and supplies necessary information (Suryani, et al., 2017).

2. 3.   *Technology Acceptance Model*

In order to address certain problem faced by MSMEs, the use of technology is preferred as helping tools for MSME performers. The adoption of technology within a company has been proved in carrying significant impact and establishing competitive advantage (Loebeccke & Phillip, 1998). The POS system application can be considered as technology adoption since it has innovation on technology and addressing financial constraints. As a reference to this study, a previous literature about POS system adoption by MSMEs is used, which has been conducted by Omotayo and Dahunsi (2015). The researchers tried to examine factors which affect significantly to the adoption of POS system among MSMEs.

Researcher tend to adopt Omotayo and Dahunsi (2015) preceding research as main reference, especially in configuring variables. Subjective Norms (SN), Image (I), Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the implemented variables that this research adopts while business organization variable is not implemented since particular research questions were difficult to be referenced which restrict this study. Hence, in this research, researcher tends to turn the particular variable to the descriptive analysis for gain insight regarding business organization level. The selection of Omotayo and Dahunsi (2015) research is due to the preceding study purposes are the same with this study in terms of POS system adoption. However, as a validation to the variables, researcher also use some other literatures which relate with Technology Acceptance Model 2 (TAM2).

As an emphasize and validation to the particular research variables, researcher tries to use the original TAM 2 of Venkantesh and Davis (2000) as benchmark. This research examined user intention to the adoption of technology based on 9 variables as researcher inputs in figure 3.7 with Subjective Norms, Image, Perceived Usefulness and Perceived Ease of Use as similar covariates. Other study that researcher tends to use is from Ismail and Razak (2011) research on mobile marketing technology in Malaysia. The certain study implemented SN, I, PU and PEOU as independent variables in configuring research purpose. Through this research in Malaysia, researcher was convinced to use particular independent variables as covariates in this research. Regional aspect, culture condition, and level of education of MSME performers in Indonesia and Malaysia have become consideration for researcher to take up the covariates.

A preceding study on Information Technology adoption by Karahana, et al. (1999) was also used similar set of variables as determinants. The study divided its determinants into two subgroups in measuring the adoption of

ICMEM

information technology, behavioral beliefs and normative beliefs. Behavioral beliefs consisted of usefulness, ease of use, visibility, demonstrability, trialbility and image as determinants while normative beliefs rely on subjective norms of particular respondents. Researcher use this research as a part of conceptualization process in selecting independent variables. As a summary, researcher tends to use variables that are common variables in TAM 2 model which intersects with variables from Omotayo and Dahunsi (2015) research paper and also met with the purpose of this research.
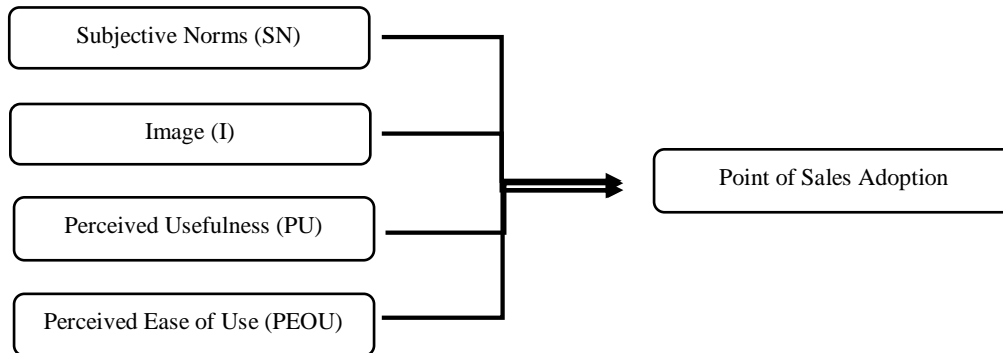
Figure 1. Modified Technology Acceptance Model 2 Framework from Omotadyo and dahunsi (2015)

As for the grounded theory for the questionnaire designing, researcher use several references from Venkantesh and Davis (2000), Ardiana (2010) and Indonesian Constitutional Law number 20 Year 2008.

3. Methodology

The research methodology is the chapter that illustrate the systematic steps of this research to achieve the research objectives. It will clarify the research process to have a clear findings and results. This diagram is made in order to give clear overview for readers to understand the research systematic process.

ICMEM

```
                          ┌─────────────┐
                          │    START    │
                          └──────┬──────┘
                                 ↓
                    ┌────────────────────────────────────┐
                    │ Problem Identification & Research   │
                    │            Objective                │
                    └────────────────┬───────────────────┘
   ┌──────────────────┐              ↓
   │ Literature Review├──────┐ ┌──────────────────────┐
   └──────────────────┘      └→│  Develop Methodology  │
                               └──────────┬───────────┘
                                          ↓            ┌──────────────────┐
                               ┌──────────────────┐    │    Technology    │
                               │  Questionnaire   │←───┤ Acceptance Model │
                               └──────────┬───────┘    │ (Modified TAM 2) │
                                          ↓            └──────────────────┘
                                  ◇ Validity & ◇
                                  ◇ Reliability ◇
                                          ↓
                                ╱ Data Collection ╱
                                          ↓
                              ┌──────────────────────┐
                              │ Binary Logistic      │
                              │ Regression           │
                              └──────────┬───────────┘
                                         ↓
                              ┌──────────────────────┐
                              │ Conclusion &         │
                              │ Recommendation       │
                              └──────────┬───────────┘
                                         ↓
                                  ┌─────────────┐
                                  │   FINISH    │
                                  └─────────────┘
```
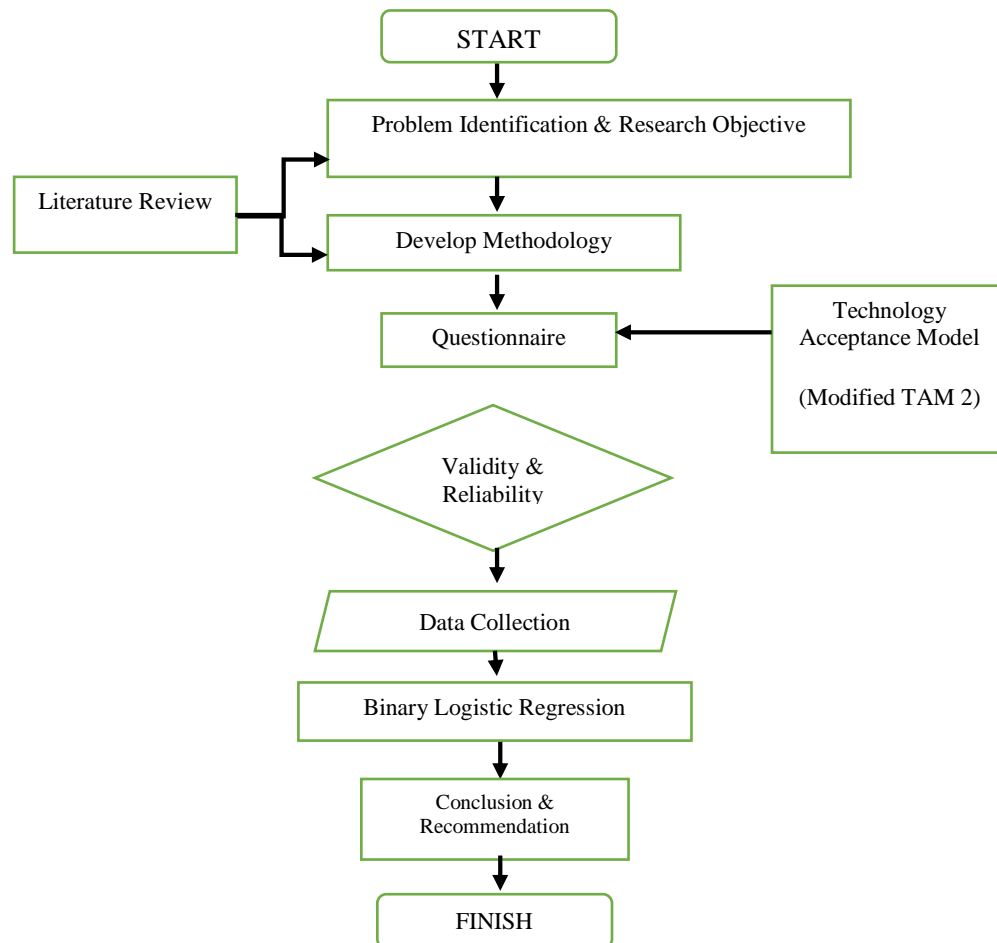
3.1. Data Sampling

This research used non probability sampling since researcher was unable to obtain full list of the total Small Medium Enterprises which fulfill the preferred criteria. Purposive sampling or judgment sampling is used for the sampling method. The sampling selection is based on researcher judgment to the sample which they think that the samples have relevant characteristic (Zikmund, et al., 2013).

3.2. Data Collection

The data collection within this research used primary data which is questionnaire and it was distributed through offline and online approach. In doing offline approach, researcher attempted to collect the data by approaching Point of sales software adopters one by one which the POS adopter's database is earned from the POS system providers. The other attempt, researcher tried to visit crowded circumstances of MSME performers such as malls. As for the online approach, researcher carried out an online form which has been spread through online channels such as social medias and emails. As an effort to make the data are still valid and correct, researcher gave additional requirement regarding the questionnaire fulfilment. Researcher tried to seek for suitable respondents by filtering the questionnaire with additional respondent criteria. The criteria are:

a. SME owners or a person in charge in a MSMEs (equal as manager).
b. The business adopts Point of Sales System Application or has future plan to adopt the particular technology.
c. The business is classified as micro, small, or medium sized enterprise.

ICMEM

3.3. Data Analysis

This research used Binary Logistic Regression for data processing the quantitative data in this research and also in terms of determining the influencing factors which are affecting positively towards the POS system adoption. Before than that, a validity and reliability test was conducted by testing the first 30 respondents in order to measure the questionnaire design as intended to the research purpose. To measure the significant level of impact in each variable, 6 degrees likert Scale is used in this research. For the tools of measurement, researcher used IBM SPSS Statistic 23 and Microsoft Excel as data processing software.

4. Result and Findings

4. 1. Descriptive Analysis

A total of 150 data have been collected within the questionnaire which gathered from preferred criteria respondents. The data consisted of 120 POS adopters and 30 non or not yet adopting POS system application but are willing to use the particular technology. This section is proposed to answer the business organization research objective.
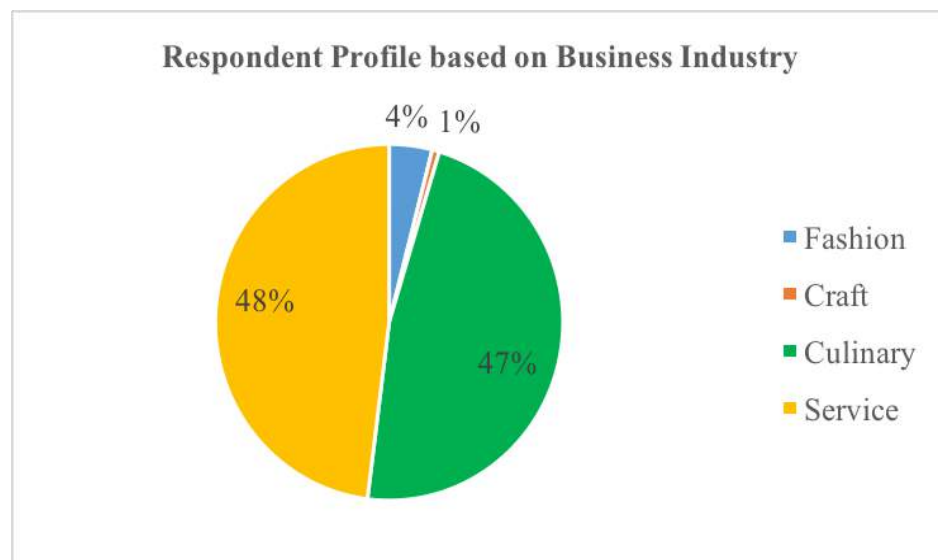
From the table above, this research yields outcome of respondent profile based on business industry. The result shows that most respondents come from service and culinary industry with each percentage of 48% and 47%. These majority adopters can be caused by the function and feature POS system which needed for both industry rather than other subsectors.

ICMEM

Respondent Profile based on Year of Establishment

- Below 1 Year
- 1- 5 Years
- 5 - 10 Years
- Above 10 years

2% 7% 23% 68%
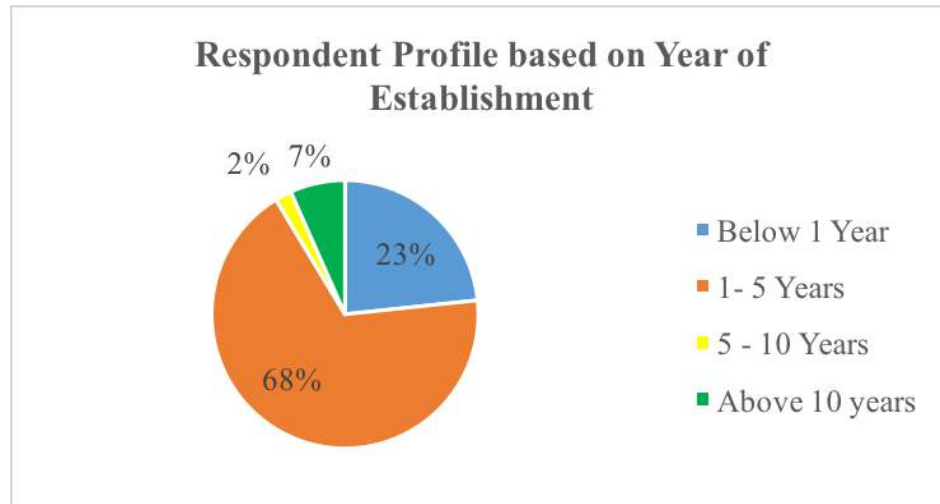
From the data above, it is known that the majority of the respondent's enterprises have been established for 1-5 Years with 102 respondents in total. Through this result, it can be deduced that business firms with 1-5 years of establishment have started using POS system as their tool to increase their business performance.

Respondent Profile based on Monthly Revenue

- Under IDR 25,000,000 (Micro Enterprises)
- IDR 25,000,000 - IDR 208,000,000 (Small Enterprises)

3% 47% 50%
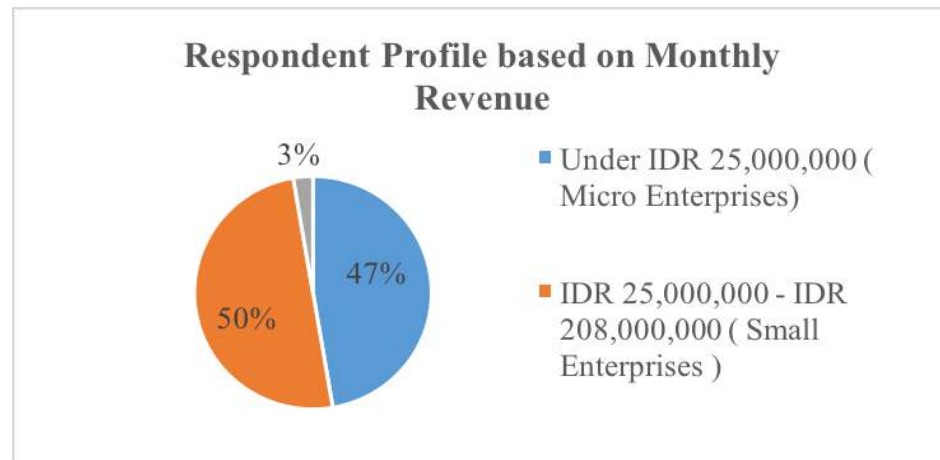
In Indonesian constitutional law number 20 year 2008 about Micro Small Medium Enterprises size classification, the data shows that the majority of respondents are MSMEs who have revenue ranging from IDR 25,000,000 to IDR 208,000,000. Thus, this class of MSMEs are considered as small enterprises.

4. 2.   Binary Logistic Regression Analysis

Table 1 Statistical Test Table

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Step	78,604	4	,000
Step 1	Block	78,604	4	,000
	Model	78,604	4	,000

ICMEM

Omnibus test is used to test the impact of all independent variables together toward dependent variable. In the omnibus variable above, it is earned that the sig model is 0.000. If it is compared with the level of significance (α) of 0.05 , the result data is less than the level of significance thus it indicates that all independent variables take affect toward the dependent variable.

Table 2 Model Summary Table

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	71,516[a]	,408	,645

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than ,001.

The above table shows the value of Nagelkerke R2 is 0.645 which means the adoption of POS System independent variables can be explained by variability of Subjective Norms, Image, Perceived Usefulness and Perceived Ease of use variables with the value of 64.5%. While the rest of 35.5% can be explained by other unrevealed variables.

Table 3 Classification Tabel

Classification Table[a]

	Observed		Predicted		
			Adoption of POS System		Percentage Correct
			Bukan Pengguna	Pengguna	
Step 1	Adoption of POS System	Bukan Pengguna	24	6	80,0
		Pengguna	6	114	95,0
	Overall Percentage				92,0

a. The cut value is ,500

The table above shows that the prediction accuracy of logistic regression in this research is 92,0%.

Table 4 Significance table test

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	X1	,758	,753	1,015	1	,314	2,135
	X2	4,711	1,523	9,571	1	,002	111,109
	X3	1,450	,470	9,526	1	,002	4,264
	X4	,524	,535	,960	1	,327	1,689
	Constant	-16,409	3,500	21,980	1	,000	,000

a. Variable(s) entered on step 1: X1, X2, X3, X4.

From the above table of the wald test, it can be written the equation:

$$\text{Ln} \frac{p}{1-p} = \text{-16,409} + 0,758 \ X_1 + 4,711 \ X_2 + 1,450 \ X_3 + 0,524 \ X_4$$

$$\text{Or} \ \frac{p}{1-p} = e \ (\text{-16,409} + 0,758 \ X_1 + 4,711 \ X_2 + 1,450 \ X_3 + 0,524 \ X_4)$$

$$= e \ \text{-16,409} \ x \ e^{\ 0,758 \ X1} \ x \ e^{\ 4,711 \ X2} \ x \ e^{\ 1,450X3} \ x \ e^{\ 0,524X4}$$

With the detail on each variable are :
Y = Adoption of Point of Sales system
X1 = Subjective Norms
X2 = Image

ICMEM

X3 = Perceived Usefulness

X4 = Perceived Ease of Use

The logit regression coefficient value (B) in this research are hard to be interpreted directly, thus to make the measurement easier, researcher measured the antilog of B (Exp B) or exponential degree of logit coefficient and can be seen in Exp B column.

- Odd ratio for Subjective Norms (X1) is 2,135. Because the coefficient of B is positive, so the Adoption of POS System's likely ratio of category 1 is 2.135 times higher than in category 0.
- Odd ratio for Image (X2) is 111,109. Because the coefficient of B is positive, so the Adoption of POS System's likely ratio to category 1 is 111.109 times higher than in category 0.
- Odd ratio for Perceived Usefulness (X3) of 4,264. Since the coefficient of B is positive, so the Adoption of POS System's likely ratio to category 1 is 4.264 times higher than in category 0.
- Odd ratio for Perceived Ease of use (X4) of 1,689. Because the coefficient of B is positive, so the Adoption of POS System's likely ratio to category 1 is 1,689 times higher than in category 0.
- Category 1 = adoption of POS system , Category 0 = non-adoption of POS system

4. 3. *Partial Hypothesize test*

The partial hypothesis test basically shows whether Subjective Norms (SN), Image (I), Percevied Usefulness, and Perceived Ease of use have influence toward the adoption of POS system.

The hypothesis used to be tested are :

Ho1: Subjective Norms have no significant effect on Adoption of POS System.

Ha1: Subjective Norms have a significant influence on Adoption of POS System.

Ho2: Image has no significant effect on Adoption of POS System.

Ha2: Image has a significant effect on Adoption of POS System.

Ho3: Perceived Usefulness has no significant effect on Adoption of POS System.

Ha3: Perceived Usefulness has a significant influence on Adoption of POS System.

Ho4: Perceived Ease of use has no significant effect on Adoption of POS System.

Ha4: Perceived Ease of use has a significant effect on Adoption of POS System.

Table 5 Statistical test :

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	X1	,758	,753	1,015	1	,314	2,135
	X2	4,711	1,523	9,571	1	,002	111,109
	X3	1,450	,470	9,526	1	,002	4,264
	X4	,524	,535	,960	1	,327	1,689
	Constant	-16,409	3,500	21,980	1	,000	,000

a. Variable(s) entered on step 1: X1, X2, X3, X4.

Test criteria :

- Ho is rejected if the p-value (sig.) < α thus it accept the H_1, and vice versa

From the table above it can be concluded :

- P value for the Subjective Norms variable is 0.314 greater than the value of α. This causes Ho acceptance, which means Subjective Norms have no effect (has no significant effect) on Adoption of POS System.
- P value for Image variable is 0,002 smaller than value of α. This causes Ho's rejection, which means that Image has an effect (has significant influence) on Adoption of POS System
- P value for Perceived Usefulness variable is 0,002 less than value of α. This causes Ho's rejection, which means Perceived Usefulness has an effect (has significant influence) on Adoption of POS System.
- P value for Perceived Ease of use variable is 0.327 greater than value of α. This causes Ho acceptance, which means Perceived Ease of use has no effect (no significant effect) on Adoption of POS System.

ICMEM

5.   Conclusion and Recommendation

5. 1.   Conclusion

After several systematic process of systematic research methodology, researcher can make conclusion regarding the problem within this research. Through this research, it is revealed that among four hypothesized factors, two factors affect significantly to the adoption of Point of Sales system applications among Small Medium Enterprises. Image and Perceived Usefulness factors have become influencing factors for SME performers to adopt Point of Sales system application in their business. While Subjective Norms and Perceived Ease of Use factors have no significant impact toward the adoption on particular technology. From the result we can conclude that the significant factor can brings good impact to the adopters in terms of functionality and it also brings positive effect to the company impression within certain industry. Subjective Norms factor has no significant impact to the implementation thus it can be deduced that the implementation tends to emerge from internal notion of the company rather than social influence. The technology easiness also has no significant impact towards the technology adoption. This can be caused by complex interface and intricate data processing since most of the MSME respondents do not have the same POS system software, hence a standardization on the same POS system that was being researched is preferable to be the limitation scope.

As for the business organization profile, the majority of the MSME respondents were from Culinary and Service Industry with percentage of 48% and 47%. There were a few MSMEs from Fashion and Craft industry who met the required criteria and were able to become respondents. However, the particular MSME This can be caused the particular industries might not consider the POS adoption as an important tool for the business. In this research, most of the respondents have already adopted POS system application in their business is in 1-5 Years of their business venture. As for the size of the business, the majority of the enterprises have been adopting certain technology in their micro and small scale, with preferred stage in small scale. Researcher used yearly revenue classification as the measurement of size scale in this research and it was converted into monthly revenue to make respondents easier to select the options. The classification on asset is less preferable to be parameter since the majority of MSMEs in Indonesia are less likely to have balance sheet reports which makes it harder to determine the size of MSMEs depend on the MSME performers accountability and knowledge.

5. 2.   Recommendation

Through this research, it is recommended for MSMEs from culinary and service industry to adopt the POS system since the majority of respondents are preferable to represent the role of POS system in their business. POS system adoption is suggested to be adopted at the developing stage of business venture with 1 to 5 years. It is preferable for MSMEs rather than during its initial year since the implementation of technology could cause costs and drawback. Researcher recommend MSMEs begin to use POS system at their small sized business stage because the enterprise revenue might be more sustain and does not bother the profitability of the business.

From researcher perspective, there are also several recommendations for the rest members of the dimensions of quadruple-helix models. Through this research, researcher proposes academicians and universities conduct more research regarding obstacles within MSMEs. Observing MSMEs business success and failure may reveals the business obstacles in the process. After identifying business obstacle, academician may be preferred to conduct comprehensive analysis and research on the particular issue. Thus, the proposed outcome may be preferred if it is try to be solved through technology usage which later on can be attached in the financial technology as additional features or even new product. The outcome of the result may become insights for other fintech firms which can be commercialized. As for the government, an incentive for both MSMEs and POS firms are likely to be offered. A little assistance on the tax incentive may help business entities to use particular system and also reduce product price of POS system. Through using the system, MSMEs are more likely would have more systematic financial management. As for the community, forming groups of MSMEs which performing on the same industry may become a proposed idea. Through a

ICMEM

community which consist of business from the same industry, they are able to share which technology or in this case POS system that are worth to implement and usable for the business. Thus, a good POS firms will have benefit from their competitive advantage and the rest will gain insight regarding their product deficiency. To make it synergize, government is proposed to provide specific budget for each subjects to conduct research and development. Thus, a supportive ecosystem can be created.

As an addition, From Nagelkerke R2 result, the outcome shows that the particular variables were able to represent 64.5 percent for the outcome. Furthermore, researcher expects the future research can determine the remaining independent variables so the accuracy of the related research scope can yields more comprehensive outcome.

References

Accenture, (2016). Fintech and evolving landscape.

Ardiana, I. D. K. R., Brahmayanti, I. A. & Subaedi, (2010). Kompetensi SDM UKM dan Pengaruhnya Terhadap Kinerja UKM di Surabaya. Jurnal Manajemen dan Kewirausahaan , March , XII(1), pp. 42-55.

Bankole, B. R., 2010. Adoption and use of electronic business technologies by small and medium-scale enterprises in Ibadan metropolis, Oyo State, Nigeria. Master of Science Dissertation.

Bisnis.com, (2018). INACRAFT 2018, Kemenkop: UKM Kerajinan Berperan Besar Dalam Industri Kreatif. [Online]

Available at: http://industri.bisnis.com/read/20180429/12/789772/inacraft-2018-kemenkop-ukm-kerajinan-berperan-besar-dalam-industri-kreatif

Dian, S. & Faisal, (2015). Analisa dan Perancangan aplikasi Point of Sale (POS) Untuk Mendukung Manajemen Hubungan Pelanggan. Jurnal Teknologi Informasi dan Ilmu Komputer (JTIIK), II(1).

Edinburgh Group , (2012). Growing the global economy through SMEs.

Gilles, K., (2006). Small business potentials : Point of sale. Gases and Welding Distributor, 50(4), pp. 12-14.

Karadag, H., (2015). Financial Management Challenges In Small and Medium-Sized Enterprises: A Strategic Management Approach. Emerging markets journal, V(1), p. 2.

Lee, I. & Shin, Y. J., (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. Business Horizons, Issue 61, pp. 35-46.

Loebeccke, C. & Phillip, P., (1998). Competitive advantage from IT in Logistic : The Integrated Transport Tracking System. International Journal of Information Management, XVIII(1).

OJK, (2018). Perusahaan Fintech yang terdaftar di OJK Januari 2018. [Online] Available at: https://www.ojk.go.id/id/berita-dankegiatan/publikasi/Documents/Pages/Penyelenggara-Fintech-Terdaftar-di-OJK-per-25-Januari-2018/Perusahaan%20fintech%20yang%20terdaftar%20250118.compressed.pdf

Omotayo, F. & Dahunsi, O.,(2015). Factors Affecting Adoption of Point of Sale Terminals by Business Organisations in Nigeria. International Journal of Academic Research in Business and Social Sciences, V(10).

Price WaterHouse Cooper, (2016). Blurred lines: How FinTech is shaping Financial Services, s.l.: s.n.

Sularto, L., Wardoyo & Yunitasari, T.,(2015). User Requirements Analysis for Restaurant POS and Accounting Application Using Quality Function Deployment. Procedia - Social and Behavioral Sciences , pp. 266-280.

Suryani, T., Iramani, R. & Lindiawati, (2017). Exploring Financial Capability of SMEs and Improving Financial Management Performance Using Financial Application. International Journal of Management and Applied Science, III(2).

Teja, A., (2017). Indonesian Fintech Business : New Innovation or foster and collaboration in business ecosystem?. The Asian Journal of Technology Management, X(1), pp. 10-18.

Venkantesh, V. & Davis, D., (2000). A theoretical extension of the technology acceptance Model: Four longitudinal field studies. Management Science, 46(2), pp. 186 - 204.

Zikmund, W., Babin, B., Carr, J. & Griffin, M., (2013). Business Research Methods. s.l.:South Western CENGAGE Learning

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Effectivity of Gamified Learning Method on Learning Outcomes

Excelita S. Dwirajani[a*], Shimaditya Nuraeni[b]

[a,b]Institut Teknologi Bandung, School of Business and Management, Bandung 40132, Indonesia

Abstract

Gamification is an application of game elements in non-playful context. The study investigated the implementation of gamification in academic environment, focusing on tertiary education. An experiment is conducted to see the effect of a gamified learning method on a learning outcome which indicated by the change in task performance using a business statistics themed game specifically designed to be used in a real related course. The experiment data analysis demonstrated the hypothesised significancy between pre-test and post-test change, and gamification involvement in that change. Additionally, study-related flow inventory is measured to ensure the validity of the method as a gamified method.

Keywords: Academic; Learning; Gamifiation; Flow; Tertiary Education.

1. Introduction

A game is a system in which players engage in an abstract challenge defined by rules, interactivity, and feedback, that results in a quantifiable outcome and often eliciting emotional reaction. (Yu-Kai Chou, 2014). Gaming industry is the only industry where its main purpose is solely to engage with people. It is the primary reason of why studies over the term "gamification" becomes more popular over decades. As games are based on design choices that successfully keep their users engaged and interested, there are expectations that by introducing game elements to a system, you can create similar engagement (Hamari, 2014). However, applying game elements in a system does not automatically creates engagement. Same goes with games: there are games which are unable to engage with its players. The main objective of gamification is to use engaging game elements in non-game situation and so, elements or game that failed to engage does not fulfill the purpose of gamification. (Ejsing-Dunn, 2013).

With diversity of human interest, people are entertained by different elements to provoke their drives and motivation and then get engaged. These drives and motivation comes from each and everyone's inner-selves, which is closely related to user experience designing (Schunk, 2010). A good user experience design will start from the mindset of how would we want to make them feel: excited? Achieved? Challenged? Empowered? Thus created the term Human-Focused Design, where a system of process is focused on the internal experience of the targeted user or market (Yu-Kai Chou, 2014).

Many areas of expertise and industry is in dire need for stronger engagement in this global era, including marketing, human resource management, creative agencies, and also in one of the most controversial area, in education It has also been argued that game-based situated learning environments promote student motivation and engagement (Greenfield, 2010). There was a study done focused on seeing the effectivity of increase in engagement against students' performance (Deci, 2001). The teacher uses engagement tool such as mini-games, points, rewards, to increase student motivation to study and it significantly increases their performance. Several other studies about engagement in education also shows that engagement promotes better performance in learning outcome. From those, an argument

---

* Corresponding author.

ICMEM

comes up: if simple engagement can increase performance, then a serious game which development focus is to engage should also be significantly effective to increase performance if it were to be used in actual learning. However, there are no to little empirical study on gamified learning method effectivity on learning outcome. In an education system, there are learning goals decided by the curriculum that are most probably not in line with a game's goals and it might hinder the educators meaning.

A study of tertiary students in Aalborg University, Copenhagen shows that students become more productive when exposed to different playing and game elements (Ejsing-Duun, 2013). Although the study did not argue on the effectiveness of gamification, it proves that gamification does influences how students interact with each other and together that makes the learning process more dynamic. On the other hand, another laboratory experiment (Allaymoun, 2014) consists of exposing 76 subjects to three experimental condition indicated that there is no impact for absorption and intrinsic motivation on performance. It shows that absorption and intrinsic motivation affect task satisfaction effectively but there is no statistically significant difference in overall outcome between the group whom were assigned the gamified situation and the control group. These researches proved that gamification can improve learner's attitude towards learning but did not support its effectiveness in achieving learning objective that the educator intended to aim.

A criticism regarding the use of game in learning situation is that there is a gap of frame between the game and teaching. (Hanghoj, 2011). Gamification researchers still believe that it – gamification, motivation, and engagement – can improve students' performance to achieve learning goals. For that, it is essential to make sure there is an appropriate relationship between student's activities and desired outcomes in order to bridge the two frame. In other words, there has to be a connection between learning goals, activity and game goals, and it must be understood in a dynamic that learners can engage in (Ejsing-Duun, 2013). There need to be a further research that balanced the playful approach and formal curriculum that allows learners intrinsic motivation to grow instead of just replacing it with extrinsic motivation.

As education level increases, the study material also became more complex and harder to gamify. This makes trials to gamify learning methods of higher education ended up leading into a mere "pointification" (Robertson, 2010) and will miss its aim: motivating the learner. However, since the difficulty increases, the need to motivate learners also increase. Our educational system is currently failing to provide a powerful pedagogy which games are able to: situated learning (Deniz Eseryel, 2014). That is why this study uses a serious game to begin from how to motivate the learner first then compares it to how they perform. Yet a fully playful approach might result in students focusing on achieving the game objective and not actually achieving the learning goals. This study is conducted to see the effectiveness of a gamified learning method in making the students achieve the desired learning outcomes.
.

2. Theoretical Background

2. 1. Effective Learning

The most frequent method used to measure students performance is by exam. How well the student's performance compared to the course's standard indicate how effective the learning is (Dunlosky et al., 2013). The term "effective" is used only when the goals and context are specified. Therefore to define learning effectvity, the learning itself must have a clear objective. Learning is an act of construction, handled with others and driven by the learner's agency (Summer, 2002). In such context, effective learning is gain through achieving the best of all of these, with additional monitoring and reviewing of whether the approaches and strategies are proven to accurately brings out the intended results. This has been described as "learning how to learn" (Nisbet-Shucksmith, 1986) and "meta-learning" (Novak-Gowin, 1984). The definition of effective learning suggest that the effective learner have the characteristic of being active, strategic, skilled in cooperation, dialogue, creating knowledge with others, able to develop goals and plans, and also able to monitor his/her own learning. It is not easy for the learning agents – teachers, lecturers, mentors, and such – to drive learners into becoming an ideal effective learners. The awareness of effective learning for the learner can be increased by employing reflective thinking skills to evaluate the learner's own learning effort (Ertmer, 1996), which was then caused studies about the use of gamification in learning process started. A gaming process starts from

ICMEM

a discovery phase, where the player was introduced to the basic controls and rules, until they strive to dominate the game – that if the game successfully hooked the player into playing until the end-game phase. It is a learning process where someone began from zero understanding until they become a master of the game, all the while they motivate themselves to do it. It can be said that gaming industry is the first industry to master the strategy to promote intrinsic motivation for active and engaging learning (Yu-Kai Chou, 2014).

2. 2.   *Gamification*

Zichermann and Linder (2013) define gamification as the deployment of game thinking to promote user engagement and ability to tackle problem. Hamari (2014) define it as a process of enhancing a service for gameful experience in order to support users overall value creation. Ejsing-Duun (2013) define gamification as a phenomenon involving the use of game design elements in non-playful context. It also emphasized that it is impossible to satisfy every students interest and needs. The educator need to always put in mind the balance between play or game elements and course material in relation to course goal and student's preferences. The main objective of a gamified method is basically triggering a game-like behavior which is characterized by, for instance, perseverance, multitasking, losing track of time, deep concentration, repetitive action, and doing activity such as working for hours without getting bored (Allaymoun, 2014).

Table 1. Sample of Gamification Cases

Case Description	Objective	Design Elements	User Rewards	Organizational Outcomes
LiveOps, which runs virtual call centres, uses gaming to help improve the performance of its 20,000 call agents	Work enhancement and Training	Points, Leaderboard, Virtual Badges	Status, Learning, Achievement, Monetary	Increased productivity, faster call processing, higher sales (Silverman 2011)
U.K.'s Department for work and Pensions developed an innovation game named Idea Street to generate ideas and decentralize innovation from its 120,000 employees	Innovation	Points, Leaderboards	Status, Achievement	More innovative ideas, increased employee engagement (Burke and Mesaglio 2010)
Starbucks gamified a reward program known as My Starbucks Rewards. The customer earns stars for every purchase with Starbucks card. High amount of stars is rewarded with free items.	Marketing	Points, Leaderboard, Progression	Monetary	Higher sales, increased brand loyalty (Investanomics 2011)
Possible Worlds, a research and development center on Instructional Technology, designed a game to teach science to middle school students.	Education	Points, Levels	Achievement, Learning	Better test scores, higher sales (Degree Directory 2011)
Nike developed a system called Nike Plus where a little accelerometer tool can be put in user's shoes and can keep track of runs statistics.	Fitness	Points, Leaderboard, Progression	Self-development, Wellness	Increased user engagement, higher sales (McClusky 2009)
Recyclebank uses games to educate and inspire people to use less energy and recycle more effectively.	Environment	Points, Leaderboard	Social and community impact, Learning, Monetary	Savings on waste disposal, higher recycling revenue, higher diversion rate (South Florida Times 2011)

ICMEM

Regardless of high demand of designing a gamified method on various industry, the interest in gamification on education is increasing even though there is no exhaustive empirical research yet in this area. The literature research on gamification are mostly focusing on analyzing if gamification can change behavior and promote engagement. Even if a significant amount of studies tested whether gamification works or not, a thorough review of those studies shows serious shortcomings. For example, a literature review of 24 empirical studies on gamification listed a summarization regarding problems with those studies (Hamari et al., 2014): 1) the sample size is too small, around 20 subjects, 2) lacks of a valid psychometric measurements, 3) lack of control group, 4) analyzing the impact of several elements at once, such as points, items, and story together rather than examining individual impact, 5) only uses descriptive statistics only, 6) does not examine the long-term impact, 7) lack of clear interpretation from the research result, 8) did not examine the relation on psychological and behavior. And also there is a problem in overemphasizing the impact of game elements but give little importance to the functions of the gamified method itself (Allaymoun, 2014). Table 2 present summaries of several empirical studies around gamification on education.

Table 2. Literature Review on Gamification in Education

Study	Research Question	Findings
Cheong, Cheong & Filippou (2013)	Does gamification impact learning, engagement, and enjoyment?	Gamification has a positive impact on student learning, enjoyment and engagement
Denny (2013)	Does gamification impact student learning and engagement?	Using badges had a positive impact on the number of quest students answered, time they spent using the gamified learning system, student enjoyment
Allaymoun (2014)	Is there any significant difference between Gamification learning and No Gamification learning method?	Subjects exposed to Gamification scored higher than the control group. However, there is no statistically significant differences.
Yildrim (2017)	Will gamification method gives impact on students achievement and attitude in Teaching Principles and Methods lesson at tertiary education?	Gamification-based teaching practices did not attribute importance to the lesson, however, students shows positive sentimental attitudes toward the lessons.

2. 3.   *Flow Theory*

It is reported that people feels happy by enjoying experience that not only meet their expectations, but also give chance for further achievement and sense of accomplishment (Csikszentmihalyi, 1990). This experience is later known as optimal experience, autotelic experience, or flow. Flow is a holistic sensation that people feel when doing activity with total immersion or involvement (Csikszentmihalyi, 1977). There are intrinsic rewards generated that makes the experience becomes unique, enjoyable and autotelic. Studies with the objective to increase motivation that uses flow theory found that the emergence of flow works when conventional rewards such as titles and monetary (Nakamura, 2002). For example, a study by LeFevre found that working triggers flow experience more frequent rather than leisure. This is the reason that makes lots of gamification experiment uses flow as the fundamental theory.

ICMEM
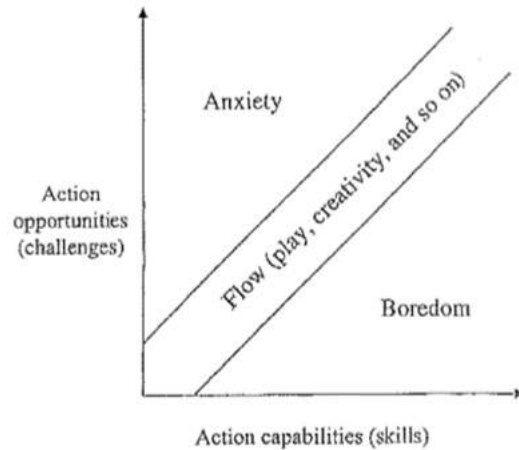
Fig. 2. Flow Model (Adapted from Nakamura, 2002)

Someone in a flow state will devoid any distractions and completely immersed in the activity at hand (Csikszentmihalyi, 1990). The experience is spontaneous and effortless and as the result, the person will develop a sense of control over what he or she is doing without being aware of it or even thinking about controlling it. The activity itself become the primary focus of awareness, almost ignoring everything else including time. It is believed that flow is one of the main motivation to play games (Allaymoun, 2014). For example, Csikszentmihalyi interviewed several chess player about why they like playing chess. The most frequent answers were: "challenging", "unlimited variety of game dynamic", "always different", "competitive". These response shows that people enjoy chess due to the goals and challenges it provides and continuous informative feedback on the process. Thus corroborate the connection between game and flow (Kapp, 2012) In literatures, flow has been tested and operationalized in various ways. However, in education, flow is mainly characterized by absorption which is characterized by a total immersion and concentration, intrinsic motivation which defined as the need to engage in a task or activity to experience inherent satisfaction and pleasure, and enjoyment which defined as a positive perspective about the activity (Allaymoun, 2014).

There are a lot of ways to measure flow: through semi-structured interviews, the experience sampling method, observation, and several other possible methods (Csikszentmihalyi, 1997). However the most frequently used method to measure flow is a self-report questionnaire. Various self-report measures have been designed to assess the three dimensions of flow experience but little is known about the applicability of these measurements and scales to the flow experience in students academic activities. Bakker (2008) developed a scale to measure flow at work, the Work-Related Flow Inventory, or in short, WOLF. The research has shown the reliability as well as the constructive, predictive, and factorial validity (Bakker, 2008). The most recent study were able to examine the psychometric adequacy of the WOLF measuring flow in education by several modification, namely the Study-Related Flow Inventory (WOLF-S) (Bakker, 2016). The WOLF-S was defined as a short-term peak experience during a study activity that able to create a state of absorption, enjoyment, and intrinsic motivation.

ICMEM

3. Hypotheses Development

Flow theory has been suggested by several researchers as a relevant framework for analyzing the impact of gamification and designing a good gamified system. In the flow theory, the flow framework referred as "the holistic sensation that someone feel when they act with maximum involvement" (Csikszentmihalyi, 1990). Flow has been tested in different ways, however, in this study flow is defined as total absorption which is characterized by a total immersion and concentration, intrinsic motivation which defined as the need to engage in a task or activity to experience inherent satisfaction and pleasure, and enjoyment which defined as a positive perspective about the activity (Allaymoun, 2014). We expect to find positive relationship between flow and gamification based on the literature review, which expected to lead to greater performance. The figure below describe the proposed conceptual framework in this study.
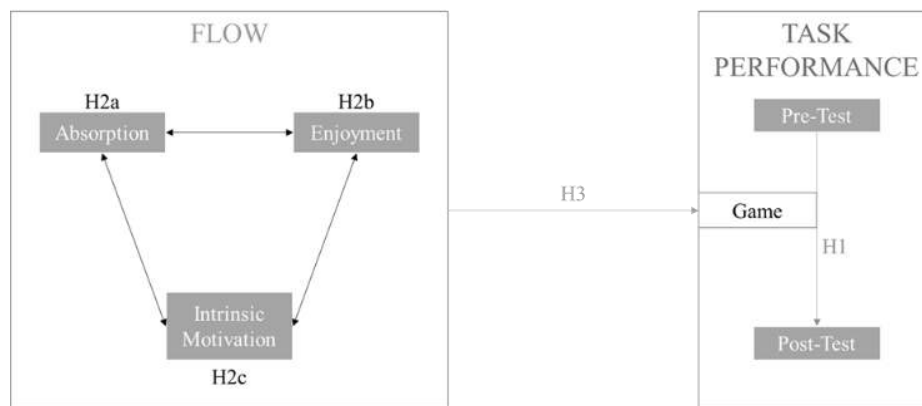
Fig. 3. Hypotheses Development

This study argues that a gamified learning method, which indicated by its ability to create a state of flow, will have an impact in learning outcome. As someone experiencing a state of flow, they will feel more effortless in doing tasks. One of the arguments from literature studies is that the more intrinsically motivated a person is, their performance will also improve. However, the results was mixed. Allaymoun's (2014) laboratory experiment shows that getting immersed in an activity might not always improve someone's performance. When the subject enjoy doing an activity, there is a good chance that they will lose awareness, including the awareness of having a goal they need to achieve.. On the other hand, an experiment on high school students by Csikszentmihalyi and Wong (2014) shows that high level of intrinsic motivation improve the students performance. The experiment measures their motivation to do the activity and compares it with their performance improvement. Using similar method, this study aim to see if a gamified learning method that is used in this experiment can have a positive impact on the participants task performance with the hypotheses as follow:

- H0: There is no statistically significant difference between pre-test and post-test
- H1: There is a significant and positive difference between pre-test and post-test

To validate that the learning method can be classified as a gamified method, based on the literature review, this study also argues that gamification is able create a state of flow. The subject of a gamified method will become immersed in the game, effortlessly wanting to achieve an accomplishment, and feel enjoyment from performing (Allaymoun, 2014). Therefore to validate that the game used in this study is able to create a state of flow, subjects fill out the work-related flow inventory (WOLF) survey with hypotheses as follows:

ICMEM

- H2a: The subjects exposed to a gamified learning method will achieve a certain level of Absorption which have positive significant correlation with Enjoyment and Intrinsic Motivation
- H2b: The subjects exposed to a gamified learning method will achieve a certain level of Enjoyment which have positive significant correlation with Absorption and Intrinsic Motivation
- H2c: The subjects exposed to a gamified learning method will achieve a certain level of Intrinsic Motivation which have positive significant correlation with Absorption and Enjoyment

If the subjects achieve a certain level of absorption, intrinsic motivation, and enjoyment, with significant and positive correlation then the method can be said of having the ability to create a state of flow, which makes it a valid method of gamification. The final hypothesis is to ensure the flow involvement in the game used in this study as follow:

- H3: There is a significant positive relationship between flow and task performance

When the flow exist and there is a change in task performance, the study will analyze the significance of the flow existence in the learning method. If H3 is accepted, then the change between pre-test to post-test is significantly due to the gamification.

4. Data Analysis

A quota sampling of subjects around the age group of 17-30 years old participated, considering that the game will be used in tertiary education for business statistics learning, a suitable age group is set to gain relevancy of insights and understanding. The quota is set at 24 also considering the availability of game equipment and facilitators, divided into six sets of game. Twenty (83%) of the subjects were male and 4 (16%) are female. Of the 24, twenty-two (91%) were college students and there are two (0.83%) graduate students. The mean age of the research subject is 20,41 with 2,12 standard deviation. All of them currently resides in Bandung, Indonesia.

ICMEM

Table 3. Descriptive Statistics of PreTest & PostTest Comparison

Test Type	Pre-Test	Post-Test
N	24	24
Mean	14,17	37,50
95% Confidence Interval for Mean Lower Bound	11,702	30,320
95% Confidence Interval for Mean Upper Bound	16,631	44,680
Std. Deviation	5,835	17,004
Std. Error Mean	1,191	3,471
Minimum	10	10
Maximum	30	70

There is an increase of the mean score from 14,17 (5,836 standard deviation) to 37,50 (17,004 standard deviation). It means that there is an increase in the average score of post-test. Before the significance is tested, a normality test is performed to see if the data pass the assumption for distribution normality. In this test, the score data becomes the dependent variable while the test type become factor.

Table 4. Pre-Test & Post-Test Normality Test

Test Type	Kolgomorov-Smirnov			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Pre-Test	,387	24	,000	,681	24	,000
Post-Test	,150	24	,174	,943	24	,189

If both variable group is normally distributed, T-Test can be used. Both the Kolgomorov-Smirnov and Shapiro-Wilk test significance for post-test is higher than 0.05, therefore the data is normal. On the other hand, both test for pre-test results in below 0.05 and therefore, the data significantly deviate from a normal distribution. From this assumption test, it is appropriate to use Mann Whitney U-Test to compare the two independent variables.

Table 5. Pre-Test & Post-Test Mann Whitney U Test

	Mean Rank	Sum of Ranks
Pre-Test	15,10	362,50
Post Test	33,90	813,50
	Score	
Mann-Whitney U	62,500	

ICMEM

Wilcoxon W	362,500
Z	-4,814
Asymp. Syg. (2-tailed)	,000
Exact Sig. [2*(1-tailed Sig.)]	,000[a]

The rank table indicates that the post-test had the highest score than the pre-test. The post-test score is significantly higher (U = 62.5, p = .000), therefore H0 is rejected. Since H1 is accepted, the study proceed to check if the gamification of the learning method does significantly correlated in this significant test result improvement. The state of flow itself is checked to see the flow level that the subjects were experiencing, three dimension of flow were identified from WOLF-S survey to subjects: absorption, intrinsic motivation, and enjoyment.

Table 6. Intercorrelations of measured variables

		WOLFS_ ABSORPTION	WOLFS_ ENJOYMENT	WOLFS_ INTRINSIC MOTIVATION
WOLFS_ ABSORPTION	**Pearson Correlation**	1	,572[**]	,620[**]
	Sig. (2-tailed)		,003	,001
	N	24	24	24
WOLFS_ ENJOYMENT	**Pearson Correlation**	,572[**]	1	,532[**]
	Sig. (2-tailed)	,003		,007
	N	24	24	24
WOLFS_ INTRINSIC MOTIVATION	**Pearson Correlation**	,620[**]	,532[**]	1
	Sig. (2-tailed)	,001	,007	
	N	24	24	24

Pearson correlation analysis is performed with the results as shown in Table 6. The correlation coefficient of absorption with enjoyment is .572 and .620 with intrinsic motivation. Enjoyment and intrinsic motivation have correlation coefficient of .532. Absorption has .003 significance against enjoyment and .001 significance against intrinsic motivation. The inter-correlations significance between enjoyment and intrinsic motivation is .007. All *p* values < .01 and therefore statistically significant. Thus it can be stated that the method used is approved as a gamified learning method. After confirming that the method is valid, another Pearson correlation analysis is performed between the WOLFS results and the change happened between pre-test and post-test to check the final hypothesis.

Table 7. Correlation between Flow and score change

ICMEM

		Change in Score	WOLFS
Change in Score	**Pearson Correlation**	1	,599**
	Sig. (2-tailed)		,002
	N	24	24
WOLFS	**Pearson Correlation**	,599**	1
	Sig. (2-tailed)	,002	
	N	24	24

The correlation coefficient between WOLFS and change in score is .599 with the significance level of .002 (p < 0.01) which conclude that the state of flow indicated by WOLFS does have significantly affect the change in test score as task performance improvement. The study results are summarized in Table 8. All hypotheses are supported by the study findings in previous analysis.

Table 8. Hypotheses testing results

Hypothesis	Finding
H1: There is a significant relationship between the learning method and Task Performance.	Supported
H2a: The subjects exposed to a gamified learning method will achieve a certain level of Absorption which have positive significant correlation with Enjoyment and Intrinsic Motivation	Supported
H2b: The subjects exposed to a gamified learning method will achieve a certain level of Enjoyment which have positive significant correlation with Absorption and Intrinsic Motivation	Supported
H2c: The subjects exposed to a gamified learning method will achieve a certain level of Intrinsic Motivation which have positive significant correlation with Absorption and Enjoyment	Supported
H3: There is a significant contribution of Flow in the learning method used	Supported

ICMEM

5. Significance of Finding

Based on the analysis in the previous chapter, there is a significant effect of a gamified learning method on learning outcome. Using the flow theory and study-related flow inventory (WOLFS) as the ground to understand what makes a gamification, the game used in this study can be properly classified as a gamified learning method. The flow level also shows the engagement capability of the game. This study shows that there is a significant level of flow that supports in improving learning outcome. Additionally, the learning outcome comparison between before and after being exposed to a gamified learning method improved significantly. In general, the gamified learning method is effective and have positive impact on learning outcome. Today, many business practitioners strive to gamify their systems, methods, procedures, and services. For instance in the context of learning with a gamified method, various company has implemented gamification especially in human resources training program and work culture reinforcement. The situation have a clear parameter and measurement similar to a learning outcome and therefore, possibly applicable. More than 70% percent of Global 2000 organizations invested in at least one gamified system (Gartner, 2011). Meanwhile there are very little amount of research that studied the potential benefit of gamification.

For practitioners who may consider using gamification in their work environment, this study has significant findings that supports the use of a gamified method in its effectiveness. While the test results improve significantly, gamification played important role in that improvement (r =.599). The result shows that gamification might have advantages in achieving an intended outcome in serious context. In other words, triggering employees state of flow in work might increase their performance significantly.

6. Further Research

Based on the conclusion and significance of the findings, several recommendations can be made for practitioners that intends to use a gamified method, especially for educators that aimed to improve students learning outcome. The recommendations are:

- It is arguable that gamification can be effective in achieving an intended outcome. Although every method has their own pros and cons, a gamified method is often controversial for blurring the line between working and playing. It will be appealing to have further research to compare the effectivity of a conventional learning method against a gamified learning method.
- A game designer should consider the game ability to create a state of flow. While it is important to make sure that the learner understand the meaning of the game, being immersed in the game and forget that underlying meaning for a while is important to trigger the intrinsic motivation. Since each flow subscales are positively related to each other, it will be a good start to focus on improving one subscale in the game while observing how it affect the other two subscales. After that, the game designer can start to balance out the flow subscales.
- Continuing the first point, it is important to make it clear to the learner about the game meaning so that they are able to relate the game elements with its actual uses (Allaymoun, 2014). When the state of flow exists without clear keynotes, the players might not be able to relate to its real-life benefits. A discussion after the game can help to exercise the learners understanding of the learning process happened in the game.

References

Allaymoun, O'La. (2014) Gamification, Creativity, Task Performance and Task Satisfaction: An Experimental Study. University of Texas, Arlington.

Bakker, A. B. (2008). The work-related flow inventory: Construction and initial validation of the WOLF. Journal of Vocational Behavior, 72, 400-414. https://doi.org/10.1016/j. jvb.2007.11.007

Bakker, Arnold (2016) Validation of the Study-Related Flow Inventory (WOLF-S). Croatian Journal of Education.

Caponetto, Illaria, Jeffrey Earp, & Michela Ott. (2014). Gamification and Education: A Literature Review. ITD-CNR, Genova.

Carli, M., Fave, A. D., & Massimini, F. (1988). The quality of experience in the flow channels: Comparison of Italian and US students.

Csikszentmihalyi, M. (1990). Flow: The Psychology of Optimal Performance. NY: Cambridge UniversityPress.

ICMEM

Csikszentmihalyi, M. (1999). If We Are So Rich, Why Aren't We Happy? American Psychologist, 54(10), 821.

Csikszentmihalyi, M. (1977). Beyond Boredom and Anxiety. Jossey-Bass.

Csikszentmihalyi, M. (1997). Flow and the Psychology of Discovery and Invention. HarperPerennial, New York, 39.

Deci, E. L., Koestner, R. and Ryan, R. M. (2001) 'Extrinsic rewards and intrinsic motivation in education: Reconsidered once again, Review of Educational Research, 71(1), 1-27.

Dunlosky, John, Katherine A. Rawson, Elizabeth J. Marsh, Mitchell J. Nathan, Daniel T. Willingham. (2012). Improving Students' Learning With Effective Learning Techniques: Promising Direction From Cognitive and Educational Psychology. Psychological Science.

Ejsing-Dunn, Steine, & Helle Skovbjerg Karoff (2013). Gamification of a Higher Education Course: What's the fun in That? Aalborg University Copenhagen, Department of Communication, IT and Learning Design, Copenhagen, Denmark.

Ertmer P & Newby T (1996), "The expert learner: strategic, self-regulated, and reflective", Instructional Science, 24: 1-24

Eseryel, Deniz, Victor Law, Dirk Ifenthaler, Xun Ge, & Raymond Miller. (2014). An Investigation of the Interrelationships between Motivation, Engagement, and Complex Problem Solving in Game-based Learning

Greenfield, P. M. (2010). Motivating children to learn effectively: exploring the value of intrinsic integration in educational games.

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? – a literature review of empirical studies on gamification. In Paper presented at the 2014 47th Hawaii International Conference on system sciences.

Hanghoj, T. (2011) 'Playful knowledge', An Explorative Study of Educational Gaming. Saarbrücken: Lambert Academic Publishing.

Kankanhalli, A., Taher, M., Cavusoglu, H., & Kim, S. H. (2012). Gamification: A New Paradigm for Online User Engagement.

Kapp, K. M. (2012). The gamification of learning and instruction: game-based methods and strategies for training and education. John Wiley & Sons.

Landers, R. N., & Callan, R. C. (2012). Training evaluation in virtual worlds: development of a model. Journal of Virtual Worlds Research, 5, 1e20

Mattox, John R. (2012). Measuring the Effectiveness of Informal Learning Methodologies. Association for Talent Development, Alexandria.

Nakamura, J., & Csikszentmihalyi, M. (2002). The Concept of Flow. Handbook of Positive Psychology, 89-105.

Nisbet J & Shucksmith J (1986), Learning Strategies, London: Routledge

Novak J D & Gowin D B (1984), Learning How to Learn, Cambridge: Cambridge University Press

Nunnally,J.C. 1978. Psychometric Theory. New York: McGraw-Hill

Orosco, John S. U.(2014). Examination of Gamification: Understanding Performance as it Relates to Motivation and Engagement. Colorado Technical University.

Robertson, M. (2010) 'Can't play, won't play', Hide&Seek: Inventing new kinds of play, 2013

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2010). Motivation in education: Theory, research, and applications (3 rd ed.). Upper Saddle River: Pearson.

Summer (2002). Effective Learning. National School Improvement Network Publisher. Institute of Education, University of London.

Zichermann, Gabe, & Joselin Linder. (2013). The Gamification Revolution: How Leaders Leverage Game Mechanics to Crush the Competitor. McGraw-Hill

ICMEM

The 3rd International Conference on Management in Emerging Markets

Designing a Nonprofit Organization in Order to Produce a Better Organizational Effectiveness: Tiup Lilin

Fairuz Rifqi Abdurahman[a*], John Welly[b]

[a]School of Business and Management, Bandung Institute of Technology, Jl. Ganesha No. 10, Bandung 40132, Indonesia
[b]Master of Business Administration Bandung Institute of Technology, Jl. Gelap Nyawang No. 1, Bandung 40132, Indonesia

Abstract

In the last twenty years, the number of nonprofit organizations has increased enormously. Tiup Lilin (TL) is one of many nonprofit organizations in Bandung that already established since 1st of June 2014. The primary goal of TL is to make Indonesian children with life-threatening sickness believe that their dreams can be realized and show that the faith in humanity is still can be relied upon. However, after they expanded into two cities, which were Depok and Surabaya, they faced a problem regarding the effectiveness of the organization. It resulted in the stagnation of the organization, and it leads to the closing of the Depok and Surabaya branches, while TL in its main city, Bandung, still operated until early 2017, where the decision to took a hiatus was made by TL and currently, they are still on a hiatus while they are preparing for their comeback. This paper aims to find out the level of effectiveness of TL organization and how to lead and manage organization design for TL. This paper used the 4-D Model of Appreciative Inquiry, starting from discovery until design phase to find the answer for both of the questions.

Keywords: Organizational design; Organizational effectiveness; Organization development

1. Introduction

In the last twenty years, the number of nonprofit organizations has increased enormously, and its scope of the activities of nonprofit organizations has broadened as well. Nonprofit organizations are involved in a more various aspect of human activity throughout the globe. One no longer sees nonprofit organizations only engaged in limited activities of dubious quality, since they play an essential role in almost every society, assisting in providing health care, in development of education and social well-being (Sargeant, 2004).

Tiup Lilin is one of many nonprofit organizations in the City of Bandung. They came into the charitable activities on the 1st of June 2014 in Bandung. Tiup Lilin is a nonprofit organization that engaged in the social field, to be specific, Tiup Lilin engaged in the field related to children. The primary goal of Tiup Lilin is to make Indonesian children with life-threatening sickness believe that their dreams can be realized and show that the faith in humanity is still can be relied upon.

Tiup Lilin expanded their range by establishing branches in other cities which are Depok and Surabaya in the last quarter of 2014. In the expansion of the organization, there is problem happened regarding the stakeholders of the organization and it relates to organizational effectiveness. With many different theories about organizational effectiveness, Herman and Renz (1997) argue that the theorizing of organizational effectiveness can be summarized as the development of alternatives or modifications to the goal model of effectiveness. One of organizational effectiveness approaches that used in nonprofit organizations is multiple constituency approach, this approach advocates stakeholders within nonprofit organization to evaluate the organizational effectiveness, such as clients, employees, funders, licensing and accreditation bodies, and vendors (Balser & McClusky,2005).

---

[*] Corresponding author

ICMEM

Nonprofit organizations that have multiple stakeholders may differ in the way they evaluate organizational effectiveness (Herman & Renz, 2004) and nonprofit organizational effectiveness is always a matter of comparison that can be evaluated based on the organization in previous years (Herman & Renz, 2002). Based on that, the researcher has collected data regarding the stakeholders of Tiup Lilin, which are members, donors, and clients. The data collected from the year the organization was founded in 2014 until 2017. The data received processed into graphs in order to evaluate the organization effectiveness of Tiup Lilin.

1. 1.   Members
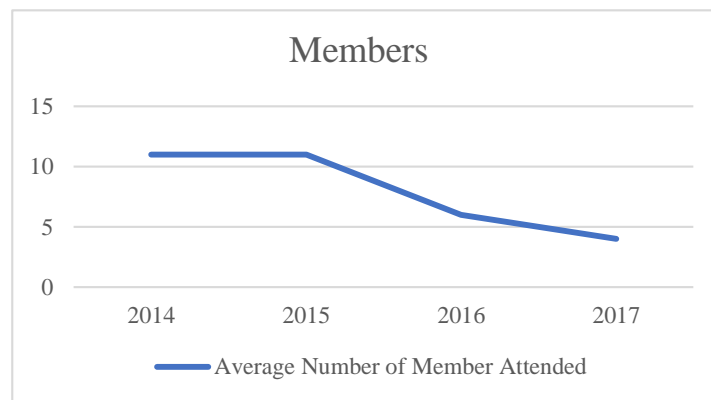
Fig. 1. Line Graph of Members

The graph shows that there is a declining trend of members activeness in the organization that examined by the average number of members attended the monthly meeting of the organization. The graph shows that in the first two years since the organization founded the number is constant at average eleven members attended in every monthly meeting that the organization held and the next two years proved that the number has declined from average six members attended in every monthly meeting in 2016 to average four members attended in 2017.

1. 2.   Donors
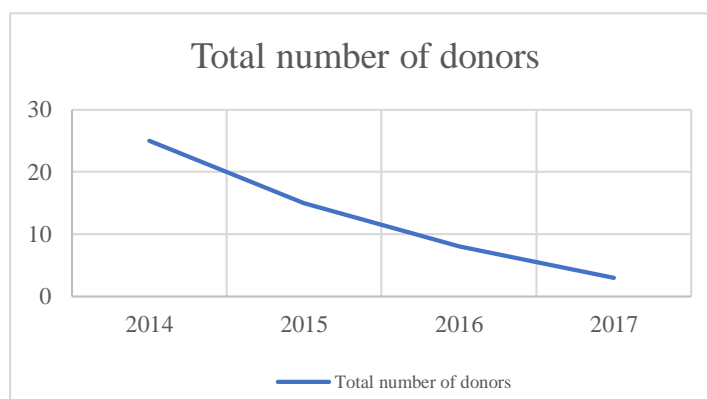
Fig. 2. Line Graph of Donors

The graph of donors shows the total number of donors per year during 2014-2017, and it shows the constant decline that the organization have regarding donors. The organization have their all-time high in 2014 with 25 donors that the organization received, but the following years did not follow the excellent start that the organization had in their first year. The next three years show that the organization received fewer donors, as the numbers show

ICMEM

that in 2015, the organization received fifteen donors, followed by eight donors in 2016 and lastly, three donors in 2017.

1. 3.   Clients
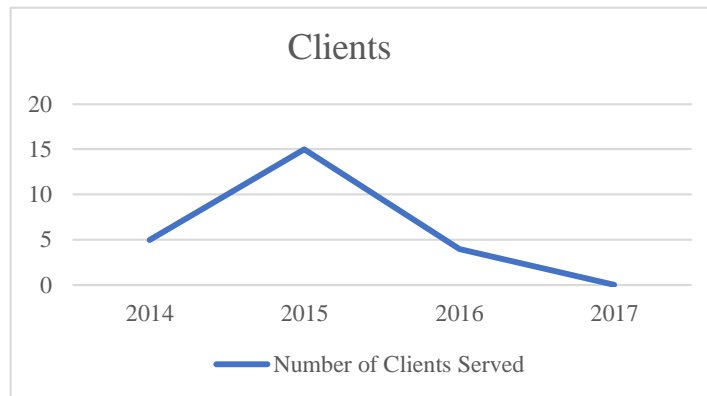
Fig. 3. Line Graph of Clients

As a nonprofit organization, Tiup Lilin have children with life-threatening sickness and/or disabilities that prevent them to reach their dream as their clients, and the graph shows the trend of clients that served by the organization each year from 2014-2017. The graph shows that in their first year, Tiup Lilin succeed to serve five clients and followed by the increased number in 2015 with fifteen clients served during the year. The organization sadly cannot keep their pace and the number of clients served fell to just four clients in 2016 and none in 2017.

From the three graphs above regarding the stakeholders that showed decline in almost each passing year, it can be seen that Tiup Lilin's effectiveness is declining. According to the interview with Head of Tiup Lilin, the decline happened because the organization activities to serve the clients declined and from that, the total number of donors received also declined. The activities to serve the clients declined also caused by the issue of less members participation in the organization. It happened because the increasing responsibilities of the education in the respective universities of the members of Tiup Lilin. It resulted in the stagnation of the organization and it leads to the closing of the Depok and Surabaya branches, while TL in its main city, Bandung, still operated until early 2017, where the decision to took a hiatus was made by TL and currently, they are still on a hiatus while they are preparing for their comeback.

The decision to took a hiatus of Tiup Lilin and the declining effectiveness of Tiup Lilin raise a question for Tiup Lilin as a nonprofit organization. There are symptoms that need to be explored more to find the root cause and to find the solution to the root cause. There are symptoms that made the declining effectiveness in Tiup Lilin. The symptoms in Tiup Lilin are the declining effectiveness of the organization, which happened because there were less activities to serve the clients of the organization. Because there were less activities to serve the clients of the organization, the total number of donors fell and in the same time, there were less activities to serve the clients happened because the less participation from the members of the organization. The total number of donors fell and the less participation from the members of the organization in Tiup Lilin happened because they do not have an adequate strategic plan since with an adequate strategic plan, the number of people they serve can increase by utilize its human and financial resources more effectively (Hill, n.d.). Therefore, it can be concluded that the root cause of the problem in Tiup Lilin is that Tiup Lilin do not have an adequate strategic plan.

Currently, Tiup Lilin still has not applicate strategic planning in their organization, which could lead to the decreasing effectiveness of the organization that can be evaluated based on the data comparison of the stakeholders of the organization in previous years. Hence, the problem statement in this research is that Tiup Lilin as a nonprofit organization, need to create a strategic plan that can help them solve the issue of declining effectiveness. Based on the identified problem, the researcher's objectives in the study is to determine how to manage the strategic planning for Tiup Lilin.

ICMEM

2. Literature review

Based on the literature review towards strategic planning, this research will use The McKinsey 7-S Model, The Balanced Scorecard, and Strategy Map as the tools to create the strategic plan for Tiup Lilin. SWOT matrix is not chosen as one of the tools because SWOT matrix does not provide actual strategies to implement to take advantages of opportunities while leveraging strengths and SWOT matrix may be difficult to interpret (Helms & Nixon, 2010). SWOT matrix often used to find the positioning of an organization in competition, while in nonprofit organization, it focuses on the achievement of the stakeholders instead of competition. Based on that, it would be more relevant to use The McKinsey 7-S Model, The Balanced Scorecard, and Strategy Map.

The McKinsey 7-S Model serve the model that emphasizing the elements that needed to be aligned if the organization was going to move forward (Peters, 2011). While the Balanced Scorecard with its extension, Strategy Map illustrate how to conduct business to achieve the strategic goals and measures the performance outcomes in the strategy element of The McKinsey 7-S Model. Since strategic planning works best when there is an exchange of ideas and input from everyone in stake in the organization (Hill, n.d.), The Appreciative Inquiry 4-D Model is used as the way to manage the strategic planning of the organization because it heavily involved members in the change, as the other planned change theory, Lewin's Change Model emphasize the role of the consultant that relatively limiting member involvement in the change process (Cummings & Worley, 2008). However, due to time constraints, only three phases out of four phases from The Appreciative Inquiry 4-D used in the process.

2. 1. Organizational Effectiveness

With many different theories about organizational effectiveness, Herman and Renz (1997) argue that the theorizing of organizational effectiveness can be summarized as the development of alternatives or modifications to the goal model of effectiveness. One of organizational effectiveness approaches that used in nonprofit organizations is multiple constituency approach, this approach advocates stakeholders within nonprofit organization to evaluate the organizational effectiveness, such as clients, employees, funders, licensing and accreditation bodies, and vendors (Balser & McClusky,2005).

Nonprofit organizations that have multiple stakeholders may differ in the way they evaluate organizational effectiveness (Herman & Renz, 2004) and nonprofit organizational effectiveness is always a matter of comparison that can be evaluated based on the organization in previous years, similar organizations, or an ideal model (Herman & Renz, 2002). Therefore, nonprofit organizations can evaluate their organizational effectiveness based on the data comparison regarding the organization's stakeholders in previous years.

2. 2. Strategic Planning

Strategic planning is a change strategy that is very carefully planned and deliberate, and it may be defined as the process of formulating, implementing, and evaluating decisions that enable the organization to achieve its goals (Lunenburg, 2011). Strategic planning in for-profit companies is focused on how to successfully compete against other companies seeking the same customers and its success is measured in revenue growth and increased profitability, while in nonprofit organizations, the overall goal of the strategic planning is to increase the number of people they serve, by utilize its human and financial resources more effectively. In the strategic planning process, organization's executive director and other senior members should be involved because strategic planning works best when there is an open exchange of ideas and input from everyone in stake in the organization (Hill, n.d.). There are tools that can be used in strategic planning, they are SWOT Matrix, The McKinsey 7-S Model, The Balanced Scorecard, and Strategy Map.

SWOT Matrix is a strategic planning tool that helps to evaluate the strengths, weaknesses, opportunities, and threats involved that can help organization gain insights (Ommani, 2011). The McKinsey 7-S model is a strategic planning tool that analyzes the design of an organization by looking at 7 key elements: strategy, structure, systems, shared values, style, staff and skills, in order to identify if they are aligned effectively and allow the organization to achieve its goals (Ravanfar, 2015), The model also divides its elements into two, which are hard Ss (Strategy, structure, systems) and soft Ss (Style, staff, skills, and shared values) (Peters, 2011). The Balanced Scorecard is a tool that

ICMEM

regarded as a way to translate both vision and mission into a coherent set of performance measures and it can provides an organization a framework to communicate mission and strategy to the parties involved in the organization. The objectives and measures of the scorecard are derived from an organization's vision and strategy (Kaplan & Norton, 1996). The objectives and measures view the organizational performance from four perspectives, which are financial, customer, internal business process, and learning and growth.

Srategy map is a tool that can provide a visual representation of a company's critical objectives with the framework of The Balanced Scorecard. A strategy map enables an organization to describe and illustrate in clear and general language of the linkages between objectives, initiatives, and targets that are the foundation for strategic direction (Kaplan & Norton, 2000).

2. 3.   *Planned Change*

Planned change is a process where an organization direct the organization to increase their effectiveness and capability to change itself. Organizations can use planned change to solve problems, learn from experience, to adapt to environmental changes, improve performance, and to influence future changes (Cummings & Worley, 2008). There are theories of planned change, they are Lewin's change model and the positive model of change.

Kurt Lewin's viewed the planned change process as consisting three steps, which are unfreezing, changing, and refreezing (Cummings, Bridgman, & Brown, 2016). Unfreezing is the step where the organization reducing the forces that maintaining the organization's behavior at its present level. Changing is the step where the behavior of the organization shift to a new level and it involves intervening through changes in the organization's structure and processes. The last step is refreezing, where the organization stabilizes themselves at a new state of equilibrium (Cummings & Worley, 2008).

The positive model of planned change is a planned change model that focus on what the organization is doing right and build on that. The positive model of change primarily done through a process called the appreciative inquiry (Cummings & Worley, 2008). Appreciative inquiry basically using a positive, strengths-based change approach as the change approach, where it focuses on leveraging an organization's positive core strengths to design and redesign the systems in an organization to achieve more effective and sustainable future (Cooperrider, 2012). The appreciative inquiry approach is often used in practice by using the '4-D' model that includes 4 phases of discover, dream, design, and destiny. Discover, is when the identification of organizational processes that work well happen, then we enter dream phase, where the organization starts to 'dream' of processes that would work well in the future. The processes continue with design phase, where the planning and prioritizing processes happen and to reach the end, the phase destiny (or sometimes called deploy), where the organization execute the planned design.

3.   Methodology

This research used qualitative research method because this research does not seek relationship and statistical data. The objective of this research is to determine how to manage the strategic planning for Tiup Lilin. Therefore, the research design will collect and analyze non-numeric data to answer this qualitative research. The steps in conducting this research start with the discovery phase, where the researcher did preliminary research, problem and objective identification, literature review, and the first data collection that collected through two forms of data, which are primary and secondary data.

The primary data collected from the interview with the Head of Tiup Lilin regarding the topic of the organizational effectiveness of Tiup Lilin. While the secondary data collected from the internal organization data that collected from 2014 until early 2017. The data explained the stakeholders of the organization, which are the details of the number of members attended monthly meetings, the number of donors that the organization received and the clients served by the organization. After researcher collected the data from the interview and internal organization data, there will also be further data collection.

The further data collection of this research use nonprobability sampling as its sampling method with focus group discussion chosen as the adequate method to collect the data. The researcher chooses to do focus group discussion because it can produce information and knowledge that would be less accessible without the interaction that found in

ICMEM

a group setting (Lindlof & Taylor, 2002). The population that the data comes from are all Tiup Lilin members, where the focus group discussion will be done with influential members of Tiup Lilin. The influential members that will do focus group discussion include the Head of Tiup Lilin and some of his influential subordinates.

There are two focus group discussion that the researcher will do with the influential members, the first one being the one where the influential members will form new vision, mission, and organizational values for their organization and the second focus group discussion was held for the validation of the proposed McKinsey 7-S Model.

After data collected, the next step of the research is to do the first focus group discussion with the influential members of Tiup Lilin. The focus group discussion itself will be conducted based on the dream phase in the 4-D Appreciative Inquiry Model. Dream phase is done through the focus group discussion with the influential members of the organization. In the focus group discussion, the influential members will brainstorm to create a new vision, mission, and values of the organization based on the strengths of the organization. The result that hoped from the focus group discussion are new vision, mission, and the organizational values of Tiup Lilin.

The steps continue with the design phase, where the researcher will try to form the proposed McKinsey 7-S Model with The Balanced Scorecard and Strategy Map used as a way to define the strategy element in the model. The output that researcher hoped for in this phase is the proposed McKinsey 7-S Model for the organization that in the next step, can be validated by the influential members. The validation will be done through the second focus group discussion with the influential members of the organization. The researcher will present the proposed McKinsey 7-S Model for the organization to the influential members and the influential members are free to give feedbacks related to the proposed McKinsey 7-S Model. All feedbacks then will be compiled and it will result in a design for the organization that already validated by the influential members.

4. Strategic planning process

This part explains the details of strategic planning process of this research. The process itself builds on the next two phases of '4-D' Model after the discovery phase was done beforehand, which are dream and design.

4. 1. Dream Phase

Before the dream phase conducted, the influential members already agreed on the strengths of the organization, which are uniqueness, openness, determination among the members, creativity, and well craft relationship with external parties. The strengths are useful in the dream phase as the dream phase was applicated in the focus group discussion by translating the strengths of the organization that already defined before by the members into a new vision and mission for the organization. Before the influential members brainstormed the new vision and mission for the organization, they previously brainstorm to form the organizational values that the organization will hold in their lifetime.

The influential members of the organization then brainstormed about the values that fit the organization itself and it resulted in the form of five chosen values for the organization, which are commitment, creativity, service to others, positivity, and consistency. All values are chosen through discussion and how much the value represent the organization itself. All those organizational values then translated into new vision and mission. The new vision of the organization is "To become a nonprofit organization that give happiness and make children with life-threatening sickness to believe in their dreams and become a medium to connect all the stakeholders". To achieve the new vision, the organization also have new missions to be its objectives.

The new missions consist of three missions, which are to fulfill the dreams of the recipients (the child with life-threatening sickness), connect the donors with the recipients of the organization through various programs, and to give an option for people to share kindness.

4. 2. Design Phase

The researcher conducted the design phase with the help of The McKinsey 7-S Model. The researcher then defined each element in the model based on the vision, missions, and organizational values of the organization. The researcher

ICMEM

started to define the hard Ss elements first (Strategy, structure, systems) then proceeded to the soft Ss elements (Style, staff, skills, and shared values). The next paragraphs below will break down each element of the proposed McKinsey 7-S Model to the influential members that given to them in the validation process, which was the second focus group discussion.

Strategy

For the strategy element, the researcher used The Balanced Scorecard and its extension, Strategy Map as the way to translate the organization's vision and missions. The strategy map itself referred to the strategy map for nonprofit organization that created by Aleksey Savkin (Savkin, 2010). The strategy map then processed into The Balanced Scorecard in table form, which includes five aspects: objectives, measures, targets, initiatives, and person in charge. The process of turning the strategy map into The Balanced Scorecard in table form was done in referenced to The Balanced Scorecard: Translating Strategy into Action (Kaplan & Norton, 1996) with the adjustment made by the researcher to fit the organization. Below here is the result of The Balanced Scorecard for the organization.

Proposed Balanced Scorecard for Tiup Lilin

Vision: Become a nonprofit organization that give happiness and make children with life-threatening sickness to believe in their dreams and become a medium to connect with all the stakeholders

Mission(s): Fulfill the dreams of the recipients (the child with life-threatening sickness), connect the donors with the recipients of the organization through various programs, and to give an option for people who want to share kindness.

Strategy: Continually improve the services to fit the recipients wants and give the recipients best experience.

Table 1. Proposed Financial Perspective of The Balanced Scorecard for Tiup Lilin

	Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budgets
Financial Perspective	Achieve Financial stability	Cash Flow per month	Balance Income/Expenses	Create projection for the cash flow	Head of Finance	
				Finding a stable funding source		
	Ensure the organization to support community	Service funding per quarter	Service Funding > Internal Expenses (80%/20%)	Make sure the efficient and effective use of resource	Head of Finance	
				Monitor budgets allocation and expenditures		

Table 2. Proposed Customer Perspective of The Balanced Scorecard for Tiup Lilin

Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budgets

ICMEM

Customer Perspective	Recipients Segmentation	Result of the recipient segmentation	Detailed information related to the segmentation (demography divided by the type of life-threatening sickness and lists of potential organizations that can help the cause)	Demography research Benchmarking to similar nonprofit organizations Develop detailed information about the target segment	Executive Director	Rp2.270.000,00
	Recipients Acquisition	Number of MOU signed	Minimum 1 MOU signed per quarter	Reach out to the potential organizations that can help Create MOU with the organization that interested Build a close relationship the organizational partner	Executive Director	Rp1.163.000,00
Customer Perspective	Maintain high levels of recipients and donors satisfaction	Recipients and donors survey score per year	Recipients survey result = 80% very satisfied or satisfied Donors survey result = 80% very likely or likely to donate again	Review the result of the survey and introspect the organization	Head of Human Resource & Head of Programs	Rp0 (Online survey)

Table 3. Proposed Internal Process Perspective of The Balanced Scorecard for Tiup Lilin

	Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budget
Internal Process Perspective	Improve Service Delivery	Percentage of active programs running on time and on budget per quarter	85% active programs running on time and on budget	Review the service delivery process	Head of Finance & Head of Programs	

ICMEM

Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budgets
Continuously innovating the programs of the organization	Ideas received for new/improved programs from the members per six months	25 ideas received	Reward the member ideas that improve the programs or resulting in a new program	Head of Human Resource	Rp300.000,00
	Total of ideas can be realized	10% of ideas implemented per six months	Enhancing members motivation to conduct experiments (pilot project) for the new ideas	Head of Programs	Rp2.000.000,00 per pilot project
Prepared and trained volunteers -	Volunteers appraisal score	75% Competent	Conduct training for volunteers that relates to the organization's core competences	Head of Human Resource	Rp405.000,00
	Training hours to the volunteers/ 6 months	6 hours of training given to the volunteers/ 6 months	Monitoring volunteers' performances Review the volunteer recruitment process and training		
- Continuously improve skills and competence of the staff	Training attended per quarter	Minimum 1 training attended	Information sharing between staffs regarding training programs	Head of Human Resource	

Table 4. Proposed Learning and Growth Perspective of The Balanced Scorecard for Tiup Lilin

	Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budgets
Learning and Growth	Prepared and trained volunteers	Volunteers appraisal score	75% Competent	Conduct training for volunteers that relates to the organization's core competences	Head of Human Resource	Rp405.000,00
		Training hours to the volunteers/ 6 months	6 hours of training given to the volunteers/ 6 months	Monitoring volunteers' performances		

ICMEM

			Review the volunteer recruitment process and training	
Continuously improve skills and competence of the staff	Training attended per quarter	Minimum 1 training attended	Information sharing between staffs regarding programs training	Head of Human Resource

Systems

Systems element proposed is based on the proposed internal process perspective of The Balanced Scorecard for Tiup Lilin. The first system is to improve service delivery and the second is continuously innovating the programs of the organization. The third is community building inside the organization and the fourth and the last one is accountability report.

Structure

The element of structure is where the researcher did a restructure to the organization's organizational structure. The organization need to align the structure with the strategy that researcher previously created. For the new organizational structure, the functional type of organizational structure is used for Tiup Lilin as functional organizational structure is the most common organizational structure adopted by most companies, since it can give departmental competence through the grouping by specialization and operational clarity to the workforce (Gleeson, 2018). The look of the new organizational structure of Tiup Lilin can be seen below, with the blue boxes represent staffs and the black boxes represent volunteers.
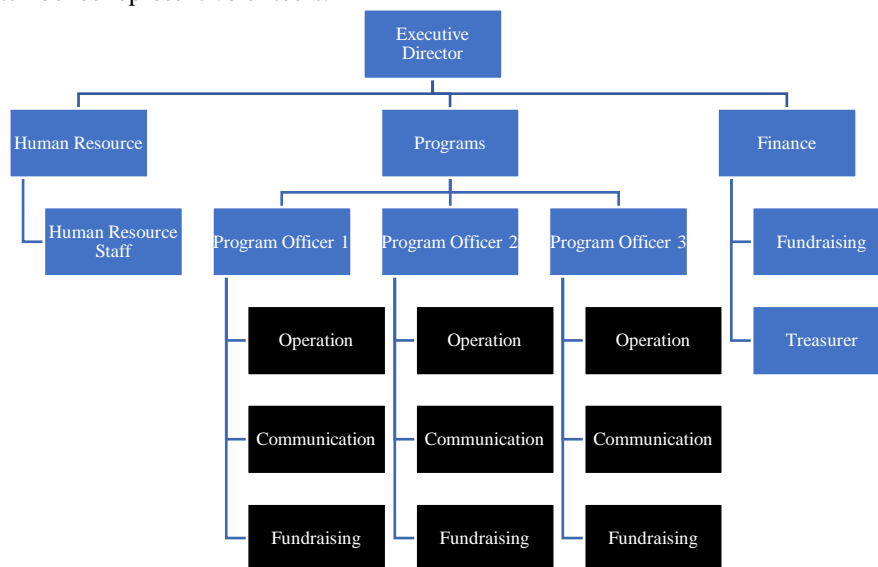
Fig. 4. The Proposed Organizational Structure of Tiup Lilin

Shared Values

The shared values in the organization will be based on the result of the dream phase, which are the organizational values, vision, and missions of the organization as it should be held by all parties involved in the organization. Those three elements were the result of the translated organization strengths and the organization is looking to instill the three elements to all parties involved.

Skills

ICMEM

To define the element of skills for the organization, the researcher defines the core competencies for the organization by using the Spencer & Spencer competence dictionary. Since core competence seen as a requirement for every members and volunteers in the organization, the researcher define the core competences with the organization's values in mind. The chosen core competences for the organization are teamwork, organizational commitment, relationship building, initiative, and customer service orientation.

Style

The proposed leadership style for the organization is the democratic leadership It is a type of leadership where the members of the organization or the group take more participation in the decision-making process as everyone is given the opportunity to participate and discussion is welcomed. Even though the democratic leadership style inclined to create group equality, the leader of the group still important as he/she is the one that guides and control the group. This style fits the organization as Tiup Lilin is a nonprofit organization and the equality that the style brings is useful for the organization and the members of the organization with this leadership style, can feel that they truly participate in the organization where each person's voice is heard by the group and in the end, it will result in better performance from the organization.

Staff

The element of staff refers to the number of personnel of the organization and for this element, the influential members look to their new organizational structure to define the number of staffs needed for their operation. From their new organizational structure, it shows that the organization need ten persons to fill every position with certain qualities for each position to ensure that the person that fills the position can handle the job and have right abilities. While the positions of operation, fundraising, and communication that are in the black boxes, will be filled with the required number of volunteers for each program that the organization hold in the future, with the supervision from the program officer and the finance team specifically for the fundraising box.

4. 3.   *Validation*

The second focus group discussion with the influential members of the organization was held to validate the proposed McKinsey 7-S Model for the organization that created by the researcher based on the result of the dream phase. In the second focus group discussion, the researcher presented the proposed McKinsey 7-S Model to the influential members and the influential members were free to give their feedbacks related to the proposed design. The influential members gave their feedbacks early when the researcher presented the proposed strategy element in the McKinsey 7-S Model.

The influential members agreed to all of the objectives of the organization in all four perspectives, but they thought that The Balanced Scorecard need adjustments as they thought that they need to add new positions to be the person in charge in several objectives and also change the person in charge for the objective of improve service delivery to be only Head of Programs. They wanted to add two new divisions, which are Research and Development team and Public Relation team, as they considered both teams are needed to execute the proposed strategy. This addition of two new teams brought changes to The Balanced Scorecard in two perspectives, which are customer perspective and internal process perspective. Here are the changes in The Balanced Scorecard after the influential members of the organization validated it. Italic font style marks the changes from the proposed Balanced Scorecard by the researcher.

Table 5. Validated Customer Perspective of The Balanced Scorecard for Tiup Lilin

	Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budgets
Customer Perspective	Recipients Segmentation	Result of the recipient segmentation	Detailed information related to the segmentation (demography divided by the type of life-threatening sickness and lists	Demography research	*Head of Research and Development*	Rp2.270.000

ICMEM

Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budget
	of potential organizations that can help the cause)		Benchmarking to similar nonprofit organizations		
			Develop detailed information about the target segment		
Recipients Acquisition	Number of MOU signed	Minimum 1 MOU signed per quarter	Reach out to the potential organizations that can help	*Head of Public Relations*	Rp1.163.000,00
			Create MOU with the organization that interested		
			Build a close relationship the organizational partner		
Maintain high levels of recipients and donors satisfaction	Recipients and donors survey score per year	Recipients survey result = 80% very satisfied or satisfied	Review the result of the survey and introspect the organization	*Head of Research and Development, Head of Programs, and Head of Public Relations*	Rp0 (Online survey)
		Donors survey result = 80% very likely or likely to donate again			

Table 6. Validated Internal Process Perspective of The Balanced Scorecard for Tiup Lilin

	Objectives	Measures	Targets	Initiatives	Persons in Charge (PIC)	Budget
Internal Process Perspective	Improve Service Delivery	Percentage of active programs running on time and on budget per quarter	85% active programs running on time and on budget	Review the service delivery process	*Head of Programs*	

Continuously innovating the programs of the organization	Ideas received for new/improved programs from the members per six months	25 ideas received	Reward the member ideas that improve the programs or resulting in a new program	Head of Human Resource	Rp300.000,00
	Total of ideas can be realized	10% of ideas implemented per six months	Enhancing members motivation to conduct experiments (pilot project) for the new ideas	*Head of Programs and Head of Research and Development*	Rp2.000.000,00 per pilot project
Community building inside the organization	Bonding hours per quarter	10 hours of bonding program	Make sure there is a bonding program each passing month that engage the members	Head of Human Resource	Rp700.000,00
Accountability Report	Accountability report per year	Do accountability report once a year in December	Make sure that each division already finished their report for the accountability report.	Executive Director	Rp483.000,00

The changes made to The Balanced Scorecard also brought changes to the organizational structure of the organization as the two new teams need to be included in the structure. They gave details related to the two new teams in which they want each new division to have two subordinates. Below here is the result of the validated organizational structure of the organization.
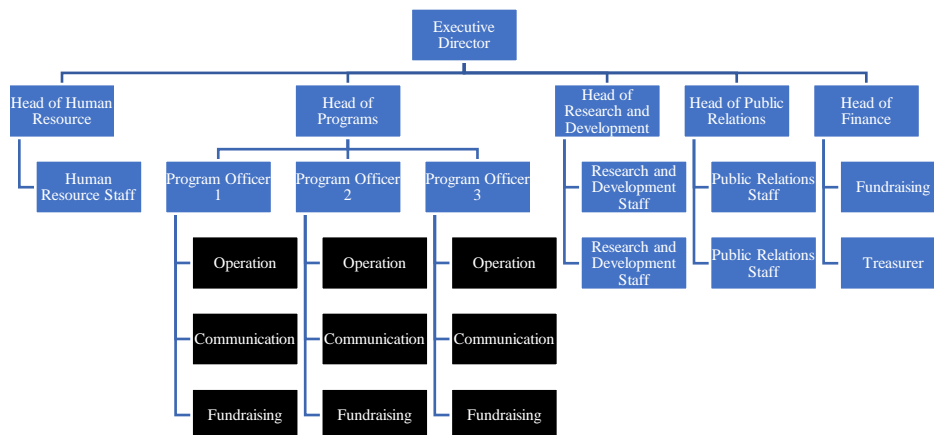
Fig. 5. The Validated Organizational Structure of Tiup Lilin

ICMEM

The changes in the organizational structure of the organization lead to changes in Staff element. In the proposed McKinsey 7-S Model, researcher pointed out that the organization need ten persons to fill every position in the organization. With the addition of the two new teams, it is changed to sixteen persons. The changes in organizational structure define the need for six more persons to fill the positions in Research and Development team and Public Relations team.

Other than the changes happened in the elements of Strategy, Structure, and Staff after the validation, the influential members of the organization felt no need to change the rest of the proposed McKinsey 7-S Model. They stated that the rest of the elements, which consisted of four other elements (Systems, Shared Values, Skills, and Style) were in line with the organization's new vision and missions. The influential members agreed on the proposed McKinsey 7-S Model, should the changes be applied.

5. Conclusion and Recommendation

5. 1. Conclusion

Tiup Lilin as a nonprofit organization is facing a decline in terms of effectiveness. Based on the root cause identification that backed by the interview, it is known that the root cause of the declining effectiveness is the adequate strategic plan is not existing in Tiup Lilin. As currently Tiup Lilin still has not applicate strategic planning in their organization and it could lead to the decreasing effectiveness that evaluated based on the data comparison of the stakeholders of the organization in previous years. Hence, the purpose of this research is to determine how to manage the strategic planning for Tiup Lilin.

The strategic planning tools that use to create a strategic plan for Tiup Lilin are The McKinsey 7-S Model with The Balanced Scorecard and Strategy Map used as the way to define the strategy element in The McKinsey 7-S Model. To manage the strategic planning, three phases of The Appreciative Inquiry 4-D Model to involved the members of the organization in the strategic planning. The discovery phase has the result of the more comprehensive understanding of the organization. The dream phase produces the new vision, mission, and values of the organization that used as the shared values for the organization. While the design phase is where the proposed McKinsey 7-S Model for Tiup Lilin was formed. The proposed McKinsey 7-S Model for Tiup Lilin then presented to the influential members with the end result of the validated proposed McKinsey 7-S Model for Tiup Lilin.

5. 2. Recommendation

The result of the strategic planning used as the basis for the recommendation. The researcher gives the recommendation on how Tiup Lilin can implement the strategic plan that already validated by the influential members of the organization. The recommendation came in the form of an implementation plan and the timeline of the implementation plan. Below here are the implementation plan and the timeline for the organization.

Implementation Plan

- Assign human resource team
  For the first step, the Executive Director of Tiup Lilin must assign the human resource team as the organization will need to fill the positions in the organizational structure. The Executive Director must assign two persons to be the Head of Human Resource and Human Resource staff to help him fill those positions better as each position requires different qualities.
- Create the letter of approval
  The next step is to have the Executive Director of Tiup Lilin and the Human Resource team to create the letter of approval to officially regard the changes ahead that will be done by the organization. The letter should have the declaration of the new vision, missions, and values of the organization. The declaration then will be followed by the new organizational structure of Tiup Lilin and in the end, will be signed by the Executive Director.
- Human resource team assign persons to the rest of the positions

The plan continues with the Human Resource team assigning persons to the positions that not yet filled with the suitable person with the right abilities for the position to complete the organization staffs. This is an important step as it is the step that can define the organization progress in the future.

- Financial assessment

The organization then need to do a financial assessment to assess the condition of the organization financially. The organization should check their condition by assessing their assets, including both financial and nonfinancial asset, and their liabilities to find the financial condition of the organization before continue to the next step.

- General briefing

After the organization staffs are complete in each position, it is time to hold a general briefing for all the staffs with the Executive Director be the one that leads the briefing. All staffs must be present in the general briefing as the general briefing is an important step before continuing the implementation of the plan. The general briefing will include the introduction of the newly assigned team and most importantly, to explain about the execution of the organization's strategy in the form of The Balanced Scorecard to all staff to ensure that every staff understands the strategy and their job. With that, the organization are hoping to execute the plan smoothly.

- Divisional meeting

Divisional meeting should be held after the general briefing and financial assessment, as each division need to gather first to prepare before they start working on their part of work in the organization. Each head of division should be responsible for the divisional meeting and the material. The result of the divisional meeting should be reported to the executive director.

- Attempt to legalize the organization

The past experience of the organization proved that legal status of the nonprofit organization is needed to create a binding between the organization and the staffs. The organization should try to legalize the organization through the Indonesian government to create a legal status for the organization that can help them in various ways.

- Execute the initiatives

Then, the organization is ready to execute the initiatives. The organization should execute the initiatives based on the strategy of the organization to make sure that the implementation is according the plan and help them reach their objectives. The Executive Director and each division in the organization should work together with commitment and passion for executing each of the initiatives.

- Monitoring and evaluation

During the execution of the initiatives, evaluation and monitoring are needed as the organization should always look to improve the performance and build on the good that achieves in their operation. Evaluation can judge whether the initiatives of the organization have delivered what expected according to the original plan. While monitoring is more of a long-term process that can monitor the development of the outputs of the organization and the outcomes and impacts that the organization give. The Executive Director and The Research and Development team should have to pay close attention to monitoring and evaluation as both can help to improve the organization in many aspects.

- Planning for next year activities and budgeting

The next step is to have the organization plan for the next year activities and prepare to create the budgeting for the activities planned for the next year. The organization should also try to institutionalize the planning cycle, but they should start from financial assessment as the organization is not need to do the first three steps.

- Accountability report

Lastly, the organization should report their accountability to all stakeholders of the organization through accountability report. Executive Director and all teams should prepare a report regarding their performance during the year collectively and then will be presented to all stakeholders of the organization. The stakeholders are free to give feedback to the organization.

The Timeline of the Implementation Plan Implementation

Table 7. The Timeline of The Implementation Plan

Month 1	1. Assign Human Resource Team
	2. Create the Letter of Approval
	3. Human Resource Team Assign Persons to The Rest of The Position

	Person in Charge	1.	Executive Director
		2.	Executive Director
		3.	Head of Human Resource
Month 2	1. Financial Assessment		
	2. General Briefing		
	3. Divisional Meetings		
	Person in Charge	1.	Head of Finance
		2.	Executive Director
		3.	Head of Human Resource, Head of Programs, Head of Research and Development, Head of Public Relations, and Head of Finance
Month 3	1. Attempt to Legalize the Organization		
	Person in Charge	1.	Executive Director
Month 4 to Month 11	1. Execution of the Initiatives		
	2. Evaluation and Monitoring		
	Person in Charge	1.	Executive Director
		2.	Executive Director and Head of Research and Development
Month 12	1. Planning for the Next Year Activities and Budgeting		
	2. Accountability Report		
	Person in Charge	1.	Executive Director, Head of Human Resource, Head of Programs, Head of Research and Development, Head of Public Relations, and Head of Finance
		2.	Executive Director

Nonprofit organizations will most likely be dependent on the commitment of its founders. Hopefully, the strategic plan can be implemented to achieve the organization's goals as long as the leaders and its core team have high regards for commitment and passion.

References

Balser, D. & McClusky, J. (2005). Managing Stakeholder Relationships and Nonprofit Organization Effectiveness. *Nonprofit Management & Leadership*, 15(3). 295-315.

Cooperrider, D. (2012). What Is Appreciative Inquiry. Retrieved November 12,2017, from http://davidcooperrider.com/ai-process/

Cummings, S., Bridgman, T., & Brown, K.G. (2016). Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. Human Relations, 69(1), 33-60.

Cummings, T.G. & Worley, C.G. (2008). Organization Development & Change (9th ed). Mason, OH: South-Western Cengage Learning.

Gleeson, P. (2018, June 30). Benefits & Disadvantages of a Functtional Organizational Structure – Chron.com. Retrieved July 14, 2018 from http://smallbusiness.chron.com/benefits-disadvantages-functional-organizational-structure-11944.html

Helms, M.M. & Nixon, J. (2010). Exploring SWOT analysis – where are we now? A review of academic research from the last decade. *Journal of Strategy and Management*, 3(3), 215-251.

Herman, R.D. & Renz, D.O. (1997). Multiple Constituencies and the Social Construction on Nonprofit Organization Effectiveness. *Nonprofit and Voluntary Sector Quarterly* 26(2): 185-206.

Herman, R. D. & Renz, D. O. (2002). Nonprofit Organizational Effectiveness: Practical Implications of Research on an Elusive Concept. An Occasional Paper Issued by the Midwest Center for Nonprofit Leadership. Retrieved July 15, 2018, from http://bsbpa.umkc.edu/mwcnl//research/FINAL%20MCNL520.pdf

Herman, R.D. & Renz, D.O. (2004). Doing Things Right: Effectiveness in Local Nonprofit Organizations, A Panel Study. *Public Administration Review*, 64(6). 694-704.

ICMEM

Hill, B. (n.d.). Strategic Planning for Nonprofit Organizations – Chron.com. Retrieved July 14, 2018 from http://smallbusiness.chron.com/strategic-planning-nonprofit-organizations-4772.html

Kaplan, R.S. & Norton, D.P. (1996). The Balanced Scorecard: Translating Strategy into Action. (The Balanced scorecard: Translating Strategy into Action, 1996).

Kaplan, R.S. & Norton, D.P. (2000). Having Trouble with Your Strategy? Then Map It. *Harvard Business Review*, 78(5). 167-176.

Lindlof, T. R., & Taylor, B. C. (2002). Qualitative Communication Research Methods, 2nd Edition. Thousand Oaks, CA: Sage.

Lunenburg, F.C. (2011). Strategic Planning: Deliberate Organizational Change. *Focus on Colleges, Universities, And Schools*, 6(1), 1-6.

Ommani, A.R. (2011). Strengths, weaknesses, opportunities and threats (SWOT) analysis for farming system businesses management: Case of wheat farmers of Shadervan District, Shoushtar Township, Iran. *African Journal of Business Management*, 5(22): 9448-9454.

Peters, T. (2011, January 9). A Brief History of the 7-S ("McKinsey 7-S") Model. Retrieved November 12, 2017, from http://tompeters.com/2011/03/a-brief-history-of-the-7-s-mckinsey-7-s-model/

Ravanfar, M.M. (2015). Analyzing Organizational Structure Based on 7s Model of McKinsey. *Global Journal of Management and Business Research: An Administration and Management*, 15(10)

Sargeant, A. (2004). Marketing w organizacjach non profit. *Oficyna Ekonomiczna*

Savkin, A. (2010, June 4). Balanced Scorecard in Nonprofit and Government Organizations. Retrieved July 14, 2018 from https://bscdesigner.com/bsc-in-non-profits.htm

ECONOMICS

ICMEM

The 3rd International Conference on Management in Emerging Markets

Research, Education and Development Studies in Indonesian Creative Economy Policy

Dina Dellyana[a*], Isti Raafaldini[b], Emilia Fitriana Dewi[c]

a,b,c School of Business and Management, Jl. Ganesha No. 10 Bandung, 40132

Abstract

Indonesia needs a document of creative economic policy studies that can support the sustainable development of creative economy. To achieve the objectives of the Creative Economy Policy Study activities, the scope of the activity of this study comprises: Identifying and analyzing various topics related to research, education and development on the Creative Economy in Indonesia, mapping and analyzing policy gaps at the central and regional levels, or inhibit the development of creative economy and identify policy needs and formulate policies in the field of creative economy created because it is really needed and useful in regulating the life of society, nation and state. The result of this study is the recommendation of research, education and development policy for advancement of Indonesian creative economy.

Keywords: Creative Economy, Policy Mapping, Policy Analysis

1. Introduction

One of the national development agenda in the National Medium-Term Plan (RPJMN) 2015-2019 is to increase people's productivity and competitiveness in the international market. To achieve this agenda, 11 sub-priority agendas are created, one of which is to increase the acceleration of national economic growth that can be achieved through acceleration of creative economic growth. The creative economy has great potential to become one of the important driving sectors to create an independent, progressive, and prosperous Indonesia. The creative economy is a economy that is powered by renewable resources and is available in abundance in Indonesia. These resources are in the form of young and creative humans that are available in large quantities, abundant renewable natural resources, as well as a unique and diverse cultural heritage source. These three resources are believe to be the driving forces of sustainable creative economic growth (Bappenas, 2014).

In addition to contributing to the Indonesian economy, the creative economy also has a positive impact on social, cultural and environmental aspects. In terms of social aspects, the advancement of Indonesia's creative economy can lift the positive image and national identity. In addition, it can foster the creativity of young people who encourage innovation for the creation of new business. From a cultural point of view, an advanced creative economy can help increase social tolerance among all levels of society due to an increase in intercultural understanding. Besides, it can increase the awareness of Indonesian society to preserve culture and environment. Through the creative economy, we can also grow the economy in an inclusive and sustainable way (Ministry of Tourism and Creative Economy, 2014).

Based on statistic data it is found that the creative economy contributes to GDP of 7.44% in 2017, which grew by 0.05% compared to 2015. Creative economic growth is contributed by 3 main sub-sectors: culinary industry 41.40%, fashion industry 18.01%, and craft industry 15.40% (BPS dan BEKRAF., 2017). In addition, there are 4 subsectors that have a rapid growth of visual communication design, music, animation / video and architecture. The growth of these subsectors has unfortunately not been optimally supported by policies specific to the creative economy so there

---

* Corresponding author.

ICMEM

is no protection for these creative industry actors. In addition, since the industry under the creative economy is expanding rapidly, policies are needed that can support the industry for the long term. Therefore, a deep analysis of the visionary policy aspect is needed to support the development of creative economy and benefit all stakeholders of Indonesia's creative economy.

This research was conducted to describe the actual condition that is happening in Indonesia related to the research, education, and development aspect in Indonesian creative economy. A policy mapping and analysis was conducted to see the extent to which the development of the creative economy in Indonesia in terms of research, education and development. The policy analysis related to creative economy was also conducted to identify the need for policies that can encourage the development of creative economy which is then compared with the existing policy conditions, to determine whether a new policy is needed, or revise / reinforce existing policies.

2. The Nature of the Problem

The needs of research, education and development policy in creative economy become urgent according on its existing condition in Indonesia. In terms of quantity, there is a lack of suitability of educational institutions with industry needs, moreover the distribution of educational institutions focused in some areas only (usually only in big cities). In terms of quality in curriculum, education system, facilities and infrastructure, as well as education personnel and methods of pursuit, the actual condition of Indonesia that occurs are: non-conformity of some curriculum in Indonesian creative education with international standard, the uneven updates on software and tools on creative subsectors education, not using updated materials in some creative subsector's education. Moreover, it was found that some education curriculum is still general and not meeting the needs of the industry, there is no continuity of vocational school curriculum with higher education level, and some creative education curriculum is still more emphasis on theory aspects rather than the practice and business development, and most importantly the creative education was giving less emphasis on conducting a proper research and knowledge about developing business in particular creative subsector. There is also a problem in link and match of creative education, such as the mismatch between the ability and the needs of the industry and the uncertainty in performing the internship activities, either from the participants or the company therefore the apprenticeship program has not providing optimal benefit (Ministry of Tourism and Creative Economy, 2014, Efendi, 2014, Pitoyo, 2013).

3. Research Method

To achieve the research objective which are to find the policy recommendation of research, education and development in Indonesian cretive economy, qualitative research with interview method, FGD, and document review was conducted. The flow of research conducted includes the following:

3.1. Analysis of Actual Condition of Indonesia Creative Economy

The identification stage is done by (1) Identification and Analysis of Economic Development Topics and (2) Mapping and Analysis of Economic Policy Gap. The first step aims to analyze the Creative Economy Trends at Local and Global Levels and the second step aims to analyze the Policy Gap related to the Creative Economy (Policy Gap Analysis). Identification and Analysis Phase of Economic Development topic was conducted through document review and comparative study. The document review was conducted on the actual conditions occurring currently in Indonesia related to the creative economy aspects of research, education, and development. While the comparative study to see the existing best practices that have been proven to have succeeded in improving the creative economy conditions in other countries, and trend analysis was conducted to give the direction of the development of creative economy. Policy mapping was done through a document review and policy analysis of all applicable policies in Indonesia related to the creative economy, particularly in research, education and development aspects. There are 12 legal bases that become the foundation for the creation of a creative economy. The legal basis comprises the 1945 Act and the Presidential Regulation. The purpose of the policy analysis is to look at the composition of the study documents of the economic

ICMEM

policy of creative aspects of research, education, and development that can support the sustainable development of creative economy

3.2. Recommendation Stage

This stage includes the process of identifying policy needs that can encourage the development of creative economic in research, education, and development aspect. The recommendation stage is carried out by the following stages: (1) identification of policy needs for the development of the creative economy; (2) recommendation of policy direction for creative economy development (stage 1); (3) data verification; and (4) finalization of policy direction recommendations for creative economic development. Participants involved in this study include all stakeholders involved in the creative economy, including government BEKRAF (National Creative Economy Body), some ministries and creative economy actors. To verify the result of this research, expert judgment was conducted.

4. Result and Discussion

4. 1. Analysis of Creative Economy Development

The results of the document review at the actual condition of Indonesia shows that:
- The percentage of creative and potential students are high
- Educational system should be further studied and adapted to meet the needs and conditions in the country
- Art, design, and media lessons not yet incorporated into the curriculum at all levels of the school as a creative learning tool. For example, drama and literature can be used to help students improve language skills, while multi-media tools can help students better understand science projects and mathematical projects in an innovative way
- To provide an international creative education, can be done in cooperation with the world's best arts universities, yet this attempt not yet conducted evenly in all educational institution.
- Apprenticeship programs and bona fide creative subjects work with major companies in the creative industries (Warner, BBC, Sky) where students are mentored by practitioners was less available.
- Conferences and research on the main topics of the creative industry was less available.
- A series of reforms for research and higher education policy that accommodate digital content and the creative industry is indispensable

4. 2. Policy Analysis

In the field of creative economic research, some policies in Indonesia have been well regulated, for example some policies in research and higher education ministries regulate the need to prepare the Master Plan of National Creative Economy Research (RIEKN) (Ministry Of Research, Technology, and High Education, 2016). This Master Plan should be set forth in some derivative policies and integrated with the National Research Master Plan (RIRN). BEKRAF as a new Institution needs to review some of the derivative policies of RIRN because it has the potential to overlap with the National Economic Research Master Plan and National Industry Research Master Plan. Creative economic research now does not provide incentives for its researchers, it shows that there is no government siding with these researchers. Policies related to higher education and vocabulary are contained in the Higher Education Act, while Student Apprenticeship Process can be seen in various regulations related to the process of community service. The government needs to provide a positive stimulus that can stimulate the growth and development of business investment as well as encourage a conducive business atmosphere. The trick is to reduce the restrictions that complicate the development and innovation of business, protect the works of business innovation, and implement government rules related to business ethics so as to create healthy business competition. On the other hand, the industry also has an obligation to contribute in creating a good business climate, such as applying business ethics, committing to corporate responsibility, and being a government partner to support national economic growth. For the sake of creative economic development in Indonesia, in the sense of knowledge-

ICMEM

based economy and human creativity, we need to elaborate the notion and application of vocational education to a wider space, as well as to diversify into an increasingly varied form as a manifestation of creative translation. Soft skill is a skill that people need to do the job. The forms include problem solving, communication, positive mindset, motivation, self-management, and so on. Vocational education should not be centralized and become the dominance of vocational schools.

4. 3. *Policy Need Identification*

Based on the analysis of creative economic developments and policy mapping, it has identified several policy needs that are related to research, education and development, namely:

1. **The Need of Master Plan of Creative Economy Research.** The contribution of research activities to the economy can be identified from its contribution to Gross Domestic Product, employment, and number of firms. The role of research on the economy is increasingly significant, it is important for Indonesia to be able to improve and prioritize research activities. Research activities can play a role to encourage the efficient use of capital and labor (Ministry of Tourism and Creative Economy, 2014). The Master Plan of Creative Economy Research as one of the components of the National Research Master Plan should begin to accelerate, thus national research can lead according to national priorities. Some of the policies that need to be present include providing incentives and disincentives for some luxury goods imports, some facilities and infrastructure should also be initiated in the creative industry Transfer of Knowledge (TOK) regulation. The Master Plan of Creative Economy Research must be regulated later by the Presidential Regulation which will later be synchronized with the Government Regulation on the National Master Plan Research. One component of the creative economy is the upstream creative industry, it also needs to be protected by a single regulation on the protection of the upstream creative industry. Meanwhile, for the downstream creative industry must start from the process of marketing, distributing and creating more value than ordinary industry. Mass production of the creative economy requires considerable research therefore budgeting in national research requires a multi-year scheme and is based on output and outcomes, not on the components of goods and services spending.

   The development of the creative economy should also be taken into account with various policies, such as government regulations on labor protection, in addition to business actors also need to be protected by ministerial regulations of small and medium enterprises. The development of creative endeavor must also begin with the regulation policy of the finance minister concerning investment in the creative economy sector. This ministerial regulation provides protection to domestic and foreign entrepreneurs in investing in the creative economy. Some local regulations that also hamper need to be reviewed such as the marketing licensing process of creative economy products no longer need to pay local taxes or retributions, this aims to protect the workers of the creative economy in the region. Government Regulation (PP) RI no. 14 of 2015 on the National Industrial Development Master Plan (RIPIN) 2015-2035 states that one of the goals and stages of industrial development achievement is the increasing development of innovation and mastery of technology. This shows that the development of technological innovation and mastery becomes one of the pillars in achieving national industrial development. On the other hand, the development of technological innovation and mastery can not be done without research.

2. **Need for Vocational Education.** Based on Creative Economy Higher education, secondary and tertiary education and non-formal education should focus on entrepreneurial ways. BEKRAF can work with some vocational education in both secondary and higher education. Vocational education should be promoted as one of education that can support creative economy policy. Strengthen the ability of soft skills of vocational education students. Soft skills are the same as intrapersonal qualities and interpersonal skills. Intrapersonal qualities are the inner quality (spiritual qualities) of humans derived from within the human heart whose dimensions include, among other things, humility, self-esteem, integrity, responsibility, commitment, self-motivation, curiosity, likes what is not known (self-love), self-discipline, self-control, self-awareness, trustworthiness, and entrepreneurial spirit where the latter is generally sourced from education that liberates human beings so as not to be depressed and become creative which consequently become innovative and able to

ICMEM

shape the entrepreneurial spirit of the students or students (Indonesia, P. R. (2016).

The conditions of competition and rapid development, require the contribution of education in producing superior and competitive human resources. Education is made as a basic need that must be fulfilled by the community. One of the indicators for the advancement of a nation is determined by the index of quality development of human resources, the results obtained from the process of quality education. The government has just issued Presidential Instruction number 9 of 2016 on the revitalization of Vocational High School in order to Improve the Quality and Competitiveness of Indonesian Human Resources. In the Inpres addressed to 12 Ministries and 1 Institution becomes the strategic momentum for the development of vocational education in Indonesia. Vocational education becomes the solution for the creation of competent, competitive, and ready-to-work professional human resources. Existing vocational education should be expanded access, given a great opportunity to all citizens to gain access to skills through vocational education.

Based on the law of higher education number 12 of 2012 on higher education, the position of vocational education becomes vital and equal to the path of academic and professional education. Openly there will be intense competition to get decent and competent work. The need for applied competencies that can directly meet the needs of the industry is born by vocational education graduates. In vocational education, learners are given the ability that can provide solutions and development of creativity based on individual potential. Seeing the strategic of vocational education, dissemination and dissemination of information and vocational education development is needed. Central government policy should also provide space for improving the process and developing human resources up to the level of applied professors. The strategic opportunity should be the momentum of vocational education development.

3. **The establishment of Knowledge Center of Natural Resources and Local Culture that is Accurate, Trustworthy and Easily Accessible.** Although data and R & D activities in the field of industrial and creative economy already exist, it is still spread in various ministries, for example Cooperative and Small Medium Businesses Ministry, Religion Ministry, Education and Cultural Ministry covering 16 sub-sectors of creative economy. To promote R & D activities in the field of creative economy and to support creative economic growth, it is necessary to establish an accurate, reliable and accessible local knowledge and resource center for local natural and cultural resources. For Cultural Progress as stipulated in Law No. 5 of 2017, Indonesian culture is a culture supported by local culture. In support of local cultural knowledge centers that are indigineous and original, it takes a variety of policies supporting local culture that can be lifted into a creative economy. Therefore the Center of Knowledge is very important in the next policy of BEKRAF.

4. **Improved Research and Development Activities.** The position of science and technology in the RPJMN is getting stronger by making science and technology as one of the development goals. The RPJMN 2010-2014 is aimed at strengthening Indonesia's rearrangement in all areas by emphasizing on improving the quality of human resources including the development of science and technology capability as well as strengthening economic competitiveness. In addition, science and technology is one of the areas of social, cultural, economic, infrastructure, political, defense and security, law and apparatus development, territory and spatial layout, natural resources and the environment; as well as technological innovation as one of the national priorities. One of the shortcomings in the improvement of research and development is the structuring of perpetrator databases, culture and creative economic potential. The central government is represented. BEKRAF can draft a joint policy with the Ministry of Research and Higher Education to create a joint regulation on database database incentives.

5. **Implementation of Technical Guidance and Training of Perpetrators of the Creative Economy National Work Training System, hereinafter referred to as Sislatkernas**. The graduate competency certification is conducted independently. The institutional constellation of Sislatkernas consists of 5 (five) institutions, namely competency standard institutions, competence-based training institutes, accrediting institutions of training institutions, competency certification bodies and training coordination agencies. Sislatkernas is implemented at the central level as well as at the regional level. Implementation of Sislatkernas at the central level is the responsibility of the Government, in this case the Minister in charge of manpower. The implementation of Sislatkernas in the regions is the responsibility of the Provincial and Regency / City Local Governments. The fact shows that until now, the implementation of Sslatkernas in the regions, both at the provincial and district / city levels, has not been running as it should. Many of the Sislatkernas infrastructures have not been built in the

ICMEM

area yet there are even areas that do not know and understand about what is Sislatkernas. As a result, job training in the region, both the implementation and coaching, there are still many who have not moved from the old paradigm before Sislatkernas. The implementation of Sislatkernas, especially in the regions, needs to be further encouraged and facilitated, both by the Government and by the Regional Government, in accordance with the duties and authorities of regional autonomy in the field of manpower. In order for the implementation of Sislatkernas at the central level and at the regional level can be integrated and synergic, it is necessary to guide the implementation of national work training system in the region. law and apparatus, territory and spatial, natural resources and environment; as well as technological innovation as one of the national priorities. One of the shortcomings in the improvement of research and development is the structuring of perpetrator databases, culture and creative economic potential. The central government is represented. Bekraf can draft a joint policy with the Ministry of Research and Higher Education to create a joint regulation on database database incentives.

5. Conclusion and recommendation

In accordance with the mandate of Law No. 17 of 2007 on the preparation of the National Long Term Development (RPJPN), the development of human resources and technology and technology (science and technology) through research, development, and application of continuous innovation is the basis of national competitiveness. Nevertheless, in realizing it, the Indonesian people still face the weak condition: 1). Capacity and flexibility, 2) development capabilities on science and technology based processes; 3) institutional and research networks in the local, regional and global spheres; 4) development and relevance of national R & D to respond to community technological needs; and 5) utilization of national research and development to increase added value to national products and innovations in order to improve economic competitiveness.

The above mentioned as a result of the low culture and literacy of science and technology in Indonesia. This is caused the phenomenon of discrepancy between the research results and the needs of the industrial world. This condition is coupled with the absence of long-term research sector planning. Efforts to encourage the promotion of science and technology and increase the contribution of research to the economy by the government have been done by issuing a number of regulations and policies. However, from the evaluation of the White Paper on Research, Development and Application of Science and Technology 2005-2025, the National Strategic Policy on Science and Technology (Jakstranas Iptek), and the National Research Agenda (ARN) shows that these policies have not fully become reference.

Therefore, more sophisticated structural and higher-order sectoral plans are needed in the form of the National Research Master Plan (RIRN). The RIRN has a 2015-2045 time range. RIRN is structured to create planning synergies in the research sector that are aligned with national development planning. RIRN not only integrates research with long-term development goals, but also to meet the needs of business and society. For that reason, RIRN 2015-2045 is prepared by taking into account planning in the industrial sector (RIPIN: National Indicator of Industry 2015-2035), KEN (National Energy Policy) and creative economy sector (RIEKN: Master Plan of National Creative Economy). It is based on science and technology-based research that is expected to lead to industry for technology-based manufacturing, as well as on the other side of creative economy for creative products based on science and technology innovation.

Acknowledgements

References

Bappenas (National Development Planning Agency). (2014). *Rencana Pembangunan Jangka Menengah Nasional* (National Medium-Term Development Plan - RPJMN) 2015–2019, Bappenas.

ICMEM

Ministry of Tourism and Creative Economy (MTCE). (2014). *Ekonomi Kreatif: Kekuatan Baru Indonesia Menuju 2025*.

Ministry Of Research, Technology, and High Education. (2016). *Rencana Induk Riset Nasional 2015-2045*.

Indonesia, P. R. (2016). *Instruksi Presiden Republik Indonesia No 9 Tahun 2016 tentang Revitalisasi SMK dalam Rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia*. Jakarta: Deputi Bidang Pembangunan Manusia dan Kebudayaan.

BEKRAF. 2017. Rencana Strategis Badan Ekonomi Kreatif 2015-2019.

BPS dan Bekraf. (2017). Data Statistik dan Hasil Survei Ekonomi Kreatif.

Efendi, Syahrul. 2014. Ekonomi Kreatif: Permasalahan, Tantangan dan Prospeknya. Kompasiana, 24 Oktober 2014. Terdapat di: https://www.kompasiana.com/syahrulefendid/ekonomi-kreatif-permasalahan-tantangan-dan-prospeknya_54f40a4d745513a12b6c845f

Pitoyo, Arif. 2013. Inilah 5 tantangan industri kreatif Indonesia. Terdapat di: https://www.merdeka.com/teknologi/inilah-5-tantangan-industri-kreatif-indonesia.html

ICMEM

The 3rd International Conference on Management in Emerging Markets

Mapping of Coastal Tourism Destination and The Factors Influencing Visitations of Domestic Tourists: A Case of Pangandaran

Ibrahim Rashid[a*], Santi Novani[b], Lidia Mayangsari[c]

[a,b,c]School of Business and Management, Bandung Institute of Technology, Ganesha Rd. No. 10, Bandung 40132, Indonesia

Abstract

Indonesia is one of the countries where tourism is one of the major contributors to the GDP. There are province and districts in Indonesia that especially focused on the tourism business, Pangandaran is one of them. As a new district, Pangandaran is still trying to develop their brand as a tourist destination. This study aims to provide perceptual maps of Pangandaran as a brand compared to other coastal tourism destination. The study used Multidimensional Scaling (MDS), to inquire about the brand image of various coastal destination in Indonesia among domestic tourist. Five dimensions consisted of performance, value, image, trust, and attachment are used to measure destination brand. Further questions are also asked to inquire about factors that may influence visitation. The result indicates that Pangandaran as a brand is not highly valued by the domestic tourists.

Keywords: Tourism; Pangandaran; Destination branding; MDS

1. Introduction

Tourism is one of the most important economic activities in the modern day. In the past decade, tourism contributed to 10% of global GDP. Furthermore, tourism-related jobs account for 1 in 10 of the population. Globally, tourism accounts for 30% of services exports and have created many job opportunities for the population. It can be said that tourism is a major force of the global economy, especially in developing countries. (World Economic Forum, 2017)

Indonesia is one of the countries where tourism is a major contributor to the economy. Indonesia is globally recognised for relatively cheap natural resources and emphasising culture in tourism. Tourism consists of 6% of the country total exports, and in response, the government invested 9% of their budget in tourism. (World Economic Forum, 2017)

Pangandaran district is a district in Indonesia that aims to be a world-class tourism destination. Pangandaran district itself is a newly formed district; it is not until 2012 that its government separated from Ciamis district. Pangandaran as a tourism destination has a potential to be developed further; as indicated by their increasing number of visitor each year. (Dinas Pariwisata dan Kebudayaan Kabupaten Pangandaran, 2017). Unfortunately, as of now, Pangandaran as a tourism district is severely underdeveloped in many aspects of infrastructure, cultural uniqueness, local products, and management. To conclude, there is lack of things that attract or drive tourists to revisit Pangandaran. To overcome this problem Pangandaran local government attempt to develop the brand of Pangandaran through infrastructure development and rearrangement of the region. They also aim to develop tourist attraction from a local point of view through local culture development and utilisation of local natural resources.

---

* Corresponding author.

ICMEM

To improve Pangandaran brand image, the stakeholders of Pangandaran tourism need to understand their image. Branding of tourism destination itself is not a new concept. Destination branding refers to activities that aim to emphasise the underlying image and associative knowledge that people have on a destination. These activities can include the creation of graphics (name, symbol, or logo) related to the destination or developing the inherent cultural and natural resources. (Evangelista & Dioko, 2011). Unlike the branding of a product, the process of branding a destination requires the marketer to understand the inherent characteristic of a product including their related brand equity. (Lim & Weaver, 2014). This study aims to provide a perceptual map of coastal tourist destination Indonesia to understand Pangandaran position in the eye of domestic tourists better. Since the main visitors of Pangandaran are domestic tourists, this study also aims to understand the factors that influence domestic tourists decision in choosing a tourism destination. This study could provide a better insight into Pangandaran as a brand, to develop a better branding strategy for Pangandaran.

1. 1.   *Research Objective*

To better understand the position of Pangandaran as a brand, this study aim to:
1. Compare the position of Pangandaran brand relative to several other popular coastal tourism destination in Indonesia

2. Map the influential factors that determine the decision of domestic tourist in choosing tourism destination

1. 2.   *Research Question*

The following research questions are asked to fulfil the objectives of the study:
1. What is the position of Pangandaran as a brand relative to other coastal tourism destination in Indonesia?

2. What are the factors that influence domestic tourist visitation of a tourism destination?

2.   Theoretical Framework

2. 1.   *Destination Branding*

Branding can be defined as a combination of name, terms, or sign that can be used to convey a product identity to differentiate them from other product. (Lim & Weaver, 2014). This concept of branding that usually related to tangible products can be applied in the context of tourism destination marketing. (Evangelista & Dioko, 2011). In that context, branding can be defined as differentiating a destination and communicating its image so tourists can experience the distinctive experience of the destination. (Campelo, Aitken, Thyne, & Gnoth, 2013). One of the most important aspects of destination branding is to understand the character and core attribute of the destination itself; because unlike tangible products or services, tourism destination has their image and set core of values before the branding process. (Campelo, Aitken, Thyne, & Gnoth, 2013).

Destination branding can help social development and economic development of the region. (Campelo, Aitken, Thyne, & Gnoth, 2013). Besides helping economically through attracting visitors, destination branding can help enhance the cultural identity of the region. Locals as one of the important stakeholders in the tourism industry have their cultural characteristics that strongly related to the place. (Balakrishnan, 2009). Therefore, during the process of brand development, managers need to consider the culture of the region. Not only it can develop a strong sense of place for the tourists; it can also help build a strong sense of identity for the locals. (Campelo, Aitken, Thyne, & Gnoth, 2013)

There are five steps to building a destination brand. These five steps are vision and stakeholder management, target customer and product portfolio matching, positioning and differentiation strategies, communication strategies, and feedback and response management. In the first step, vision and stakeholder management, the destination needs to have a clear and unified goal in the mind of their stakeholders. These goals can be anything from social welfare, business, or improvement of tourism services. These goals can help harmonise all aspects of tourism from services,

ICMEM

culture, infrastructure, and other aspects into a single brand of tourism. To achieve this harmonisation strong government involvement needs to happen. (Balakrishnan, 2009)

The second step is target customer and product portfolio matching. A destination need to develop their brand based on assets that exist or the provider can develop. Through the development of the portfolio, the destination can better position themselves and expose the brand to the right target visitors. The third step, positioning and differentiation strategies, utilise brand components, both tangible and intangible, to create an emotional connection between a destination and the visitors. (Balakrishnan, 2009)

For the fourth step to building a destination, the providers need to understand how to communicate effectively to the target customer. Tourism destination often has difficulty in differentiating themselves from other destination. Therefore they need to learn how to communicate their brand effectively. Word of mouth, TV, and newspaper usually influence potential visitors more than the internet when choosing a destination. Meanwhile, information on the internet is more useful when determining itinerary. (Balakrishnan, 2009)

The final step of building a destination brand is feedback and response management. Providers need to lessen the perception gap of visitors because word of mouth is one of the main drivers of visitation. Selling brands with correct information can help to reduce the gap. Providers are advised to not caught in the hype about their destination in the marketing process because it can lead to exaggerated information. (Balakrishnan, 2009)

2. 2. *Brand Equity*

Like any tangible brand, the concept of brand equity can be applied to a tourism destination. (Evangelista & Dioko, 2011). According to Keller (2016), brand equity can be defined as "the differential effect that brand knowledge has on customer response to brand marketing activity". The basis of consumer-based brand equity is brand knowledge. Brand knowledge consists of two important elements, brand awareness and brand image. Brand awareness refers to the ability of the consumer to recall the brand. Meanwhile, the brand image refers to the positive association of a brand in the eye of the customer. In other words, brand knowledge can affect customer response to a product. (Keller, 2016)

Brand knowledge itself consists of several dimensions; these dimensions are awareness, attributes, benefits, images, thoughts, feelings, attitudes, and experiences. These dimensions can be used to measure the brand equity things such as people or places. (Keller, 2016). In the context of destination branding, these dimensions can be categorised into the following: (Evangelista & Dioko, 2011)
1. Performance: Visitor's judgement about the destination attributes
2. Value: Utility gained from visiting the destination relative to the cost
3. Image: Social esteem gained from visiting the destination
4. Trust: Confidence in the destination service and goods providers
5. Attachment: Positive feeling related to the destination

2. 3. *Brand Extension*

Brand extension is a branding strategy in which an existing brand attached to a new product in a different category of the initial product which the brand developed. The strategy aims to minimise barrier, risk, and advertisement cost. Brand extension can negatively or positively impact the equity of a brand. The strategy is built on the premise that consumer can transfer their attitude about a brand into a new product under that brand if it introduced with some similarities. In other words, the consumer relies on their knowledge of a parent brand to judge a new product. (Lim & Weaver, 2014).

This concept can be applied to destination brand extension. Destination brand can be extended to tangible local products or services. The positive image that a destination conveys can impact the image of local products as the extension of destination brand. This image can both be affective or cognitive. (Lim & Weaver, 2014)

ICMEM

3. Methodology

3.1. Research Design

The study aims to create a perceptual map of Pangandaran based on five dimensions of destination brand equity (performance, value, attachment, trust, and image). The perceptual map is created through an interdependence multivariate analysis method called Multi-Dimensional Scaling (MDS). MDS is a method that aims to find structure in a set of distance measures between cases or objects. Another thing that is measured in this study is the criteria of domestic tourist when choosing a tourism destination. The data will also be analysed using MDS, to provide the perceptual of importance.

An exploratory interview is conducted to better understand Pangandaran as a tourism destination and to develop the construct needed to asses the factors that affect visitation. The result of exploratory interview will be used to help develop the framework of Pangandaran brand.

3.2. Data Collection

Preliminary Interview

An exploratory interview is conducted in order to gain better understanding of Pangandaran tourism. The interview was conducted on 16 March 2018. The respondents include five owner of SMEs, local government, and Ministry of Tourism Pangandaran Branch officer. The interview method employed is semi-structured interview as the aim of the interview is to explore the context. The result of this interview were used to conduct analysis on the subject and to build the survey.

Survey

The data is collected through an online questionnaire, with the target population of Indonesia. The sampling method used is Probability Sampling, a sampling method that assumes that every individual in a given population can be sampled.

For the first set of data, the respondents will be asked to rate seven coastal tourism destination in Indonesia based on the five dimension of tourism destination brand equity. Each respondent will be asked to rate each of the five dimension of these tourism destinations.These destinations were chosen based on information from travel sites. The destinations are:

1. Pangandaran (Jawa Barat)
2. Pelabuhan Ratu (Jawa Barat)
3. Kuta (Bali)
4. Nusa Dua (Bali)
5. Gili Trawangan (NTB)
6. Karimun Jawa (Jawa Tengah)
7. Kepulauan Seribu (DKI Jakarta)

For the second set of information, the respondent will be asked to rank ten criteria of a tourism destination based on importance. The criteria and their codes are:

1. Goods and services price (F1)
2. Cultural uniqueness (F2)
3. Basic infrastructure availability (F3)
4. Accessibility (F4)
5. Sanitation (F5)
6. Experience (F6)
7. Natural uniqueness (F7)
8. Service quality (F8)
9. Community acceptance (F9)

ICMEM

10. Information availability (F10)

These variables are based on paper by (Assaker, Vincenzo, & O'Connor, 2011) and earlier exploratory interview with tourism providers and stakeholders.

3.3. Data Processing

The data processing method utilized R programming as a tool for statistical analysis. The data are collected are first converted into excel files which then used as an input in R programming tool. The study then used the MDS programming code to process the data. The result of the processing is a perceptual map of the destinations and factors, which in this case is processed with two dimensional aspect. As of now, the number of data collected is 36 data, there are still open possibilities for further data to be collected.

4. Results

4. 1. Interview Result

The interview result indicate several problems in Pangandaran tourism. The SME owners thought that the local government does not support them enough. As of now, there is little support on the welfare of SME, local government impose tax and relocate them in order to clean and tidy up the beach. As a result the owners lost their strategic business location. Furthermore, the government impose tax to the owners in order to achieve income target. Unfortunately, this policy is detrimental because the SMEs in Pangandaran did not have steady income because of visitors only come on weekend.

For the local government itself, their main problem is to develop Pangandaran as a tourism destination. As of now, they still struggling to develop the uniqueness of Pangandaran. The local government tried to improve the layout and infrastructure of Pangandaran, in order to improve the image of Pangandaran. The local government also tried to poromote Pangandaran local product especially culture and culinary. Other main problem in Pangandaran as a tourism district is that only a few of their population actually engaged in the tourism activity. The local government tried to engage them in tourism activities through government provided trainings but the effort is not effective.

4. 2. MDS Result

Perceptual Mapping of Performance Dimension
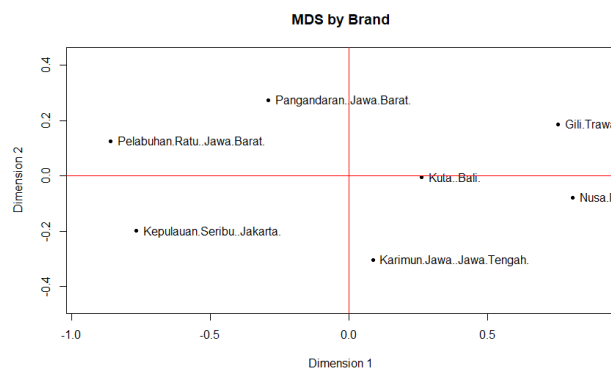
Fig 1. Performance dimension perceptual mapping

The performance dimension refers to how customer judges the fault-free attributes of a destination. (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.0701, an indication of the good fit of the model. Dimension 2 of the result indicate performance and dimension 1 indicate the domestic orientation of the tourism destination. From the result, we can conclude that the closest Pangandaran is in term of performance is Pelabuhan Ratu. The position of Pangandaran itself indicates that the attributes of the destination are not that good in the eye of the visitors compared

to other more famous destination such as Kuta, Nusa Dua, or Gili Trawangan. The result also indicates that the attributes of Pangandaran are valued quite highly by domestic tourists.

Perceptual Mapping of Value Dimension
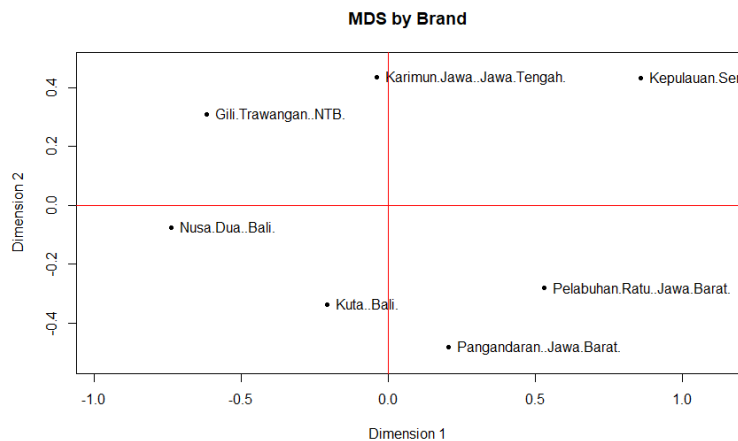
Fig 2. Value dimension perceptual mapping

The value dimension refers to utility gained from visiting a destination compared the cost of the experience. (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.118, an indication of the good fit of the model. Dimension 2 of the result indicate domestic orientation and dimension 1 indicate the value of the tourism destination. From the result, we can conclude that the closest Pangandaran is in term of perceived value is Pelabuhan Ratu. The position of Pangandaran itself indicates that it is easier to reach, along with Pelabuhan Ratu and Kepulauan Seribu. All of these destinations can be reached by car from major cities in Java. Meanwhile. The other destinations are either located outside Java or in a remote location.

Perceptual Mapping of Image Dimension
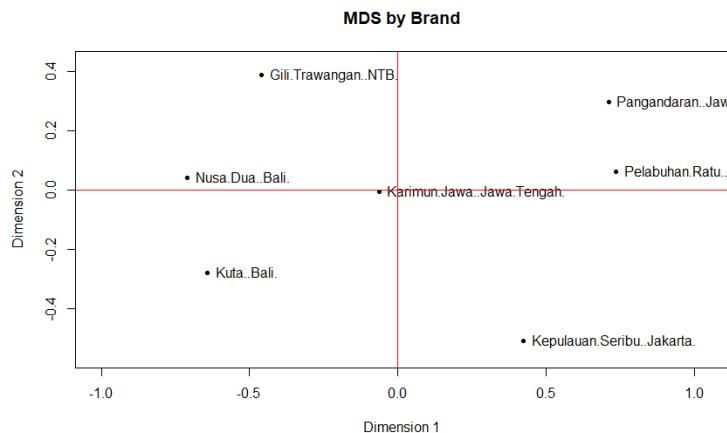
Fig 3. Image dimension perceptual mapping

The image dimension refers to the esteem someone gets from visiting the destination in the eye of their social group or society. (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.0997, an indication of the good fit of the model. Dimension 2 of the result indicate weak image and dimension 1 indicate domestic orientation. From the result, we can conclude that the closest Pangandaran is in term of image is Pelabuhan Ratu. The position of Pangandaran in the perceptual map indicate that prestige gain from visiting it is low, as is other domestically favoured

ICMEM

destinations. Meanwhile, other destinations that are more international tourists oriented are valued more highly in term of social esteem.

Perceptual Mapping of Trust Dimension
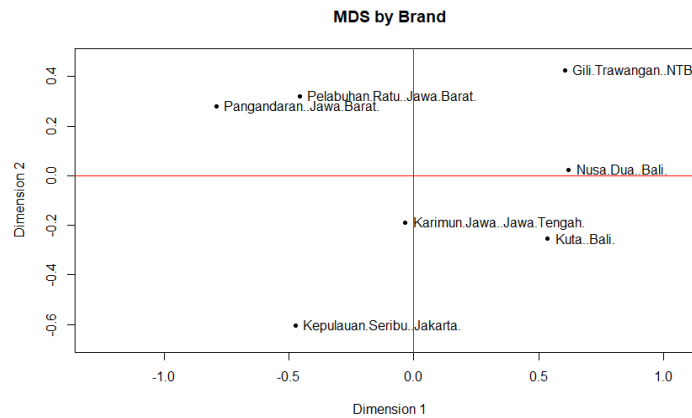
Fig 4. Trust dimension perceptual mapping

The trust dimension refers to confidence that visitor put on the providers of the tourism destination. (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.131, an indication of the good fit of the model. Dimension 2 of the result indicate trust and dimension 1 indicate domestic orientation. From the result, we can conclude that the closest Pangandaran is in term of trust is Pelabuhan Ratu. The position of Pangandaran in the perceptual map indicate that visitors do not feel confident in the services and goods provided by the providers of Pangandaran. Meanwhile, international tourists oriented destinations are more trusted, because they provide higher quality services.

Perceptual Mapping of Attachment Dimension
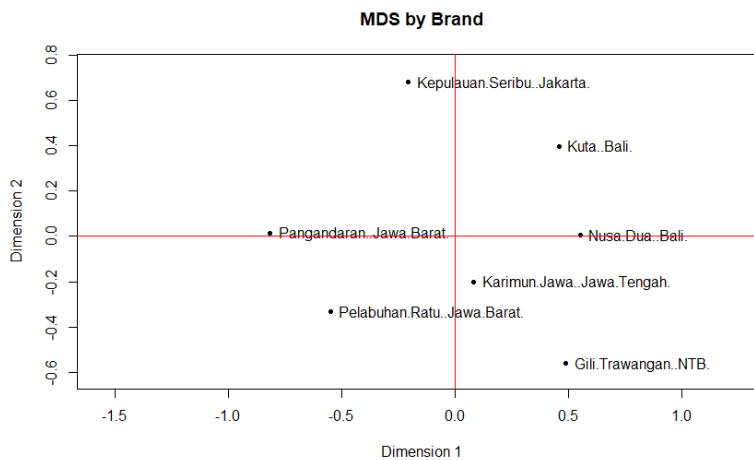
Fig 5. Attachment dimension perceptual mapping

The attachment dimension refers to positive feelings visitors have after their visitation. (Evangelista & Dioko, 2011). The final stress value of all the iteration is 0.185, an indication of the good fit of the model. Dimension 2 of the result indicate attachment and dimension 1 indicate domestic orientation. From the result, we can conclude that the closest Pangandaran is in term of the attachment is Kepulauan Seribu. The position of Pangandaran in the perceptual map indicate that visitors do not feel attached to place after their visitation, which means that revisit intention is low.

ICMEM

Meanwhile, more popular tourist destination such as Kuta, Nusa Dua, and Gili Trawangan have a high attachment, which can be attributed because they are more tourism-oriented in cultural and infrastructure aspect.

Perceptual Mapping of Factor Affecting Domestic Tourist Visitation
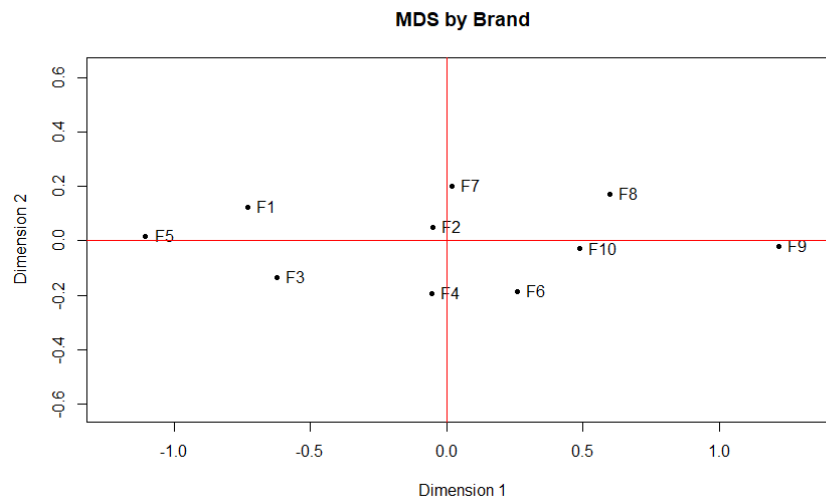
Fig 6. Tourists visitation factors perceptual mapping

The final stress value of all the iteration is 0.061, an indication of the good fit of the model. Dimension 2 of the result indicate domestic tourist preference and dimension 1 indicate destination uniqueness. The second quadrant indicate the most desirable tourism destination traits for domestic tourists. Those factors are sanitation, price, and cultural uniqueness.

5. Discussion

The result of perceptual mappings indicates that brand equity of Pangandaran in the eye domestic tourists is still low compared to other tourists destinations. The perceptual mapping also indicates that Pangandaran is more domestically oriented compared to other popular coastal tourism destination. Pangandaran needs to develop their brand equity to develop themselves as a tourist destination.

Pangandaran as a tourism destination has a potential to be developed further. But, there are several things that Pangandaran must do to leverage their brand in the eye of domestic tourists, who is their main visitors. Pangandaran's attribute is perceived by domestic tourists to be lesser than other tourism destination. These attributes include unique natural resources and activities. In fact, many of potential unique natural resources, such as destination and local products are underdeveloped. Many locals in Pangandaran are not integrated into tourism, because they prefer jobs in agriculture. It is the job of the government to try to empower and integrate these people in tourism.

Pangandaran main strength is in its location compared to popular tourist destination such as Bali or Lombok. Pangandaran district is located in the south of West Java. As a result, there are many tourists from West Java that visits Pangandaran because it is easily reachable by car or bus.

The image of Pangandaran in the eye of domestic tourists is not valuable. Domestic tourists mainly see popular tourism destination such as Kuta or Gili Trawangan as more prestigious to visit. Pangandaran visitors are mainly domestic tourists. According to the mapping of factors influencing visitations, price of goods and services is an important factor that influence domestic tourists visitations. Therefore, Pangandaran can try to segment themselves into more budget-friendly destination compared to a more popular destination that caters to international tourists. Of course, this strategy has to be accompanied by the development of an interesting visitation experience to attract tourists.

ICMEM

The trust of domestic visitors on Pangandaran providers is also low. Tourists have a hard time putting their trusts that Pangandaran goods and service provider can deliver on acceptable quality. The authority in Pangandaran can help increase the quality of services and goods by empowering the providers through training or regulations.

Low attachment for the tourist destination is also a problem for the providers of Pangandaran. Low attachment means that the visitor will not likely visit Pangandaran for the second time or more. Factors such as cultural uniqueness can be the main driver for revisit intention. Through culture, the tourists can experience the uniqueness of a destination and give rise to the intention to revisit. Unique local products can provide a reason for attachment to a place. Using the concept of brand extension, providers can utilise destination brand as a tool to promote local products and empower locals. Sanitation as one of the factors that influence visitation is also important in determining attachment. A clean environment can promote a sense of comfort and a sense of luxury in the eye of the visitors.

6. Conclusion

The research result indicates that the brand equity of Pangandaran in the eye of domestic tourists is not good. Domestic tourists mainly visit Pangandaran because of its location compared to them. Pangandaran needs to develop their position as a tourism destination that is cheap and relatively easy to visit, to attract more visitors. Cultural uniqueness is also important in determining revisit intention.

The study limit itself on the constraints of tourist perception. Therefore this study does not see things from the perspective of the developer. It is interesting to know how developer perceives their own destination brand; future researches could delve further into the developer side of the topic. Other things to consider for destination branding is how the developer tried to develop their brand. The process of destination brand development of these successful destinations, could be helpful as a guideline for less successful dstinations. Furthermore, this study is still ongoing therefore further sample still need to be collected.

Reference

Assaker, G., Vincenzo, E. V., & O'Connor, P. (2011). Modeling a causality network for tourism development: An empirical analysis. Journal of Modelling in Management, 6(3), 258-278.

Balakrishnan, M. S. (2009). Strategic branding of destinations: a framework. European Journal of Marketing, 43(5), 611-629.

Campelo, A., Aitken, R., Thyne, M., & Gnoth, J. (2013). Sense of Place: The Importance for Destination Branding. Journal of Travel Research, 53(2), 154-166.

Dinas Pariwisata dan Kebudayaan Kabupaten Pangandaran. (2017). Data Kunjungan Wisata. Retrieved October 20, 2017, from Dinas Pariwisata dan Kebudayaan Kabupaten Pangandaran: http://dispar.pangandarankab.go.id

Evangelista, F., & Dioko, L. A. (2011). Interpersonal influence and destination brand equity perceptions. International Journal of Culture, Tourism and Hospitality Research, 5(3), 316-328.

Keller, K. L. (2016). Reflections on customer-based brand equity: perspectives, progress, and priorities. Academy of Marketing Science Review, 6(1), 1-16.

Lim, Y., & Weaver, P. A. (2014). Customer-based Brand Equity for a Destination: the Effect of Destination Image on Preference for Products Associated with a Destination Brand. International Journal of Tourism Research, 16, 223-231.

World Economic Forum. (2017). The Travel & Tourism Competitiveness Report. Geneva: World Economic Forum.

ENTREPRENEURSHIP AND INNOVATION

ICMEM

The 3rd International Conference on Management in Emerging Markets

Understanding Islamic Urban Women Entrepreneurial Association in Indonesia: A Service Science Perspective

Iqbal Fauzi Akbar Firdaus[a*], Utomo Sarjono Putro[b], Santi Novani[c], Pri Hermawan[d], Lidia Mayangsari[e]

[a b c d e] *Institut Teknologi Bandung, Jl. Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

The role of entrepreneurial association is important in assisting the growth of women entrepreneurs. Solidarity and togetherness among individuals inside the circle could help women entrepreneurs in coping with the challenges and realizing opportunities in their business life. Making use of service science perspective, this study aims to explore the service system within Islamic urban women business association by combining the viewpoint of association's members using exploratory factor analysis and the administrator's through in-depth interview. The uncovered service system is the proper beginning to understand how business association could be the better accelerator for the growth of women entrepreneurship.

Keywords: Women Entrepreneurship, Entrepreneurial Association, Service Science

1. Introduction

Indonesia is a country with a very large population. Data from the national economic census (Susenas) in 2010 stated the total population of Indonesia amounted to 237.5 million, with the percentage of women amounted to 49.83%. It is a good news that the number is not only represent the quantitative aspect, but also qualitatively the existence of women population in Indonesia has a positive impact to the economy, in the context of entrepreneurship.

The absolute number of women entrepreneurs in Indonesia is very high. In 2011, the Ministry of Women Empowerment and Child Protection estimated that there are 55 million micro, small, and medium enterprises (MSMEs) in the country, of which 60%, or 33 million, are owned by women, representing almost a quarter of the active labor force (Melissa et al, 2015). The 2014 Global Entrepreneurship Monitor estimated approximately 26% or 22 million out of Indonesia's total adult female population of 85 million, are active entrepreneurs (Nawangpalupi et al., 2015).

The proportion of women entrepreneurs in Indonesia is also growing. The proportion of women entrepreneurs as a share of all SMEs in Indonesia was estimated at 23% by a 2014 study, but this figure is deemed to be increasing rapidly, with women-owned enterprises expanding at a faster pace than their male counterparts (Asia Foundation, 2013). The vast majority of women entrepreneurs, like Indonesian MSMEs in general, are operating in the informal sector, or in some middle ground between formality and informality (IFC, 2015). Compared to other countries, entrepreneurial prevalence amongst female entrepreneurs in Indonesia is high, and the gender gap in total numbers of male and female entrepreneurs is low.

Women entrepreneurs seem to find their places along with the growth of economic sector. In the publication of the Creative Economy Agency (Bekraf) in cooperation with the Central Bureau of Statistics (BPS) in 2017 shows as if the creative economy is a locomotive for women to explore their creativity. It is worthy noted that in the creative economy,

---

* Corresponding author.

ICMEM

the labor structure is dominated by women (53.68%) than men (46.52%). However, at the entrepreneurial level, the participation of female entrepreneurs in the creative economy is merely 22.60%. Interestingly, the three subsectors of the creative economy with the highest GDP contribution came from the activities generally preferred by women: culinary (41.69%), fashion (18.15%), and craft (15.70%).

Figure 1 shows that Indonesia has a very high concentration of women-owned enterprises in the micro and small sector. This is due to a very high population of women micro-entrepreneurs. Representation of women declines as business size increases.
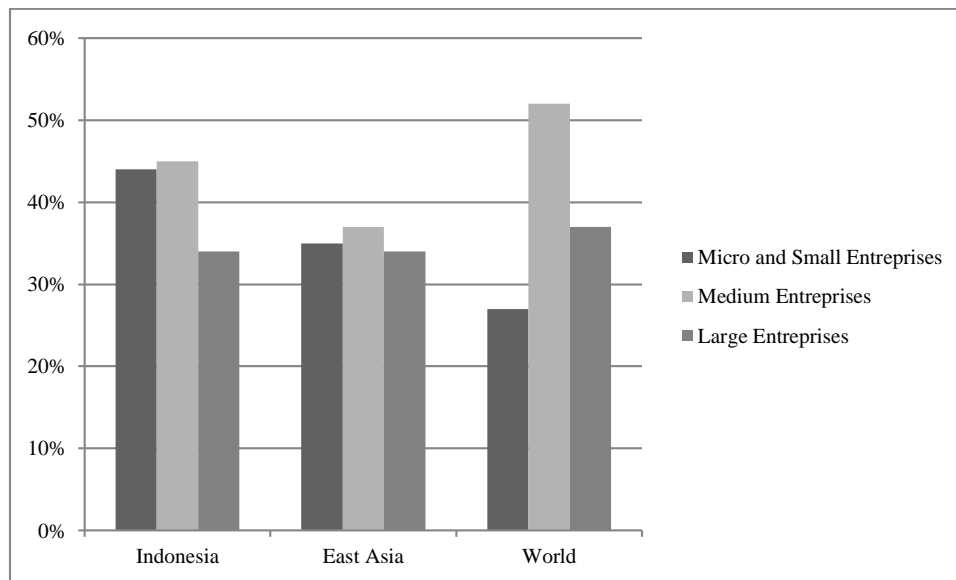
Fig. 1. Firms with a Listed Female Owner, by Firm Size (World Bank Indonesia Enterprise Survey, 2009)

Previous studies had captured the challenges encounter women entrepreneurs in their daily practice. Access to loans and grants, bureaucracy and procedures (Danish & Smith, 2012), lack of management skills, lack of confidence, guilt related to parenthood (Fleck, 2015) are merely part of the problem faced by women entrepreneurs. In order to make a significant growth, women entrepreneurs need to overcome the obstacles and improve their skills and knowledge. This desired condition could be obtained by joining and participating in entrepreneurial associations.

Entrepreneurial associations are important vehicle for supporting women entrepreneurs in Indonesia. Such associations can provide a forum for women entrepreneurs to network with the female role models, develop linkages with suppliers and buyers, and access information about available services and markets (World Bank, 2016). Therefore, the objective and designation of business associations should meet the problems faced and improvement sought by women entrepreneurs. The design of activities and system in the scope of business associations could be seen from the perspective of service science.

The infrequent number of study regarding entrepreneurial associations in the context of women entrepreneurship is far from pleasure. The closest discussion regarding women and economic community is about the SHG (self-help groups) that generally take up the women entrepreneurship movement in the rural area. The SHGs are considered as one of the definite solution against the dynamic complexity of women entrepreneurship. Its characteristics of remain small and affinity-based is the key to contrast the reality with the bigger circle prevailing in the urban area.

Based on the above explanation, the primary research questions in this paper are:

RQ1. What factors determining urban women entrepreneurs decision to join and participate in business association?

ICMEM

RQ2. How service sciences define the system of urban women business association?

2. Literature Review

2. 1. Woman entrepreneurship

Numerous studies had been attempting to bring the light into various aspects of women and their activity of entrepreneurship. From the global perspective, Brush, et al. (2010) introduced the empirical evidence of the importance of 5M framework to study women entrepreneurship, as the criticism to the prior 3M framework (market, money, and management). Previously, the 3M, namely money, market, and management, is generally approved as the basic construct that determine the successful process in venture creation. It is a general agreement that all entrepreneurs need to establish access to markets (Shane, 2003) money (Penrose, 1959) and management (in the form of human and organizational capital) (Aldrich, 1999). Two additional constructs, namely 'motherhood' and 'meso' and 'macro' environment was conceptualized and proposed for the first time by Brush, de Bruin and Welter (2009) as an emphasis that norms, values and external expectations must also be considered in order to holistically study women entrepreneurship.
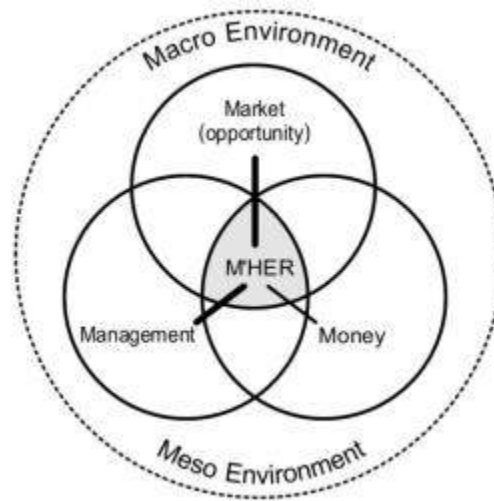
Fig. 2. 5M framework (Brush, de Bruin & Welter, 2009)

In the level of macro environment, that encompass the national level policies, culture, laws and economy, it had been discovered that women entrepreneurs also have challenges and opportunities to deal with. Danish and Smith (2012) found that in Saudi Arabia, where the patriarchal society does strongly exist, women entrepreneurs commonly meet challenges within the bureaucracy and procedures, and also in their access to loan and grants. In the other hand, human resource talents, leadership and management skills, and government networking appear as the most influencing critical success factors. In Oman, McElwee and Al-Riyami (2003) found that some women entrepreneurs have to sacrifice their social life while running their businesses, and most of them agree that the market competition was too tight. In the local context of Indonesia, Hani et al. (2012) found that the hardest bottleneck to be faced by women entrepreneurs is financial and environmental aspect. Most of them also recognized that there was high competition in their businesses.

Meanwhile, in the level of meso environment of Indonesia, Anggadwita et al. (2017) had proven that socio-cultural environment influence women entrepreneurial behaviour and activity. The socio-cultural environment was specifically consisted of three basic construct, with 'mutual cooperation' gained the greatest influence, followed by 'cultural kinship'

ICMEM

and 'tolerance'. Along with the spirit of mutual cooperation, the World Bank (2016) study had also indicated that Indonesian women entrepreneurship is 33% more likely to use the business association than their male counterparts. The number confirmed that Indonesian women entrepreneurs have a high needs for socializing and communicating with each other. Those findings are in line with the understandings given by Brush, de Bruin and Welter (2009) about the meso environment, whose the institutions included occupational networks, business association and the like and industries. Other studies also recognized that business networking activity and social capital play an important role in helping women entrepreneurs gain access to financial capital (Shaw et al., 2006). Thus, it is challenging to explore deeper on how entrepreneurial association contribute to the growth and survival of women entrepreneurship.

2. 2.Entrepreneurial Associations

It is not a convenient work to study the literature about entrepreneurial associations as the exploration upon the topic is remaining scarce. The result is even worse when the authors attempted to bring the topic onto the specific area of women entrepreneurship. There is an abundance number of study in social capital, but nothing is going specific in the discussion regarding the role of entrepreneurial association in promoting entrepreneurship in gendered lens. One of the closest works was done by Ndyetabula et al. (2014) which stated that conventionally, the purpose of an entrepreneurial association is threefold: (1) the association is the primary advocacy institution for outsiders, including government, (2) The association serves its members by providing functions such as organising training or providing information, and (3) the association may be looked upon as a network in which members can meet and exchange experiences on from alliances.

The search was then continued until the authors come to a growing topic and is very close to the subject of women entrepreneurship: self-help groups (SHG). The topic of SHG mostly came from the developing country like India. The notion of SHG was born when Prof. Mohammed Yunus, founded Grameen Bank of Bangladesh in 1975, who tried out a new approach to rural credit in Bangladesh (Saravanan, 2014). The SHGs are informal voluntary associations of 5 to 20 people formed to attain a collective goal (Sharma, 2001), with the spirit of affinity among the economically homogenous (Nayyar, 2017). The group strives for the socio-economic development of its members through elf-employment and empowerment.

Nayyar (2017) proposed the following steps should be taken by SHGs in order to develop entrepreneurship: (1) identification of potential entrepreneur, by working together with government and non-government agencies for the need of technical assistance, (2) establishing the financial help and creating customers, and (3) expansion of business through innovation. The statement could be an enlightenment to underline that SHGs are not merely pay attention to the financial support, but also nurturing and cultivating the nature of entrepreneurship among the members. The discussion of SHG can be a high contrast to this study because SHG is basically and commonly set on the rural area, whereas the current study is conducted in the set of urban area.

2. 3.Service Science and Service System

Service science is centered on the study of value cocreation within and among service systems - dynamic and adaptive webs of exchange composed of interactions among people, technology, and organizations (Spohrer et al. 2007). Service-dominant (S-D) logic centers on the concept of value cocreation, along with its definition of *service* as the application of resources for the benefit of another (Vargo and Lusch 2008). Simply put, service science aims to explain and improve interactions in which multiple entities work together to achieve win-win outcomes or mutual benefits (Spohrer and Maglio, 2008).

Service science plays an important role within this research, as its interdisciplinary philosophy that concluded service as the fundamental basis of exchange. To see the women business association from the service science standpoint will enrich the comprehension towards the reality among the entities within the circle as the system.

ICMEM
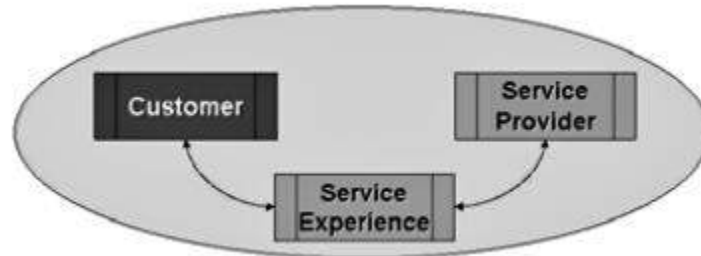
Fig. 3. A Service System and Its Entities (Kwan & Min, 2008)

Kwan & Min (2008) define the framework of service system as the assembly point of service provider and customer that generate the service experience. The customer can be a person, a group, an organization or institution. A service provider is the entity that is the primary purveyor of the service experience to the customer. As we see in Fig. 3, the service provider could be part of a more complex service supply chain. The term of "service system" is used intentionally to convey the notion that the service is intangible and the customer is the recipient who experiences the service usually for some duration of time. Based on this comprehension, the authors defined the members of the association as the customers, while the administrators take a role as the service provider.

With each role had been defined, it is clear that the administrator of association is in charge to perform such and such service (with an implied use of resources) for a certain mutually agreed "price". The price here is not only be defined to the hard cash, as one of the fundamental premises of service-dominant logic (Vargo and Lusch, 2008) explained that goods, money, and institutions mask the service-for-service nature of exchange. Therefore, in this case of social relationship within the circle of business association, the "price" can also be interpreted as all the sacrifices are given by both sides in order to achieve the service experience through value cocreation. The members of association act as the customers with the intent to obtain what they need, so that they could enter into an agreement with the provider for the "price" and extent of the service experience.

3. Methodology

The employment of mixed methodology in this research is intended to obtain a deep understanding towards the driving factors within the circle of urban women business association. It includes the mixing of qualitative and quantitative data, methods, methodologies, and/or paradigms in a research study or set of related studies (Creswell, 2009).

3.1. Exploratory Factor Analysis

In order to complete the descriptive statistical analysis, the use of exploratory factor analysis (EFA) in this research would be useful in examining the patterns underlying the large number of variables represented within the questionnaire response. Exploratory factor analysis is an interdependence which primary purpose is to define the underlying structure among the variables in the analysis (Hair et al., 2014).

The representative sampling technique was utilized with the target of women entrepreneurs who has been being an active member of a business association, specifically the association of Ipemi (Ikatan Pengusaha Muslimah Indonesia/ Indonesian Moslem Women Entrepreneur Association) in the city of Bandung, West Java. The listed active members reach the amount of approximately 1500 when the study was conducted. As a general rule, the minimum is to have at least five times as many observations as the number of variables to be analyzed (Hair et al., 2014). In this study, it could be mean 95 samplings required of 19 variables which had been predetermined.

ICMEM

The questionnaires are generally distributed online through the established communication network of Ipemi. The questionnaire mainly focuses on questions examining the indicators to generate the main factors that determine the driving factors of women entrepreneurs to join in Ipemi as a business association.

The authors identified 19 variables representing the intended driving factors. These 19 variables were derived to be the compiler of questionnaire items. The variables are gathered from the works of previous researchers as mentioned in Table 1.

To examine these items, 1-to-5 Likert scale was used in the questionnaire constructed. 1 represents the response of "strongly disagree", and 5 is for the "strongly agree". Some important questions for the descriptive analysis were also shown, such as the questions about respondent's current age, their highest education, their business age, and the industry where their businesses are running.

Table 1. Research variables

No.	Variables	Source
Q17	Society awareness	Sharma KC (2001)
Q3	Increase the income level	Sharma KC (2001)
Q12	Increase borrowing capacity	Sharma KC (2001)
Q4	Increase self confidence	Sharma KC (2001)
Q6	Need of business insight	Suja, S. (2012)
Q7	Need of business information	Suja, S. (2012)
Q9	Direct financial support	Fazalbhoy (2015)
Q15	Eliminate gender discrimination	Fazalbhoy (2015)
Q1	Increase the entrepreneurial skill	Fazalbhoy (2015)
Q16	Experience sharing	Fazalbhoy (2015)
Q19	Aspiration channel to government	Fazalbhoy (2015)
Q18	Business networking	Fazalbhoy (2015)
Q14	Business partnership	Fazalbhoy (2015)
Q2	Gender interest	Pio, E. (2010)
Q5	Spiritual interes	Pio, E. (2010)
Q8	Gain motivation to begin the business	Nayyar, N. (2017)
Q11	Create new market	Nayyar, N. (2017)
Q13	Gain encouragement for creativity	Nayyar, N. (2017)
Q10	Gain encouragement for innovation	Nayyar, N. (2017)

3.2. In-depth Interview

In order to gain a vivid clear understanding regarding the practical aspect of the association, qualitative study using unstructured interview with the chief coordinator of Ipemi branch of Bandung was performed. During the interview, the participant talks openly and widely about the topic with as little direction from the interviewer as possible (Saunders & Lewis, 2012). Although there was no predetermined list of questions, the interviewer had a clear idea to explore the topics related with the history of the association and how it is operated in daily practice.

4. Discussions

4. 1. *Factors driving urban women participation in business association*

Exploratory factor analysis was employed toward the responses of pilot 52 respondents in order to discover the most influencing factors for urban women entrepreneurs in participating in business association. The collected data was processed using R Studio as the statistical software and all the statistical operation ran in the analysis recorded in Appendix.

ICMEM

Referring to the result of Bartlett's test of Sphericity, the p-value 2.22e-16 or less than 0.05 (the significance level) indicated that sufficient correlations exist among the variables to proceed. The Kaiser-Meyer-Olkin (KMO) measure sampling adequacy (MSA) was shown 0.749 which is considered middling. This means that the sample was sufficient to examine the variables and that the factor analysis was appropriate to be used. The MSA measurement dropped 5 out of 19 variables predetermined, namely Q1 (*to increase entrepreneurial skill*), Q3 (*to increase the income*), Q8 (*to gain motivation to start a business*), Q9 (*to gain direct financial support*), and Q15 (*to eliminate gender discrimination issue*), because they were considered as inadequate. The principal component analysis generated 3 factors to be extracted with the cut-off of loading factor for each variable is 0.4. Thus, the individual Q4 (*to increase confidence level as women entrepreneur*) variable should be deleted. The next variables of Q11 (*create new market opportunity*), Q17 (*society awareness*) and Q19 (*aspiration channel to the government*) were also deleted because the cross-loading issue. Eventually, there are total 9 out of 19 variables deleted and the final interpretation of the factors is as shown below in Table 2.

Table 2. Factor Analysis Result

Factor 1	Q2	Gender interest	Eagerness to Improve
	Q5	Spiritual interest	
	Q10	Encouragement towards innovation	
	Q12	Borrowing capacity	
	Q13	Encouragement towards creativity	
	Q14	Business partnership opportunity	
Factor 2	Q16	Experience sharing	Social Benefit
	Q18	Networking	
Factor 3	Q6	Need of business insight	Source of Business Knowledge
	Q7	Need of business information	

Table 3. Principal Component Analysis with Varimax Rotation

	Factor 1	Factor 2	Factor 3
SS Loadings	2.301	2.245	2.195
Proportion Variance	0.164	0.160	0.157
Cumulative Variance	0.164	0.325	0.482

Referring to the Proportion Variance (which explains the proportion of variance explained by each factor) in Table 3, we can conclude that the three factors are just important. Factor 1 has proportion of 16,4%, indicates that "eagerness

ICMEM

towards improvement" has driven urban women entrepreneurs the most to participate in business association. They are in the battle against complacency. They are willing to push their current condition to the betterment by gaining motivation towards innovation and creativity, increase their borrowing capacity, seek for the partnership opportunity, and surround themselves with people with the same interest vibration.

The two following factors, namely "social benefit" and "source of business knowledge", each represented by two variables, had explained the variance in the proportion of 16,0% and 15,7%. Both indicated that social value and the association's ability to deliver the knowledge needed are also the keys that urban women entrepreneurs seek for by participating in the circle.

4. 2. *Ipemi as urban women business association*

The interview section with the chief coordinator of Ipemi branch of Bandung enriched the comprehension of the association in perspective of service science. The Ipemi association has been established for 3 years in the national extent, and 1 year particularly in Bandung. 300 people had come on the day when administrators of Ipemi Bandung were sworn in. They were representing the district level of Ipemi networks who had received the socialization from two months earlier. The listed active members of Ipemi Bandung have been increasing up to 1500 when the interview conducted.

The Ipemi Bandung structure generally divided into six fields based on the members' interest or current businesses: *warung* (small shop selling daily necessities), beauty salon, fashion, craft, food and beverages, and services and others. The first two mentioned are the implementation of national Ipemi program, which the concept of technical implementation had been designed for all Ipemi branches.

Ipemi accommodates three groups of women: first, the women entrepreneurs; second, women who are willing to be an entrepreneur; and third, all women who are interest and pay attention to the growth of women entrepreneurship in the town - it could be a person or an institution.

> *The* warung *is the combination of all concepts. It is our definite step to grow the nascent entrepreneurs. It is like our next door neighbor's small shop and we asked them, "What do you need?" and they answered, "Financial support." Alright, we noted that and soon we were moving to connect them with financial institution. Bandung has a product of financial support called Kredit Melati (loan for small enterprises), without interest rate and guarantee. We also connect them with Kadin (Kamar Dagang Indonesia/Indonesian Chamber of Commerce), with BPR (Bank Perkreditan Rakyat), with the expert to nurture them in each field. I think, we have been involving all the stakeholders needed in this concept.*

At this point, Ipemi assisted the women entrepreneurs as the bridge to the program of the large institutions and government. In many occasion, government and supporting institutions created hundreds yearly programs that could not be accessed by entrepreneurs as individual. Therefore, the association plays a vital role to gain information and access to the programs as much as it is needed for the prosperity of the members. Ipemi also provide accompaniment to its members, mainly strive until the members could return the fund in loan program.

In order to accommodate the communication that involve the large number of members and administrators, Ipemi also designed the way they communicate to each other. Utilizing the latest communication platform like Whatsapp, the group of communication divided to make it as effective as it can be. There are special groups of all coordinator, the group of each district, and the interest-based group.

> *With the high level of activity of the members, we have to design the communication group as good as if one member could say, "I lost because I did not read the information." Whose fault?*

The chief emphasize on how the social value become the key for the association to keep sticking in harmony. Actually, to put the social value as the core could help the association to sustain and cope with the technical challenge such as funding. What Ipemi has done so far is to involve its members as sponsorship partners in took place. very event . It also strives for the co-branding strategy with the bigger business entities such as banking for utilizing their resources. The best example is on how Ipemi create the membership card by cooperating with BJB Bank. After unifying their own mission, both sides signed an agreement that all the new members of Ipemi have to create the

ICMEM

membership card issued by BJB and integrated with its banking system and networks. Ipemi gain benefit by having the provider of its membership card, and give its member database as a form of cooperation.

> *That is what makes different between a good organization and one that is not. Believe me, I had seen and even joined in many organization and take an evaluation about what works and what does not. The social organization without social value is nothing but nonsense. It is carried by individuals within the circle. The ones without social spirit devastate the circle from inside. They will not support in any, even information will not be shared - they will keep everything for themselves. And, yes, it happens in many organizations.*

4. 3.   Business association: A service system

In contrast between the above explanation and service system definition of Spohrer, et al. (2007), Ipemi association fulfilled the criteria to be classified as a service system, which possess the element of people, shared information, technology, and the organization itself. The interaction between administrators and members, and among the members themselves create the service experience as explained by Kwan & Min (2008). The service definition from IfM and IBM (2008) could complete present paper, which is "a dynamic configuration of resources that creates and delivers value between the provider and the customer through service." As can be seen from the definition, there are two important aspects of a service system, namely "dynamic configuration of service system" and "value delivery to customers" (Zine, et al. 2016).

This section proposed the service system design for urban women business association, based on the case of Ipemi. Based on Zine, et al. (2016), the step for designing service system will pass the process as below:

a. Identify system stakeholders
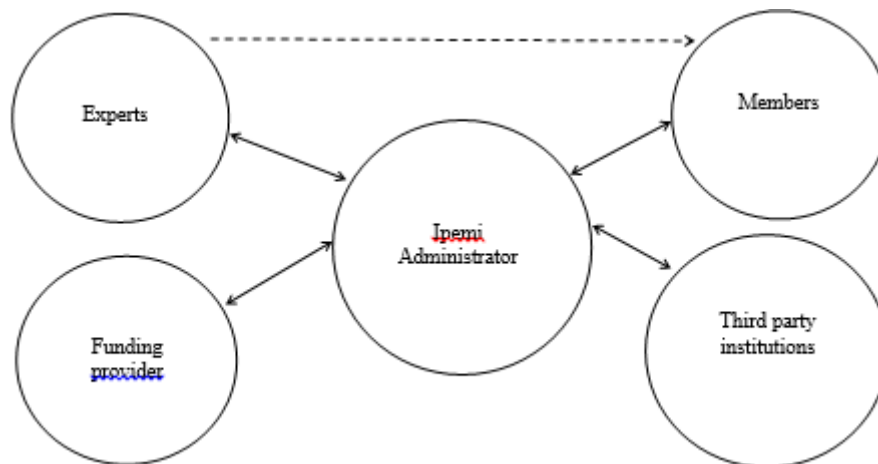
Fig. 4. Stakeholders involved in Ipemi business association

Fig. 4 is the configuration of system stakeholder in Ipemi business association. The administrators of Ipemi run the role of the association as the bridge among the other stakeholders with their own interest and requirements. The experts have a straight communication with the members in the framework of mentorship and accompaniment facilitated by Ipemi. The third party mentioned in the structure could be addressed to all institution that assists Ipemi to accomplish its mission and grow up, like Kadin, government, or even other similar associations.

b. Identify and define the service components

ICMEM

The deliverable services (termed as 'service components' in this research) need to be identified along with the value they would create for the customers. The validated customers need and aspiration represented by the results of EFA and specified in Table 4.

Table 4. Customers (members) service requirements

No.	Requirement description
1	Gathering with people with the same gender
2	Gathering with people with the same religion
3	Gain encouragement towards innovation
4	Increase borrowing capacity
5	Gain encouragement towards creativity
6	Gain business partnership opportunity
7	Experience sharing moment
8	Networking
9	Need of business insight
10	Need of business information

During the interview, the appropriate service components were identified, defined and elaborated based on customers' service requirements, along with the value they would add to the customers. The service components to be given by Ipemi to its members are listed in Table 5.

Table 5. Service components of Ipemi association

No.	Service component	Value to customer
1.	Operator support	Welcoming new members
2.	Membership card	• Giving new official identity and spirit as member of Ipemi • Deliver the new prospective customers for banking • Provide database of active members as marketing targets for banking
3.	Distributing business information and insight	Update the business knowledge
4.	Structured information channel	Ease in organizing information
5.	Participation in exhibition	• Create new market • Business partnership opportunity

ICMEM

6.	Grouping into business interest	Helping members to grow focus and passionately
7.	Cooperation with government and national figure	Aspirations channeling
8.	Gathering in district to national extent	• Rallying with people in similar interest • Experience sharing moment
9.	Entrepreneurial seminar	Enhance confidence
10.	Technical training	Improving expertise
11.	Training for general public	Sharing expertise
12.	Joint event with banking	• Loan program opportunities • Increase borrowing capacity
13.	Accompaniment by expert	• Help members grow within the guidance • Acknowledgment to the expert • Joint capability improvement

c. Develop service design

Since the stakeholders have been identified, as well as the requirements of customers and service components from the provider's side have been mapped, the service design could be generated in order to explain the whole service system. Unlike product design, the components of service are a combination of integrated processes, people, skills, and materials that must be planned in advance (Goldstein et al. 2002). The design can be generally presented in a service blueprint.

ICMEM

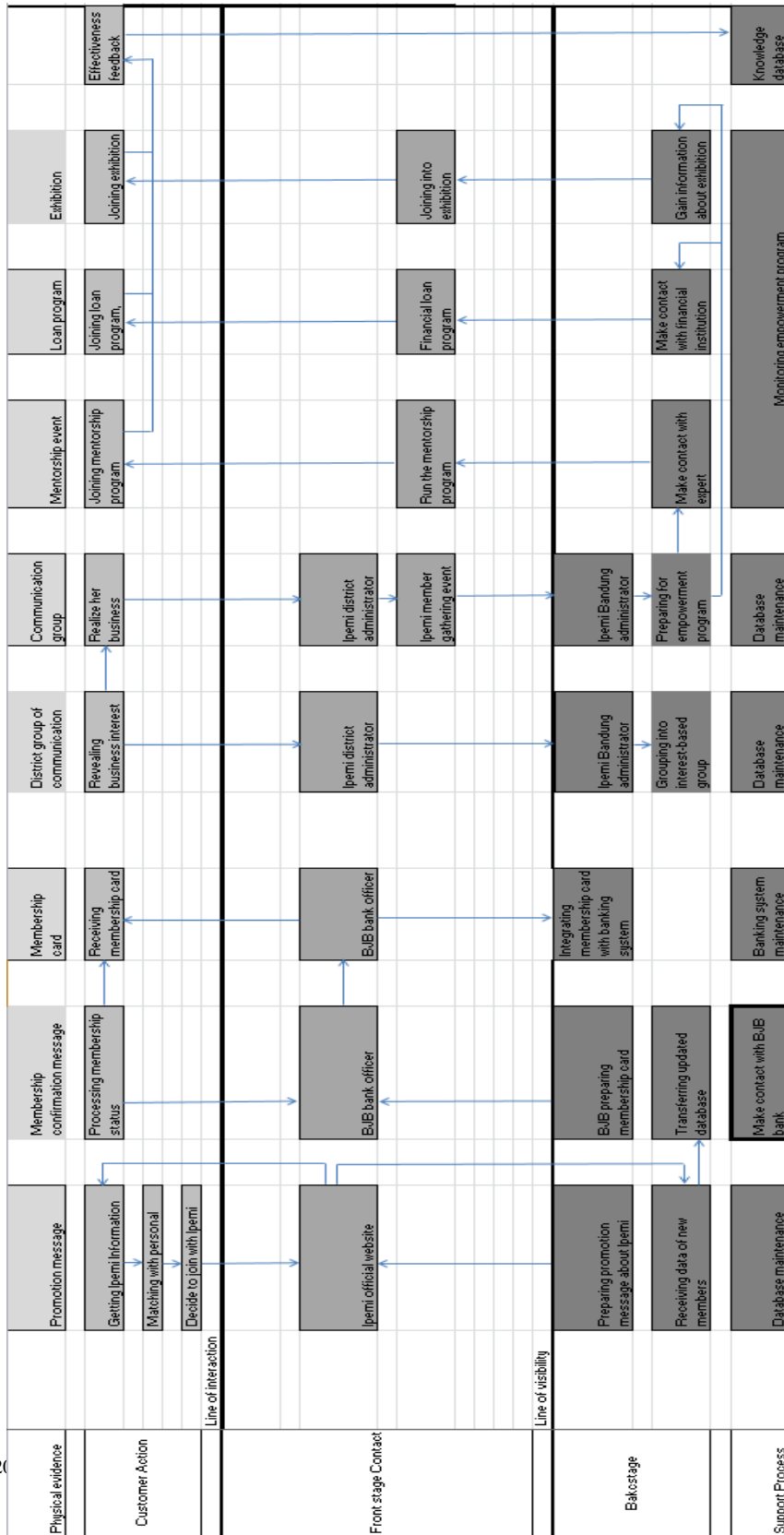**Fig. 5.** Service Blueprint of Ipemi association

ICMEM

A *service blueprint* is a flow chart used to describe the design of a service process (Katzan, 2011). It could be a useful tool for delineating the steps through which the designer or customer will go. The following service blueprint in Fig. 5 represents the general activity in the relationship between Ipemi's administrators as service provider and the members as the customers.

Based on the blueprint, the general activity within Ipemi business association presented. The journey began with the member registration process to obtain the official ID as the new member of Ipemi. From the blueprint, it can be known that the banking as one of the key stakeholders involved in the production of membership card, with new member's database as the exchange.

After officially accepted as new member, one can reveal their business interest and soon be grouped with other women entrepreneurs with similar interest in one established virtual communication group. Inside the group, interaction formed and the ideas born from there. The experience and information will be shared. That is the start to identify business challenges and opportunities that faced by individuals and continuously changing over time. The district administrators of Ipemi always monitor the interaction and give a periodic report to the particular group of administrators. The report becomes a good materials to determine the appropriate variation of empowerment program.

The empowerment program here adjusted with the association's capability to deliver value to its members, as it was identified in a prior section. The blueprint presented the aspect of mentorship, financial loan, and the exhibition event without ruling out another deliverable value like training and seminars. The empowerment program joined by members would result to the effectiveness feedback; whether the program has generally impactful to the improvement or not. Then the feedback can be a source of knowledge database to evaluate the performance of the association in overall.

5. Conclusion

The contrast between the result of exploratory factor analysis and the qualitative in-depth interview generated the rich comprehension regarding Ipemi as a business association and a service system. In fact, the expectation from the women entrepreneurs while joining the association has quite fulfilled in general. It is the common task for everyone inside the circle to improve the quality that could be gained from the association in the future.

It had been stated that the key factors for keeping the group sustain are: (1) the clarity of the vision, mission, and concept of the organization, (2) maintenance of the good communication among the entities, and (3) the social value as the core to be nurtured together. Beyond everything else, the spirit of the association as a service system should be to serve and satisfied as much as the stakeholders involved and provide a long-lasting value.

6. Further Research

This study was limited to the context of a certain gender and religion-based entrepreneurial association (Ipemi) in local coverage of Bandung, West Java. The concept of service science employed in this study also required further development from interdisciplinary perspective, given that the number of research regarding urban women business association is still small.

First, it is critical to distinguish the impact of participation in business association among women entrepreneurs whose business is established with the nascent ones. Second, as the communication among the administrator and the member of the group is as effective as it was found in the interview results, it is also important to know whether the knowledge management within the association is adequately good to create continuous improvement. Third, as it was aforementioned that government support is one of the critical success factors for women entrepreneurs, it would be fascinating as well to assess the different level of rural and urban government support towards women entrepreneurship using comparative case study.

7. Implications

The model of activity inside the circle of Ipemi could be considered as good to be implemented by other entrepreneurial association. Furthermore, the association have to actively scale up its capacity by persuading more experts to come and join into the circle, so that the number of nascent entrepreneurs to join can be expected to increase as they have a high need in gaining business insight through experience sharing. Considering gender and religion interest as some of the key driving factors, the community can schedule some specific activities not only to talk about the business, but also to discuss and improve their own quality as a moslem woman.

Appendix A. The operationalization of Exploratory Factor Analysis using R Studio

```
> Survey2 <- read.table(file.choose(), header=TRUE, sep=",")

> head(Survey2)
```

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19
1	4	5	3	4	4	5	4	2	1	4	5	5	5	5	4	4	4	4	5
2	5	4	4	5	4	4	4	5	3	4	4	5	5	5	3	4	4	4	4
3	4	5	3	5	5	5	5	2	2	4	5	5	5	5	5	5	4	4	5
4	5	5	5	5	4	5	5	2	4	5	4	4	5	5	4	4	5	5	5
5	5	4	3	5	4	4	4	4	4	4	4	5	4	4	5	5	5	5	5
6	4	5	4	4	4	5	4	4	3	5	4	4	5	4	3	4	4	5	4

```
#### Quantify the degree of intercorrelations among the variables/measure of
sampling adequacy (MSA) using Kaiser-Meyer Olkin Statistics
> KMOS(Survey2, use = "complete.obs")

Kaiser-Meyer-Olkin Statistics

Call: KMOS(x = Survey2, use = "complete.obs")

Measures of Sampling Adequacy (MSA):
       Q1          Q2          Q3          Q4          Q5          Q6          Q7
Q8          Q9
```

0.3621997 0.6068196 0.5504489 0.6915696 0.6622843 0.6029126 0.6788384 0.50028
51 0.4534199
       Q10   Q11   Q12   Q13   Q14   Q15   Q16   Q
17   Q18
0.6520880 0.6963549 0.5507977 0.7016949 0.5858896 0.4601293 0.6931586 0.65913
00 0.6569305
       Q19
0.6888168

KMO-Criterion: 0.6170051
*The KMO-Criterion exceeded the minimum .50, yet the individual variables of Q1, Q9, and Q15
    did not. Thus, the mentioned variables should be deleted and the test should be repeated.*

Repeat the MSA test with removed inadequate variables
Kaiser-Meyer-Olkin Statistics

Call: KMOS(x = Survey2, use = "complete.obs")

Measures of Sampling Adequacy (MSA):
       Q2   Q3   Q4   Q5   Q6   Q7   Q8   Q
10   Q11
0.6100697 0.3887131 0.7200860 0.7088751 0.6740302 0.6834353 0.4436050 0.64857
58 0.7438701
       Q12   Q13   Q14   Q16   Q17   Q18   Q19
0.7154754 0.7797330 0.7416225 0.7620547 0.8765313 0.7432875 0.7615233

KMO-Criterion: 0.7099885

*The KMO-Criterion increased, yet the individual variables of Q3 and Q8 was found to have
    value below .05 which forced the test to be repeated over again.*

Repeat the MSA test with removed inadequate variables
Kaiser-Meyer-Olkin Statistics

Call: KMOS(x = Survey2, use = "complete.obs")

Measures of Sampling Adequacy (MSA):
       Q2   Q4   Q5   Q6   Q7   Q10   Q11   Q
12   Q13
0.6480959 0.7671492 0.7306185 0.7513363 0.7479057 0.6170679 0.7527948 0.73949
46 0.8020023
       Q14   Q16   Q17   Q18   Q19
0.7447714 0.7557305 0.8776514 0.7352636 0.7869785

KMO-Criterion: 0.7499693
*Both the overall test and each individual variables eventually had the value greater than .50
    after the removal of the variables of Q1, Q9, Q15, Q3 and Q8.*

Check for sample adequacy with Bartlett's Test of Sphericity

```
> bart_spher(Survey2, use = "complete.obs")

        Bartlett's Test of Sphericity

Call: bart_spher(x = Survey2, use = "complete.obs")

    X2 = 284.793
    df = 91
p-value < 2.22e-16
```
*The p-value significance level of < 2.22e-16 which is less than .05 indicates that sufficient correlations ex
ist among the variables to proceed.*


```
#### Defining the number of factors to be extracted (using Principal Componen
t Analysis/PCA)
> Survey2.pca <- princomp(Survey2)
> summary(Survey2.pca)
Importance of components:
                            Comp.1    Comp.2    Comp.3     Comp.4     Comp.5
Comp.6      Comp.7
Standard deviation      1.5525945 0.8646768 0.8503927 0.71923241 0.65110796 0.
60548623 0.56159860
Proportion of Variance 0.3706455 0.1149609 0.1111941 0.07953919 0.06518515 0.
05637041 0.04849475
Cumulative Proportion  0.3706455 0.4856065 0.5968006 0.67633976 0.74152491 0.
79789532 0.84639007
                            Comp.8     Comp.9    Comp.10    Comp.11    Comp.12
Comp.13
Standard deviation      0.49998749 0.40735045 0.40120810 0.37295846 0.35641639
0.29265850
Proportion of Variance 0.03843802 0.02551403 0.02475039 0.02138768 0.01953251
0.01316937
Cumulative Proportion  0.88482809 0.91034212 0.93509251 0.95648018 0.97601269
0.98918206
                           Comp.14
Standard deviation      0.26524728
Proportion of Variance 0.01081794
Cumulative Proportion  1.00000000


#### Defining the number of factors to be extracted (using Scree Plot)
```

From the scree plot, the authors defined the number of 3 factors to be extracted.

ICMEM

Call:

Survey2.pca
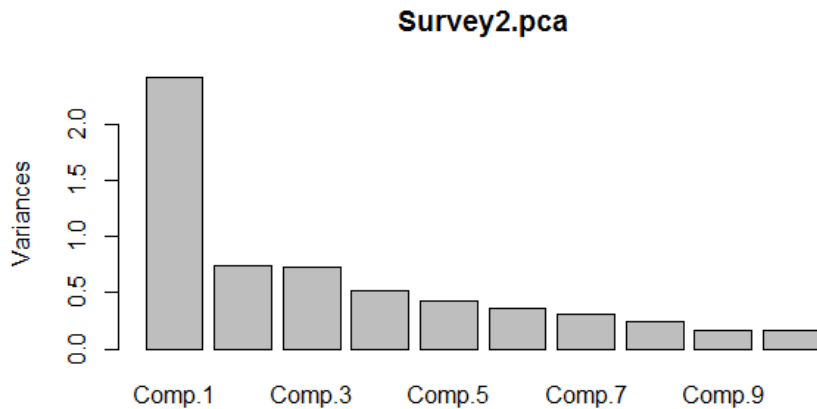
factanal(x = Survey2, factors = 3, rotation = "varimax")

Uniquenesses:
```
   Q2      Q4      Q5
Q6      Q7     Q10    Q11
Q12    Q13    Q14    Q16    Q17    Q18    Q19
0.592 0.670 0.679 0.350 0.223 0.705 0.558 0.699 0.572 0.695 0.341 0.587 0.107 0.481
```

Loadings:
```
    Factor1 Factor2 Factor3
Q2   0.578    0.270
```

Gender interest
```
Q4   0.166   0.383   0.395
Q5   0.457   0.259   0.212  Spiritual interest
Q6           0.244   0.764  Business insight
Q7   0.194   0.179   0.841  Business information
Q10  0.535                  Motivation towards innovation
Q11  0.407           0.525
Q12  0.439   0.139   0.298  Borrowing capacity
Q13  0.604   0.108   0.227  Motivation towards creativity
Q14  0.522   0.128   0.129  Business partnership
Q16          0.715   0.377  Experience sharing
Q17  0.430   0.406   0.253
Q18  0.116   0.912   0.219  Networking
Q19  0.446   0.557
```

```
               Factor1 Factor2 Factor3
SS loadings      2.301   2.245   2.195
Proportion Var   0.164   0.160   0.157
Cumulative Var   0.164   0.325   0.482
```

Test of the hypothesis that 3 factors are sufficient.
The chi square statistic is 61.06 on 52 degrees of freedom.
The p-value is 0.182

Q4 did not sufficient as the cut-off loadings value is .40. Meanwhile, Q11, Q17, and Q19 should also be deleted due to the cross-loading issue.

ICMEM

Reference

Aldrich, H. E. (1999). Organizations Evolving. London et al.: Sage Publications.

Anggadwita, G., Luturlean, B. S., Ramadani, V., Ratten, V. (2017). 'Socio-cultural environment and emerging economy entrepreneurship: Women entrepreneurs in Indonesia', *Journal of Entrepreneurship in Emerging Economies, 9*, 85 - 96.

Asian Foundation: *Access to Trade and Growth of Women's SMEs in APEC Developing Economies: Evaluating The Business Environment in Indonesia*, received from https://asiafoundation.org/resources/pdfs/EvaluatingtheBusinessEnvironmentinIndonesia.pdf, April 2018.

Badan Ekonomi Kreatif. (2018). *Data Statistik dan Hasil Survei Ekonomi Kreatif; Kerjasama Badan Ekonomi Kreatif dan Badan Pusat Statistik,* received from http://www.bekraf.go.id/berita/page/17/infografis-data-statistik-dan-hasil-survei-khusus-ekonomi-kreatif.

Brush, C. G., de Bruin, A. M., & Welter, F. (2009). A Gender Aware Framework for Women's Entrepreneurship, *International Journal of Gender and Entrepreneurship*, *1*, 8 - 2.

Brush, C. G., de Bruin, A., Welter, F., & Allen, E.. (2010). Gender embeddedness of women entrepreneurs: An empirical test of the 5 "M" Framework. *Frontiers of Entrepreneurship Research*, 30(8), 2.

Danish, A. Y. & Smith, H. L. (2012). Female entrepreneurship in Saudi Arabia: opportunities and challenges, *International Journal of Gender and Entrepreneurship,* 4, 216 - 235.

Creswell, J. (2009). Mapping the Field of Mixed Method Research, *Journal of Mixed Method Research,* 3, 95 - 108.

Fazalbhoy, S. (2014). Women entrepreneurship as the way for economic development, *Annual Research of Journal of Symbiosis Centre of Management Studies, Pune,* 2:117-127.

Fleck, E. (2009). To Grow or Not to Grow: Challenges or Choices for Female Entrepreneurs? *Journal of Business Diversity*, 15(2).

Goldstein, S., Johnston, R., Duffy, J., and Rao, J. (2002). The Service concept: the missing link in service design research? *Journal of Operations Management,* 20, 121 - 13.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. (2014). *Multivariate Data Analysis*, Pearson Education Limited.

Hani, U., Rachmania, I. N., Setyaningsih, S., Putri, R. C. (2012). Patterns of Indonesian Women Entrepreneurship. *Procedia Economics and Finance, 4,* 274-285.

International Finance Corporation and AXA. (2018). She For Shield: Insure Women to Better Protect All, received from https://cdn.axa.com/www-axa-com%2F57b5a3a4-c7cc-4dea-97c9-5f7d9f47232c_sheforshield_final-web2015.pdf

IfM, IBM. (2008). Succeeding through service innovation: a service perspective for education, research, business and government. *University of Cambridge Institute for Manufacturing, Cambridge*.

Katzan Jr., H. (2011). Essentials of Service Design. *Journal of Service Science, 4*.

Kwan, S. K. & Min, J. H. (2008). An Evolutionary Framework of Service Systems, *Journal of Harbin Institute of Technology*.

McElwee, G. & Al-Riyami, R. (2003). Women entrepreneurs in Oman: Some barriers to success, *Career Development International*, 8, 339 - 346.

Melissa, E., Hamidati, A., Saraswati, M., Flor, A. (2015). The Internet and Indonesian Women Entrepreneurs: Examining the Impact of Social Media on Women Empowerment, *Impact of Information Society Research in the Global South*.

Nawangpalupi, C., Pawitan, G., Gunawan, A., Widyarini, M., Bisowarno, B., Iskandarsjah, T. (2012). *Global Entrepreneurship Monitor 2014 Indonesia Report.* Unpar Press, Bandung.

Ndyetabula, D. W., Sorensen, O. J., Temu, A. A. (2014). Agribusiness development and the role of value chain business associations: The case of dried fruits and vegetables in Tanzania, *African Journal of Economic and Management Studies, 7(14).*

Pio, E. (2010) Islamic sisters: Spirituality and ethnic entrepreneurship in Sweden, *Equality, Diversity and Inclusion: An International Journal*, 29, 113-130.

Nayyar, N. (2017). Role of SHGs in Rural Women Entrepreneurship: an Overview, *Journal of Commerce & Management Thought*, 8, 777 - 789.

Penrose, E. (1959). *The Theory of Growth of the Firm.* New York: John Wiley & Sons.

Saravanan, S. (2014). A Study on Socio-Economic Profile and Problems faced by the Women Self-Help Groups in Coimbatore District - Tamil Nadu, *IPE Journal of Management*, 4.

Saunders, Mark NK, and Philip Lewis. (2012). *Doing research in business & management: An essential guide to planning your project*. Pearson.

Shane, S. (2003). *A General Theory of Entrepreneurship*, Cheltenham, UK and Northampton, MA: Edward Elgar.

Sharma, K. C. (2001). Micro financing through self-help groups, *Indian Journal of Agricultural Economics,* 3, 460.

Shaw, E., Lam, W., Carter, S., & Wilson, F. (2006). Theory, Practice and Policy: An Integrated View on Gender, Networks and Social Capital, International Council for Small Business, 51st World Conference, June.

ICMEM

Spohrer, J., Maglio,. P. P.(2008). Fundamentals of service science, *Journal of The Academy of Marketing Science,* 36, 18-20.

Spohrer, J., Maglio, P. P., Bailey, J. & Gruhl, D. (2007). Towards a science of service systems, *Computer,* 40, 71-77.

Suja, S. (2012). Women Empowerment Through Self-Help Group: An Evaluative Study, *Global Management Review*, 6:68-82.

Vargo, S. L., Lusch, R. F. (2008). *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions*, M. E. Sharpe, Armonk, NY.

Vargo, S. L., Lusch, R. F. (2016). Institutions and axioms: an extension and update of service-dominant logic, *Journal of the Academy of Marketing Science*, 44:5-23.

World Bank. (2018). *Women Entrepreneurs in Indonesia: A Pathway to Increasing Shared Prosperity,* received from http://documents.worldbank.org/curated/en/738881467782741648/Women-entrepreneurs-in-Indonesia-a-pathway-to-increasing-shared-prosperity.

Zine, P. U., Kulkarni, M. S., Ray, A. K., Chawla, R. (2016). Designing flexible service systems: Application to machine tool. *Journal of Interantional Manufacturing,* 27.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Investigation of SMEs' IP Management at Different Growth Stages: A Preliminary Study in SMEs

Eko Agus Prasetio[a], Dina Dellyana[b], Safrani Nurfatiasari[c*]

[a,b,c]*School of Business and Management, Institute of Technology Bandung, Indonesia*

Abstract

To remain competitive in the globalization era, SMEs should expand their distinct resources to better satisfy customer needs and limit imitative competition. The undertake action that can be done to manage its distinct resource is through filing intellectual property as formal protection, yet, only a small number of SMEs in Indonesia has registered to formal IP protection. The internal environment of SMEs which different in each stage of growth due to the distinction of availability of resources can be a factor, accordingly, this preliminary study attempted to investigate SMEs' consideration toward intellectual assets management on each growth stage. As the number of respondent is considered insufficient to conduct the regression analysis, we try to get insight through descriptive data analysis. The result shows that different consideration seems to occur in each stage of growth, particularly in deciding IP protection management between SMEs in the inception stage and the growth stage. The SMEs in the inception stage most likely prefer to register IP in formal way, while SMEs in the growth stage most likely to do continuous innovation in terms of successive product development without considering for protection.

Keywords: Small Medium Enterprise, Intellectual Property Management, Stage of Growth

1. Introduction

Small and medium enterprise (SME) has been exposed to the impact of globalization and internationalization such as the uncertainty of the market and the high level of market turbulence. Market turbulence can be defined as the intensity level of change in customer preference (Olson, Slater, and Hult, 2005). In this situation, the market environment can be challenging, moreover, the rapid advancement of technology utilization by customer and businesses has been made competition to be fiercer. To remain competitive, the pioneer of resource-based view (Penrose, 1995) suggest firm should expand their distinct resources to better satisfy customer needs and limit imitative competition (Barney, 2003; Foss and Knudsen 2003). The undertake action that can be done to manage its distinct resource is through filing intellectual property as formal protection.

In Indonesia, intellectual property protection has been promoting by the government since the early year of 2000 until now. The first move to promote IP protection was initiated by the ministry of trade in order to lift up creative industry development, then in 2015, Indonesia government establish a special agency, named BEKRAF (Badan Ekonomi Kreatif Indonesia) to continue the development of the creative industry as one of the economic pillars. However, the effort of the Indonesian government in promoting IP protection seems lack of effectiveness due to the result that registered IP by SMEs are still low. For instance, less than 1% of SMEs in a creative sector that protected by formal IP protection and in 2014 only 7,2% of SMEs register their trademark (Sinaga, 2014; BEKRAF and BPS, 2016).

According to BEKRAF (2017), there are several factors that make SMEs reluctant to register their IP as follow: the low law enforcement to misappropriation such as imitation and piracy, impractical and costly administration. The

---

* Corresponding author.

ICMEM

SMEs also disappointed to the society due to the lack of appreciation of intellectual property. The huge number of misappropriation cases and lack of appreciation from the society can be caused by the low level of IP literacy. The report from BEKRAF reveals that the reluctant factors are from the external environment of SMEs, while most of the previous study shows that the major hinder factor is from the internal environment of SMEs which often underestimate the existence of intellectual property as future revenue stream (Gee, 2007; Sukarmijan and Sapong, 2014).

In general, internal environment includes the resources, capabilities and competencies are corresponding with the ability of the firm to grow. SMEs often dealing with many constrains in the each growth phase. Financial aspect is consider as the main problem for SMEs in the early stage of establishment. The SMEs usually rely on founder's funds with the major investment usually distributed to the development of production site and the equipment (Quartey et al, 2017; Scott and Bruce, 1987). With the limited of resources and capital, SMEs most likely in haste to generate profit in order to sustain their business. As a result, SMEs in emerging country seems overlooked the activity that required investment but cannot generate sales in the short time. When the business profitable enough, firms are move out to the next phase. Competition in the industry is change due to the entrants of the new comers. In this phase, small medium enterprise facing a new challenge to win the fiercer competition, moreover, if the larger company try to enter the market, price battle will occur. The larger company has better position to develop and commercialize the product or service in affordable price. In order to win the battle, small medium enterprise often seek to raise the cash by admitting new partner or meeting investor. The changes of environment in every stage of growth seems influence firm's decision toward their future strategy. Thus, it may be also affected to SMEs' consideration towards hinder factors to register their IP in formal protection.

This study attempted to examine the influence of the growth stage in small medium enterprise as moderation factor on deciding their attitude toward the hinder factor of their willingness to register the formal IP protection particularly in Indonesia, while recent study (Kitching and Blackburn, 1998; Gee, 2007) and report (IPRIA, 2005 and BEKRAF, 2017) only explain about the barrier of SMEs to register the formal IP protection. This study will conducted using multi linear regression analysis to examine the proposed model. The expected result from this study is to see the relationship between the stage of growth in small medium enterprise with their attitude toward inhibiting factor and willingness to register IP. This study can contributes to give insight to the policymaker regarding the future development of well-design of intellectual property promotion for small medium enterprise in Indonesia. However, due to inadequate sample, the regression analysis has not been done. Accordingly, we decided to reveals our preliminary study on this paper. The aim of this preliminary study is to investigate SMEs' consideration of intellectual asset management on each growth stage.

2. Literature Review and Conceptual Framework

2. 1. Stage of Growth in Small Medium Enterprise

The most definition of Small Medium Enterprise (SME) is based on the number of employees, sales, revenue, and loan size. The definition of SME can be different among counties due to each countries' regulator. According to the Indonesian Ministry of SME and Cooperation (2008), small and microenterprise is a business unit which generates profit not more than Rp. 200.000.000 and sales not more than Rp. 1000.000.000 annually, while a medium enterprise can be defined as a business unit which has profit between Rp. 200.000.000 until 10 billion Rupiah per year.

The development of small-medium enterprise usually measures through its size that closely related to the performance of its resources. Firm resources reflect the ability of the firm to take a risk and expand its business. Financial, human, technology and organizational resources are the indicators that commonly examine during the investigation of SMEs development (Wernerfelt, 1984; Ekeledo and Sivakumar, 2004). However, aside from the enterprises' performance, the development of SMEs can be investigated through their daily routines. The literature reveals that SMEs commonly facing distinct problem and crisis during their development that creates a kind of pattern which can help managers or founders of SMEs plan their future growth (Churchill and Lewis, 1983; Scott and Bruce 1987).

ICMEM

The model that has been developed by Scott and Bruce (1987) attempted to describe the stage of growth in a small-medium enterprise through defining the crisis and the company situation to five stages without disregard the common indicator such as sales, total assets, or the number of the employees. The five stages of growth are:
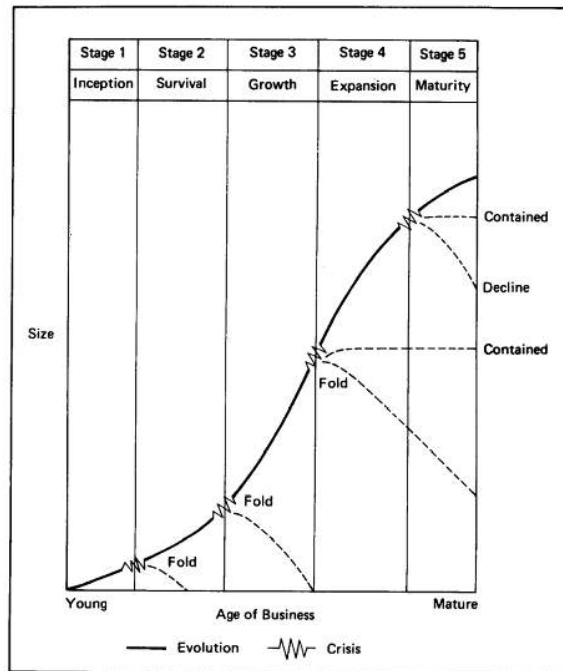
Figure 1. Stage of Growth by Scott and Bruce (1987)

Stage 1 – Inception

Inception is an initial time when business just begins to develop. The reason for SMEs to establish are closely related to the founder's background such as basic skill, education, and hobby, it is somehow determined the main concentration of the business. In this stage, the focus of the business effort will be to develop the product that acceptable by the market and establishing the market. Funding will depend on the founder, friends, and family. The common crisis at this stage is struggling to remain in the market and generate a positive cash in order to survive. With the push of profits and increased business activity, the firm also deals with administration issues, some improvement in the systems and record keeping are needed. The founder also needs to be ready to enlarge the human resource size due to the increase in business activity and initiate to delegate administrative tasks. If the founder cannot accept the challenge in a short time then the firm will fold due to a limited time that firms have to spend on this stage.

Stage 2 – Survival

When the firm can going through the inception stage to the survival stage it can be said that it is a workable business unit. In the survival stage, the level competition is still uncertainty but if the business doing well it might be attracting new entrants. If the barriers to entry are not much, the competition will be increase and decrease the chance of business to depend on differentiation as a business core strategy. The crisis that most likely to occur is the complexity of expanded distribution channels. With the aim to drive the sales growth, the market channel will need to expand. The new market maybe has a new rule of the game. This action requires a firm to be restructured with the adaptation of management style with more emphasize on delegation and coordination from distance. If the business doing well, increase in a number of the competitors will arise and differentiation will be difficult to maintain. Shifting to economic of scale strategy can be a choice, yet, this action should be supported by expanding new skill and equipment which

ICMEM

requires more capital. The founder can consider engaging with the new partner in order to bring new cash to the business.

Stage 3 – Growth

The firm on this stage should be profitable but still not generate cash for the owner. As the business enlarge, the improvement on management style and structure of the firm should be improved to the more formal organization based on functional lines. The accounting system should be established, hence, skillful human resources should be placed. At this stage, formal research and development will be necessary to expand the product range. A firm can be last at this stage for a long time. The most likely crises to occur in the coming of larger companies to the industry and change the competition once again that resulted in to pressure on price since larger company often use economies of scale as a major strategy. To succeed in the competition, extensive investment of time and resources in product and development should be needed. As larger company entrants to the industry, challenges in expansion into new market or products is occurring. To cope with this challenge, organizational structure will need to change, the more decentralized structure will be necessary due to the increase of administrative issue to control and coordinate.

Stage 4 – Expansion

The firm at this stage more likely has to be prepared to improve administration function including budget control, management report and decentralized authority. As the company starts to be a professional business, the most likely crises to occur is the distance of top management from the action. It is a challenge for the founder's entrepreneurship since the company no longer the same as the first time he starts the new business. The professional managers have more power and authorization to make a decision. Other crises to cope with is too focus on internal product and disregard the external changes. As competition fiercer, to maintain competitive advantage through a differentiated product requires intensive effort. Put more attention on the changes in customer needs and marketing strategy which can fulfill their needs is absolutely needed.

Stage 5 – Maturity

Unlike the maturity stage on product lifecycle, the small-medium enterprise at this stage is still growing. They are growing to move out from SME to be a large company. The most likely crises are expenses control, productivity and finding growth opportunities. The firm should focus to maintain investment in the marketing effort and operation sites upgrading.

2. 2. Growth Stage of Small Medium Enterprise and Willingness to Register IP.

Small medium enterprise facing many challenges at every stage to be dealing with and IP related issues can be a threat or otherwise can be a solution for the firm. When the firm starts the business and enters the industry with the new product, they are struggling to be accepted by the market. The process of making the product, resources and the product itself might be the intellectual property that should be protected. Intellectual property providing opportunities for future profit. SMEs may generate income through licensing, sale or commercialized the IP product. Furthermore, in the next stage, SME will be facing the need of new capital in order to expand their business then IP may provide better value or bargaining position of SMEs when facing the investor or financial institution. If the SMEs failed to protect their IP in the beginning, a good creation or invention may be lost and claimed by the larger company. The larger company has a better position to bring the invention or creation to the market with more affordable price due to their adequate capital. SMEs who are the original inventor may be left behind and failed to generate any financial benefit from its intellectual property asset.

To be capable of protecting and capturing benefit from IP, firms must capable to identify its knowledge that is worth to be protected (Levin et al, 1987). Considering external and internal environmental resources appear to be an essential step in IP strategy. Internal consideration of IP including asses vulnerability, arrange a protection strategy and growth plan in order to strengthen IP strategy. The internal scanning should be supported with external scanning. As a firm will understand competitors' patents, it can leads firm to define a comprehensive IP strategy (Brown and Prescott, 2004; Chaudhry et al, 2009; Berard and Delerue, 2010). Much of previous research reveals the factor that makes SMEs slow to protect their IP. The lack of information, high cost, impractical and time-consuming are the factor

ICMEM

that mostly shows by the empirical study become the inhibitor factors, particularly in a developing country (Gee, 2007; Sukarmijan and Sapong, 2014). In Australia, the lack of awareness is not a significant factor that hinders SMEs to register form IP protection, however, the cost of IP enforcement is a significant barrier. The second focus of SMEs in Australia is they perceived insufficient of benefit, in terms of the protection benefit. The SMEs afraid that even the company possess IP protection, it would be no guarantee against imitation by competitors (IPRIA, 2005).

It seems to be able to turning IP assets to be business assets with real market value require many aspect including resources and capabilities of the firms. Unfortunately, small medium enterprise often have an inadequate of resources and capabilities when they first start the business. However, refer to stage of growth by Scott and Bruce (1987), resource and capabilities of the small medium enterprises will develop along their journey if they can respond to the environment changes. Thus, we argue that small medium enterprise will respond differently toward the barrier factor that influence to their willingness to register IP. There are six of barriers factor that maybe moderated by the growth stage of small medium enterprise, including lack of awareness, lack of information, costly to register, low law enforcement, perceived insufficient of benefit and SMEs' unique business strategy.

Based on our focus group discussion (FGD) with SME founders in 2017 we can argue the hypotheses as below. Lack of awareness and lack of information problem is closely related to the low level of IP literacy. Although the Indonesia government has been promoting IP in various manners and the advancement of information technology enable SMEs to get the IP related information in easiest way, it seems their willingness to knowledgeable about IP is the major reason. The willingness to understand about intellectual property maybe influenced by insufficient of competent employee of human capital in the firm. The SME owners may also put less attention to IP since IP related requires more investment and they prefer to take the fastest strategy to generate profit in the initial phase. It also make the cost to register IP considered as too expensive for them. On the other hand, the law enforcement is still weak. A huge number of IP piracy and infringement cases considered as a reason for SMEs perceive formal IP protection is less benefit in term of protection that will disadvantage them in terms of financial aspect. With this regard, SMEs implement unique strategy to protect their intellectual property by unprotecting the intellectual property. To maintain their differentiation strategy, SMEs prefer to do continuous innovation without consider to protect it, while the SMEs that focusing to economies of scale strategy prefer to let intellectual property imitate by competitor. We argue, all this matters are caused by the lack of financial resources, capabilities and competencies in early stage of SMEs development since usually Indonesian SMEs rely on owners' fund and skill to building the business. As their business become bigger and profitable, SMEs are able to increase financial resource and human capital that will make them more capable to managing their intellectual property. Thus, we hypothesise that:

H1 : (a) Lack of awareness, (b) lack of information, (c) costly to register, (d) low law enforcement, (e) perceived insufficient of benefit, and (f) unique business strategy as the inhibiting factors that are negatively associated with willingness to register intellectual property.

H2 : Stage of growth in small medium enterprise will moderate the relationship between (a) Lack of awareness, (b) lack of information, (c) costly to register, (d) low law enforcement, (e) perceived insufficient of benefit, and (f) unique business strategy as the inhibiting factors and their willingness to register intellectual property.

H3 : Stage of growth will positively associated with willingness of SMEs to register intellectual property.

ICMEM
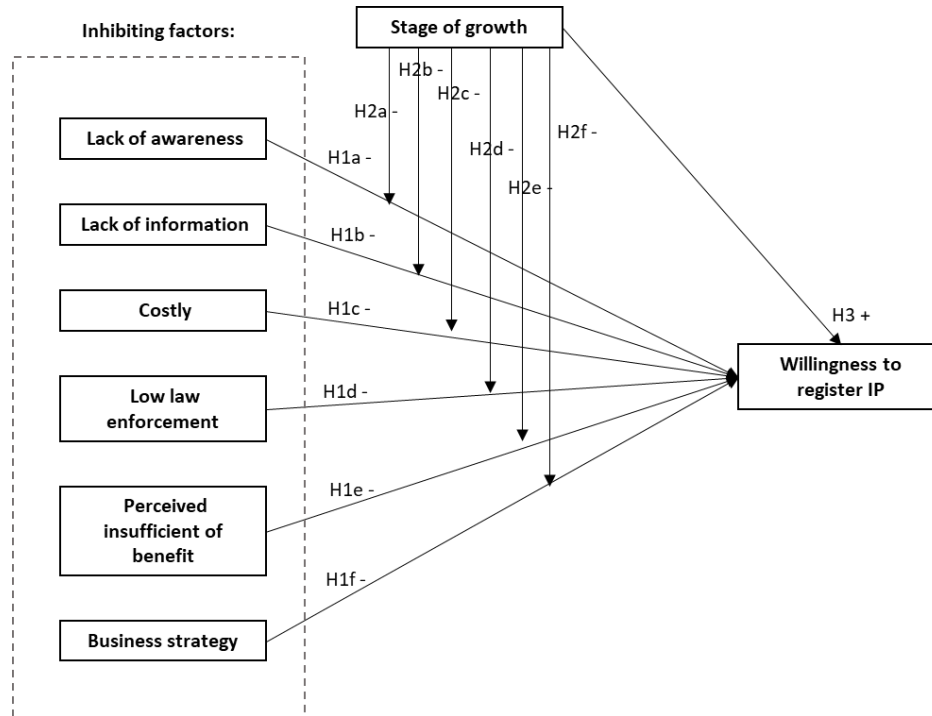
Figure 2. Conceptual framework of moderating effect of stage of growth on the relationship between inhibitor factors and willingness to register intellectual property in small medium enterprise.

3. Methodology

The sample of this research are SME in Indonesia, currently, we have collected 33 respondents which not adequate to fulfill the regression analysis. This preliminary study provide with descriptive analysis. The survey was conducted by collecting the questionnaire responses through online form survey.

ICMEM

4. Result of Preliminary Study
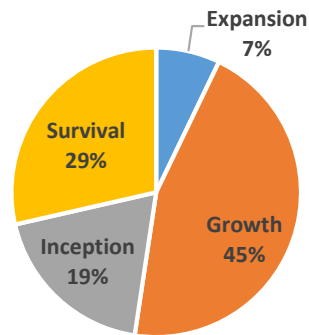
Figure 3. The composition of respondent according to the stage of growth

The respondent of this study is the small-medium enterprise in Indonesia. The most of respondent is in the growth stage, while only small numbers of respondent are in expansion stage. SME in the survival and inception stage is dominating in this survey by 48%. The difference in the stage of growth among SMEs might offer the interesting insight into the decision in IP management. The various sector of business also might have a different perspective while viewing the factors that can be affected by their willingness to register IP.

The first thing to examine in this survey is the awareness of SMEs regarding IPR. The respondent asked whether they do not know about IPR. Most of the respondent are disagree with this statement. It indicates that most of them are aware of the existence of the intellectual property right in their business, yet, 30% of respondent are not aware of IPR. The SMEs in the survival stage is the most SMEs that agree with the statement.
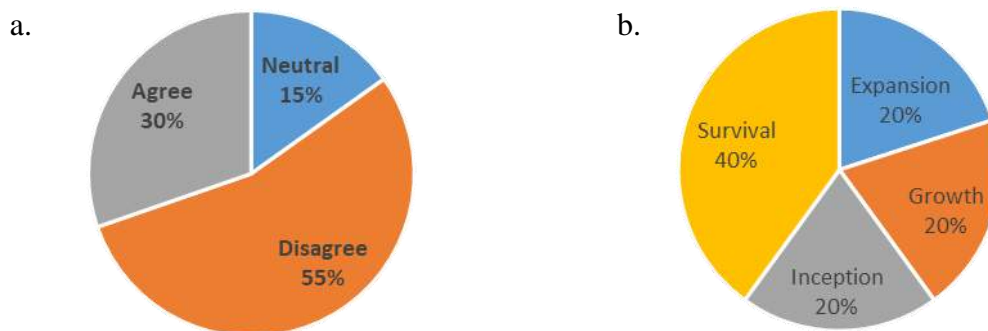
Figure 4. The cognition of intellectual property among SMEs

The cognition of intellectual property is related to the availability of information or the reachability of information. The survey indicates that most SMEs can reach the information regarding IPR and the information that they received is quite interesting to be known. However, still, 37% of respondent perceived difficulties to find information regarding the requirement and how to register IP.
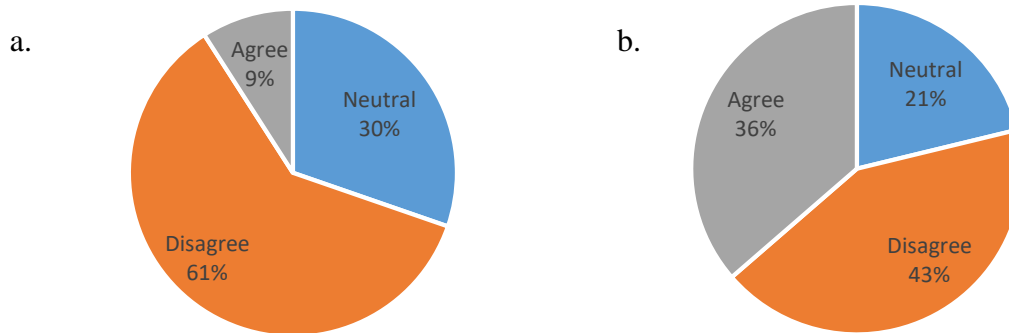
Figure 5. (a.) Insufficient information regarding IPR; (b.) unattractiveness of information regarding IPR

The cost of IP registration is the second factor that might be become inhibitor factor for SMEs to not manage their IP with formal protection. Interestingly, 40% of respondent are neither agreed nor disagreed with the statement. They choose to remain neutral. SMEs in the level of growth tend to agree that it is too expensive for them to register the IP while most of SMEs in the inception stage and survival stage are tend to neutral. Despite it, the SMEs in inception stage and survival stage has different respond aside from neutral respond, SMEs in the inception stage tend to disagree with the statement while the survivals tend to agree with the statement. We argue that most SMEs cannot decide whether the cost of IP registration is expensive or worth enough while considering the benefit of formal IP protection. It is because, in the survey, they also asked whether to possess the formal protection of IP can generate good benefit for their business. Most of the respondent, 67 % of them, agree that their business could generate good benefit from the register the IP.

ICMEM
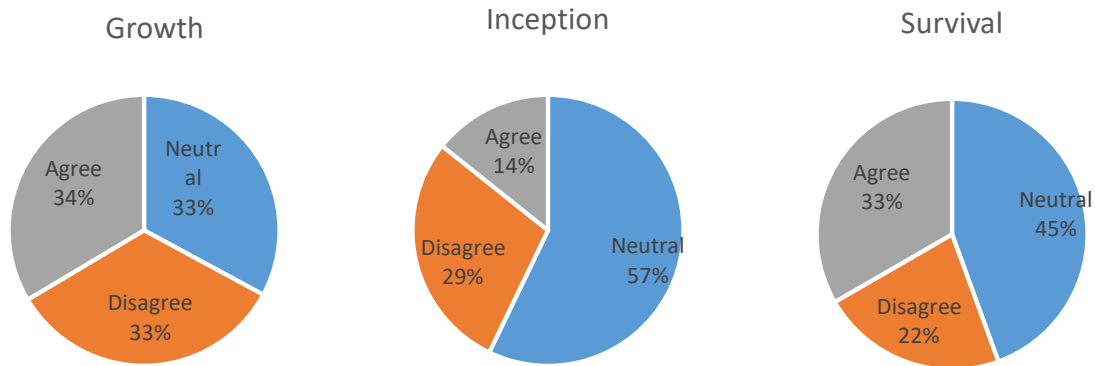
Figure 6. Respond to "costly to register IP" statement according the stage of growth

Formal protection of IP offers authorization that protecting by law for IP owner. In this survey, most of the respondent perceived insufficient of the benefit of law protection. 79% of respondent agree that formal protection cannot protect them from imitation. The respondent agrees that even though they possess the formal protection, it is not guaranteed that they will win the lawsuit if misappropriation occurs. It indicates that distrust with the law enforcement is occurred among SMEs, moreover, most of the respondent assumes that deal with legal issues is costly.
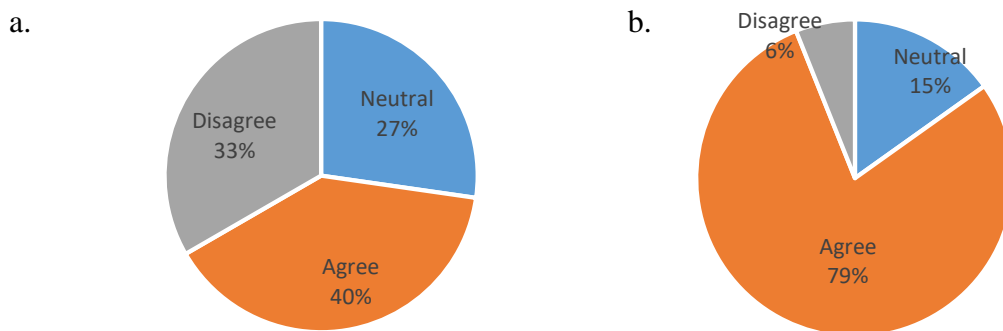
Figure 7. (a.) Perceived insufficient benefit of law protection; (b.) Perceived not protected from misappropriation of IP

The respondent also asked regarding their business strategy which can be a reason for them to be not necessary to register their IP. In this globalization era, the company sometimes deal with the rapid changes in customers' taste due to the advancement of information technology. To overcome the dynamic environment, most of the respondent in this survey agree that continues innovation is more useful rather than register the IP. Through innovation, SMEs can sustain their competitiveness without any worries to protect their IP. Yet, innovation is not the focus of SMEs in all stages. The survey indicates that SMEs has a different point of view regarding the use of innovation rather than registering to formal IP protection.

ICMEM
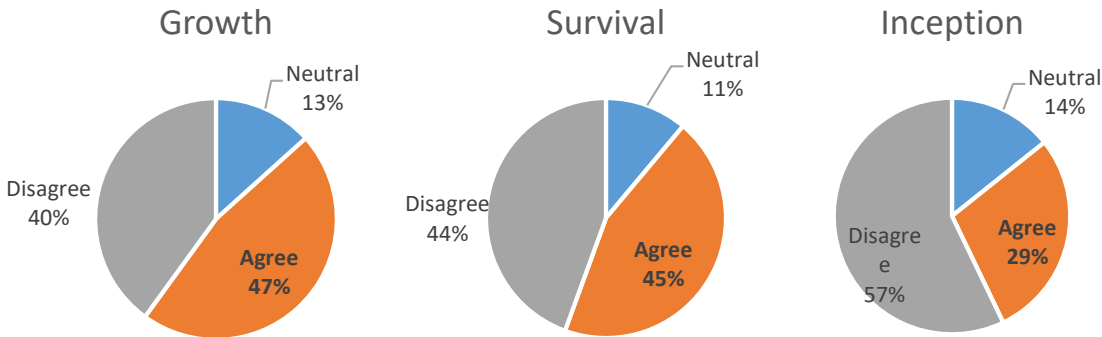
Figure 8. Perceived usefulness of continuous innovation rather than register to formal protection

5. Conclusion

Although our sample may not sufficient to represent Indonesian SMEs, we can conclude that SMEs in Indonesia are differed according to their stage of growth and has a different perspective in considering their IP related issues that may have an impact to their business. However, awareness problem, distrust of the law enforcement and business strategy issues which become inhibitor factors to register formal IP protection occurs in Indonesian SMEs.

As SMEs in growth and expansion stage seems already aware to IP, yet, they put distrust of law enforcement and administration system. The SMEs in growth stage prefer to do continues innovation than register their IP. The business sector of the respondent which majority is from creative industry such as fashion, culinary, craft and service may affect their statement to the survey. Intellectual property assets form above industry is more likely to be the intangible knowledge, for instance, know-how, recipes and human skill, which can be protected through informal protection such as trade secret. The Indonesian government has the regulation regarding trade secret as governed in the law of the Republic of Indonesia number 30 the year 2000 regarding trade secret. Therefore, the policymaker or government agency which response to IP management and SME should develop a comprehensive system that allows SMEs and society to be aware to the protection through trade secret regulation in order to protect intellectual assets which can provide a better opportunity for SMEs to be more competitive in the market.

Different from SMEs in the growth stage, on the other hand, the SMEs in inception stage and half of the survivals seems more prefer to register the formal IP protection rather than do continues innovation in order to maintain their competitive advantage. It may be because they still focus to make their product acceptable by the market and be able to commercialize while looking up for the opportunity from their intellectual property. This situation shed a light to the IP protection in Indonesia. As the growing number of SMEs is huge in Indonesia, the government should develop a well-managed program to literate this huge number of new SMEs with IP related issue with the aim to prepare the SMEs with better intellectual property management in globalization market environment.

This preliminary study reveals the importance of IP literacy since on the early stage of business development, however, it seems that stage of growth in the small business enterprise can moderated the inhibiting factor of SMEs in reluctant to register IP formal protection since SMEs in each stage has different focus and perspective regarding IP related issues. We believe it opens the opportunity for further research to investigating the moderation effect of SMEs' stage of growth to the inhibiting factor for SMEs to register formal IP protection. It may provide insight for the policy maker to design the right approach in promoting IP management to small medium enterprises.

ICMEM

References

BEKRAF and BPS. 2017. Data statistic dan hasil survey : Ekonomi Kreatif Indonesia.

Berard, C and Delerue, H. 2010. A cross-cultural analysis of intellectual asset protection in SMEs. Journal of Small Business and Enterprise Development, vol. 17, no. 2, pp. 167-183.

Brown, J.D. and Prescott, J.E. 2000. Products of the mind: assessment and protection of intellectual property, Competitive Intelligence Review, Vol. 11, pp. 60-76.

Chaudhry, P.E., Zimmerman, A., Peters, J.R. and Cordell, V.V. 2009. Preserving intellectual property rights: managerial insight into the escalating counterfeit market quandary", Business Horizon, Vol. 52, pp. 57-66.

Churchill, N. C and Lewis, V.L. 1983. The five stage of small business growth. Harvard Business Review: Entrepreneurial Management.

Ekeledo, I and Sivakumar, K. 2004. International market entry mode strategis of manufacturing firms and service firms: A resources-based view. International Marketing Review, vol. 21, no. 1, pp 68 – 101.

Foss, N.J. and Knudsen, T. 2003. The Resource-Based Tangle: Towards a Sustainable Explanation of Competitive Advantage. Managerial and Decision Economics, 24, 291-307.

IPRIA. 2005. Factor affecting the use of intellectual property protection by small and medium enterprises in Australia. Department of Industry, Tourism and Resources.

Kitching, J and Blackburn, R. 1998. Intellectual property management in the small and medium enterprise (SME). Journal of Small Business and Enterprise Development, Vol. 5 Issue: 4, pp.327-335,

Gee, H. L. (2007). Impact of the Intellectual Property System on Economic Growth. WIPO-UNU Joint Research Project.

Levin, R., Klevorick, A., Nelson, R.R. and Winter, S.G. 1987. Appropriating the returns from industrial R&D, Brookings Papers on Economic Activity, pp. 783-820.

Olson, E.M., Slater, S.F., and Hult, G.M.T. 2005. The Performance Implications of Fit Among Business Strategy, Marketing Organization Structure, and Strategic Behavior. Journal of Marketing: July 2005, Vol. 69, No. 3, pp. 49-65.

Penrose, E.T. 1995. The Theory of the Growth of the Firm. Oxford: Blackwell.

Quartey, P., Turkson, E., Abor, J.Y., and Iddrisu, A.M. 2017. Financing the growth of SMEs in Africa: What are the contraints to SME financing within ECOWAS?. Review of Development Finance, vol.7, no. 1, pp. 18-28.

Sinaga, S.V. 2014. Faktor-Faktor Penyebab Rendahnya Penggunaan Hak Kekayaan Intelektual di Kalangan Usaha Kecil Menengah Batik. Jurnal Hukum IUS QUIA IUSTUM vol. 21, no. 1, pp. 61 – 80.

Scott, M and Bruce, R. 1987. Five stage of growth in small medium business. Long Range Planning, vol. 20, no. 3, pp. 45-52.

Sukarmijan, S S and Sapong, O. D. V. 2014. The importance of intellectual property for SMEs; challenge and moving forward. UMK Procedia, vol.1, pp. 74-81Wernerfelt, B. 1984. A resource-based view of the firm. Strategic Management Journal, vol. 5, no.2 , pp. 171-180.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Customer Perception Influence towards Cash Flow Projection for Event Planner in Bandung (Case Study: Seperti yang Diimpikan Event Planner)

Nisita Nola Adalea Agma[a*], Raden Aswin Rahadi[b]

aSchool of Business and Management, Institut Teknologi Bandung, Jl. Ganeca no. 10, Bandung 40116, Indonesia

Abstract

This research discusses about expanding event planner company by creating new product to reach new market based on consumer perception and cash flow projection. This research conducted in Bandung area with 18-30 age range. According to conceptual framework in this research, online questionnaire conducted to get consumer perception information. Factors from conceptual framework and company data used to design the questionnaire. Current event planner packages used to get the price based on consumer perception and tendency to choose the package. Consumer perception information is being used for cash flow projection and finding factors affecting the tendency to choose event planner package. The findings from this research is the most important factor to consider in creating new package for event planner in Bandung is price. Price for some current packages already suitable for the market. Differentiation between package and detail explanation is important for the customer to make the decision.

Keywords: Customer Perception; Cash Flow Projection; Event Planner; Event Planner Package; Bandung.

1. Introduction

Growth is very important for business. Numerous factors contribute to develop performance and venture growth. Quick development is an indicator of worldwide business success (Navarro, Casillas & Barringer, 2012). However, rapid growth can effect a firm to collapse because running out of cash for operation expenses. The important thing is to balance revenue with expenses and make sure that there is enough cash to provide the growth of the business (Atkinson, 2014).

Expansion is part of growth in business. Firm expansion escalate demand of a product or service by reaching new market or developing current market (Bang & Joshi, 2008). Expansion is great if it is under supervision and cash flow plan. Expansion must be planned by preparing budgets which is balance sheet, cash flow analysis, and income statement (Bartecki, 2005).

To reach new market for expansion, information of consumer's perception is important for achieving sales target. Consumer decide to purchase based on their perception towards a product or services (Atkinson, 2014). If the firm follow the consumer's perception, the firm can develop a suitable product or service for the market. In the market, service or product which close to consumer's perception are likely to be choosen (Pisharodi, 1994). Successful business depends on ability to provide product or service that meet consumer's perception (Clow & Vorhies, 1993). When new market successfully reached, entreprenerur need to make sure that cash inflow and outflow are balance (Atkinson, 2014).

Projecting cash flow precisely is important for a firm. Entrepreneur has to ensure that cash needed are sufficient. The difference of cash inflows and outflows can be shown in cash flow every week or every month (Knapp, 2005).

---

* Corresponding author.

ICMEM

Report of cash inflow and outflow can help investors know capacity and capability of a firm towards cash. (Kousenidis, 2006). Poor cash flow can cause firm to collapse. Cash flow projection can support entrepreneur to make a decision for every project (Chen, 2007). Good cash flow projection can lead to business decision that support business growth.

Recently, number of people celebrating a special event extensively rising. The impact of rising number and complexity of the event is high demand for event planning and management service (Thomas & Adam, 2005). Event planner design and create the event with many stakeholder that have a define objective. Event planning and management business focusing on integrating resources, designing the event, and managing system for the event (Getz, 2007).

"Seperti yang diimpikan" is one of event planner that focusing on thematic event based on client's interest and personality. The design of event will be unique for each client. "Seperti yang diimpikan" located in Bandung with narrow target market. Current target market of "Seperti yang diimpikan" is people in 17-30 years old with upper middle ecomomic class. They live in Bandung with busy daily schedule and like to celebrate a special day. "Seperti yang diimpikan" will expand the business in order to reach new market. Cash flow projection will be used to make the decision for expanding the business.

2. Literature Review

2. 1. Cash flow projection

Cash flow projection is term features conspicuously in the project to get huge capital amount and possibilities to do it (Fight, 2005). In cash flow projection, there are operating cash flow, capital spending, and changes in net working capital. All of the components are important to constructing cash flow projection. In total cash flow projection, there are addition such as net present value, internal rate of return, and payback. Cash flow projection formula is operating cash flow projection minus changes in net working capital projection and capital spending projection (Ross, et al., 2010).

Data for operating cash flow is based on income statement (Ross, et al., 2010). Operating cash flow should be positive. If it is negative for a long period, the company is in trouble because it did not get enough cash to pay operating cost (Westerfield, et al., 2010). Formula of operating cash flow is:

$$Operating\ cash\ flow = Earnings\ before\ interest\ and\ taxes\ (EBIT)$$
$$+\ Depreciation$$
$$-\ Taxes$$

Net working capital is posted from balance sheet (Ross, et al., 2010). When assets are greater than liabilities, net working capital is positive. It is indicates that the cash available will greater than cash that must be paid out. Change in net working capital can be define as differences between 2 years of net working capital. For growing firm, the change in net working capital is generally positive (Westerfield, et al., 2010).

Capital spending is the difference between ending and beginning net fixed assets plus depreciation (Westerfield, et al., 2010). When a firm sold more assets than it purchase the net capital spending could be negative (Ross, et al., 2010).

NPV is the difference between cost and market value. Take the project if the NPV is positive. Estimating NPV by computing the present value of the future cash flows then subtracting the cost. NPV is preferred criterion of decision and has no serious flaws (Ross, et al., 2010).

IRR provides a single number that summarize the merits of a project. The number is not depend on the interest rate in capital market (Westerfield, et al., 2010). IRR is the discount rate that cause the projected NPV equal to zero. IRR and NPV is related closely that leads to same decisions as NPV for a projects. Highest IRR in a project is not the preferred investment (Ross, et al., 2010).

ICMEM

Table 1. Rules of IRR.

Flows	Number of IRR's	IRR Criterion	NPV Criterion
First cash flow is negative and all remaining cash flows are positive.	I	Accept if IRR > R. Reject if IRR < R.	Accept if NPV > 0. Reject if NPV < 0.
First cash flow is positive and all remaining cash flows are negative.	I	Accept if IRR < R. Reject if IRR > R.	Accept if NPV > 0. Reject if NPV < 0.
Some cash flows after the first are positive and some cash flows after first are negative.	May be more than I.	No valid IRR	Accept if NPV > 0. Reject if NPV < 0.

The payback period is time for the cash flow investment to equals with the cost. The rules of payback period is take the project if the payback is less than prespecified number of years. The payback period ignores risk, cash flows beyond the cutoff point, and the time value of money (Ross, et al., 2010). Discounted payback period is the time for discounted cash flow until it is equal to the investment (Westerfield, et al., 2010).

2. 2.Consumer perception

Consumer perception towards specific brand can be identify by product related and non-product related attributes. The product related attributes are product function and service's requirements, while non-product related attributes are price information, packaging or product appearance, user imagery, and usage imagery (Keller, 1993).

There are five steps that considered when selecting services: (1) problem identification (2) information search (3) evaluation of alternatives (4) purchase; and (5) post purchase evaluation (W. Mullins, C. Walker Jr., & W. Boyd Jr., 2008). Consumer loyalty can be seen as the steps when consumers make a decision when purchasing a product. The first step is identifying which product to purchase, and then consumer would gather deeper data on the specified store, finding substitute, decide on purchasing on that specified store, and conduct post-purchasing evaluation for the product. When the consumer is satisfied with the store, they will turn into a loyal consumer (Rahadi , 2012).

Consumer looking for deeper information relating with the brands and products in the market when they are deciding whether to purchase or not. There are three factors for the consumer to make the decision: (1) Product factors; (2) Situational and; (3) Personal (W. Mullins, C. Walker Jr., & W. Boyd Jr., 2008). Product factors mean if the store has the product available. Situational factors mean if the experience of shopping in the store is satisfying or have excellent service quality. Personal factors mean consumer identification by register membership cards and discounts (Rahadi , 2012).

Consumers could have equal involvement with a product, consumer tend to purchase different brands and purchase in different stores for several reasons. The actions that consumers take are influenced by psychological and personal characteristics. Influence of social can affecting purchase decision of consumers when purchasing goods or services. The factors of social influences are culture, subculture, social class, reference groups and family (W. Mullins, C. Walker Jr., & W. Boyd Jr., 2008). Consumer can become loyal to specific product or store when they are facing social and environment pressure (Rahadi , 2012).

2. 3.Event planner

An event is people gathered with any purpose. Events is very various and conducted with vary of reasons. Professional event planner is needed in order to organized the various of event. Event planning is a process to organize and concepting the event which has been decided on by client. Event planning takes client through all these areas and activities that have to be planned and concepted, managed and executed to make sure that the event is successfully executed (Carter, 2012).

ICMEM

Customer Perception	Cash flow projection
• Price information • Packaging or product appearance • User imagery • Usage imagery • Product function • Service's requirements • (Keller, 1993)	• IRR • NPV • Payback
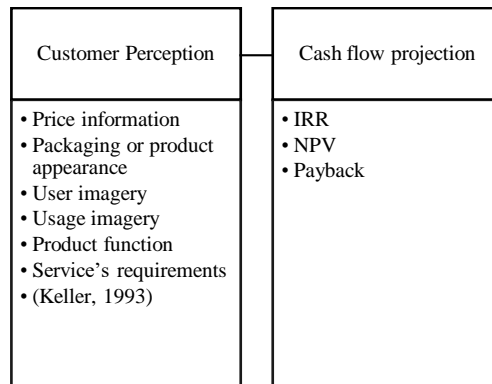
Fig. 1. Conceptual framework.

Consumer perception based on factors from Keller 1993 conducted to get the information about the suitable price for the packages, composition of package variance, and also ideal product for event planner in Bandung. Cash flow projection produce by combining current data from the company and consumer perception data. From the cash flow projection, there will be projected IRR, NPV, and payback period for the company.

3. Methodology

Online questionnaire conducted for this research. The data gathered from 141 respondents in Bandung area. The respondents are in 17-30 age range. Non-probability random sampling that used in this research is snow ball sampling. The data collected by using social media such as Line and Whatsapp.

The purpose to conduct this questionnaire is to get the information about customer perception towards event planner in Bandung. Expectation from this questionnaire are getting information about the suitable price for the packages, composition of package variance, and also ideal product for event planner in Bandung based on "Seperti yang diimpikan" event planner case.

The questionnaire produced with 3 sections. First section of this questionnaire is about demographic of the respondent. The second section of this research is about behavior of the respondent towards event planner. The third part of this questionnaire is about respondent perception towards composition of the package, tendency to choose the package, and also the suitable price for the packages.

In order to minimized bias, supporting attributes such as picture and description in Appendix 1 are stated in this questionnaire. The respondent choosing from the likert scale from 1-6, 1 reflecting strongly disagree and 6 reflecting strongly agree with the statement. Based on the composition that the respondents choose with likert scale, respondents asked to choose their tendency to choose from 3 packages provided. The respondents also choosing their preferences towards price of the packages.

4. Analysis and Result

In this section, provided findings from the conducted online questionnaire of consumer perception towards "Seperti yang Diimpikan" event planner in Bandung area. This research using descriptive statistics such as analysis of mean, mode, and consumer perception towards the price.

4. 1. Mean analysis

Based on analysis using SPSS, mean analysis appeared in reliability test by using Cronbach α. Score of Cronbach α for this research is 0.719 that summarized the data is reliable. From Table 2, price appeared with highest mean score

ICMEM

(5.376) and flower appeared with lowest mean score (3.624). After price, the order from highest to lowest score are concept (5.333), completeness of package (5.319), theme (5.057), customization (4.922), and location (4.631).

Table 2. Mean analysis.

No	Label	Response Frequency						Total	Mean
		1	2	3	4	5	6		
1	Concept	1	1	1	18	46	74	141	5.333
		0.7%	0.7%	0.7%	12.8%	32.6%	52.5%	100%	
2	Location	1	2	12	46	52	28	141	4.631
		0.7%	1.4%	8.5%	32.6%	36.9%	19.9%	100%	
3	Theme	2	0	5	24	60	50	141	5.057
		1.4%	0%	3.5%	17.0%	42.6%	35.5%	100%	
4	Completeness of package	1	0	3	18	46	73	141	5.319
		0.7%	0%	2.1%	12.8%	32.6%	51.8%	100%	
5	Flower	7	16	35	58	15	10	141	3.624
		5.0%	11.3%	24.8%	41.1%	10.6%	7.1%	100%	
6	Price	0	0	2	15	52	72	141	5.376
		0%	0%	1.4%	10.6%	36.9%	51.1%	100%	
7	Customization	1	3	11	28	46	52	141	4.922
		0.7%	2.1%	7.8%	19.9%	32.6%	36.9%	100%	

4. 2.   Mode analysis

Mode analysis used to support the findings from mean analysis. From the mode analysis, flower get the lowest score (4). While concept, completeness of package, price, and customization get highest score (6). Location and theme get 5 score from the mode analysis.

Table 3. Mode analysis.

	Concept	Location	Theme	Completeness of package	Flower	Price	Customization
Mode	6	5	5	6	4	6	6

4. 3.   Customer perception towards event planner package

In final section of the questionnaire, respondents chosen their tendency to choose the packages and price preference about the package. Table 4 shows that highest tendency of package that chosen from the respondents are Cirrostratus

ICMEM

with 46%, while tendency of Nimbostratus and Altostratus is the same in 27%. Based on the data, the most suitable price for Nimbostratus is IDR 400,000, Altostratus is IDR 807,500, and price for Cirrostratus is IDR 1,500,000.

Table 4. Customer perception towards event planner package.

No.	Package	Tendency	Price (in IDR)	Percentage
1	Nimbostratus	27%	380,000	47.5%
			400,000	49.0%
			420,000	3.5%
2	Altostratus	27%	807,500	63.8%
			850,000	34.0%
			892,500	2.2%
3	Cirrostratus	46%	1,425,000	45.4%
			1,500,000	46.1%
			1,575,000	8.5%

4. 4. *Cash flow projection based on respondent preferences*

Table 5 provides cash flow projection based on "Seperti yang Diimpikan" and customer perception towards the package price. The order of projected cash flow from the first year is -IDR 29,102,680, -IDR 7,172,210, IDR 23,111,111, IDR 62,504,447, IDR 139,038,106. The actual cash flow is expected to be positive as in the projected cash flow. In Table 6, the projected NPV is IDR 75,043,894. IRR of this cash flow is 35.51%. And the payback period is expected in 2 year, 2 months, and 26 days.

Table 5. Cash flow projection of "Seperti yang Diimpikan" event planner.

Year	0	1	2	3	4	5
Projected cash flow	-IDR 32,858,610	-IDR 29,102,680	-IDR 7,172,210	IDR 23,111,111	IDR 62,504,447	IDR 139,038,106

Table 6. NPV, IRR, Payback period.

NPV	IDR 75,043,894
IRR	35.51%
Payback period	2 years, 2 months, and 26 days

5. Conclusions and Recommendations

Based on the research, the highest factor of package composition is price. After price, other factor to consider are concept, completeness of package, and customization. Respondents not highly consider about the theme and location. The lowest factor to consider is flower.

The perception about package price from the respondents for Nimbostratus and Cirrostratus are fit with current package price of "Seperti yang diimpikan" event planner. It means that the price provided was already fit the market. For Altostratus, the respondents choose the lowest price of the options. It means that price for Altostratus package is overpriced based on the data. In suggestion column of questionnaire, some respondents state that they cannot see significant difference between Nimbostratus and Altostratus.

Recommendation from the data result in this research that could be consider for event planner in Bandung to produce new package:

ICMEM

- Considering price that worth the package is the most important. Concept, completeness of package, and customization can be offered for new package. Since respondents not highly consider about the flower, event planner can take the advantage to cut the cost for flower combination. Theme and location is also not highly consider by the respondents.
- The package price already met the expectation of the respondents. Differentiation between package that shows the detail of the package is recommended to attract the customer and help consumer to decide which package that they will choose.

Appendix 1

Supporting questionnaire attributes.

References

Atkinson, S.(Ed.) (2014). *The Business Book* (1st ed.). London: Dorling Kindersley Limited.

Badan Pusat Statistik (2016). Jumlah Penduduk Menurut Kelompok Umur dan Jenis Kelamin di Kota Bandung, Bandung.

Bang, V.V.a.S.L.J. (2008). Conceptualization of Market Expansion Strategies in Developing Economies. Academy of Marketing Science Review, vol. 2008, pp. 1.

Bartecki, G. (2005). Plan Ahead for Business Expansion. AC Business Media. Fort Atkinson.

Chen, Mark T,P.E., C.C.E. (2007). ABC of Cash Flow Projections. AACE International Transactions, , (pp. PM21-PM25).

Clow, K.E. & Vorhies, D.W. (1993). Building a competitive advantage for service firms: Measurement of consumer expectations of service quality. The Journal of Services Marketing, **7**(1), pp. 22.

Carter, L. (2012). Event Planning (2nd ed). Bloomington: AuthorHouse.

Dhar, R., & Simonson, I. (2003). The effect of forced choice on choice, Journal of marketing research, 40(2), 146-160.

ICMEM

Getz, D. (2007), Event Studies: Theory, Research and Policy for Planned Events (1st ed). Oxford: Elsevier Ltd..

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. Journal of Marketing, 57(1), 1-22.

Knapp, J. (2005). Projecting Cash Flow -- Sorting Out the Information That Will Allow You to Make Well-Informed Decisions About Your Company's Money. New York: New Bay Media LLC.

Kousenidis, D.V. (2006). A free cash flow version of the cash flow statement: a note. Managerial Finance, vol. 32, no. 8, pp. 645-653.

Navarro, J.L.B., Casillas, J.C. & Barringer, B. (2012). Forms of growth: How SMEs combine forms of growth to achieve high growth. Journal of Management and Organization, vol. 18, no. 1, pp. 81-97.

Pisharodi, R.M. (1994). Preference for supplier when supplier and customer perception of customer service levels differ. Logistics and Transportation Review, vol. 30, no. 1, pp. 31.

Rahadi , R. A. (2012). Factors Related to Repeat Consumption Behaviour. Malaysia: Elsevier L.

Ross, S. A., Westerfield, R. W. & Jordan, B. D. (2010). Fundamentals of Corporate Finance (9th ed). New York: McGraw-Hill/Irwin.

Thomas, M. & Adams, J. (2005). Adapting Project Management Processes to The Management of Special Events: An Exploratory Study. Academy of Strategic Management Journal, vol. 4, pp. 99-114.

Wahlen, J. M., Baginski, S. P. & Bradshaw, M. T. (2008). Financial Reporting, Financial Statement Analysis, and Valuation: A Strategic Perspective. Mason: s.n.

W. Mullins, J., C. Walker Jr., O., & W. Boyd Jr., H. (2008). Marketing Management: A Strategic Decision-Making Approach. Singapore: McGraw Hill.

Westerfield, R. W., Ross, S. & Jaffe, J. (2010). Corporate Finance (9th ed). New York: The McGraw-Hill/Irwin.

FINANCE AND INVESTMENT

ICMEM IBEC

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of the Fama-French 3-Factor Model and the Enterprise Value Multiple on Returns

Isrochmani Murtaqi[a*], Sylviana Maya Damayanti[b], Raden Aswin Rahadi[c]

Abstract

This study analyzes the impact of enterprise value multiple (EV Multiple), and the Fama-French 3-Factor Model comprising book-to-market, beta, and market capitalization, on security returns on 30 big market capitalization stocks listed in the Jakarta Stock Exchange (IDX) for the period of 2014 to 2016. The independent variables serve as a proxy for the following; EV Multiple for investing risk on the part of investors, book to market for value risk, beta for non-diversifiable risk, and market capitalization for size risk.

The empirical evidence in this study shows that beta has a significant and positive impact on security returns; this is consistent with Sharpe, Lintner, and Black who created the Capital Asset Pricing Model (CAPM) in which non-diversifiable risk as measured by beta was touted the only significant risk of an asset, and that beta as a measure of non-diversifiable risk, when taken in isolation, is positively related to security returns. However, this is inconsistent with the finding made by Fama and French (1992) in which beta does not have a significant impact on security returns when beta is included in the Fama-French 3-factor model.

The empirical evidence in this study shows that book to market has a significant and positive impact on security returns; this is consistent with the findings made in the Fama French 3-factor model. The book-to-market signals distress; in other words, the higher the book-to-market ratio, the higher is the firm's distress; therefore the higher are the security returns expected by investors of said firm.

The empirical evidence in this study shows that the Enterprise Value Multiple has a significant and negative impact on security returns. This is in line with the finding made by Laughran and Wellman (2010), and by Iglejas et al (2017).

The empirical evidence in this study shows that market capitalization has a significant and negative impact on security returns. This is consistent with the findings made in the Fama French 3-factor model. They found that the security returns on the small capitalization stocks at NASDAQ, Amex, and NYSE were on average higher compared to that of the big capitalization stocks; in Fama's words "smaller stocks *have higher average security returns*"

Keywords: Fama-French 3-Factor Model, EV Multiple, security returns

1. Background

This study analyzes the impact of enterprise value multiple (EV Multiple), and the Fama-French 3-Factor Model comprising book-to-market, beta, and market capitalization, on security returns on 30 big market capitalization stocks listed in the Jakarta Stock Exchange (IDX) for the period of 2014 to 2016. The independent variables serve as a proxy for the following; EV Multiple for investing risk on the part of investors, book to market for value risk, beta for non-diversifiable risk, and market capitalization for size risk.

Loughran and Wellman (2010) conducted a cross-sectional analysis on stocks in the NYSE, Amex and Nasdaq to determine the relationship between the EV Multiple and stock returns. Igrejas et al (2017) conducted a similar study of stocks listed in the Brazil Stock Exchange between 2005 and 2013. Fama and French (1992) formulated the Fama-French 3-factor model to allow for the premise that variations in security returns would be explained by beta, market capitalization and book-to-market.

---

* Corresponding author.
E-mail address: nani@sbm-itb.ac.id

ICMEM

2. Literature Review and Methodology

Enterprise value multiple (EV Multiple) is the product of enterprise value (EV) in the numerator, and earnings before depreciation and amortization (EBITDA) in the denominator. As a stand-alone, enterprise value (EV) is viewed from the standpoint of a potential investor intent on taking full control of a targeted entity; hence the entity's market capitalization plus its debt less the firm's cash and cash equivalents. That said, EV does not take the place of the free cash flow to the firm (FCFF) to compute a firm's intrinsic value. The reason is that EV measures how much the market values the firm - hence the market capitalization component of the EV; whereas FCFF measures *"...the cash flows (generated by the firm's assets) before debt payment and after reinvestment needs."*(Damodaran, 2006), rendering EV incompatible when computing the intrinsic value of a firm.

As a multiple, the EV Multiple serves as a relative valuation method. In this respect, the EV Multiple is more robust than the Price to Earnings (P/E) ratio for the following reasons: a) EBITDA excludes non-operating income and expenses, leaving only revenues generated and operating expenses incurred from the core activity of a firm. b) EBITDA also excludes depreciation and amortization expense, making it ideal as a proxy for operating cash flow. c) Enterprise value is inclusive of debt, therefore leverage plays an important part in making a comparison of returns among firms. Laughran and Wellman stated that, *"...market value of equity by itself is unlikely to fully capture the effect (that) debt has on...returns."* And according to Igrejas et al, when using the EV Multiple, *"...it is possible to include companies with different capital structures in the sample since a company's value includes the value of debt."*

The EV multiple has also been discussed in the context of value firms versus growth firms. Blazenko and Fu (2012) cited Fama and French in defining value stocks as those with low market to book ratio, with the latter having a strong and positive relationship to low profitability. In the context of growth firms, Dapena (2001) elaborated that companies may encounter growth opportunities either *"...within the value chain"* or *"outside of the core business…"* and that *"...the current value of the firm should reflect this option (for growth)"*. Laughran and Wellman stated that, *"low enterprise value multiple companies should be considered value firms while high enterprise multiple firms are growth firms."* This study follows the definition of the EV multiple as mentioned above.

In their study, Loughran and Wellman posited that the EV Multiple can be regressed to stock returns by applying the Fama French 3-Factor Model as control variables. Loughran and Wellman found empirical evidence to suggest that *"...low enterprise multiple firms significantly outperform high enterprise multiple firms."* In other words, they found the EV Multiple to have a negative effect on security returns.

In the Brazil Stock Exchange, Igrejas et al found empirical evidence that suggested similar result, in that *"…stocks with high enterprise value multiples displayed lower rates of return as compared to those with low EMs."*

Fama and French developed a model in which size risk as measured by market capitalization, and value risk as measured by book-to-market, in combination with non-diversifiable risk as measured by beta were regressed to explain the variations in security returns. Fama and French posited that there was opportunity to reap high security returns by investing in small market capitalization stocks; likewise, by investing in high book-to-market stocks. In other words, Fama and French found empirical evidence to show that market capitalization had a negative impact on security returns, and that book-to-market had a positive impact on security returns.

Beta is the covariance of the returns of a security to the market returns divided by the variance of the market returns. Beta is a measure of non-diversifiable risk ie. market risk. Market i.e. systematic risk cannot be diversified away; in other words, even with diversification, a portfolio will always have market risk. Sharpe, Lintner, and Black posited that beta was positively related to security returns. In other words, the higher the beta, the greater is the propensity of a security to exactly mimic the market; thus with higher beta comes increasing security returns as well as greater risk. This gives an investor an opportunity to attain security returns equal to or greater than the market, at the same time that he runs the risk of going bust with the market.

Market capitalization is the product of market price per share multiplied by number of shares outstanding. It is worth noting that for market capitalization, Berk (1995) used the natural log (ln) thereof because "natural log has received the lion's share in the literature", and stated that, "the logarithm of a stock's market value is an inverse predictor of its security returns". Through empirical testing, Fama and French showed that on average, the security returns of firms with low market capitalization were higher than those for firms with high market capitalization. In the words of Fama and French, *"size on average has a negative premium in the cross-section of security returns".* And

ICMEM

according to Berk, *"a firm with a low market value is more likely to be riskier than a firm with a high market value."* Investors require higher security returns to compensate for the additional risk. Consequently, when taken in the context of a regression model, market capitalization is said to have a negative effect on security returns.

Book-to-market is the product of book value of equity divided by market capitalization. The book-to-market signals distress; in other words, the higher the book-to-market ratio, the higher is the firm's distress; therefore the higher are the security returns expected by investors of said firm. In the words of Fama and French *"book-to-market equity on average has a positive premium in the cross section of security returns.";* that is, book-to-market was found to be positively related to security returns.

Although their paper used the term "expected security returns", in reality Fama and French used historical security returns in their sample set because it was the observable data. Similarly, the data applied in this study is that of historical security returns rather than expected security returns because it is the data that is readily available and observable. Security returns is computed by way of dividing the market price per share of this period by the market price of the previous period, then subtract by 1.

3. Result and Findings

The Fact Book published annually by the Jakarta Stock Exchange (IDX) includes, among others, a list of *"50 Leading Companies by Market Capitalization."* From 2014 to 2016, the period of study for this research, these 50 entities constituted from total market capitalization, a percentage of 84.23%, 76.19%, and 74.05%, respectively. In selecting the data, the writers have replicated the Fama-French model, in that the data were those of non-financial firms. Fama and French had eliminated financial institutions (which included but were not limited to consumer banks, investment banks, insurance companies, and brokerage firms) from their study because the ratios used as performance indicators at financial institutions were interpreted differently from those of non-financial institutions. According to Fama French, *"we exclude financial firms because the high leverage that is normal for these firms probably does not have the same meaning as for nonfinancial firms, where high leverage more likely indicates distress."*

Overall, the data for 30 non-financial firms was used as the sample set for this study. The 30 companies are covered in eight sub-sectors, namely (a) consumer goods, (b) infrastructure, utilities and transportation, (c) trade services and investment, (d) basic industry and chemicals, (e) mining, (f) agriculture, (g) property, real estate, and building construction, and (h) miscellaneous. The summary statistics are shown in Table 1 below.

Table 1. Summary statistics, 2014 – 2016

	RETURNS	BETA	BOOKTOMARKET	LNEVTOEBITDA	LNMARKETCAP
Mean	0.034279	0.372190	0.374963	-4.170136	10.89301
Median	0.032664	0.269245	0.284148	-4.204957	10.69337
Maximum	0.060833	1.773135	2.777778	-3.215011	13.00695
Minimum	0.012417	0.007026	0.004057	-4.906595	9.694863
Observations	90	90	90	90	90

Source: The writers

This study has the following hypotheses:
    Hypothesis 1: Beta has a positive impact on security returns
    Hypothesis 2: Book to Market has a positive impact on security returns
    Hypothesis 3: Enterprise Value Multiple has a negative impact on security returns
    Hypothesis 4: Market capitalization has a negative impact on security returns

ICMEM

In this study, the writers conducted a unit root test to determine whether to not reject the alternative hypothesis that the time series data are stationary. According to Hossain (2008), *"stationary time series data is necessary to have a valid t-statistics and F-statistics"*. Time series data that is non-stationary may only be used to explain conditions occurring within the time-frame of that particular sample set. In other words, data that is non-stationary cannot be used to generalize conditions in some other time-frames, thus making the data ineffective as a forecasting tool. By using the unit root test in the EViews software package and by applying the Augmented Dickey Fuller (ADF) test on each of the variables in the regression model, the writers do not reject the alternative hypothesis that the variables are stationary at level.

Next, by means of the Hausman test for panel model specification, the writers do not reject the null hypothesis that the individual effects of the panel data have no bearing on other independent variables in the model; thus indicating that Random Effect is to be selected.

Next is to ensure that the assumptions of the classical normal linear regression model are being met; in other words, that multiple regressions using ordinary least square (OLS) is the best linear unbiased estimator (BLUE). To this end, we do not reject the null hypotheses for each of assumptions tests mentioned below:
- Test of autocorrelation – the writers do not reject the null hypothesis that there is no autocorrelation present in the residuals.
- Test of multicollinearity – the writers do not reject the null hypothesis that no multicollinearity is present.
- Test of heteroskedasticity – the writers do not reject the null hypothesis that no heteroskedasticity is present.
- Test of normality assumption – the writers do not reject the null hypothesis that the error terms follow a normal distribution.

Lastly, an estimated regression equation was achieved by selecting random effects, White cross-section, and no d.f. (degree of freedom) correction. The empirical findings made in this study show a regression equation as shown below.

$$Y = C + 0.009156*X1 + 0.008303*X2 - 0.003346*X3 - 0.001506*X4$$

p	0.0000	0.0000	0.0969	0.0927

Adjusted R-squared	0.304967
Prob (F-statistic)	0.000000
Durbin-Watson stat	1.987956

whereby:

$Y = Security\ returns$

$X_1 = Beta$

$X_2 = Book\ to\ Market$

$X_3 = Enterprise\ Value\ Multiple$

$X_4 = Market\ Capitalization$

Based on a 10% significance level, the p values show a significant impact individually between the independent and the dependent variables, while the F test shows that the independent variables are simultaneously related to security returns. The model's forecasting ability is reflected in its adjusted R-squared, which is interpreted to mean that 30.4967% of the cross-sectional variation in security returns can be explained by the independent variables.

ICMEM

The empirical evidence in this study shows that beta has a significant and positive impact on security returns; this is consistent with Sharpe, Lintner, and Black who created the Capital Asset Pricing Model (CAPM) in which non-diversifiable risk as measured by beta was touted the only significant risk of an asset, and that beta as a measure of non-diversifiable risk, when taken in isolation, is positively related to security returns. However, this is inconsistent with the finding made by Fama and French (1992) in which beta does not have a significant effect on security returns when beta is included in the Fama-French 3-factor model.

The empirical evidence in this study shows that book to market has a significant and positive impact on security returns; this is consistent with the findings made in the Fama French 3-factor model. The book-to-market signals distress; in other words, the higher the book-to-market ratio, the higher is the firm's distress; therefore the higher are the security returns expected by investors of said firm.

The empirical evidence in this study shows that the Enterprise Value Multiple has a significant and negative impact on security returns. This is in line with the finding made by Laughran and Wellman (2010), and by Iglejas et al (2017).

The empirical evidence in this study shows that market capitalization has a significant and negative impact on security returns. This is consistent with the findings made in the Fama French 3-factor model. They found that the security returns on the small capitalization stocks at NASDAQ, Amex, and NYSE were on average higher compared to that of the big capitalization stocks. Or in Fama's words *"smaller stocks have higher average security returns."*

References

Berk, 1995, *A Critique of Size-Related Anomalies*, The Review of Financial Studies

Blazenko and Fu, 2012, *Value versus Growth in Dynamic Equity Investing*, Managerial Finance, Emerald Group Publishing Limited

Damodaran, 2006, *Damodaran on Valuation*. 2nd Edition, John Wiley & Sons

Dapena, 2001, *On the Valuation of Companies with Growth Opportunities,* Journal of Applied Economics

Fama and French, 1992, *the Cross-Section of Expected Security Returns*, The Journal of Finance

Fama and French, 1993, *Common Risk Factors in the Returns on Securities and Bonds,* The Journal of Finance

Fama and French, 2002, *Value versus Growth: The International Evidence*, The Journal of Finance

Gujarati, 2003, *Basic Econometrics*, McGraw-Hill

Hossain, 2008. Econometrics Modelling, Frequently Asked Questions, Multimedia University, Malaysia

Igrejas et al, 2017, *Enterprise Multiple and Future Returns of the Brazilian Stock Market*, Rebrae

Loughran and Wellman, 2010, *New Evidence on the Relation between Enterprise Multiple and Average Stock Returns,* Journal of Finance and Quantitative Analysis

Sharpe, 1964, *"Capital asset prices: A theory of market equilibrium under conditions of risk"*, Journal of Finance

www.idx.co.id

ICMEM

The 3rd International Conference on Management in Emerging Markets

Selecting Strategic Investment Financing for Expansion Shipyard Project in Batam

Adiel Andhika Putra[a*], Uke Marius Siahaan[b]

*a,b*School of Business and Management, Institut Teknologi Bandung

Abstract

The role of the shipbuilding industry is increase since the issuance of The Presidential Instruction no. 5 of 2005 on the empowerment of the national shipping industry. Government policy to enforce Cabotage principle aims to empower the role of the national shipping industry, so be able to operate in their own country. The Government concern about shipping industry automatically leads to an increase demand for the national fleet.

PT. XYZ Shipyard (Persero) is a state-owned company that established in 1990, which was the result of merger from four integrated shipbuilding companies. In the last five years, financial condition of PT. XYZ Shipyard (Persero) was not good, proven with loss in their income statement 2013-2017. As a state-owned company that loss in previous years, PT. XYZ (Persero) received Rp 95.500 Million from Government Capital Investment Fund (Penyertaan Modal Negara) sourced from APBN of Fiscal Year 2015 to increase their business capacity. The company conducted a study in 2016 with result to build Slipway with capacity up to 17.500 DWT and whole project investment required Rp 362.372 million cost.

Currently, PT. XYZ already have 106.248 meters' land that valued Rp 1.100.000 per meters, which the total value is Rp 116.872 Million; and also Rp 95.500 million Government Capital Investment Fund (PMN). So, another Rp 150.000 million investment is still needed to fulfill the project cost. This research will focus on the financial feasibility of the project, and also purposed external funding strategy. There are four alternatives purposed; Joint Operations, Venture Capital, Bank Loan, and Two Steps Financing. The Joint Operations is considered as the best funding alternative since it had the lowest cost and the best in financial feasibility.

Keywords: Shipyard; Shipbuilding; Business Strategy; Strategic Financing; Venture Capital; Bank Loans.

1. Introduction

The role of the shipbuilding industry is increase since the issuance of The Presidential Instruction no. 5 of 2005 on the empowerment of the national shipping industry. Government policy to enforce Cabotage principle aims to empower the role of the national shipping industry, so be able to operate in their own country. The Presidential concern about shipping industry automatically leads to an increase demand for the national fleet. Theoretically, if in certain market conditions suddenly enacted regulations that cause the supply capacity to fall (foreign vessels are required to "exit" from the market), then there will be shock on the market balance and the impact can lead to market inefficiency. This is a challenge for the national shipbuilding industry. Figure 1 illustrates the number of Indonesian vessels is increasing from 11,791 in 2012 to 27.610 in 2017, which become an evidence that the shipping industry in Indonesia is growing.

---

* Corresponding author.
 E-mail address: Adiel.andhika@sbm-itb.ac.id

ICMEM

Figure 1 Indonesian Number of Vessels 2012-2017

PT. XYZ Shipyard (persero) is a company that scope of business as a shipyard in Indonesia had three services; new ship-building, ship repairing and maintenance. As a state-owned company that loss in previous years, PT. XYZ (Persero) received Rp 95.500 Million from Government Capital Investment Fund (Penyertaan Modal Negara) sourced from APBN of Fiscal Year 2015 to increase their business capacity. Then in 2016, PT. XYZ conducted a study for the utilization of PMN fund with the help from an independent consultant. From the study, it was agreed that the fund will be used for the development of Batam area.

However, the whole project investment required Rp 362.372 million cost. Currently, PT. XYZ already have 106.248 meters' land that valued Rp 1.100.000 per meters, which the total value is Rp 116.872 Million; and also Rp 95.500 million Government Capital Investment Fund (PMN). So, another Rp 150.000 million investment is still needed to fulfill the project cost.

2. Research Objectives

This research conducted to help PT. XYZ Shipyard (Persero) in analysis the project financial feasibility study and finding the best funding alternatives for the project expansion in Batam.

3. Methodology

This research is using secondary data from market, company financial report, and internet exploration. For the business analysis, there will used external and internal environment point of view. In the external analysis, PEST analysis is being used to analyze the macro environment of the business while Porter's Five Forces is being used to analyze the industry environment. Furthermore, Business Model Canvas is being used to analyze the current business model and process of PT. XYZ's Shipyard in Batam.

In the end, financial feasibility study is being conducted to decide if this project is feasible or not based on the discounted cash flow theory and the capital budgeting techniques such as Net Present Value (NPV), Internal Rate of Return (IRR) and Payback Period (PP). When this project is feasible, external funding strategies will be proposed as the business solution for this project. Every cash flow of the alternative will re-calculate after implemented the strategic financing.

ICMEM

4. Finding And Arguments

4. 1.   Business Model Canvas (BMC)

BMC is a business model describes the rationale of how an organization creates, delivers, and captures value (Osterwalder, 2010), there are nine components from business model canvas, as seen on Figure 2.9 which are: Customer Segments, Value Preposition, Key Activities, Customer Relationship, Key Resources, Channels, Key Partners, Revenue Stream, and Cost Structure.

1) **Customer Segments.** Customer Segments Building Block defines the groups of people a company aims to reach and serve. (Osterwalder, 2010). The customer of PT. XYZ Shipyard Batam is business entity which operating vessels like oil and gas company, shipping line company, sea transport company, and also from government side like military.

2) **Value Preposition.** The Value Proposition is an aggregation, or bundle, of benefits that a company offers to customers. (Osterwalder, 2010). The value preposistion PT. XYZ Shipyard Batam is the free imported cost for materials, machines, and navigation systems because the benefit of Free Trade Zone area. In addition, with the implementation of the 17,500 DWT capacity slipway project, customer will get more benefit like more dock space capacity and the waiting time for docking process become faster.

3) **Key Activities.** The Key Activities Building Block describes the most important things a company must do to make its business model work. Every business model calls for a number of Key Activities. These are the most important actions a company must take to operate successfully. (Osterwalder, 2010). The key activities of PT. XYZ Shipyard Batam is manufacturing and repair or maintenance. The activity related to engineering design, operation, and quality control. The operational process of production and repair is using subcontractor for the human capital, the welding process.

4) **Customer Relationship.** The Customer Relationships Building Block describes the types of relationships a company establishes with specific Customer Segments. Relationships can range from personal to automate. (Osterwalder, 2010). PT. XYZ Shipyard had a marketing and sales division that will help customer while making their purchase (ship repair or maintenance) or sevices (design new shipbuilding specifications).

5) **Key Resources.** The Key Resources Building Block describes the most important assets required to make a business model. Every business model requires Key Resources that allow a company to create and offer a Value Proposition, reach markets, maintain relationships with Customer Segments, and earn revenues. Key resources can be physical, financial, intellectual, or human, can be owned or leased by the company or acquired from key partners. (Osterwalder, 2010). The key resources for PT. XYZ Shipyard Batam is facility, imported materials, human resources, and financial support. The facility in PT. XYZ Shipyard Batam nowadays.

6) **Channels.** The Channels Building Block describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition. Communication, distribution, and sales Channels comprise a company's interface with customers that play an important role in the customer experience. (Osterwalder, 2010). Until now, the marketing channel of PT. XYZ Shipyard Batam is joined with the headquarter PT. XYZ Shipyard (Persero) in Tanjung Priok, Jakarta.

7) **Key Partners.** The Key Partnerships Building Block describes the network of suppliers and partners that make the business model work. Companies forge partnerships for many reasons, and partnerships are becoming a cornerstone of many business models. Companies create alliances to optimize their business models, reduce risk, or acquire resources. (Osterwalder, 2010). The key partnership of PT. XYZ shipyard batam is with parent company PT. XYZ Shipyard (persero) and all off the parent company partner that are the supplier of materials, the subcontractor of employee, and the state-owned companies.

8) **Revenue Stream.** The Revenue Streams Building Block represents the cash a company generates from each Customer Segment, where costs must be subtracted from revenues to create earnings. Each Revenue Stream might have different pricing mechanisms. The type of pricing mechanism chosen can make a big difference in terms of revenues generated. There are two main types of pricing mechanism, Fixed Menu Pricing where prices are based on static variables and Dynamic Pricing where prices change based on market conditions. (Osterwalder, 2010). The revenue streams of PT. XYZ Shipyard Batam is from new shipbuilding process and ship repair or

maintenance. The pricing strategy used is dynamic pricing based on market condition and the customers. The pricing in state-owned project usually through tender mechanism and every project had different price.

9) **Cost Structure.** The Cost Structure describes all costs incurred to operate a business model. This building block describes the most important costs incurred while operating under a particular business model. (Osterwalder, 2010). PT. XYZ shipyard Batam as a shipbuilding company have direct cost and indirect cost. The direct cost is for production material, electrical need, and other production cost. Meanwhile the indirect cost is labor cost.

4. 2. *PEST Analysis*

PEST analysis is being used to analyze the macro environment. PEST analysis helps business owner understand the "big picture" forces of change that you're exposed to, and, from this, take advantage of the opportunities that they present. It is consisting of Political, Economic, Socio-Cultural, and Technological point of view that affected the business. Table 2 will describe the PEST analysis.

➢ **Political:** Government give full support the shipbuilding industry with several policies in Ministry of Transportation 2017, Presidential Instruction no 5 2005.

➢ **Economical:** The economic 2018 forced by improvement in world economy and domestic investment which improve the consumption rate. The growth in Indonesian consumption rate will lead to improving of shipping logistic industry especially the voyage outside Java Island. The world rating agency Standard & Poor's (S&P) upgraded Indonesia's sovereign ratings to investment grade and this means Indonesia economy outlook is stable and there's a huge possibility Indonesia will get investment fund from foreign market.

➢ **Socio Cultural:** The workforce in shipbuilding and ship-repair business consist of the welder, the engineer, the managerial level employee. In Indonesia welding science has been developing since vocational high school (SMK) for supporting shipbuilding industry in the future. In Batam the number of workers reach 250.000 peoples in 2012. Now with the sluggish condition of Batam shipbuilding industry, only 20.000 workers available. But with the early educational opportunity in SMK, it can help Shipbuilding Company in the future.

➢ **Technological:** The shipbuilding industry requires integrated manufacturing technology and automation of management systems such as CAD (Computer Aided Design) and CAM (computer aided manufacturing) for efficiency purposes such as shipbuilding technology based on Product Work Breakdown Structure (PWBS) block with the integration of piping and painting (Storch, 1995).

4. 3. *Industry Analysis – Porter's Five Forces Model*

Porter's five forces describe the competitive forces within an industry and can help to analyze the strength of threats to a company (Diener & Lüttgens, 2016).

1) **Threat of New Entrants:** The entry barriers in shipbuilding and marine industry is **high** because this industry need a lot of capital investment like the land, the heavy machine, a lot of employees.

2) **Bargaining Power of Suppliers:** The bargaining powers of suppliers in Batam is **low** because a lot of supplier that can contributed so the price is competitive and following market price.

3) **Bargaining Power of Buyers:** The customer of PT. XYZ Shipyard Batam is business entity and there are lot of other shipyards and usually in the tender process, the shipyards that have lowest prices will win the project. Therefore, the bargaining powers of buyers is **high**.

4) **Threat of Substitute Products:** PT. XYZ Shipyard Batam is a shipbuilding company which the service is manufacturing new ship or ship repairing. A direct substitute of the service process manufacturing a ship is not yet known so the threat of substitutes is **low**.

5) **Intensity of Rivalry among Competitors:** Besides the domestic area, the industry rivalry come from other countries like Singapore and Malaysia that located closely to Batam Island. So the intensity of industry rivalry is **high** and PT. XYZ should build its competitive advantages.

4. 4. *Financial Condition Analysis*

Financial condition analysis will show either the company can be funding the project by itself or need funding from external side. The financial condition of PT. XYZ Shipyard (Persero) was not good in previous five years. From Table 1, known that in 2013-2017 the company faced a loss condition because the PMN Funds still not being used to build

a good facility and increasing capacity. Therefore, the project of development shipyard in Batam will be funded by external funding.

Table 1 PT. XYZ Shipyard (Persero) Financial Report

PT. XYZ Shipyard (Persero) Income Statement 2013-2017					
	2013	2014	2015	2016	2017
Operating Income					
New Shipbuilding	240.639	131.011	31.147	181.297.000	304.200.000
Ship Repair and Maintenance	369.886	306.413	218.807	220.203.000	326.519.000
non ship	4.767	4.944	6.615	10.854.000	11.505.240
Subsidiaries	161.754	115.711	69.499	118.627.000	95.266.440
Total Operating Income	**777.046**	**558.079**	**326.068**	**530.981.000**	**737.490.680**
Cost of Goods Sold (COGS)					
New Shipbuilding	264.554	256.767	81.698	155.915.000	273.780.000
Ship Repair and Maintenance	223.106	184.981	181.870	127.315.000	199.176.590
non ship	2.551	1.525	2.607	2.626.000	2.605
Subsidiaries	89.423	72.050	46.007	71.136.000	58.112.528
Total COGS	**579.634**	**515.323**	**312.182**	**356.992.000**	**531.071.723**
Gross Profit	**197.412**	**42.756**	**13.886**	**173.989.000**	**206.418.957**
Operating Expense	190.477	219.989	266.202	202.083	212.187
Marketing Cost	5.995	6.353	1.714	3.267	3.430
Operating Profit	940	(183.586)	(254.030)	(31.361)	(9.198)
Interest	-	-	-	30.433	25.263
EBT	940	(183.586)	(254.030)	(61.794)	(34.461)
Income Tax	4.019	40.725	62.277	835	(8.615)
NAT	**(3.079)**	**(224.311)**	**(316.307)**	**(62.629)**	**(25.846)**

5. Business Analysis Conclusion

From the business analysis tools above known that PT. XYZ Shipyard in Batam has high potential markets and supported by Indonesia Maritime regulation. However, with high competition in Batam market, PT. XYZ Shipyard in Batam need to increase their competitive advantage so they can compete with current competitors. Therefore, the investment of 17.500 DWT slipway capacity in Batam will become an added value preposition and competitive advantage for PT. XYZ Shipyard in Batam. With the bad condition of PT. XYZ Shipyard (Persero) financial performance in the last five years, the Shipyard Branch in Batam will form a new business entity as a subsidiary so the external side will not see the bad performance of the headquarter but the prospect of the new subsidiaries.

ICMEM

5. 1. Project Financial Feasibility Study

After making the business analysis using tools above, the next step of the research is calculate the financial feasibility, starting with calculate the cost of equity from the project. Then, the Weighted Average Cost of Capital (WACC) to find the discount rate, Net Present Value, Internal Rate of Return, and Payback Period.

5. 2. Projected Demand from Shipbuilding Industry

As a state-owned company, PT. XYZ Shipyard (Persero) will target new shipbuilding and ship repair from state-owned company too like Pertamina, Pelni, and ASDP. From the sources, this is the sampling amount of state-owned company vessels:

Table 2 State-Own Company Sampling Vessels Amount

No	Company	Vessels Type	Total Unit
1.	PT. Pertamina	*Tanker*	56
2.	PT. ASDP	*Ferry* ro-ro	126
3.	PT. Pelindo I	Tug boat	53
4.	PT. Pelindo II	Pilot and Tug Boat	84
4.	PT. Pelni	*Passenger*	30
	Total		**264**

Source: Transportation Statistic 2017

Table 2 shows All of the 264 vessels will need ship repair for the next year, and with the minimal capacity from shipbuilding industry and the Synergy BUMN program, this can be opportunities for PT. XYZ Shipyard (Persero). The main target is Tanker from PT. Pertamina because the size of the vessel is 17.500 DWT and in 2016, PT. Pertamina order 8 vessels and one of the builder is PT. Black Orchid Shipyard Batam that located nearby the PT. XYZ Shipyard.

5. 3. Projected Cost

The projected cost of using the production facility is as follows: Direct Cost, Indirect Cost, Material Cost, Outsourcing Cost, Utility Cost, and Maintenance Cost.

1) **Direct Cost.** The largest direct costs for new building works are the machineries and equipment (40%). For ship repair jobs, the largest direct cost is the purchase of the main material (20%). Outsourcing costs represent costs incurred for subcontractor leases / contracts as well as heavy equipment leasing if required. The total direct cost for new building works at the 17,500 DWT slipway facility is Rp 73,094 Billion or 89.20% of the first year income, and for repairs employment at the 17,500 DWT slipway facility of Rp. 26,714, Billion or 50.50% of first year income. The projected public cost of the 17,500 DWT slipway facility is Rp 2.079 Billion or 2.36% of the first year income

2) **Indirect Cost.** The salary of administrative workers and shipyard management has been adjusted to the provisions of Minimum Area Regional Wage Batam. In projected indirect costs, it is projected that the salary of employees will be paid 14 times (calculated for 13th wages and holiday allowances). In addition, every 5 years once the salary of employees increased as much as 10% salary. For the implementation of business process slipway facility requires HR of 53 people, consisting of General Manager, Manager, Administration, QC and K3L. The total projected indirect cost of operating the slipway facility is Rp 5.950 Billion or 3.14% of first year income.

5. 4. Projected Revenue

Projected earnings are done by taking into account the ability of the company to market the services provided. The differences are in the value of construction contracts and ship repairs. The projected revenue is a 17,500 DWT vessel. Projected revenues for new building work at the 17,500 DWT Slipway facility are shown on Table 2.

ICMEM

Table 3 Estimated Income from New Shipbuilding

Facility	Working Time (Months)	Estimated New Building Time (Months)	Project Value (in Million -Rupiah)	Project Value (Million -Rupiah) / year	Income Growth / Year
Slipway	12	18	363.847,61	242.565,08	5,0%

Table 4 describes the projection used for the calculation of the revenue of ship repair work. Estimated length of repairs is 4 weeks. The contract value of each ship repair work is Rp 6 Billion. Within one year, it is targeted to complete the ship repair as many as 11 units, so that the one-year revenue from ship repair work is Rp 66 Billion. From the target 11 every year, the assumption is PT. XYZ Batam will reach the target 100% in the fourth year. The first three year targets are 30%, 50% and 70%.

Table 4 Estimated Income from Ship Repair and Maintenance

Facility	Working Time (Days)	Estimated Repair Work Time (weeks)	Estimated Vessel Ages	Target Repair Work (vessel)	Repair Work Price (in million -Rupiah)	Income Growth / Year
Slipway	300	4	> 6 Years	11	60.000,00	5,0%

5. 5.   Discount Rate

According to Gitman in Principles of Managerial Finance 13th edition, we can calculate cost of equity using the Capital Asset Pricing Model (CAPM). CAPM describes the relationship between the required return, rs, and the non-diversifiable risk of the firm as measured by the beta coefficient, b.

The Formula is:

$$rs = Rf + [b \times (rm - Rf)$$

R$_F$= risk free of return   b = beta coefficient   rm = market return

In case of PT. XYZ, the beta is using beta from PT. Soechi Lines.Tbk. Since there's no independent shipyard company that become public company. PT. Soechi Lines Tbk is a shopping company that have shipyard for their own vessels and served another company vessel. The beta of PT. Soechi Line.Tbk according PT. Pefindo (Indonesia credit rating Company) is 1,093. The risk free rate is using government bond yield for 10 years and according to official website of Indonesia Central Bank (BI.go.id) is 6,32% and risk premium is from Damodaran 2,43%.

So the CAPM: $rs = 6,32\% + [1,093 \times 2,43\%]$ = **8,98%**

5. 6.   Cash Flow Analysis

The Free Cash Flow is calculated from Net after Tax + Depreciation – Retention for Growth. Table 5 shows the Free Cash Flow calculation for 30 years.

Net Present Value (NPV)

After calculating the Cost of Equity as the discount rate, next step is calculating the Net Present Value. The net present value (NPV) is found by subtracting a project's initial investment (CF$_0$) from the present value of its cash inflows (CF$_t$) discounted at a rate equal to the firm's cost of capital (r). The formula:

ICMEM

$$NPV = Present\ Cash\ inflows - initial\ investments$$

Table 5 Cash Flow Analysis

Year	NAT	Depreciation	RG	FCF	Accumulated FCF
0			5%		(362.372,80)
1	4.269,66	(4.175,83)	213,48	8.232,01	8.232,01
2	13.486,53	(4.175,83)	674,33	16.988,03	25.220,04
3	24.768,76	(4.175,83)	1.238,44	27.706,15	52.926,20
4	39.869,24	(4.175,83)	1.993,46	42.051,61	94.977,81
5	43.068,60	(4.175,83)	2.153,43	45.091,00	140.068,81
6	44.727,43	(4.175,83)	2.236,37	46.666,89	186.735,70
7	46.748,11	(4.175,83)	2.337,41	48.586,53	235.322,23
8	48.860,52	(4.175,83)	2.443,03	50.593,33	285.915,56
9	51.112,69	(4.175,83)	2.555,63	52.732,89	338.648,45
10	33.468,44	(29.561,10)	1.673,42	61.356,12	400.004,57
11	54.613,85	(5.407,22)	2.730,69	57.290,37	457.294,94
12	57.377,93	(5.407,22)	2.868,90	59.916,25	517.211,19
13	60.338,22	(5.407,22)	3.016,91	62.728,53	579.939,72
14	63.508,61	(5.407,22)	3.175,43	65.740,39	645.680,11
15	57.437,54	(17.390,01)	2.871,88	71.955,67	717.635,78
16	69.603,60	(5.872,74)	3.480,18	71.996,15	789.631,93
17	73.497,64	(5.872,74)	3.674,88	75.695,50	865.327,43
18	77.667,77	(5.872,74)	3.883,39	79.657,11	944.984,54
19	82.133,47	(5.872,74)	4.106,67	83.899,53	1.028.884,08
20	51.001,32	(51.333,88)	2.550,07	99.785,14	1.128.669,22
21	89.724,77	(8.007,14)	4.486,24	93.245,68	1.221.914,89
22	95.208,45	(8.007,14)	4.760,42	98.455,17	1.320.370,06
23	101.080,45	(8.007,14)	5.054,02	104.033,57	1.424.403,63
24	107.368,18	(8.007,14)	5.368,41	110.006,91	1.534.410,55
25	114.100,97	(8.007,14)	5.705,05	116.403,06	1.650.813,61
26	120.622,02	(8.007,14)	6.031,10	122.598,06	1.773.411,67
27	128.341,35	(8.007,14)	6.417,07	129.931,42	1.903.343,09
28	136.606,72	(8.007,14)	6.830,34	137.783,53	2.041.126,62
29	145.456,66	(8.007,14)	7.272,83	146.190,97	2.187.317,59
30	154.932,37	(8.007,14)	7.746,62	155.192,89	2.342.510,49

In this research, Free Cash Flow is used to calculate the NPV with discount rate 8,98% from the cost of equity and found that the NPV of this project is Rp 4.062.795 Million.

5. 7.   Internal Rate of Return (IRR)

The internal rate of return (IRR) is the discount rate that equates the NPV of an investment opportunity with $0 (because the present value of cash inflows equals the initial investment). It is the rate of return that the firm will earn

if it invests in the project and receives the given cash inflows. When the IRR used as decision criteria: if the IRR > cost of capital, accept the project, if not reject the project. The internal rate of return of his project is 33,18%.

5. 8.   Payback Period (PP)

According to Gitman in "Principles of Managerial Finance 13th Edition" the payback period is the amount of time required for the firm to recover its initial investment in a project, as calculated from cash inflows. In the case of an annuity the payback period can be found by dividing the initial investment by the annual cash inflow. For a mixed stream of cash inflows, the yearly cash inflows must be accumulated until the initial investment is recovered. The payback period of this investment project is 8,61 years while the lifetime of the project is 30 years, so the investment is feasible from Payback Period criteria.

5. 9.   Project Financial Feasibility Conclusion

Table 6 Financial Feasibility Conclusion

NPV	IDR 4.062.795 Million
IRR	33,18%
Payback Period	8,61

Table 6 shows the summary of project financial feasibility study. With calculating the NPV, IRR, and Payback Period, known that the investment project is feasible to do. But the calculation in this section only saw equity financing while the equity condition from PT. XYZ is poor and will not able to fulfil the investment alone, so external financing is needed to make this investment project begin. In the next section, several alternatives of external financing will be calculated to meet the investment needed.

6.   BUSINESS SOLUTION

This section will describe how the alternatives is proposed to fund the project. There are four alternatives:

➢ **Joint Operation**

The first alternative is PT. XYZ can find a partner to make joint operation. In global perspective, joint operation was a part of partnership between the companies commonly known as a joint venture (JV). In general, Wallace (2004) defines joint venture as a coming together of two or more independent businesses for the sole purposes of achieving a specific outcome that would not have been achievable by any one of the firms alone. The joint venture in this alternatives is profit-sharing with ratio 70% for investor and 30% for company. In Indonesian perspective, Joint Operation is an agreement between two or more parties, which agrees to undertake a joint venture by using the assets and / or business rights owned and jointly reducing the risk of such business, as stated in the Statement of Financial Accounting Standards (PSAK) No. 39 regarding Accounting for Joint Operations. The parties referred to in PSAK No.39 are the Asset Owner and the Investor (Funders). Hennart (1988) classify joint venture into two separate groups, namely:

- Equity joint venture: On this type of joint venture, several involved parties brought their own assets and formed a new and separate legal entity from the holding company to conduct its business. Profit and loss from this type of joint venture is distributed according to the agreement of all parties involved.
- Non-equity joint venture: a type of business cooperation based on contract or an agreement of several involved parties in conducting business jointly and not a new legal entity.

➢ **Venture Capital**

ICMEM

The term venture comes from the word venture, which literally means something that contain risks or can also be interpreted as business. So, venture capital (venture capital) is the capital invested in the business that contains risk. From the above understanding can be concluded that venture capital is high risk financing. Venture capital financing is different from banks that provide financing in the form of loans or credit, because venture capital provides financing by way of direct participation into the company financed. Venture Capital Investment is defined provision of risk bearing capital, usually in a form of a participation in equity, to companies with high growth potential (Neil Cross).

The venture capitalist usually requires target yield 15%-20% x investment period and will be collected in the end of investment period. In this investment project, the investment period for funding is 10 years while the project life time is 30 years. With the investment needed Rp 150 billion, in the end of year 10, PT. XYZ must pay back the fund Rp 450 billion from Rp 150 billion + [(20% x 10years) x 150 billion]. The weighted average cost of capital (WACC) 59% from CAPM for own equity and 41% from the Venture Capital target yield 20% so the WACC is 10,13%, the NPV is positive, IRR is above the discount rate and the payback period is under 30 years so the alternative is feasible.

➢ **Bank Loans**

Investment Loan is a medium/long term credits to purchase capital goods and services required for rehabilitation, modernization, expansion and relocation of project or establishment of a new business. The bank loan PT. XYZ need is investment loan because it will use to financing an expansion project. According to BI.go.id, the commercial lending rate in Indonesia December 2017 is 11,3%. The WACC is 12,36% as the cost of debt is 11,3% and the cost of equity is 8,9%. The proportion of WACC is 59% for equity and 41% for Debt. The NPV is positive, IRR is 19,63% and payback period 15,36 years so the alternative is feasible.

➢ **Two Steps Financing**

Two steps financing is a combination between two alternatives that already calculated above. This method is pure a creative financing from the author. The alternatives are Venture Capital and Bank Loan with total investment period 10 years. The two steps financing begin with financing from Venture Capital with target yield 15% in 3 years and then to pay the venture capitalist, investee borrow money from bank and get loans for 7 years with interest loan 12%. With the cash flow after 3rd year, PT. XYZ will confidence to pay the annual loan payment to the bank and the venture capitalist will not too long have share in the company.

7. Conclusions

This section will conclude the best alternatives from business solution section above. There are four alternatives that purposed above, each alternative already analyzes with the capital budgeting techniques and cash flow analysis. All of the alternatives are feasible except the bank loans because the negative cash flow in the first three years. The calculation summary of the funding alternatives will be shown in Table 6. Besides the feasibility calculation, there are several advantage and disadvantage of each alternative and will show table 7.

Table 7 Funding Alternative summary

FUNDING ALTERNATIVES SUMMARY

No	Funding Alternatives	WACC	NPV	IRR	Payback Period (year)	Cost
1	Bank Loan	11,45%	IDR 1.006.999,47	19,63%	15,36	115.476
2	Joint Operations	8,98%	IDR 1.415.507,80	27,22%	13,08	104.974

3	Venture Capital	10,13%	IDR 1.931.110,25	21,29%	15,49	300.000
4	Two Steps Financing Venture Loan 3+7 Years 15%	11,45%	IDR 1.300.188,34	23,01%	14,70	183.581

Table 8 Funding Alternative advantage and disadvantages analysis

FUNDING ALTERNATIVES ADVANTAGE AND DISADVANTAGES

No	Funding Alternatives	Advantage	Disadvantage
1	Bank Loan	• No external managerial involvement • The project financial will be controlled by the bank	• The cash flow is negative in first three years. • Paying Loan every year since the first year
2	Joint Operations	• Lowest Cost • Best IRR and payback period • No paying Loan every year	• Managerial involvement in ten years • Share 41% of company share with investor • Difficult finding the investor.
3	Venture Capital	• No paying Loan every year • Can use sinking fund to pay it	• Highest Cost of Capital • Managerial Involvement for 10 years
4	Two Steps Financing Venture Loan 3+7 Years 15%	• Paying Loan when the cash flow is already good. • Managerial Involvement from VC only 3 first year.	The cost of capital is the second high

Based on the financial feasibility and the advantage disadvantages analysis, there is one best funding alternative which in the form of Joint operations since had the lowest cost of capital and can increasing the new entity position in the market because the partner's performance.

After seeing the business analysis, the feasibility study above, the target objectives of research are done. The project is feasible to do with four funding alternatives Bank Loan, Venture Capital, Joint Operation, and Two Steps Financing and the best funding alternatives is Joint Operation.

8. Implications And Future Research

8. 1. Theoretical Implications

This feasibility study based research using NPV, IRR, and Payback Period is already conducted so many times before, but what make this research interesting is the shipbuilding industry. Feasibility study for shipyard expansion project usually conducted by independent consultant of the company, and not being published. The list of assumption for revenue and cost is based on the historical data of the company operation so more close the assumption to realization, more good the research will be.

8. 2. Practical Implications

1) **Academic.** Implication for the academic is to add more research about calculating financial feasibility study on shipbuilding industry. Shipbuilding industry is booming in Indonesia but had minimal information for research. Hopefully this research can help the academic research with the assumption and the business analysis.

ICMEM

2) **Shipbuilding Industry.** Indonesia is an archipelagic country, but the investment of shipyard facility is still minimal. Hopefully with this research, more feasibility study will be conducted to help other company in doing expansion project.

3) **Company.** With this research conducted, the financial feasibility study will complete the previous research by the independent consultant about the technical feasibility of the project. Hopefully the company can implement the alternative proposed and can build the facility successfully.

9. Future Research

Hopefully this research can be a new benchmarking paper for the next academic research about feasibility study of shipbuilding industry project and for the next research it could be adding the sensitivity analysis of the revenue and cost assumption.

Refferences

Bank Indonesia. Survei Proyeksi Indikator Ekonomi. 2018 quoted on 20th March 2018 from https://www.bi.go.id/id/publikasi/survei/proyeksi-indikator-makroekonomi/Pages/SPIME_Tw-I_2018.aspx

Bank Indonesia. Indonesia Sovereign Credit Rating. 2018 quoted on 20 March 2018 from https://www.bi.go.id/en/iru/market-data/indonesian-sovereign-rating/Default.aspx

Damodaran, Country Risk Premium. 2017 quoted in January 2018 from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

Gitman, Lawrence J. 2012. Principles of Managerial Finance, Fourteenth Edition, Boston: Pearson Education, Inc. Chapter 20. Capital Budgeting Techniques. Net Present Value

Gitman, Lawrence J. 2012. Principles of Managerial Finance, Fourteenth Edition, Boston: Pearson Education, Inc. Chapter 20. Capital Budgeting Techniques Internal Rate of Return

Gitman, Lawrence J. 2012. Principles of Managerial Finance, Fourteenth Edition, Boston: Pearson Education, Inc. Chapter 9. The Cost of Capital Weighted Average Cost of Capital (WACC)

Gurusamy.2009. Financial Services 2nd Edition. Tata Mcgraw Hill Education Private Limited.

Hennart, J-F.1988." A Transactions Cost Theory of Joint Ventures." Strategic Management Journal 9, 361-374. Kementrian Perhubungan Republik Indonesia. 2017. Transportation Statistic Book I quoted on 25th March 2018 from http://dephub.go.id

Kementrian Perhubungan Republik Indonesia. Direktorat Jendral Perhubungan Laut. 2014. Aturan Baru tentang Pengedokan Kapal Berbendera Indonesia quoted on 25th March 2018 from http://dephub.go.id

Lüttgens and Diener (2016), Business Model Patterns Used as a Tool for Creating (New) Innovative Business Models, Journal of Business Models, Vol. 4, No. 3, pp. 19-36

Pefindo Beta Stock. Soechi Line. Quoted on 16th March 2018 from http://pefindo.com

President Instruction no. 5. 2005. Empowerment of National Shipping Industry quoted on 20th march 2018 from http://www.bpkp.go.id/uu/filedownload/7/21/49.bpkp.

SMK Negeri 1 Batam. Welding Education Program. 2018 quoted on 20 April 2018 from https://www.smkn1batam.sch.id/smk-negeri-1-batam/

Statement of Financial Accounting Standards (PSAK) No. 39 regarding Accounting for Joint Operations quoted on 20th March 2018 from https://slidepajak.wordpress.com/2010/04/07/psak-39-akuntansi-kerjasama-operasi-accounting-for-joint-operation/

Storch, Richard Lee. (1995). Ship Production: Second Edition, SNAME. New Jersey City.

Osterwalder, A. & Pigneur, Y. (2010). Business Model Generation. Hoboken: John Wiley and Sons.

Porter, M. E. (2009). The Five Competitive Forces That Shape Strategy. Harvard Business Review.

Wallace, R. (2004). Strategic Partnerships: An Entrepreneurs' Guide to Joint Venture and Alliances, Dearborn Trade Publishing, Chicago.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Application of Minimum Demand Guarantee Scenario in Investment Analysis of Hospital Expansion Project - Case Study Of XYZ Eye Hospital

Nindya Kumala Dewi[a]*, Taufik Faturohman[b]

*a,b*Institut Teknologi Bandung, Jalan Ganesha No. 10, Bandung 40132

Abstract

Blindness and visual impairment is one of the main diseases that Indonesia currently faces. XYZ eye hospital as the national eye center wants strengthen its role as a national eye center which is responsible for the eye health of the people of Indonesia. The main problem that is faced by XYZ Eye Hospital is that currently it experiencing excess patient compare to the medical staff available which can be seen by how crowded number of visitors come every day. With its plan to expand, this research objective is to answer how much capital funding is needed for the expansion project, and whether it is feasible to run financially and how minimum demand guarantee can improve the viability of this project. Discounted Cash Flow (DCF) and Monte Carlo Simulation method were used in this study. Minimum Demand Guarantee (MDG) scenario was proposed as a risk mitigation caused by the uncertainty of demand forecasting. The result shows that the expansion project is worth to pursue and MDG scenario can be an alternative solution that could lessen the potential loss caused by demand risk

Keywords: Hospital; Investment Feasibility; Minimum Demand Guarantee.

1. Introduction

One of the health problems that Indonesian people have to face nowadays is visual impairment and blindness, some causes of blindness and health vision can be overcome by an early detection and proper handling (Depkes, 2012). In 2014, there are 3 millions blind people in Indonesia and every minute one person goes blind (IAPB, 2014). Along with WHO vision 2020: The Right to Sight, Indonesian government committed to implement the vision through National Strategic Plans for The Prevention of Visual Impairment and Blindness. The high number of visual impairment patient in Indonesia currently can only be covered by a small number of eye health care services (CBMUK, 2017). In Indonesia, there are three levels of health services, they are primary, secondary and tertiary.

For the realization of its goal, XYZ eye hospital actively participates in several government programs for improving Indonesian citizen's eye health. In carrying out its responsibility, XYZ eye hospital faced a problem in term of capacity. Based on BPS data, Indonesian population will increase over time (BPS,2013), along with it the potential number of eye patients will also increase. If the increase in demand is not accompanied by increase in number of medical staff and health care services, then number of the unserved patients will also increase. As the national eye center, XYZ eye hospital has a mission to give better eye health care service for Indonesia citizen comprehensively. To fulfill its mission, XYZ eye hospital plans to expand its services to reach more people. The limited number of health care services also means that there is an opportunity for XYZ eye hospital to capture the number of the unserved patients.

2. Literature Review

In carrying out its responsibility as mentioned in section 1, XYZ Eye hospital faced a problem in term of capacity.

---

* Corresponding author.

ICMEM

Based on BPS data, Indonesian population will sharply increase (BPS,2013), therefore the potential number of eye patients will also increase. If the increase in demand is not accompanied by increasing number of medical staff and health care services, then there will be an increase in number of the unserved patients.

Based on the working paper by IRIHM, it was found that within the secondary level of the health centre and Tertiary level of the health centre, there is a shortage number of health care service compared to the number of patients that needs to be served. As the national eye centre, XYZ Eye Hospital has a mission to give better eye health care service for Indonesia citizen comprehensively. To fulfill its mission, XYZ Eye Hospital plan to expand its services to reach more people. The limited number of health care services also means that there is an opportunity for XYZ Eye Hospital to capture the number of the unserved patients. To see whether the project is worth the investment, feasibility analysis needs to be done. The calculation for the financial feasibility analysis, the research used a discounted cash flow. Discounted cash flow valuation is the calculation of the present value of a future cash flow to determine its worth today. (Ross, Westerfield, Jordan, 2010, p. 129). For the analysis, three investment categories were use, they were, NPV, IRR and Payback Period.

The wellbeing of the citizen is one of the main responsibilities of the government. Building an infrastructure such as roads, bridges, ports, airports, schools and health care centres for the public, need to be provided by the government. Infrastructure project usually financed by government budget and operated by government agencies in charges. With the increasing demand for infrastructure to support the economic growth, the government of Indonesia tries to attract the private sectors to participate with its capital and expertise in public infrastructure development.

It is estimated that until 2019, the cost of infrastructure development reaches Rp 5.519,4 trillions, which mostly comes from the state budget and considered to be far from the budget required. (Safiq Bachdar, 2016). It is also the reasons which spur government to take steps to the private sectors to participate. Some examples that have been done by the government is to facilitate the regulation of infrastructure development, shorten permit processing time, and forming government guarantee.

XYZ Eye Hospital is a public service agency under the coordination of Ministry of Health. As a public service agency, historically when the hospital experienced losses, there is no cover or compensation from the government to recover the loss. The project expansion of the hospital will require a high amount of capital with potentially high risk due to uncertainty in demand forecasting. Minimum demand guarantee (MDG) can be used as risk mitigation for the hospital to ensure minimum loss against particular demand level.

Several researches on this subject show that minimum demand guarantee will improve the project value and viable economic alternatives for public infrastructure project (Brandon, Saraiva, 2007).
Referring to paper "value of government guarantee" by Brando and Saraiva, minimum and maximum demand limits are deemed as acceptable upper and lower threshold. Minimum demand limit and maximal demand limit need to be decided by negotiation with the public agency in charge.

3. Methodology

Figure 2.1 below will show the steps of development in the study. the business issues are to determine whether the expansion project is viable and recommend the minimum demand guarantee scenario that will improve the viability of the project.

ICMEM
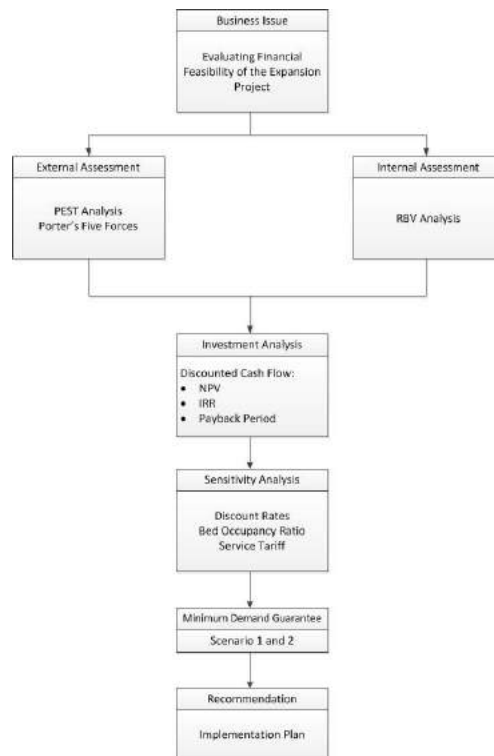
Figure 1. Conceptual Framework

3.1. Method of Data Collection

The research will be limited to investment analysis and risk management and excluding aspect of this project. The source of assumption used in this project is from the data given by the internal company, master plan from the consultant hired by the company, regulation that was available and secondary data that was provided publicly.

An external assessment focuses on identifying and evaluating several variables beyond the control of the company. By doing an environmental analysis, the company can create strategies that better capture the opportunities and prepare a plan to mitigate the impact of a threat. (Rufaidah, 2014, p.109). The method used for the external environment in this study is PEST analysis and Porter Five Forces. One of an alternative to analyze the strength and weaknesses of a company is by using RBV analysis. The competitive advantage of a company depends on the internal resources that the company have which are valuable, rare, inimitable, and non-substitutable. The data used in the analysis is primary data from discussion with the hospital management team, and secondary data from analysis result by a consultant hired by XYZ eye hospital.

Investment project analysis will evaluate whether the expansion is worth to pursue. Discounted Cash Flow Valuation was used, and the criteria used are NPV, IRR, and Payback Period. For further analysis of the project, the next step is to identify the factor that might affect the project such as the change in Bed Occupancy ratio (BOR), discount rate, and tariff. The objective of using minimum demand guarantee is to better mitigate the risk caused by the uncertainty of demand forecasting.

4. Findings

4. 1. Business Situation Analysis

One of the tools to assess the opportunity and threat that the company faced was by using PEST Analysis. PEST

ICMEM

analysis consists of four factors, they are political, environmental, social and technology. Table 1 are the result of PEST Analysis.

Table 1. PEST Analysis Result

Category	Result
Political	• With vision 2020, The Indonesian government was committed to improving the health vision and committed to supporting a public health care center such XYZ eye hospital to give a more comprehensive service to the community. • with the establishment of BPJS Kesehatan in order to ensure the public health, now health cost can be covered by the state. With this, people can access health service more easily and therefore, public health service center such as XYZ eye hospital required to serve more people. • Establishment a national Referral system
Environmental	• it is predicted that Indonesian economic growth will increase.(Fajriah, 2017). • Because of the election, it was predicted that the rate of inflation in 2018 to 2019 will be stable
Social	• A survey done by Litbang Kompas shows that more people are aware of the importance of health check-up • The lack of awareness of the importance of eye check-up is one of the reason why there is a high number of visual impairment and blindness • The increasing number of contact lenses users
Technology	• The rapid development of medical technology can become an opportunity for XYZ eye hospital to serve patient with eye health problem better. • Internet makes people easier to access information about health service center

The Porter's five forces model is used to identify the competitiveness eye hospital industry. Hospital is a capital-intensive business with a significant investment value. Hospital location, the structure of the building, the medical equipments will need a high initial investment value. The establishment of the hospital is also highly regulated. In order to increase the quality of health service center, since January 1, 2018, national standard of the hospital was established. That is why, the threat from new entrant is relatively low.

There are currently 10 eye hospitals both state and private owned (Depkes,2011). If we compare the service provided by XYZ Eye hospital and Jakarta Eye Hospital, they both have similar services such as Cataract and Refractive Surgery, Refractive, Contact Lenses and Low Vision, Glaucoma, Infection and Immunology, Pediatric Ophthalmology, Vitreoretinal Reconstruction, Oculoplastic, and Oncology, Ophthalmology Community. As a Public Hospital, XYZ has a lower tariff than its competitor. If we consider government support and the national referral systems, XYZ eye hospital has moderate power in the competition among the rivalries.

Substitute products or services can be an indirect competitor to the company. Substitute products exist in a different shape and method but can fulfill the same needs that were provided by the company. XYZ eye hospital provides a wide range of services and eye health treatment, from the mild level of disease to serious eye disease. For mild level eye disease such as mild infection, red-eye problem can be solved in primary and secondary health service center, if we take it as consideration, PUSKESMAS, District hospital, Eye Clinic can also be considered as the substitute. For the consumers who paid by using BPJS Kesehatan, they need to have a referral from Puskesmas and District hospital before they can get a treatment at tertiary eye health such as XYZ eye hospital. Therefore, the threat of substitute product is considered high.

As mentioned before, the number of a direct competitor in Indonesia itself is limited, but there are a lot of indirect competitors such as primary health center and secondary health center. because of the importance of health, although there are a lot of choices, the consumers can not push the company to reduce its tariff. Thus, the bargaining power of the consumer is considered as Moderate.

Based on Information Penglihatan (2014), shows that until 2013 there are 1.522 ophthalmologists and 622 residents in Indonesia which means that in average for every ophthalmologist required to serve 170.000 people, this number is under the standard of World Health Organization (WHO) that is 1:20.000. which means that there is a limited number of doctors compared to the patient. Because of the limited number of medical personnel, a competitor may offer more competitive salary and benefit. Indonesia is very dependent to import medical supplies. The limited number of local

ICMEM

suppliers and the competitive quality compared to import, make the import medical supplies more preferable (Zahrotul Afriani, 2017).

Resources owned by the XYZ Eye Hospital can be divided into intangible and tangible resources. Below are the results of the RBV Analysis:

• Tangible Resources

A physical resource that XYZ eye hospital has such as building, medical equipment, and financial sources. The area is strategic and near the city center. according to gap analysis on IRIHM Working paper, it was said that with the existing number of doctors in 2018 XYZ eye hospital is over capacity, they need to hire more doctors, but it is not possible with the current building capacity. Furthermore, As the National Eyes Center in which is responsible for performing eye health services, educational activities, research, and development in the field of eye health, XYZ eye hospital uses advanced technology such as Optical coherence tomography for retina examination and glaucoma. As a public Service agency, their capital mostly comes from government and grant funds from district office or private companies. Based on some analysis result from the master plan on financial condition of XYZ eye hospital, an average gross profit margin of XYZ eye hospital is below the industry average. Compared to the Industry, XYZ eye hospital has better ability to meet it short-term obligation as shown from its current ratio. Its inventory turnover, asset turnover, and Return on Investment (RoI) are below the Industry average. If we summarize, a tangible asset of XYZ eye hospital is valuable, rare but not inimitable and non-substitutable.

• Intangible Resources

According to the market analysis in the master plan, the service given by XYZ eye hospital doctors and nurses are excellent because the doctors are easy to communicates and the nurses are very caring to the patient. The result also shows that they trust the skill and ability of the medical personnel. As one of the research center for eye health science, XYZ eye hospital holds several patents that are valuable for the quality service of the company.

• Organizational Capabilities

One of the strengths of XYZ eye hospital is that they have their own training center for its medical staff such as doctors and nurses. As the educational center for eye health, XYZ eye hospital has ophthalmic training center and eye nurse training center, so they can develop their human resources. With more than 10 years of experience, they have a professional and well-trained staff to treat their patients. One the example of innovative efforts for XYZ eye hospital to serve more patients better is by launching the SMS registration ticketing.

From the external analysis using PEST and Porter's Five Forces, it shows that there is an opportunity from the increasing number of potential eye patients with limited numbers of eye health services center. From the internal analysis, it shows that the strength of XYZ eye hospital is its brand as the national eye center and the highly qualified medical staff. On the other hand, its weaknesses are the overcapacity from its medical staff and the length of waiting time for the patients.

From the analysis, it shows that the opportunity from only a limited eye health service center existence is not really captured by XYZ eye hospital because it has an over capacity. Therefore, the right strategy for XYZ eye hospital is to serve more patient by expanding its hospital.

4. 2.   *Initial Investment*

Based on external and internal analysis conclusion, the expansion plan is the right move for to hospital to seize the opportunity of the potential number of the unserved patient. This chapter will show the amount of investment needed, and whether the project is financially feasible to run, and how minimum demand guarantee scenario can improve the project. The most viable investment that XYZ eye hospital required is building a new hospital. From the analysis in the working paper of IRIHM, it can be concluded that by 2014 the number of patient visits exceeds capacity and requires additional capacity to serve an increasing gap. Based on the gap analysis, it is concluded that there is a need for other hospitals that can serve the demand. The new hospital's capacity assumption is to adjust the ideal patient's gap according to bed requirements. the choice is to build an additional hospital with existing hospitals running or establishing a new hospital and moving the operation to a new building by selling the existing building.

To simplify the calculation of the land and building requirement, bed occupation ratio (BOR) was used as a measurement for the hospital expansion decision. BOR is highly correlated with the number of inpatient visit, it is

ICMEM

calculated by the number of beds effectively occupied divided by the number of beds available (European Health Information, 2017). BOR is one of the indicators hospital services used to show hospital bed utilization rate. As supported by the regulation of technical requirements of the building and hospital infrastructure, according to the regulation of the health minister no. 24 year 2016 about the calculation of the hospital building space, the building area calculated based on the projected bed capacity requirement. Bed capacity requirement is calculated by using this formula:

$$BCR = ((Average\ Length\ of\ stay\ (ALoS)x\ patient))/((Bed\ to\ Patient\ ratio\ (BoR)\ x\ 365)\ )$$

From the calculation by IRIHM, the scenarios to carry out in order to meet the demand in tertiary level of health center are to build Type A Hospital for demand in tertiary level. In the calculation to determine which scenarios are financially feasible, below are assumptions used in the calculation of initial investment:

i. Outpatient gap projections = (projected gap visits / historical proportion of visits per patient)

ii. Inpatient projection = (outpatient gap projections / historical proportions of outpatient comparison of inpatient care)

iii. In accordance with Ministry of Health Regulation no. 340 in 2010 regarding to the classification

iv. Components of building site costs are calculated on the basis of the cost x units per m2, and other cost components are calculated based on the cost of x BCR (cost per bed and per m2 based on previous master plan cost and adjusted by current price increases).

vi. In the course of this academic manuscript, for the calculation purposes is assumed that the new hospital building will be built in 2019.

With the above assumptions and the calculation of investment needs according to the alternative scenario:

1) Moving to the new hospital site by selling the existing building

Table 2. Detail Initial Investment required Hospital alternative 1

NO.	COMPONENT	COST
1	Planning, Supervision and CM	Rp 20.300.394.506
2	Building	Rp 379.954.186.344
3	Amdal Document and Permits	Rp 1.789.994.734
4	Procurement of Medical Equipment	Rp 167.812.006.357
5	Human Rescources	Rp 44.749.868.362
6	Procurement Utilities	Rp 111.874.670.905
	TOTAL	**Rp. 726.481.121.208**

The existing area of XYZ eye hospital is 21,448.95 m2, assumed to be sold at Rp 15.000.000, - / m2 then the total sales fund is Rp Rp 321.734.250.000,-. This fund will reduce the initial investment of new building construction so that the initial investment value required is Rp 404.746.871.208,-

2) Build an additional hospital with existing hospitals running

ICMEM

Table 3. Detail Initial Investment required Hospital alternative 2

NO.	COMPONENT	COST
1	Planning, Supervision and CM	Rp 8.523.597.457
2	Building	Rp 159.532.689.643
3	Amdal Document and Permits	Rp 751.571.333,33
4	Procurement of Medical Equipment	Rp 70.459.812.500,
5	Human Rescources	Rp 18.789.283.333,33
6	Procurement Utilities	Rp 46.973.208.333,33
	TOTAL	**Rp. 305.030.162.599**

4. 3.   Financial Feasibility Result

To see whether the project is worth the investment, feasibility analysis needs to be done. The calculation for the financial feasibility analysis, it used a discounted cash flow. Discounted cash flow valuation is the calculation of the present value of a future cash flow to determine its worth today. (Ross, Westerfield, Jordan, 2010, p. 129). For his analysis, three investment criterias were used are, NPV, IRR and Payback Period. Below is the analysis result :

Table 4. Financial Feasibility Analysis Result

CRITERIAS	ALTERNATIVE 1	ALTERNATIVE 2
NPV	Rp76.185.277.780,03	Rp111.005.201.632,00
IRR	7,06%	10,10%
Payback Period	10,05 years	7,49 years

The result of the calculation can be seen from NPV calculation, if we compare between investment feasibility result of both alternative 1 and 2 for construction of building for tertiary level, shows that the development plan of XYZ eye hospital is feasible to run, because the value of NPV>0. However, looking at either the NPV or IRR results, alternative 2 is a better results. In that case it would be better if XYZ eye hospital run the second alternative.

For IRR calculations obtained from trial and error method, the investment can be considered feasible to run if the net cash flow return will be equal or more than its discount rate. From the IRR calculation of the development plan is worth 10.10% which is greater than its discount rate of 4%, therefore Investment for XYZ eye hospital development program is declared eligible to run.

4. 4.   Sensitivity Analysis

Keep in mind that in reality, the projected income an investment will be influenced by many real factors in it. Risk analysis aims to determine which factors are most influential on the value of investments that has been calculated based on the most likely scenario in the project development. For this Risk Analysis, the APBN value for operations is assumed to be the same per year for each factor analysis scenario. In this sensitivity analysis, it is also assumed that the cost of general and administrative expenses as fixed costs.

Discount rates - Due to XYZ eye hospital belongs to the government, in consideration of the discount rate taken for investment feasibility analysis, based on current inflation reference. The inflation target for 2017 is 4% ± 1% (Bank Indonesia, 2017). From the analysis of the sensitivity of the discount rate to the NPV value of both alternative 1 and alternate 2, it was found that there is an inverse relationship between the discount rate to the NPV value, which means an increase in the discount rate, will negatively affect its NPV value.

Bed Occupancy Ratio (BOR) - The assumption of projected income and expenditure above assumes that Bed Occupancy ratio is 60%. If in fact, BOR is different than the projection, then it should be seen how the effect of

ICMEM

changes in BOR on income and expenditures that result in changes of NPV value. Bed Occupancy ratio is highly correlated with the service revenue from inpatient. From the financial statement from 2012 – 2016, it was found that inpatient service revenue is the biggest contributor to the total revenue for the hospital. From the scenario, it is found that the changes in BOR will be directly proportional to the NPV value.

Tariff Changes - a contrast to the sensitivity analysis for the discount rate, to analyze the tariff increase, the cost projection is assumed to be the same between the scenarios, to see how big the effect of individual tariff increased on the value of NPV. From the result of sensitivity analysis changes of the tariff to NPV, it was found that there is a directly proportional correlation between tariff increase to NPV which means an increase of tariff will cause NPV value to increase, also tariff decrease cause NPV value come down, with cost assumed to remain the same.

4. 5.   *Minimum Demand Guarantee*

The wellbeing of the citizen is one of the main responsibilities of the government. Building an infrastructure such as roads, bridges, port, airport, school and health care center for the public need to be provided by the government. Infrastructure project usually financed by government budget and operated by the government agencies in charges. With the increasing demand for infrastructure to support the economic growth, the government of Indonesia tries to attract the private sector to participate with its capital and expertise in public infrastructure development. The expansion project of the hospital will require a high amount of capital with potentially high risk due to uncertainty in demand forecasting. Minimum demand guarantee (MDG) can be used as risk mitigation for the hospital to ensure minimum loss against particular demand level.

Expansion project of the hospital will require a high amount of capital with potentially high risk due to uncertainty in demand forecasting. Minimum demand guarantee (MDG) can be used as risk mitigation for the hospital to ensure minimum loss of particular demand level. MDG may allow the hospital to get a compensation if particular demand limit is not reached.

MDG can be a form of protection for the hospital against the uncertainty in demand projection. although the hospital under direct coordination of Ministry of Health, as a public service agency, historically when the hospital experienced losses, there is no cover or compensation from the government for the hospital. MDG can be used as an "insurance" from the potential loss of the hospital. There are two parties involved in this scheme, namely the government as the guarantor and the hospital.as the guarantee holder. MDG may allow the hospital to get a compensation if particular demand limit is not reached. This scheme can also benefit the government to fulfill its role to support the infrastructure development and the potential government revenue that might be gain if the agreed limit is exceeded.

Minimum demand limit and maximal demand limit need to be decided by negotiation with the public agency in charge. Several research on this subject shows that minimum demand guarantee will improve the project value and viable economic alternatives for public infrastructure project (Brandon, Saraiva, 2007). Referring to paper "value of government guarantee" by Brando and Saraiva, minimum and maximum demand limit are deemed as acceptable upper and lower threshold. For this expansion project, the minimum demand guarantee model is calculated based on the Bed Occupation Ratio (BOR).

In Indonesia, government guarantee such as minimum revenue guarantee usually used in public private partnership agreement (Wibowo,2012). To support infrastructure development, one of action taken by the government is by establishing Indonesia Infrastructure Government Funds. The Indonesia Infrastructure Guarantee Fund (IIGF) is an independent State-Owned Enterprise (SOE) 100% owned by the Government of Indonesia (GOI) which responsible for appraising, structuring, processing claim payment and providing government guarantees for infrastructure development project. There are 19 eligible sectors for guarantee such as drinking water, roads, electricity, healthcare etc.

As mentioned on the page before, BOR of 60% was deemed acceptable to hospital management team, but based on the historical data, it shows that BOR in 2010-2015 is still under 60%. According to Indonesia healthcare profile in 2005 by Health Department, the ideal number of BOR is 60-85%. This is also the reason that the revenue forecasting was using BOR of 60%.

Using Monte Carlo Simulation with triangular distribution (because of the limited data on BOR history of the hospital) will produce the probability of different outcomes occurring or in this case probability of amount of NPV

that was affected by a number of BOR. Based on the historical data available Monte Carlo simulation was run with minimum BOR of 37,7, maximum of 85% and most likely of 60%.
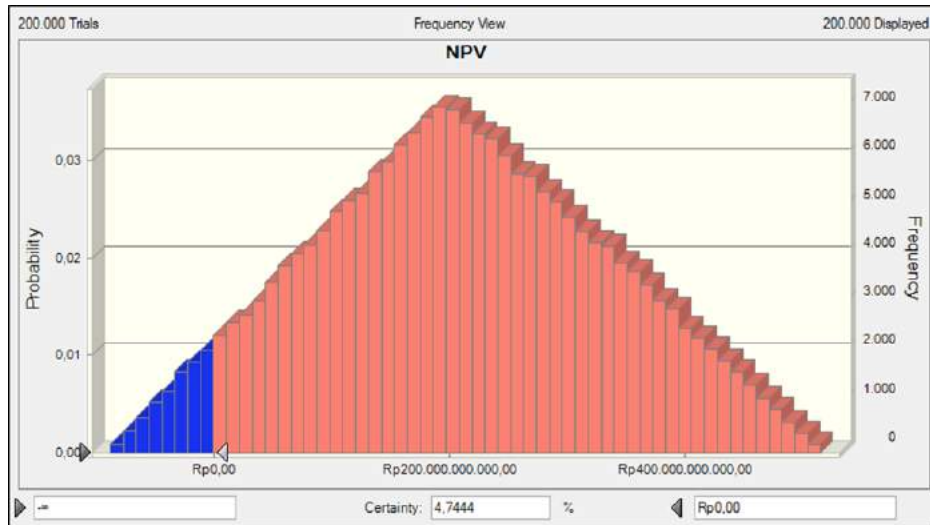
Figure 2 Monte Carlo Simulation Scenario 1

Using Monte Carlo simulation, there is a possibility of 4,744 % that this project will incur losses and a possibility of 95,26% that it will result in a potential profit. it also found that NPV will be 0 if it achieve a 48% BOR. it also found that NPV will be 0 if it achieve a 48% BOR. To lessen the potential loss that might occur the hospital can propose an upper and lower threshold that they are willing to accept.

Using a minimum BOR limit acceptable at 44,4% (average BOR from historical data) and upper BOR limit (table BOR below) will result in NPV of – Rp 3.914.995.716.27 and Rp 111.005.201.632 respectively.

Table 5. BOR based on Forecast Result

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
46%	47%	49%	50%	52%	53%	54%	56%	57%	59%	60%

According to Monte Carlo Simulation result, there is a probability of 4,2774% that the hospital will incur losses with the maximum potential loss of – Rp 3.914.995.716,27, on the other hand the hospital will have a probability of 18,805% that hospital will gain profit from the expansion plan with maximum potential profit that will be accepted by the hospital amount to Rp 111.005.201.632,00.

By using minimum demand guarantee, demand risk caused by BOR can be mitigated and share with the government. With the commitment of Indonesian government to improve the eye health of the citizen, and commitment to developing the national infrastructure, the minimum guarantee can be a form of support to lessen the burden of the hospital and in return with an expansion plan, more people can be served with the new eye health hospital. On the other hand, if the hospital does not want to apply both minimum demand guarantee scenario, it will be exposed to a higher chance of potential loss due to the uncertainty in demand forecasting but also it might receive a higher chance of potential profit because there is no obligation for XYZ eye hospital to share.

5. Conclusion

As mention in DCF Theory by Ross, Westerfield, Jordan, Discounted Cash Flow (DCF) is one of the valuation method to determine a project worth. From this study, shows that by using Discounted Cash Flow method, we can see

ICMEM

which investment alternative are best carried out by comparing the NPV, IRR, and payback period results based on the possible future cash flow.

Based on the calculation and discussion with the hospital management, the most viable option for expansion plan is to build a new hospital with running the existing building, the initial investment needed for this expansion project is Rp 267.101.566.165

From the sensitivity analysis of three variable that is tariff changes, discount rates, and BOR changes, it shows that both demand changes and discount rates greatly affected the NPV result of the investment. Tariff changes are highly regulated by the government, but on the other hand, the BOR changes are more volatile and cannot be predicted easily. To better mitigate the demand risk, Minimum demand guarantee scenario based on the BOR rate is proposed.

If the project is decided to be carried out, then the next step is to prepare the available documentation to support the financing proposal to the health department. With the additional minimum demand guarantee scenario, the hospital will need an additional documentation such as detailed feasibility study that was accepted by the government standard. As an "Insurance", there might be a premium has to be paid by the hospital to the guarantor, therefore option valuation will be needed to calculate the premium for the MDG. Because of minimum demand guarantee scenario used are based on BOR Rate, the BOR rate will need to be evaluated every year so if the ratio is under the limit, the hospital can ask a compensation, and if the ratio is higher than the limit, XYZ eye hospital will need to transfer the additional profit to the government.

This study focused on how minimum demand guarantee can improve the project value by mitigating its demand risk. The practical implication from MDG scenario, the hospital can lessen the potential losses causes by the uncertainty from the demand. On the other hand, MDG can be a form of government support to encourage the infrastructure development to better serve the Indonesian citizen.

References

Allya Alwi M.D., (2011). Situation analysis :Eyecare in Indonesia. Available at http://www.aurosiksha.org/content/pdf/Dr.%20Allya_AP.pdf Accessed: 11 January 2018)

BPS, 2013. Proyeksi Penduduk Indonesia 2010 - 2035, Jakarta: Badan Pusat Statistik.

BPS, Jumlah rumah sakit available at https://www.bps.go.id/linkTableDinamis/view/id/933 accessed : 2 February 2018.

Brandao, L, E., Saraova, Eduardo,C. (2007) Valuing governent Guarantee in toll road project

CBMUK, (2017). Available at https://www.cbmuk.org.uk/where-we-work/indonesia/ (Accessed: 11 January 2018)

Cicendo eye hospital Eye Hospital. Selayang pandang. Available at http://cicendo eye hospitaleyehospital.org/index.php/info-layanan/selayang-pandang/97.html (Accessed: 11 January 2018)

Depkes, (2012). Mata sehat di segala usia untuk peningkatan kualitas hidup masyarakat Indonesia. Available at : http://www.depkes.go.id/article/print/2082/mata-sehat-di-segala-usia-untuk-peningkatan-kualitas-hidup-masyarakat-indonesia.html (Accessed: 11 January 2018)

Depkes,2011, SESJEN RESMIKAN PEMBANGUNAN RUMAH SAKIT JAKARTA EYE CENTER, available at http://www.depkes.go.id/article/print/1400/sesjen-resmikan-pembangunan-rumah-sakit--jakarta-eye-center.html

Detik health (2011). 6 Pemeriksaan Medis Rutin yang Penting Dilakukan. Available at https://health.detik.com/read/2011/12/23/180159/1798906/766/6-pemeriksaan-medis-rutin-yang-penting-dilakukan-

Diswantini,Dianadewi (2017). Managerial flexibilitiy in undertaking urban rail transport business in pt len industri (persero), case study: real option valuation of bandung cable car investment project. The Indonesia Journal of Business Administration

DTF. Guidelines on discount rates. Available at https://economicdevelopment.vic.gov.au/__data/assets/word_doc/0007/1492603/Guidance-on-discount-rates-internet.DOCX (Accessed: 28 January 2018)

Ervi Indria (2017). http://majalahkartini.co.id/keluarga-karier/kesehatan/rendahnya-kesadaran-masyarakat-untuk-cek-kesehatan-rutin/ (accessed :30 January 2018)

IAPB, (2014). Vision 2020 workshop report. Available at https://www.iapb.org/wp-content/uploads/VIsion-2020-workshop-2014-Report-Indonesia.pdf Accessed: 11 January 2018)

Ilyas Praditya (2017). Ekonom ramal Inflasi akan Stabil di tahun politik available at : http://bisnis.liputan6.com/read/3118280/ekonom-ramal-inflasi-akan-stabil-di-tahun-politik

IRIHM research team, Cicendo Eye hospital Research team, (2018). *Working Paper*

ICMEM

Kemendagri,2017. Mendagri: Lebih 175 juta WNI Telah Merekam Data Kependudukan. Available at http://www.kemendagri.go.id/news/2017/09/10/mendagri-lebih-175-juta-wni-telah-merekam-data-kependudukan

Kompas.com, 2017. Standar nasional rumah sakit akan diresmikan available at http://nasional.kompas.com/read/2017/08/09/23192351/standar-nasional-rumah-sakit-akan-diresmikan

Lili Rusna Fajriah (2017). Tahun 2020 pertumbuhan ekonomi Indonesia diatas 6%. Available at https://ekbis.sindonews.com/read/1234400/33/tahun-2020-pertumbuhan-ekonomi-indonesia-di-atas-6-1503888302 (accessed :30 January 2018)

Rindy Ferarosdela (2017). Kenali Operasi Lasik Mata disini. Available at http://haidokter.com/kenali-operasi-lasik-mata-disini

Ross, Westerfield, Jordan., 2010. Fundamentals of Corporate Finance 5ed. New York: Mc Graw Hill.

Rufaidah, Popy. 2014. Manajemen Strategik, 1ed. Bandung : Humaniora.

Safiq Bachdar (2016). Biaya Pembangunan Infrastruktur. Available at http://marketeers.com/biaya-pembangunan-infrastruktur-hingga-2019-rp-5-500-triliun/ (Accessed : 28 January 2018)

Vemale.com. Rumah sakit Jakarta Eye centre Kedoya available at https://www.vemale.com/direktori/85-rumah-sakit-jakarta-eye-center-kedoya.html

VinylHospital, (2016). Modal yang dibutuhkan untuk memulai bisnis rumah sakit available at http://www.vinylhospital.com/single-post/2016/1/18/Modal-Yang-dibutuhkan-untuk-memulai-Bisnis-Rumah-Sakit-Untuk-Bangunan-Rumah-Sakit

Widya Artini (2010). Available at http://repository.maranatha.edu/3419/3/0910138_Chapter1.pdf

Zahrotul Afrialni (2017) Indonesia Masih Bergantung pada Alat Kesehatan Impor http://nasional.republika.co.id/berita/nasional/umum/17/12/13/p0wpmy384-indonesia-masih-bergantung-pada-alat-kesehatan-impor

Ashuri, B., Kashani, H., Molenaar, K. R., & Lee, S. (2010). A Valuation Model for Choosing the Optional Minimum Revenue Guarantee (MRG) in Highway Project: A RealOption Approach. Construction Research Congress, pp. 1244-1253.

Bradao, L. E., Pinto, B. C., Gomes, L. L., & Labes, M. (2012). Government Support in Public

Cruz, C. O., & Marquez, R. C. (2012). Flexibel Contracts to Cope with Uncertainty in Public Private Pertnerships. International Journal of Project Management, 473-483.

Indra, B. P. (2011). PPP Policy and Regulation in Indonesia. Ministry of National Development Planning/National Development Planning Agency.

van Rhee, C., Pieters, M., van de Voort, M., & Strateligence. (2008). Real Options Applied to Infrastructure Projects: A New Approach to Valuing and Managing Risk and Flexibility. International Conference on Infrastructure Systems. Rotterdam.

Kashani, H. (2012). A Real Option Model for The Financial Valuation of Infrastructure System under Uncertainty, p.53

Adetunji, O., Owolabi. A. Real Option and Government Support to Infrastructure Investment, p.10

Lee, H. (2012). A Real Option Approach to Valuating Infrastructure Investment, p.9

Kokkaew, N., Chiara, N., (2011) A Modelling Government Revenue Guarantee in Privately Built Transportation Projects: A Risk Adjusted approach. Walailak University.

Samis, M., Davis, G. A., (2014) Using Monte Carlo Simulation with DCF and Real Option Risk Pricing Techniques to analyse a mine Financing Proposal. International Journal Financial Engineering and Risk Management

Doan, P. & Menyah, K., 2013. Impact of Irreversibility and Uncertainty on the Timing of Infrastructure Projects. Journal of Construction Engineering and Management.

Wibowo, I. P., (2012). Government Guarantee in Public Private Partnership: The Features of Indonesia Infrastructure of Government Funds, p. 4

ICMEM

The 3rd International Conference on Management in Emerging Markets

Financing Assessment to Support Business Expansion of PT. Patra Jasa

Lolita Febriyana[a*], Subiakto Soekarno[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha 10, Bandung 40132, Indonesia*

Abstract

Currently, Indonesia Government intense to promote Indonesia tourism industry to domestic and international tourists. The government also build several facilities and infrastructures to support the tourism industry. These efforts give the positive impact for Indonesia economy and tourism industry, including the hospitality industry. Therefore, PT. Patra Jasa as one of the companies who is engaged in hospitality industry plans to expand its business. This research aimed to make an analysis for PT. Patra Jasa to obtain an additional capital for expanding its hospitality business, especially the analysis of conducting IPO. The valuation analysis using free cash flow to firm (FCFF) model and P/E ratio model. This research found that the best alternative for PT. Patra Jasa to obtain the additional source of funds is using the combination of debt and conducting IPO. PT. Patra Jasa is eligible to conduct IPO and its equity value increase from IDR 10,041,538,000,000 to IDR 12,891,522,000,000 after IPO. The dilution effects of IPO to existing shareholders are reducing ownership percentage, reducing the voting control, reducing its earnings per share and increasing the company's value without reinvesting additional fund for the company.

Keywords: Dilution Effect; Free Cash Flow to Firm; Hospitality Industry; Initial Public Offering; Valuation

1. Introduction

Indonesia's economic condition continue to grow stronger. According to data from Bank Indonesia, Indonesia GDP growth increased from 5.03% in 2016 to 5.07% in 2017. Then, World Bank predicts that its GDP growth in 2018 will increase and reaches 5.3%. Moody's also upgraded the Indonesia Government's long-term issuer rating from Baa3 to Baa2 on April 2018. This economic condition boosted investors' confidence and desire to invest in IDX (Indonesia Stock Exchange). However, publicly listed companies in Indonesia Stock Exchange (IDX) is still lower compared to other ASEAN countries. Therefore, the government encourages more national private company, state-owned enterprise (SOE) and its subsidiaries to go public

Currently, Indonesia government intense to promote the tourism industry to domestic and international tourists. Then, the government also build several facilities and infrastructures to support the economy and tourism industry in the area. All these efforts give the positive impact for its economy and tourism industry, such as the development of new tourism areas and increasing the number of visitors. The tourism industry gives a significant contribution to its foreign exchange as much as US$ 16.8 billion in 2017 and is predicted to increase to US$ 20 billion in 2018 (Simorangkir, 2018). Beside the foreign exchange, tourism industry also contributes to Indonesia GDP from 4% in 2016 then increased to 5.5% in 2017 (Patra Jasa Annual Report 2017). Therefore, PT. Patra Jasa as one of the companies who is engaged in the hospitality industry, is planning to obtain the additional source of funds to expand its business, such as build several new hotels in new tourism areas such as Riau, North Sumatera, East Nusa Tenggara and East Java. According to data from BPS (Indonesia Statistic Agency) and Ministry of Tourism Republic Indonesia, the occupation hotel rate is quite high but the number of hotels in those areas are relatively low.

Table 1. Data of Occupation Hotel Rate and Number of Hotels in Several Provinces

---

* Corresponding author.

ICMEM

Provinces	Average Hotel Occupation Rate (Jan – Feb 2018)	Number of Hotels (2016)
Riau	46.73%	58
North Sumatra	43.57%	116
East Nusa Tenggara	48.73%	23
East Java	51.64%	158

Source: http://www.kemenpar.go.id and BPS

In addition, company also plans to revitalizes its several hotels. The projects predicted will cost as much as IDR 7 trillion (Heriyanto, 2017). However, the company has not enough capital. In 2017, PT. Pertamina (Persero) as its holding company, has already reinvested additional capital as much as IDR 1.54 trillion. So, the company needs additional fund as much as IDR 5.46 trillion.

This research aimed to make the recommendation for PT. Patra Jasa's management to obtain the additional capital for expanding its hospitality business. There are several alternatives for company to obtain additional funds such as borrowing from the bank, issuing bonds, issuing medium term notes, find additional private investors and conducting IPO. However, this research is more focus with the analysis of conducting IPO.

2. Literature Review

Source of Fund

Basically, there are two types source of fund, debt and equity. Debt is the fund obtained through borrowing from other parties. There are several types of funding from debt, such as borrowing from the bank, issuing bonds, issuing notes, etc. Meanwhile, equity is the fund provided by the firm's owners when they reinvest capital or issue stock for investors. The differences between debt and equity are shown as follows

Table 2. Differences Between Debt and Equity

Criteria	Debt	Equity
Maturity	It specifies the maturity date.	There is no specific maturity date
Claim on Assets	Creditors have prior claims on assets than stockholders if the company bankruptcy.	Stockholders have claims after the company have already satisfied the claims for creditors.
Claim on Income	Creditors have prior claim on fixed interest payments	Stockholders have a leftovers claim (dividend) after all company's obligation to creditors have been paid.
Right to a Voice in Management	Creditors are not the firm's owners. Therefore, they have no right to voice in company affairs.	Stockholders are the firm's owners and have right to voice in company affairs.
Tax Treatment	Interest payment to creditors are treated as tax deductible expenses for the firm.	Dividend payments to firm's stockholders are not tax deductible.

Source: Gitman, *et al.*, 2015

ICMEM

Initial Public Offering

IPO is the process of a private company to issues company's shares and offers it to the public. In other words, IPO is transforming a private owned company into a public traded company. The purposes for the company to conduct IPO are searching for additional capital for expanding its business, repaying the debt and or lowering its debt to equity ratio. Within IPO, the shareholder will get the dividend as a benefit after all company's obligation to creditors have been paid. IPO provides the company with several advantages and disadvantages.

Table 3. Advantages and Disadvantages of IPO

Advantages	Disadvantages
• Obtain additional source of capital. • Easier access to banking and issuing bonds in capital market. • Maintain lower the company's debt to equity ratio. • Conducting merger or acquisition of other companies through issuance of new shares • Increase the company's value and image	• There will be additional expenses, such as underwriting fee, stock exchange listing fee, legal and accounting fee. • Reduction in company's ownership percentage and control for current shareholders • Loss of privacy.

Source: IDX., 2016

To conduct IPO, the company must report, follow the process and fulfill all the requirement to get permission from OJK (Indonesian's Financial Service Authority) and IDX (Indonesia Stock Exchange) as the authorized department of the capital market in Indonesia. According to IDX regulation (2016), the IPO process is shown below
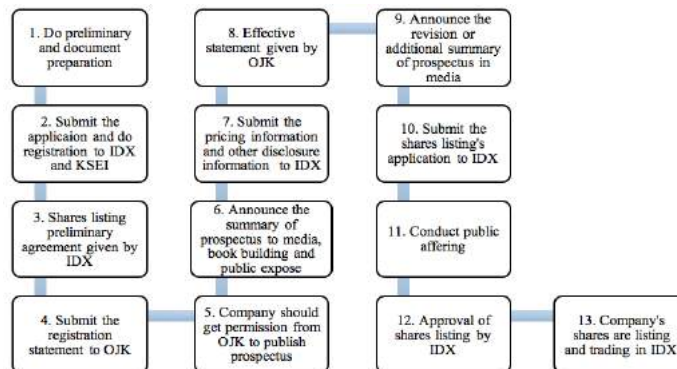
Fig. 1. IPO Scheme Process

Valuation

Valuation is the estimation of an asset's value based on variables perceived to be related to future investment returns or on comparisons with similar assets (Pinto, *et al.*, 2010). Valuation is divided into three, absolute valuation and relative valuation and contingent clam valuation.

Absolute valuation is a model that estimates an asset's intrinsic value and compared with the asset's market price. The most important type of absolute valuation model is discounted cash flow (DCF) model. DCF model applied to equity valuation derives the value of assets as the present value of its expected future cash flows (Pinto, *et al*, 2010). DCF model is divided into free cash flow to equity (FCFE), free cash flow to firm (FCFF) and adjusted present value (APV) model.

Relative valuation model estimates an asset's value relative to another similar asset using a common variable such as earnings, cash flow or book value. The example of relative valuation model is price to earning (P/E) ratio and price to book value (Gitman, *et al.*,2015)

ICMEM

Contingent claim valuation is a valuation model that uses option pricing model to determine the asset's value that share option characteristics (Damodaran, 2012).

2.1.1. Free Cash Flow to Firm (FCFF)

FCFF model is the cash flow available to the company's capital suppliers after all operating expenses (including taxes) have been paid and necessary investments in working capital and fixed capital have been made (Pinto, *et al.*, 2010). Formula to calculate is shown below (Damodaran, 2012).
FCFF = EBIT (1-Tax Rate) + Depreciation – Capital Expenditure – Change in Net Working Capital

2.1.2. Weighted Average Cost of Capital (WACC)

In FCFF model, it uses weighted average cost of capital (WACC) as its discount rate. WACC is the expected average future cost of capital over the long run period (Gitman *et al.*, 2015). The formula to calculated WACC is shown below (Damodaran, 2012).

$$WACC = (Cost\ of\ Debt\ x\ \frac{Debt}{(Debt + Equity)}) + (Cost\ of\ Equity\ x\ \frac{Equity}{(Debt + Equity)})$$

2.1.3. Cost of Debt

Cost of debt is financing cost associated with new funds raised through long term borrowing (Gitman, et al., 2015). Usually, for estimating before tax cost of debt of company, it uses yield to maturity formula. However, if the company does not have traded bonds, so the interest coverage ratio of company can be used to estimate the default spread and added to risk free rate to obtain before tax cost of debt (Damodaran, 2012). After obtained before tax cost of debt, it must be multiplied by (1 – tax rate) to obtain after tax cost of debt. The formula of after tax cost of debt is as follow (Damodaran, 2012).
After Tax Cost of Debt = (Risk free rate + default spread) x (1- Tax Rate)

2.1.4. Cost of Equity

Cost of common stock equity is the rate at which investors discount the expected firm's common stock dividends to determine its share value. There are two techniques to determine cost of equity, constant growth valuation model and capital asset pricing model (CAPM). Constant growth model assumes the value of a share of stock equals to present value of all future dividends and grow at constant rate over an infinite time horizon. While CAPM describes the relationship between the required return and non diversifiable risk of the firm as measured by beta coefficient. The CAPM's formula is shown below (Gitman, *et al.*, 2015).
CAPM = Rf + (β x (rm – Rf))

2.1.5. Terminal Value

Terminal value is resulting from termination and liquidation at the end of firm's economy life. To calculate terminal value, it usually uses perpetuity growth. Perpetuity growth assumes free cash flow will continue growing at constant rate into perpetuity (Gitman, et al., 2015). The formula of terminal value is shown below (Gitman, *et al.*, 2015).

$$Terminal\ Value = \frac{FCFF_{n+1}}{(WACC - g_n)}$$

2.1.6. Relative Valuation

ICMEM

In this research, author will use price earnings ratio (P/E) ratio method for relative valuation. P/E ratio reflects the amount investors are willing to pay for each dollar of earnings (Gitman, et al., 2015). P/E ratio is calculated as

P/E ratio = (Market price per share of common stock)/(Earnings per share).

Optimal Capital Structure

Optimal capital structure is the combination of long term sources of financial long term sources (long term debt and equity) that lead to minimize the weighted average cost of capital (WACC) and will maximize the firm's value (Gitman, *et al.*, 2015).

3. Research Methodology

For this research, author uses secondary data. It means author uses the data and information from sources that have already existed for the public, such as financial reports from the company's official website, news website and other official websites.

Fig. 2. Conceptual Framework

Regarding to conceptual framework, author does problem identification and search alternatives to obtain additional capital, such as using debt and conducting IPO. To conduct IPO, author analyzes the eligibility of PT. Patra Jasa to conduct IPO. After the company eligible to conduct IPO, author does absolute and relative valuation of the company.

For absolute valuation, author uses free cash flow to firm (FCFF) model. To determine several assumptions for doing FCFF valuation, author analyzes external condition (general and industry environment) and internal condition (financial ratio analysis). The present value of FCFF and terminal value is obtained by discounted back its value with WACC (weighted average cost of capital). The next step is total the present value of FCFF and terminal value to determine firm's value. Firm's value is reduced with current outstanding debt to determines the company's equity value. Then, the company's equity value is divided with number of outstanding shares to determine the company's intrinsic value.

While for relative valuation, author compares the company with other property and hospitality companies who have already traded its shares to public. Then do price to earnings ratio model to determine the company's market price.

Finally, after doing valuation, author conducts conclusion and recommendation for the company to obtain additional capital.

ICMEM

4. Data Analysis

Analysis of Alternatives to Obtain Additional Capital

There are three alternatives for the company which is being analyzed to obtain capital such as:

- Using debt

  By using debt to obtain additional fund, the company increases its debt to equity ratio and company's obligation to pay interest and loan principal. Therefore, it can endanger the company's sustainability if the company can not paid the debt on time.

- Conducting IPO

  There are several advantages and disadvantages that the company can perceive by conducting IPO. However, current market condition is not too supportive for the company to obtain a large number of funds from IPO. The number of funds which are needed by PT. Patra Jasa to expand its business is IDR 5.46 trillion. Therefore, if the company still forced to conduct IPO to get the entire required of funds, it feared the company cannot achieve the expected results.

- The combination of using debt and conducting IPO

  Besides using debt or conducting IPO, the company can also combine both options to obtain additional funds and there will be proportion between debt and equity that will be used by the company to obtain additional capital.

Regarding to analysis above, using the combination of debt and conducting IPO (equity) is the best alternative to obtain additional capital for the company. The company can maintain its capital structure, as well as its sustainability and get the expected additional fund that has been adjusted to market conditions.

In this research, author uses the company's optimal capital structure in 2017, which is its weight of debt is 10% and weight of equity is 90%. Therefore, the company's target fund from debt is IDR 546,281,000,000 and from conducting IPO is IDR 4,916,525,000,000.

Eligibility of Company to Go Public

There are two boards in Indonesia Stock Exchange (IDX) for issuers, main board and development board. Main board is for the prospective companies with good track record. While development board is for the companies that have not fulfilled the main board's listing requirements. PT. Patra Jasa wants to listing in the IDX main board. There are several listing requirements that have been prepared by Indonesia Stock Exchange (IDX) for the prospective companies that will list it shares in the Main Board:

Table 4. Requirements for Company to be Listed in the IDX Main Board

Requirements	Has PT. Patra Jasa fulfilled the requirements?
Has independent commissioner minimum 30% from the Board of Commissioners' composition, minimum 1 director, unit of internal audit and corporate secretary.	Yes (company has 1 independent commissioner from 3 commissioners, 1 independent director, unit of internal auditor and corporate secretary).
Until the submission of listing application, the company has been conducting operational activity in the same core business for more than 36 consecutive months.	Yes (company has been operating its hospitality business since 1975).
Book business profits minimum in the last 1 financial year.	Yes (since 2013 the company books business profit).
Its financial report has been audited minimum for the last 3 years, provided the last 2 years financial	Yes (since 2013 its

ICMEM

reports and the latest interim audited financial report (if any) obtain an unqualified opinion.

financial report has been audited and obtained unqualified opinion).

Has a net tangible asset more than IDR 100 billion on the latest audited financial reports.

Yes (its net tangible asset in 2017 more than IDR 100 billion).

The total shares owned by non controlling shareholders after public offering or in the period of 5 days prior to the listing application are more than 300 million shares and

• 20% from total shares, for equity less than IDR 500 billion.

• 15% from total shares, for equity IDR 500 billion until 2 trillion.

• 10% from total shares, for equity more than IDR 2 trillion.

Company's equity in 2017 is IDR 2.001 trillion. (The total shares owned by non controlling shareholders are more than 300 million shares and 10% from total shares)

Source: (IDX, 2016)

Regarding to table 4, it shows that PT. Patra Jasa is eligible to be listed on the IDX's main board.

Discounted Cash Flow (DCF) Valuation

Author makes the prediction of future cash flow for 5 years (from 2018 until 2022). The reason is because due to the company's long-term plan, company will expand its businesses in hospitality industry for 5 years (2017-2021). Then authors also consider the possibility of delays in project work, so it is estimated that its businesses can operate optimally in 2022. Author uses one of DCF model, free cash flow to firm (FCFF) model to value PT Patra Jasa's equity value.

4.1.1. Estimating Weighted Average Cost of Capital (WACC)
- Weight of Debt and Weight of Equity
  The weight calculation of PT. Patra Jasa's optimal capital structure is as follow:

Table 5. Weight Calculation of PT. Patra Jasa's Cost of Capital

	Optimal Capital Structure (IDR million)	Weight (%)
Long Term Debt	546,281	10.00
Equity	4,916,525	90.00
Total	5,462,805	100

- Cost of Debt
  The calculation of PT. Patra Jasa's cost of debt is as follow:

Table 6. After Tax Cost of Debt Calculation of PT. Patra Jasa

		Source
Risk Free Rate (Rf)	6.99%[1]	www.ibpa.co.id (8th June 2018)

Firm Default Spread	1.98%[2]	Damodaran, 2018
Cost of Debt	8.97%	
Tax Rate	25%[3]	PwC, 2018
After Tax Cost of Debt (Kd)	6.73%	

- Cost of Equity

The technique that author uses to determine cost of equity in this research is capital asset pricing model (CAPM). It is because CAPM consider the relationship between the firm's required return and non diversifiable risk (Gitman, et al., 2015).

However, PT. Patra Jasa is still private company and makes the calculation of beta coefficient is different with publicly traded company. The method to calculate beta in private company is bottom up beta (Damodaran, 2012). With bottom up method, the beta of private company can be estimated by using at the public peer companies' average beta. In this research, author compares PT. Patra Jasa with several public peer companies, such as PT. Ciputra Development, Tbk. (CTRA), PT. Lippo Karawaci, Tbk. (LPKR), PT. Pakuwon Jati, Tbk. (PWON), PT. PP Properti, Tbk. (PPRO), and PT. Summarecon Agung, Tbk. (SMRA) However, there are the differences in debt to equity ratio that will effect the calculation. To minimize the differences, author un-levers the peer companies' beta. Unlevered beta is the beta of a company without any debt. The formula of unlevered beta is

Unlevered Beta = (Levered Beta)/((1+(1-Tax) * Debt/Equity)

After obtained unlevered beta, then re-levers the beta using the private company DER and tax rate. Levered beta is the firm beta with debt.

Table 7. Calculation Beta of PT. Patra Jasa

	Beta	DER
CTRA	1.687	0.5785
LPKR	1.073	0.6056
PWON	1.349	0.4951
PPRO	1.465	0.7975
SMRA	1.682	1.0837
Average	1.4512	0.71208
DER Patra Jasa		0.111
Tax Rate		25%
Unlevered Beta		0.946
Levered Beta of Patra Jasa		1.025

Source: Pefindo and www.reuters.com (8th June 2018)

Table 8. Cost of Equity Calculation of PT. Patra Jasa

		Source
Risk Free Rate (Rf)	6.99%	www.ibpa.co.id (8th June 2018)
Market Return (Rm)	14.61%	
Equity Risk Premium (Rp)	7,62%	Damodaran, 2018
Beta	1.025	
Cost of Equity (Ke)	14.80%	

- Weighted Average Cost of Capital (WACC)
  The detail calculation of WACC is shown as follows

Table 9. WACC Calculation of PT. Patra Jasa

Weight of Debt (Wd)	10.00%
Weight of Equity (We)	90.00%
After Tax Cost of Debt (Kd)	6.73%
Cost of Equity (Ke)	14.80%
WACC	13.99%

4.1.2. Estimating Growth

Author uses the historical growth as basis projection. Higgledy Piggledy Growth shows a little evidence that firms that grew fast in one period continued to grow fast in the next period (Little, 1962). In this research, author estimates the growth rate using geometric average. The formula to calculate geometric average is (Damodaran, 2012)

Geometric average $= (\frac{Earnings_0}{Earnings_{-n}})^{(\frac{1}{n})} - 1$

Where, earnings $-n$ = earnings in n years ago

Author uses 3 stage growth because PT. Patra Jasa has grown significantly and has significant barriers to entry into hospitality business (Damodaran, 2012). For terminal growth rate, author uses World bank's prediction of Indonesia GDP growth in 2018 is around 5.3%. The reason is Indonesia tourism industry gives contribution to Indonesia GDP as much as 5.5% in 2017.

4.1.3. Number of Share Outstanding Projection

Before IPO, Patra Jasa has 1,537,195 paid-up shares (modal saham disetor). Each share has a nominal value of IDR 1,000,000 per share. This price per shares become too expensive for the retail investor to buy and the number of shares is very small to circulate in the stock market. Therefore, to handle this problem, usually, the company that goes public will reduce the nominal value to increase the number of shares. Regarding to IDX regulation, the minimum price of the initial public offering is IDR 100 per share.

Table 10. Share Projection of PT. Patra Jasa

	Before IPO	After IPO

ICMEM

Nominal Value	1,000,000	100
Paid Up Shares	1,537,195	15,371,950,000
Additional Issued Shares		7,135,659,190
Total Shares	1,537,195	22,507,609,190

4.1.4. Free Cash Glow to Firm (FCFF) and Intrinsic Value

As mention before, author uses free cash flow to firm to determine company's value. The reason is the company has unstable debt and expects to change the leverage over time (Damodaran, 2012). The formula of FCFF is

FCFF = EBIT (1-Tax Rate) + Depreciation – Capital Expenditure – Change in Net Working Capital

$$\text{Firm Value} = \sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1+WACC)^t} + \frac{\frac{FCFF_{n+1}}{(WACC-g_n)}}{(1+WACC)^n}$$

The result of valuation is shown as follows:

Table 11. FCFF Calculation Before IPO

	2017 A	2018 F	2019 F	2020 F	2021 F	2022 F
EBIT	197,861	243,995	289,630	330,498	362,009	380,006
Tax Expenditure	33,191	32,036	37,692	42,698	46,521	48,690
Depreciation Expenses	123,857	157,252	191,325	222,648	247,309	261,606
Capital Expenditure	371,473	600,478	897955	1,234,082	1,546,612	1,751,034
Change in Net Working Capital	-1,139,306	-1,172,403	-1,880,478	-2,525,210	-2,692,747	-1,946,406
Free Cash Flow to Firm	1,056,360	941,136	1,425,786	1,801,576	1,708,931	788,295
Terminal Value						9,550,505
Total FCFF	1,056,360	941,136	1,425,786	1,801,576	1,708,931	10,338,800
Discounted Cash Flow	1,056,360	825,620	1,097,261	1,216,287	1,012,129	5,371,671
Firm Value	10,579,328					

Table 12. FCFF Calculation After IPO

	2017 A	2018 F	2019 F	2020 F	2021 F	2022 F
EBIT	197,861	243,995	289,630	330,498	362,009	380,006
Tax	33,191	32,036	37,692	42,698	46,521	48,690

ICMEM

Expenditure					
Depreciation Expenses	123,857	157,252	191,325	222,648	247,309	261,606
Capital Expenditure	371,473	600,478	897,955	1,234,082	1,546,612	1,751,034
Change in Net Working Capital	-1,139,306	-1,947,033	-2,429,986	-3,234,959	-3,430,307	-2,470,939
Free Cash Flow to Firm	1,056,360	1,715,765	1,975,293	2,511,325	2,446,491	1,312,828
Terminal Value						15,905,442
Total FCFF	1,056,360	1,715,765	1,975,293	2,511,325	2,446,491	17,218,270
Discounted Cash Flow	1,056,360	1,505,171	1,520,153	1,695,456	1,448,956	8,945,998
Firm Value	16,172,093					

After obtained the company's value, it is reduced by current outstanding debt to obtain the company's equity value. Then, the equity value is divided by number of shares outstanding to obtain the intrinsic value per share. The calculation of company's intrinsic value per share is shown as follows

Table 13. Calculation of PT. Patra Jasa's Intrinsic Value

	Before IPO	After IPO
Firm Value (in Million IDR)	10,579,328	16,172,093
Less: Current Outstanding Debt (in Million IDR)	664,521	664,521
Equity Value (in Million IDR)	9,914,807	15,507,572
Number of Shares Outstanding	1,537,195	22,507,609,190
Intrinsic Value per Share	6,449,935	689

Relative Valuation

In this research, relative valuation is calculated to support the DCF valuation price per share but will not affect the calculation. Author uses pricing to earning ratio model for relative valuation. Patra Jasa's EPS is 6.69. After obtained EPS, author multiplying EPS with P/E ratio of industry average to obtain the company's value. According to data from Reuters on 8th June 2018, the P/E ratio of the hospitality industry is 68.53. Therefore, the market price per share of PT. Patra Jasa is IDR 458.

Dilution Effects of IPO to Existing Shareholders

There are several dilution effects of IPO to existing shareholders, such as:

- Reducing ownership percentage
  By issuing new shares in the IPO process, the number of shares outstanding will be increased so the existing shareholders will own a smaller percentage of the company's shares. The details of PT. Patra Jasa's ownership percentage is shown in Appendix D.

Table 14. PT. Patra Jasa's Ownership Percentage Before and After IPO

	Before IPO	After IPO
PT. Pertamina (Persero)	99.99%	68.296%
PT. Pertamina Pedeve	0.01%	0.001%
Public		31.703%

- Reducing the company's voting control
  By having a lower percentage of the company's shares after IPO, the existing shareholders will also have lower company's voting control.
- Lowering its earning per share
  By issuing new shares in the IPO process, the number of shares outstanding will be increased. Therefore, the EPS that the shareholders will obtain after IPO is lower than before. Before IPO, the EPS of PT. Patra Jasa is 75,821. While after IPO, the EPS of the company is 6.69.
- Increasing the company's equity value without reinvesting additional funds
  One of the advantages of the company's IPO is increasing company's equity value without reinvesting additional fund in the company. According to the previous calculation, it shows the company's equity value is increasing from IDR 9,914,807,000,000 to IDR 15,507,572,000,000 after IPO.

5. Conclusion

Conclusion

The best alternative for the company to obtain additional capital for expanding its hospitality business is using the combination of debt and conducting IPO to maintain its capital structure, as well as its sustainability and get the expected additional fund that has been adjusted to market conditions. The company's target fund from debt is IDR 546,281,000,000 and from conducting IPO is IDR 4,916,525,000,000.

After the analysis and valuation have been done, PT. Patra Jasa is eligible to conduct IPO and increasing the company's equity value from IDR 9,914,807,000,000 to IDR 15,507,572,000,000 after IPO. By conducting IPO, the dilution effects of IPO to existing shareholders are reducing ownership percentage, reducing the voting control, reducing its earnings per share (EPS) and increasing the company's value without reinvesting additional fund for the company.

Recommendation

The best alternative for the company to obtain additional capital for expanding its hospitality business is using the combination of debt and conducting IPO. It is to maintain capital structure, as well as its sustainability and get the expected additional fund that has been adjusted to market condition.

Acknowledgements

Appendix A. Income Statement Projection of PT. Patra Jasa (in Million IDR)

ICMEM

	2013A	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F
Revenue	375,430	442,930	451,699	584,994	908,431	1,132,995	1,358,064	1,561,909	1,720,521	1,811,709
COGS	-284,757	-316,602	-219,584	-343,137	-451,912	-563,625	-675,589	-776,995	-855,899	-901,261
Gross Profit	90,672	126,329	232,115	241,858	456,518	569,370	682,475	784,914	864,622	910,447
Operating Expenses	-	-	-104,428	-100,054	-134,800	-168,123	-201,520	-231,768	-255,304	-268,835
EBITDA	90,672	126,329	127,687	141,803	321,718	401,247	480,955	553,146	609,318	641,612
Depreciation and Amortization	-14,156	-22,152	-64,941	-84,893	-123,857	-157,252	-191,325	-222,648	-247,309	-261,606
EBIT	76,516	104,176	62,746	56,910	197,861	243,995	289,630	330,498	362,009	380,006
Interest Expenses	-16,355	-24,538	-12,434	-30,671	-48,118	-115,849	-138,862	-159,705	-175,923	-185,247
EBT	60,161	79,639	50,312	26,238	149,743	128,146	150,768	170,793	186,085	194,759
Income Tax Expenses	-16,518	-20,825	-17,887	-12,666	-33,191	-32,036	-37,692	-42,698	-46,521	-48,690
Net Income	43,643	58,814	32,425	13,572	116,552	96,109	113,076	128,095	139,564	146,069

Appendix B. Balance Sheet Projection of PT. Patra Jasa Before Conducting IPO (in Million IDR)

	2013A	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F
Current Asset	136,014	165,051	186,225	266,551	1,709,060	3,217,740	5,500,344	8,448,575	11,512,334	13,691,199
Non Current Asset	413,671	494,098	660,736	915,310	1,407,128	1,827,974	2,269,278	2,684,812	3,018,442	3,214,637
Total Asset	549,685	659,149	846,962	1,181,862	3,116,188	5,045,713	7,769,622	11,133,388	14,530,776	16,905,836
Current Liabilities	140,509	157,520	259,436	385,778	688,980	1,025,256	1,427,382	1,850,403	2,221,415	2,453,874
Non Current Liabilities	82,811	126,561	184,197	390,445	426,159	1,752,406	3,736,552	6,304,583	8,990,976	10,914,324
Total Liabilities	223,320	284,081	443,633	776,222	1,115,139	2,777,662	5,163,934	8,154,986	11,212,391	13,368,198
Equity	326,365	375,068	403,329	405,640	2,001,049	2,268,051	2,605,688	2,978,402	3,318,385	3,537,638

Total Liabilities and Equity	549,685	659,149	846,962	1,181,863	3,116,188	5,045,713	7,769,622	11,133,388	14,530,776	16,905,836

Appendix C. Balance Sheet Projection of PT. Patra Jasa After Conducting IPO (in Million IDR)

	2013A	2014A	2015A	2016A	2017A	2018F	2019F	2020F	2021F	2022F
Current Asset	136,014	165,051	186,225	266,551	1,709,060	3,992,369	6,824,481	10,482,461	14,283,780	16,987,178
Non Current Asset	413,671	494,098	660,736	915,310	1,407,128	4,294,726	5,445,886	6,552,137	7,454,681	7,991,477
Total Asset	549,685	659,149	846,962	1,181,862	3,116,188	8,287,095	12,270,367	17,034,598	21,738,461	24,978,656
Current Liabilities	140,509	157,520	259,436	385,778	688,980	1,025,256	1,427,382	1,850,403	2,221,415	2,453,874
Non Current Liabilities	82,811	126,561	184,197	390,445	426,159	3,273,004	5,041,564	8,026,796	11,528,024	14,070,709
Total Liabilities	223,320	284,081	443,633	776,222	1,115,139	4,298,260	6,468,946	9,877,199	13,749,439	16,524,583
Equity	326,365	375,068	403,329	405,640	2,001,049	3,988,835	5,801,421	7,157,399	7,989,023	8,454,073
Total Liabilities and Equity	549,685	659,149	846,962	1,181,863	3,116,188	8,287,095	12,270,367	17,034,598	21,738,461	24,978,656

Appendix D. Details of PT. Patra Jasa's Ownership Before and After IPO

Shareholders	Before IPO			After IPO		
	Value per stock: IDR 1,000,000			Value per stock: IDR 689		
	Paid in Capital	Number of Stock	Percentage	Paid in Capital	Number of Stock	Percentage

ICMEM

PT. Pertamina (Persero)	1,537,179,628,050	1,537,180	99.99%	10,591,170,200,000	15,371,800,000	68.296%
PT. Pertamina Pedeve	15,371,950	15	0.01%	103,350,000	150,000	0.001%
Public	-	0	0%	4,916,469,181,910	7,135,659,190	31.703%
Total	1,537,195,000,000	1,537,195	100%	15,507,742,731,910	22,507,609,190	100%

References

Badan Pusat Statistik. (2016). *Jumlah Akomodasi Kamar dan Tempat Tidur yang Tersedia pada Hotel Bintang Menurut Provinsi 2000-2016*. Viewed on 12th May 2018 at https://www.bps.go.id/dynamictable/2015/12/28/1096/jumlah-akomodasi-kamar-dan-tempat-tidur-yang-tersedia-pada-hotel-bintang-menurut-provinsi-2000-2016.html.

Bank Indonesia. (2017). *Laporan Perekonomian Indonesia Tahun 2017*. Viewed on 6th May 2018 at https://www.bi.go.id/id/publikasi/laporan-tahunan/perekonomian/Pages/LPI_2017.aspx.

Damodaran, A. (2012). *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* (3rd ed.). New Jersey: John Wiley & Sons, Inc.

Damodaran, A. (2018). *Country Default Spreads and Risk Premiums*. Viewed on 4th June 2018 at http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html.

Damodaran, A. (2018). *Ratings, Interest Coverage Ratios and Default Spread*. Viewed on 4th June 2018 at http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm.

Fikri, R. (2018). *Ini Daftar 26 Perusahaan Siap IPO Saham Tahun 2018*. Viewed on 7th May 2018 at http://www.bareksa.com/id/text/2018/03/07/ini-daftar-26-perusahaan-siap-ipo-saham-tahun-2018/18628/news.

Gitman, L.J. & Zutter, C.J. (2015). *Principle of Managerial Finance*. Harlow: Pearson.

Heriyanto, H.S., 2017, *Bangun Sejumlah Hotel Baru, Patra Jasa Siap Melantai di Bursa*. Viewed on 7th May 2018 at http://www.beritasatu.com/bisnis/443466-bangun-sejumlah-hotel-baru-patra-jasa-siap-melantai-di-bursa.html

IBPA (Indonesia Bond Pricing Agency). (2018). *Harga dan Yield Wajar Obligasi Pemerintah Indonesia Seri Benchmark*. Viewed on 8th June 2018 at http://www.ibpa.co.id/DataPasarSuratUtang/HargadanYieldHarian/tabid/84/Default.aspx.

Indonesia Stock Exchange. (2016). *Panduan Go Public*. Viewed on 27th May 2018 at http://www.idx.co.id/Portals/0/StaticData/Information/ForCompany/Panduan-Go-Public.pdf.

Indonesia Stock Exchange and PwC. (2016). *IPO Socialization – A Joint Indonesia Stock Exchange and PwC Event*. Viewed on 27th May 2018 at https://www.pwc.com/id/en/our%20services/capitalmarkets/IPO%20Socialization%20%0A%20joint%20Indonesia%20Stock%20Exchange%20and%20PwC%20Event.pdf.

Little, I.M.D. (1962). *Higgledy Piggledy Growth*. Oxford: Institute of Statistics.

Miles, M.B. and Huberman, A.M. (1994). *Qualitative Data Analysis: An Expanded Source Book* (2nd ed.). Newbury Park, CA: Sage.

Pefindo. 2018. *Pefindo Beta Stock*. Viewed on 8th June 2018 at http://www.pefindo.com/index.php/fileman/file?file=15.

Pinto, J.E., Henry, E., Robinson, T. and Stowe, J.D. (2010). *Equity Asset Valuation* (2nd ed.). New Jersey: John Wiley and Sons, Inc.

PT. Patra Jasa (2013-2017). *Annual Report of PT. Patra Jasa*. Jakarta: PT. Patra Jasa.

Reuters, 2018, PT. Ciputra Development Tbk. Viewed on 8th June 2018 at https://www.reuters.com/finance/stocks/overview/CTRA.JK.

Reuters, 2018, PT. Lippo Karawaci Tbk. Viewed on 8th June 2018 at https://www.reuters.com/finance/stocks/overview/LPKR.JK.

Reuters, 2018, PT. Pakuwon Jati Tbk. Viewed on 8th June 2018 at https://www.reuters.com/finance/stocks/overview/PWON.JK.

Reuters, 2018, PT. PP Properti Tbk. Viewed on 8th June 2018 at https://www.reuters.com/finance/stocks/overview/PPRO.JK.

Reuters, 2018, PT. Summarecon Agung Tbk. Viewed on 8th June 2018 at https://www.reuters.com/finance/stocks/overview/SMRA.JK.

Simorangkir, E., 2018, *Pariwisata Jadi Andalan Penyumbang Devisa US$ 20 Miliar*. Viewed on 12th May 2018 at https://finance.detik.com/berita-ekonomi-bisnis/d-3844660/pariwisata-jadi-andalan-penyumbang-devisa-us-20-miliar.

World Bank, 2018, *March 2018 Indonesia Economic Quarterly: Towards Inclusive growth*. Viewed on 6th May 2018 at http://www.worldbank.org/en/country/indonesia/publication/indonesia-economic-quarterly-march-2018

ICMEM

The 3rd International Conference on Management in Emerging Markets

Financial Assessment Of Project Sustainability Using Altman Z-Score Model (Case Study PT. Dirgantara Indonesia Aerospace)

Rizella Tiaranita[a*], Asep Darmansyah[b]

[a,b]*MBA-ITB, Gelap Nyawang 1st, Bandung 40132, Indonesia*

Abstract

The demand for aircraft product is increasing and lead to production for making new aircraft should increase too. PT. DI as one aircraft manufacturing company go through the fact that the sales from aircraft and profit of the company were declining and make concern to company sustainability in the future. The financial assessment will analyze using financial ratio, growth rate, Altman Z-sore model, and sensitivity analysis. The result from the financial ratio calculation showed that the company did not perform a good financial performance. Based on calculation growth rate showed that company needed the external fund for sustainable growth. The z-score value used to predict the probability of a company will go into bankruptcy or not. The z-score value of PT. DI in 2016 is 1.92 (grey zone) that mean that company has financial difficulties, but are saved and possibly bankrupt depends on the decision of the company's management policy as a decision maker. Sensitivity analysis used to increasing value each variable into the safe zone and resulted that company should increase 32% for each variable in Altman formula within simultaneously. This increasing expected to lead PT. DI in the safe zone, and affected for the future sustainability company.

Keywords: Financial Assessment, Altman Z-score, Sustainability, Aircraft Industry, Financial Ratio

1. Introduction

The significant increase has been due largely to regional economic growth, market liberalization, new technology enhanced airplanes expanding further market opportunities, and successful evolution of new business models. Over the past decade, jet fleets of Asian airlines have nearly doubled, from 3,600 to 7,000. The number of Asian airlines with jet fleets has grown from 200 to 250, while airplane orders by these airlines have increased from 1,940 to 4,400. The capacity that these airlines provide has grown on average by almost 10 percent annually. Indonesia's aviation industry has recorded robust growth marked by increased passenger numbers, expanding fleets, and increased flights. The aviation sector offers huge investment opportunities given the country's unique geographical conditions coupled with a rising middle-class and a strengthening domestic as well as international tourism industry.

---

[*] Corresponding author. Tel : 081217078316
E-mail address : rizella@sbm-itb.ac.id

ICMEM
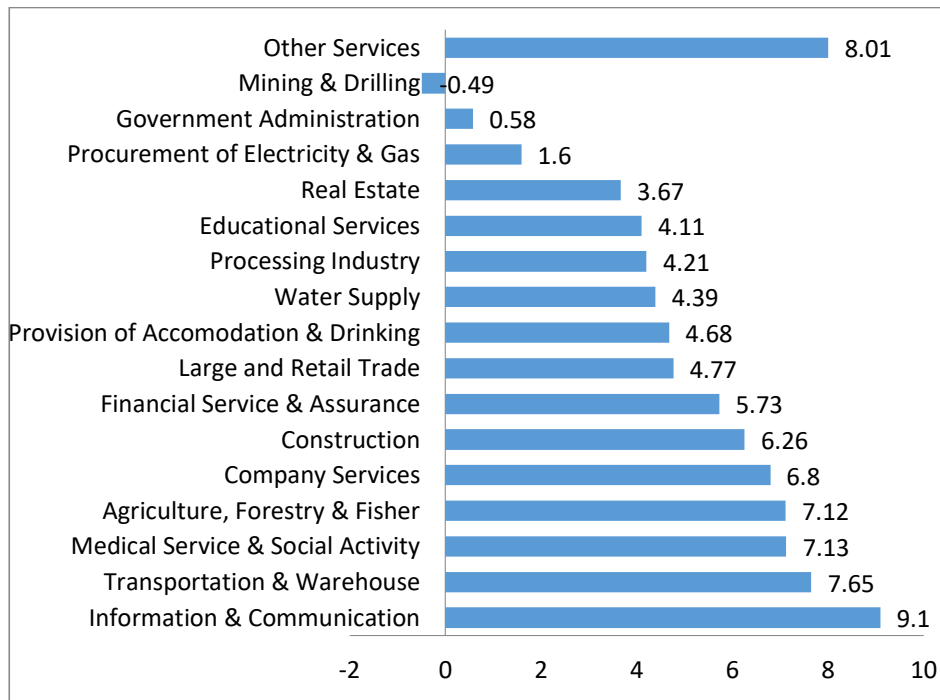
Fig. 1 Indonesia's Economic Growth Rate by Sector (1st Quarter of 2017)

According to Badan Pusat Statistik (BPS), Indonesia Economic Growth rate by sector can show in the first quarter of 2017, sector transportation and warehouse became the third sector with highest growth as much as 7.65% , the first sector is information and communication 9.1% and for second highest growth is in other services 8.01%.

PT Dirgantara Indonesia (PT. DI) is the only aircraft industry in Southeast Asia. Since being established in 1976 located in Bandung, West Java PT. Dirgantara Indonesia are state owned company (BUMN) produce civilian and military of light and medium aircraft. PT. Dirgantara Indonesia has several categories in business process there are: Aircrafts Assembly & Integrations, Aero Structure, Aircraft Service, Technology and Development.

PT Dirgantara Indonesia was established to provide business in the field of interconnect, communication, defense and security in the form of industry and trade of products and services as well as optimizing the utilization of the Company's resources to produce goods and / or services of high quality and strong competitiveness. The main business activity is to manufacture, market, sell and distribute the aerospace and defense and security products of aircraft and helicopters, aircraft components, aircraft maintenance and modification, weapons systems and technology services.

On the contrary, the fact that happens with PT. DI business whereas in the fact the profit for aircraft cannot be targeted every year, this is what makes PT. Dirgantara Indonesia has to think hard how to sustain the company if the sales from aircraft was declining or the operational activity have a small portion to being run in the future and PT. DI is also required by government to earn profit.

With this uncertain situation and decreasing profit aircraft and company get continuous profit loss can lead to bankruptcy company, it can be conduct an assessment towards sustainability business. The bankruptcy assessment analysis will help the management in PT. Dirgantara Indonesia to predict the bankruptcy and find strategy solution to prevent its business from bankruptcy.

ICMEM

	2013	2014	2015	2016
Sales	130,659,472	161,034,950	86,891,551	106,161,368
Profit	3,644,119	8,063,254	1,126,691	(7,306,339)
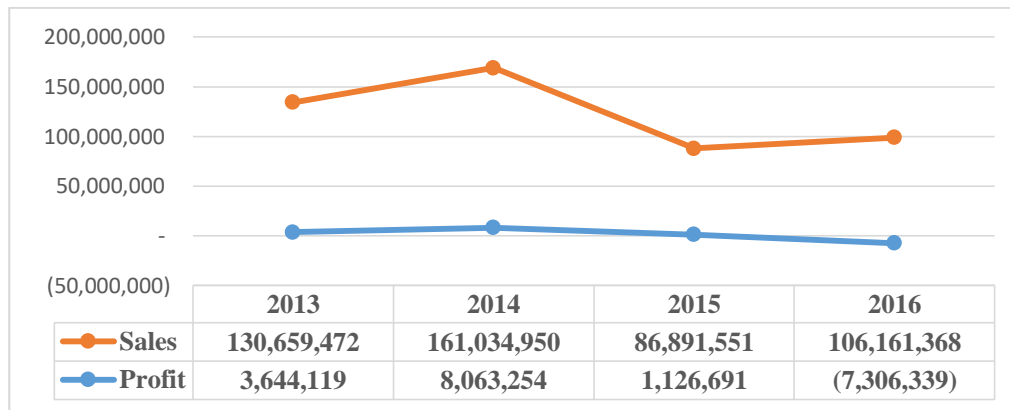
Fig 2. Total Profit PT. Dirgantara Indonesia

Sales in PT. Dirgantara Indonesia from to 2013 to 2016 have fluctuated value. In the 2013 until 2014 the which gained as much as 23.24%, from 2014 to 2015 the sales decreased as much as 46.04%. For 2015 to 2016 the which gained as much as 22.17%.

Profits of PT. Dirgantara Indonesia from 2013 to 2016 tend to decrease. In the 2013 until 2014, the profit increased as much as 121.26 %. From 2014 to 2015, profit decreased as much as 615, 65 %. From 2015 to 2016, the profit decreased sharply as much as 115.42%.

These decreased trends in the profit and fluctuation in sales became the concerns for PT. Dirgantara Indonesia. The company needs to do analysis on their financial performance and resolve the problems arose. The analysis is needed in order to gain sustainability of its business, and survive in the aircraft manufacturing industry. These fluctuated sales and profits from 2013 to 2016 tend to decrease, thus could cause bankruptcy and becoming threats for company in the future.

PT. Dirgantara Indonesia must find the way to increasing profit. Finding the best strategy formulation to solve this issue. Therefore, this research need to do analysis about sustainability for Aircraft industry through doing bankruptcy analysis approaches using Altman Z -Score model. This method was chosen because the company already suffered decreasing sales that affected to the declining profit of the company, and this might threaten the sustainability of PT. Dirgantara Indonesia. By analyzing their financial condition, the company could maintain their position in the aircraft industry.

2. Methods and Data Collection

The objective of this research is to provide the sustainability of the company for the future years and improving the company position within the industry with give a suggestion and recommendation for the strategy that should be doing in the future. For reaching the objective research, the basic concept framework for business must be known. The conceptual framework will analyze the business situation of the company that consist of SWOT analysis, PEST'L analysis.

The conceptual framework is the basic concept on which the entire research project is based. It needed to shows the key elements of this research and the relation between each other. The conceptual framework begins with the finding of problems that faced by the company. The problems that have occurred are described. Furthermore, the analysis will doing by analyzing the business situation from performance aircraft industry in Indonesia. The external environmnet analysis will be analyzed to define the elements that might be a rise or be potential for the business. The external analysis common techniques are PEST'L analysis. It resulted to give description analysis will be analyzed by SWOT analysis and financial performance PT. DI.

ICMEM

Financial performance will use the ratio analysis as a tool to measure the financial performance company. Internal Growth Rate (IGR), Index Sustainable Growth (ISG), and Sustainable Growth Rate (SGR) to know the company can maintain or need external capital for long range planning. After that, the next step is to analyze using Altman Z -Score Model. Altman Z-Score Model using to answer the indication condition company. Condition Company will be safe zone, grey zone, or distress/bankruptcy zone. Business solution using sensitivity analysis for improve and maintain z-score company for sustainability in future years The ending this research are result, the result are summary with consisting of conclusion and solution and will be explain in the implementation plan.

Business Analysis

The business analysis is use to get a view of the business environment that will face by the company. Business environmnet identify internal and external environmnet company to planning strategy business for sustainability comapny in the future. This research used PESTL analysis and SWOT analysis as tools of busines analysis.

PESTL Analysis

PESTL analysis consits of political, economical, social, technological, and legal. PESTL using for businnes circumtance examination requirement for make thought of decision making to make vital arranging in company.

Political/Legal

Political condition in PT. DI has intervention from goverment because PT.DI are state owned company. The governing law of domestic component level (Tingkat Komponen Dalam Negeri) Ministry of Industry, Ministeriaal Regulation No. 102/M-IND/10/2009). The sertification will be impact to sales for customer and makes the company consider to increase performance service

Social

Bappenas's forecasting of Indonesia's total population in 2035 showed that the total population in Indonesia will reach to 305.6 million people. The increasing trend for the total population and young people make a demand for the aircraft industry that will increase too, because the demand for travelling other land or country using aircraft. This condition can affect the business that expected to grow. From Boeing market outlook that the demand forecast in Asia Pasific is high with the amount is 16,050. Increasing Global GDP growth that affected for increasing number of salary, that give opportunity to people doing travelling use aircraft. Create maintain alliance relationshop and to create trusted for buyer or consumer.

Economic

From the BPS in first quartal in 2017, showed that the transportation dan ware house sector has third sector as much as7.65%. Bank Indonesia stated that Indonesia's economic growth will grow between 5.1% - 5.5% in 2018 and grow as much as 5.3% - 5.7% in 2019. After the election in 2019, expected Indonesia's economic growth will increase above 6% in 2020 and 2021. The increasing growth affected by the increasing investment as much as 6% - 7%, and the increasing export as much as 4%. This show that opportunity for company to increase strategic alliance with customer for increase sales aircarft and component.

Technology

Innovation progreression technology advancement. Allow developing multiple and overlapping technologies and skill into future generations of every new product. Aircraft technology industry improvement.

SWOT Anlysis

SWOT is an acronym used to describe the particular Strengths, Weaknesses, Opportunities, and threats that are potential strategic factors for a specific company. A SWOT approach should not only result in the identification of a corporation's distinctive competencies-the particular capabilities and resources.That a firm possesses and the superior way in which the use- but also in the identification of opportunities that the firm is not currently able to take advantage of due to a lack appropriate resources (Wheelen, Hunger, Hoffman, & Bamford, 2015).

Strenghts

1. PT. DI as indigenous aeropace companies in South East Asia
2. High probability to formed other alliance or streghten the alliance through improvement within company
3. PT. DI has the upside of delivering aircraft for little island airplane terminal

ICMEM

Weakness

1. Limitation of production capacity and facility aircraft manufacture
2. The firm has generation gap to make un-optimal regeneration system in the company structure make problem in transfer knowledge in the future
3. Lack of on-time delivery

Opportunity

1. Market ooportunity in African and little island
2. Goverment Indonesia has plans to build 14 airports in small toens or small island, with the new building airports the demaand for number of aircraft will also increase
3. Strategic alliance with Airbus and Boeing as the biggest aircraft manufacturing in the world for selling component aircraft

Threat

1. Decrease sales aircraft
2. Political issue in the world
3. Price rivalry among other aircraft manufactures
4. Unstabill economic and politic condition in aerospace business industry
5. Get sertification or license

Root Cause Analysis

The business issue in decrease sales and profit in PT. Dirgantara Indonesia from 2013 to 2016. The root cause of this issue must be defined further by using fish bone diagram. The result of fish bone diagram will be presented below:
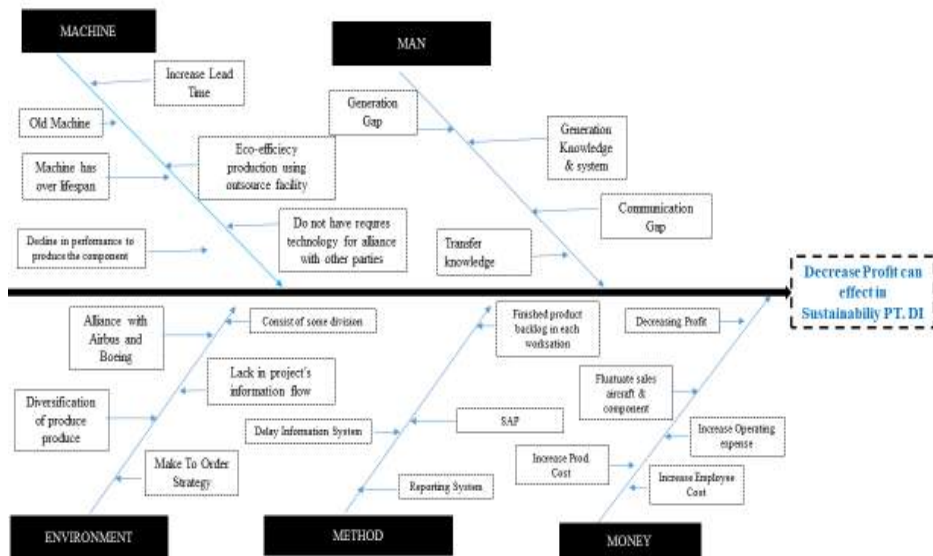
Fig. 3 Fish Bone Diagram

ICMEM

3. Results and Discussion

3.1. Financial Ratio

Financial ratio help to measure the health well companies over a given period time and how the asset, liabilities and equity that companies have can generate revenues. Ratio analysis will be used to know the companies financial performance. Analysis of financial performance in this research will be used time series approaches that see the growth in the companies over the several times. Ratio analysis that be used are liquidity ratio, financial leverage ratio, activity ratio and profitability ratio.

Table 1 Financial Ratio

	2013	2014	2015	2016	Average
Liquidity Ratio					
Current Ratio	1.44	1.45	1.52	1.35	1.44
Quick (Acid-Test) RAtio	1.17	1.09	1.04	0.86	1.04
Financial Leverage					
Debt Ratio	64.26%	62.24%	58.61%	64.80%	62.48%
Debt to Equity Ratio	179.82%	164.81%	141.59%	184.08%	167.57%
Activity Ratio					
Inventory Turn Over	3	3	1	1	2
Avg. Collection Period	179	62	164	181	147
Avg. Payment Period	67	52	68	51	59
Total Asset Turnover	48.37%	58.51%	31.31%	34.91%	43.28%
	2013	**2014**	**2015**	**2016**	**Average**
Profitability Ratio					
Gross Profit Margin	19.17%	22.75%	36.34%	29.91%	27.04%
Operating Profit Margin	-4.11%	3.28%	1.38%	-1.12%	-0.14%
Net Profit Margin	2.79%	5.01%	1.30%	-6.88%	0.55%
Return on Total Assets (ROA)	1.35%	2.93%	0.41%	-2.40%	0.57%
Return on Total Equity (ROE)	3.77%	7.76%	0.98%	-6.83%	1.42%

In the overall condition, PT. Dirgantara Indonesia did not perform an excellent financial performance . From liquidity ratio, PT. DI show the value greather than 1 that indicate the company have ability to pay their short-term liabilities. From financial leverage ratio , PT. DI financed their asset through thourgh lower equity and it's showed that company difficullt cover their total liabilities within the compaany equity.From activity ratio, PT. DI showed inventory turnover is good but average collection more than higher than average payment period it's showed in their operation activity can't manage their collection fastest than before and can't optimalization their asset to generate revenue within efficiently. From profitability ratio, PT. DI showed the negative value performance in generally profitability ratio. The negative value showed a bad sign for the company, it's indicate that the company must more effective to convert their revenue into actual profit within optimalization asset and equity and also the company can manage their expense every years.

ICMEM

The result from the financial ratio (liquidity ratio, leverage ratio, activity ratio, and profitability ratio) calculation analyze that PT. Dirgantara Indonesia did not perform an excellent financial performance. PT. Dirgantara Indonesia continuously show and slow improvement in financial performance year by year is shown by the decreasing amount, the company can start generating profit again upcoming year.

3.2. Internal Growth Rate (IGR)

Internal Growth Rate Analysis on this research intends to find the ability of the company. The maximum growth rate that can achieve with no external financing of any kind. The internal Growth rate is the maximum growth of a company without the needs of the fund from external or growth rate based on the growth of retained earnings. Playback ratio (b) get 100% because all of the net income that obtained along current year will be allocated as return earning. The calculation internal growth rate show in the table 2

Table 2 Internal Growth Rate

	ROA	b	IGR
2013	1.35%	100%	**1.37%**
2014	2.93%	100%	**3.02%**
2015	0.41%	100%	**0.41%**
2016	-2.40%	100%	**-2.35%**
Average			**0.61%**

Based on the table 2, in 2016 company's internal growth is -2.35% this value is the lowest from the other year since four years and the average less than 1%, the condition means the company gowth rate can achive with no external financing only 0.61% since four years, it indicate that company could not fulfill the funding needs for company operation for future years, with the result. PT. DI need extra fund from external to keep the company still sustain in the future years.

3.3. Index Sustainable Growth (ISG)

The ISG indicates how much of the growth rate of sales can be sustained by the internally generated fund. Value dividend (D) is zero because PT. DI is private manufacturing. If the planned growth rate (ISG) call for a growth rate higher than (IGR), external capital will be needed to fund the growing company. The calculation index sustainable growth show in the table 3

Table 3 Index Sustainable Growth

	P	D	L	T	g*
2013	2.89	0.00	1.798206	206.74	**4.07%**
2014	4.78	0.00	1.648095	170.90	**8.00%**
2015	1.51	0.00	1.415894	319.39	**1.15%**
2016	(7.51)	0.00	1.840793	286.42	**-6.93%**
Average					**1.57%**

Based on table 3 that the g* from 2013 to 2016 is fluctuating with the lowest is -6.93% in 2016 and the highest value is 8.00% in 2014 with the average index sustainable growth are 1.57%. Average ISG is 1.57% greater than average IGR is 0.61 %, it means that company cannot fulfill the funding needs for the long term, it indicated that PT DI need external capital for growth sustainability companies.

3.4. Sustainable Growth Rate (SGR)

ICMEM

The sustainable growth rate is interesting is the maximum growth rate a firm can achieve with no external equity financing while it maintains constants debt-equity ratio. SGR can analyses the perspective that important for potential funding faced by the company in the future. The calculation internal growth rate show in the table 4

Table 4 Sustainable Growth Rate

	ROE	b	SGR
2013	3.77%	100.00%	3.92%
2014	7.76%	100.00%	8.41%
2015	0.98%	100.00%	0.99%
2016	-6.83%	100.00%	-6.39%
	Average		1.73%

Based on table 4 that the sustainable growth rate from 2013 to 2016 is fluctuating with the average value for sustainable growth rate at 1.73%, the value of SGR was the highest in 2014 are 8.41% dan the lowest in 2016 with the values -6.39 %. Average value SGR is 1.73% is higher than average value IGR are 0.61 %, this is due to IGR did not use additional of long-term debt. Meanwhile, the IGR will gain higher value when using the long-term debt and retained earnings. In conclusion, based on the calculation show that the value is negative, which amplifies the company's need the external funding.

The result calculation from IGR, ISG, and SGR obtained the largest average value is SGR, and the smallest average value is IGR, this condition means that company needed the external fund for the sustainable business company in the future. This is also linear with the result of financial ratio calculations this proves that company has decreased financial performance over the last four years from 2013 to 2016 and the company also requires an external fund for the sustainable business company in the future.

3.5. Altman Z-Score Model

Predictions of business bankruptcy have a role in providing guidance or advice for the parties about the performance of the company whether the company will have financial distress or not in the future. Bankruptcy will be a matter to be seriously considered, so it takes the effort to anticipate the emergence of financial distress. The Z-scores, Altman found the formulas that can be used to predict the probability that a company will go into bankruptcy or not. The model using financial statement ratios and multiple discriminant analyses to predict bankruptcy for private manufacturing.

Table 5. Altman Z-Score Model of PT. DI

$Z = 0.71 X_1 + 0.847 X_2 + 3.107 x_3 + 0.42 X_4 + 0.998 X_5$		
	Value Result	Indicator
2013	2.19	Grey Zone
2014	2.50	Grey Zone
2015	2.18	Grey Zone
2016	1.92	Grey Zone

Based on Altman Z-score model indicator, there are 3 zones for bankruptcy prediction based on Z-Score calculating. From the results of the calculation of the Z-Score for PT. Dirgantara Indonesia in 2013 to 2016 can be seen that the indicator is grey zone because according to the Altman Z-Score in 1.92 until 2.19. The best value in safe zone indicator in 2014 the value is 2.50 but still in grey zone, the second place for grey zone in 2013 the value is 2.19, the third place for grey zone indicator in 2015 the value is 2.18, and the fourth place for grey zone area in 2016 the value as 1.92 it

indicates that the company has a decreasing Z-Score compared to previous year. In 2016 PT. Dirgantara Indonesia was still in "grey zone" neither considered safe, nor distressed, although the company might still face the risk of bankruptcy.

PT. DI is in the gray zone by value Z-Score, so the company must improve and the financial performance by increasing the sales growth and production. The financial performance also could be increased by optimizing the production cost if PT. DI does not immediately increase its financial performance bankruptcy, and sustainability will threaten the company in the year to come.

3.6. Sensitivity Analysis

Sensitivity analysis is to assess the uncertainty that can be affected by the feasibility of project and business in the future. The conditions with the uncertainty that will indicate sustainability of the project business in the future. The sensitivity analysis will calculation the best scenario. In this research, the author will use slope analyze for each variable with the scenario. The author analyses the calculation from 2016, finding the sensitivity analysis based on the multi sensitivity analysis. This action chosen as the author had done the single sensitivity analysis on each of the variables from Altman Z-score. However, the results cannot support to reach safe zone if only depend on one variable from Altman Z-score. Thus, the author decided to calculate the sensitivity analysis of each variable in Altman z-score simultaneously. The calculation sensitivity result show in the table 6.

Table 6 Sensitivity Analysis based on Altman Z-Score Model on PT. DI

$Z = 0.71\ X_1 + 0.847\ X_2 + 3.107\ x_3 + 0.42\ X_4 + 0.998\ X_5$						
	X_1	X_2	X_3	X_4	X_5	**Z-Score**
Base	0.13	1.29	-0.08	0.23	0.35	**1.92**
10%	0.09	1.53	-0.08	0.25	0.41	**2.20**
20%	0.04	1.80	-0.08	0.27	0.49	**2.52**
30%	-0.02	2.13	-0.07	0.30	0.57	**2.90**
31%	-0.03	2.16	-0.07	0.30	0.58	**2.94**
32%	-0.04	2.20	-0.07	0.30	0.59	**2.99**
33%	-0.04	2.24	-0.07	0.30	0.60	**3.03**
34%	-0.05	2.28	-0.07	0.31	0.61	**3.07**
35%	-0.06	2.31	-0.07	0.31	0.62	**3.12**

Based on the calculation from Altman Z-score, the company is in the grey zone. By using multi sensitivity analysis will help to determine the increase of each variable within the calculation of Altman z-score for the company to reach the safe zone. The sensitivity analysis also gives the framework for developing strategies to increase the value of variables within the Altman Z-score. Moreover, based on multi sensitivity result, the company should increase 32% for each variable for to be a safe zone, because index z-score for the safe zone is 2.99.

In conducting sensitivity analysis the authors used multi sensitivity analysis of all simultaneous variables in Altman Z-score and based on multi sensitivity result, the company should increase 32% for each variable for the safe zone, because index z-score for the safe zone is 2.99 and the value z-score in 2016 are 1.92. The variables that must increasing are the net working capital, retained earnings, EBIT, the book value of equity, and sales.

4. Conclusion

The result from the financial ratio (liquidity ratio, leverage ratio, activity ratio, and profitability ratio) calculation analyze that PT. Dirgantara Indonesia did not perform an excellent financial performance shown from the unachieved for each ratio. PT. Dirgantara Indonesia continuously show and slow improvement in financial performance year by year is shown by the decreasing amount, the company can start generating profit again upcoming year. Based on calculation form IGR, ISG, and SGR obtained the largest average value is SGR the value is 1.73%, and the smallest

ICMEM

average value is IGR the value is 0.61%, and the average value ISG is 1.57%, this condition means that company needed the external fund for sustainable growth business company in the future. This is also linear with the result of financial ratio calculations this proves that company has decreased financial performance over the last four years from 2013 to 2016 and the company also requires an external fund for the sustainable business company in the future. The final conclusion Z-score are 1.92 is grey zone in 2016. Grey zone indicates that company has financial difficulties, but are saved and possibly bankrupt as much as depends on the decision of the company's managemnt policy as a decision maker.

5. Recomendation

Value z-score from grey zone 1.92 to safe zone 2.99. PT. Dirgantara Indonesia should ncrease 32% for each variable for to be safe zone. The variable that must increase are the net working capital, retained earnings, EBIT, the book vlaue of equity, and sales. Implementaton plan is an important part of the strategic planning process, this was made the solution can be implemented by the stakeholder.

As for ways that can be used to increase the value of each variable of the z-score, namely:

- **Increasing net working capital (X_1)** with lowering current asset by making inventory sales faster than before. Also, the company's receivable turnover should improve to accelerate so that accrual can lower so that cash ca increase. PT. DI must fix on the process of collection of accounts receivable to the debtor. Lowering acc. Receivables is made to increase the company's cash with implementation plan are scheduling plan and for lowering curreent aseet with fixed asset management. Implementaation plan can see in table 7 and 8

Table 7 Schedulling Plan

ACTIVITIES (Scheduling Plan)	Person In Charge	2017 Dec	2018 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	2019 Jan
Design Activity	Div. Of Programm Management & Planning														
Line balancing															
Line and Work Balancing															
Changeover Time															
Worker-machine balance															
Capacity Utilization															
Operational Activity															
Shortages analysis															
material and equipment analysis															
Work Flow analysis															
Meeting time															
Scheduling Plan Implementation	Directorate of Production														
Briefing															
Plan Update															
Meeting Time															

Table 8 Fixed Asset Management

ACTIVITIES (Fixed Asset Management)	Person In Charge	2017 Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	2019 Jan
Fixed Asset															
Verify existing Facilities	Div. Of Treasury; Div. Of Program Management & Planning	�█													
Procurement Process for Unused Facilities															
Open Bid	Div. Of Treasury		�█												
Expression of Interest			�█												
Tender				�█											
Finalization				�█											
Procurement Process for New Facilities															
Space Need Analysis	Div. Of Treasury		�█												
Market Survey			�█												
Request for proposal			�█												
Open bid				�█											
Tender				�█											
Expression of Interest					�█										
Limited Tender					�█										
Request for Quotation					�█										
Finalize Lease						�█									
Implementation Project							�█	�█	�█	�█	�█	�█	▢	▢	▢	

- **Increasing Retained Earnings (X₂)** with the decrease of cost of goods sold and increasing sales and increase net income can affect net income value so also increase the value of retained earnings this increase can increase the company's z-score value from gray zone become a safe zone. Implementation plan variabel increasing retained earning merged with increase EBIT.

- **Increasing EBIT (X3)** is by lowering operating expense. Operating expense at PT. DI consists of employee cost and operating cost. By efficiently applying the budget to employee cost and production cost, the expected benefit is the increase in profits that impact the upgrading of company performance value in the future. Also, it also affects the company's z-score changes from gray zone to safe zone. Implementation plan for increase retained earning and increasing EBIT with financial restructurization. Implementation plan can see in table 9

Table 9 Financial Restructurization

ACTIVITIES (Financial Restructurization)	Person In Charge	2017 Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	2019 Jan
Valuation of Business	Division of Corporate														
Estate Planning			▢												
Market Analysis			▢												
Valuation of Financial	Directorate of Finance														
Current Financial Position			▢												
Investment Planning			▢	▢											
Protection Planning				▢											
Tax planning				▢											
Formulation of New Capital Structur					▢										
Financial Condition Review	Each Directorate					▢		▢		▢		▢		▢	▢

ICMEM

- **Increasing Book Value of Equity (X$_4$)** is important to increase effectiveness and efficiency of own capital management conducted by the management company for help to maintain and improve equity. The way for increasing book value of equity with optimize funds obtained from stakeholders carefully and optimally in providing long-term returns for example by making long-term investments that provide long-term returns, Conducting additional external fund from outside parties, so it is expected to maximize the value of company's equity, obtain external fund through State Equity Participation in the form of contractual agreement, and establish a cooperative relationship with aircraft buyer or cooperation relationship with other countries who want to buy aircraft from PT. DI. Implementation plan for increase book value of equity with external fund contract can see in table 10

Table 10. External Fund Contarct

ACTIVITIES (External Funds Contract)	Person In Charge	2017	2018												2019
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Jan
Contracts preparation															
Assesemant	Division of Corporate Planning; Directorate of Finance	▰										▰			
Planning		▰										▰			
Review		▰										▰			
Contracts Submission															
Contracts Offering			▰										▰		
Reviews			▰										▰		
Expression of Interest				▰										▰	
Contracts Acceptance				▰										▰	

- **Increasing Sales (X$_5$)** with increase the sale of airplanes and helicopters, increase component sales, increase aircraft maintained, increase sales service work packages. Increasing sales can increase profit company, help to maintain and improve sales the future years, help to maintain and improve financial performance company in future years, and increase Altman Z-score from grey zone to safe zone. Implementation plan increasing sales with sales promotion can see in table 11

Table 11 Sales Promotion

ACTIVITIES (Sales Promotion)	Person In Charge	2017	2018												2019
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Jan
Planning															
Team Assembly	Directorate of commerce & Restructurization	▰													
Market analysis		▰													
Sales Project's Planning		▰													
Plan review		▰													
Project Acceptance		▰													
Implementation															
Project's WBS Completion	Div. Of Sales		▰												
Project assignment			▰												
Project reviews			▰	▰	▰	▰	▰	▰	▰	▰	▰	▰	▰	▰	▰

References

Adnan, K. M. dan E. Kurnayasih. 2000. Analisis Tingkat Kesehatan Perusahaan untuk Memprediksi Potensi Kebangkrutan pada Pendekatan Altman. *Jurnal Akuntansi dan auditing Indonesia* 4(2): 131-149

Altman, Edward., 1968. *Financial Ratio,Discriminant Analysisand the Prediction of Corporate Bankruptcy.* United States: A Wiley Interscience Publication

ICMEM

Arini, sopiyah. 2013. "Analisis Altman Z-Score Untuk Memprediksi Kebangkrutan Pada Perusahaan Farmasi Di Indonesia". *Jurnal Ilmu & Riset Manajemen* 2 (11): 1-17. https://ejournal.stiesia.ac.id/jirm/article/viewFile/406/397.

"Badan Pusat Statistik". 2017. *Bps.Go.Id*. http://www.bps.go.id.

"Dirgantara Indonesia". 2017. *Indonesian-Aerospace.Com*. https://www.indonesian-aerospace.com/.

"GBG Indonesia | Global Business Guide Indonesia". 2017. *Gbgindonesia.Com*. http://www.gbgindonesia.com/.

Gitman, Lawrence J, and Zutter, Chad. 2012. *Priciples Managerial Finance*. 13th editions. Edinburgh: Pearson

Ross, Westfield, and Jordan. 2010. *Corporate Finance Fundamental*. New York: McGraw Hill

"Indonesia GDP Annual Growth Rate | 2000-2018 | Data | Chart | Calendar". 2017. *Tradingeconomics.Com*. https://tradingeconomics.com/indonesia/gdp-growth-annual.

Wheelen and Hunger., 2006. *Strategic Management and Business Policy*. 10th editions. United States of America: Pearson Prentice Hall

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants Analysis of Net Interest Margin Using Bank-Specific Variables and Macroeconomic Factors of Commercial Banks in Indonesia

Fachri Dwiansyah[a], Achmad Herlanto Anggono[b]*

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No.10, Bandung and 40132 , Indonesia*

Abstract

Banks have a major role that affects the economic growth in a country. Banking serves as the main source of financing in order to drive the economic growth. Banks also have a vital role in the allocation of public deposits funds. Given the important role of bank in a country economy, the performance of commercial banks gets a great deal of attention in the economic literature. In order to evaluate bank performance, this research will use profitability perspective.

This study aims to identify the relationship between bank-specific variables: Bank Size (LNSIZE), Capital Adequacy Ratio (CAR), Credit to Total Asset Ratio (CRDTA), Operating Expense to Operating Income Ratio (BOPO), Non-Performing Loans (NPL) and macroeconomic factor, Inflation Rate (INFL) and Gross Domestic Products Growth (GDP) towards Net Interest Margin (NIM) in 19 commercial banks in Indonesia, which included in BUKU 3 and 4 in the period of 2008-2017. The data is analyzed using panel data regression with random effect method.

The findings of this research indicated that the independent variables that Capital Adequacy Ratio, Credit to Total Assets Ratio, Non-Performing Loan, and Inflation Rate appeared to have positive significant relationship to Net Interest Margin, while Bank Size and Operating Expense to Operating Income Ratio indicated to have a negative significant effect toward Net Interest Margin in the significance level of 0.05.

Keyword : Indonesia; Net Interest Margin; Bank Specific Variables; Gross Domestic Products; Inflation Rate

1. Introduction

Banking industry is one of the major industries which have a major and notable role in a country's economic condition. In several countries, including Indonesia, banking serve as an important source of financing in order to foster the economic growth. Banks also have a vital role in the allocation of public deposits funds, which can be specified into productive investments and lending to productive sectors (Raharjo et al., 2014).

Given the important role of bank in a country economy, the performance of commercial banks receives a great deal of attention in the economic literature. The performance of banks can be defined into various terms, which are competition, concentration, efficiency, productivity, and profitability (Bikker and Bos, 2008). Commercial banks are required to perform well, since a healthy banking sector will be able to defy shocks, cope with crisis, and contribute to the stability of the financial system. On the contrary, bank failures can trigger a crisis of trust to the banking system and lead to a slowdown in economic growth (Athanasoglou et al., 2005).

Banks have many types of assets and liabilities, with different interest rates for each type. Net Interest Margin is used to measure the cost and efficiency of a bank. It is calculated as the ratio of net interest income and total productive assets. According to Brock and Suarez (2000), high interest margins are unfavorable. Low deposits rates will discourage savings, as it represents unattractive returns. Furthermore, high lending rates will restrain investments, as the cost of funds for the potential borrowers increased. While high net interest margins are usually associated with

---

ICMEM

inefficiency, they may also strengthen a country's banking system, as the profits are disbursed by banks to their capital bases (Saunders and Schumacher, 2000).
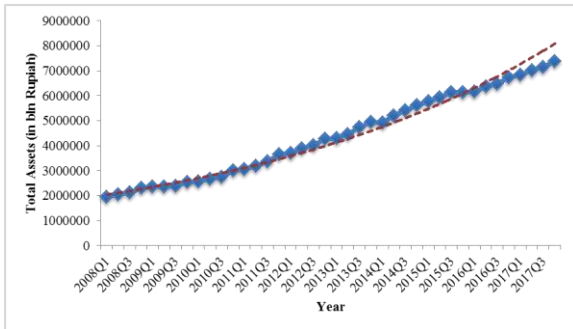
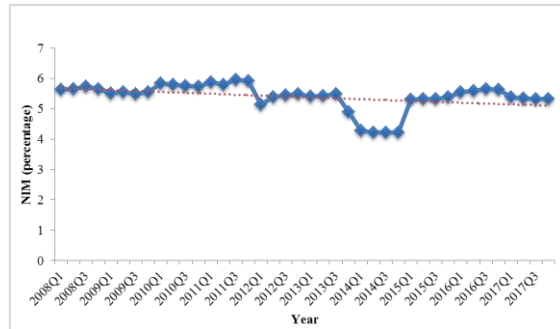

Figure 1.1 Commercial Banks Total Assets (2008-2017)

Figure 1.1 Commercial Banks NIM (2008-2017)

As seen on Figure 1.1, over the last ten years, the total assets of Indonesian Commercial Banks grew up to 380%, from Rp 1.944.686 billion in 2008Q1 to Rp 7.387.144 billion in 2017Q4. The overall trends of commercial banks' total assets is increasing gradually. However, the increase in the asset is not followed by the increase in the banks' interest margin. Commercial Banks Net Interest Margin in the last 10 years appeared to be fluctuative, as shown in Figure 1.2. In 2008Q1, the NIM is 5,64%, decreasing to 5,15% in 2012Q1, and hit the lowest point in 2014Q3 OF 4,21%. In the last 3 years, it gradually increased to 5,30% in 2015Q1 and 5,33% in 2017Q3.

The increase in a bank's total assets indicates a higher productive assets which generates interest income, and also other assets that may increase the efficiency of a bank's operation. An efficient bank should attracts more customers to borrow and save their money, which eventually may increase the net interest margin. The contradictory trends between the total assets and net interest margin motivate the author to analyze the financial performance of commercial banks in Indonesia through the profitability perspective, as the net interest margin represents the ability of a bank to generate profits.

This research is aiming to analyze the determinants of Net Interest Margins using bank-specific variables and macroeconomic factors which consist of Inflation Rate, and Gross Domestic Products. The output of this research is intended to be a recommendation for commercial banks, investors, and also regulators to focus on the significant factors that affect Net Interest Margin.

2. Literature Review

Several researches on Net Interest Margin determinants have been conducted before. This research used several empirical studies as the basis of the study.

Naceur (2003) conducted a research on bank profitability in Tunisia. The study used the data of 10 banks in the country over the period of 1980-2000. The dependent variables of this research are Return on Asset and Net Interest Margin. The research used fixed effect multiple linear regression model to estimate the result. The author found that Capitalization Ratio has positive effect toward NIM, which indicated that well-capitalized banks tend to lower their expected bankruptcy costs, which eventually may cut their cost of capital. The reports also shown the evidence of positive relationship of Overhead to Total Asset ratio and Credit to Total Asset ratio to NIM. On the other hand, Bank Size indicated to be negatively correlated with NIM, as the author suggested that larger banks may have less efficiency level than smaller banks..

Hamadi and Awdeh (2012) examined the determinants of NIM in Lebanese banking sector. The research used panel data from 53 banks, which divided into 32 domestics and 21 foreign banks, from 1996 to 2009. The independent variables that examined in this research are bank-specific, industry specific, monetary policy, and macroeconomic variables. The research used fixed effect regression analysis to describe the model. The findings of this research

ICMEM

showed that Bank Size, Capitalization Level, and Liquidity have negative significant influence toward NIM. Larger banks may have lower interest margins, as they tend to rely less on the interest income compared to smaller banks. The author also suggested that bank may increase their interest rates to acquire more deposits from customers in order to increase their liquidity. This action will eventually lower their interest margin.

Yuksel and Zengin (2017) conducted a study on influencing factors of NIM in Turkey. The authors used the data of all banks in Turkey from 2003 to 2015. MARS method is used to define the relationship between the independent variables, which includes 9 internal and 5 external variables, to NIM. The result showed that Non-Performing Loans is among the variables that have negative relationship to NIM. Higher NPL indicates a lower interest income for the bank, which may decrease the overall interest margin.

Raharjo et. al (2014) examined the determinants of NIM in Indonesian commercial banks for the period of 2008-2012. This research used several internal factors that consists of growth of bank's assets, profitability, efficiency, capital adequacy, liquidity, and risk. It also used external factors which includes market power, inflation and interest rates. The study used fixed effect regression analysis to identify the relationship between each independent variables to the dependent variables. They found that Bank Size, Capital Adequacy Ratio, and Non-Performing Loan positively impacted NIM in Indonesia, while Inflation Rate appeared to have a negative significant relationship with NIM. The study suggested that higher CAR may trigger banks to increase their interest margin to cover the increase in cost of capital. Higher inflation rate would affect the customers ability to pay for their loans, which may eventually decrease the bank's interest income.

Based on those researches, this research will use Bank Size (LNSIZE), Capital Adequacy Ratio (CAR), Credit to Total Asset Ratio (CRDTA), Operating Expense to Operating Income Ratio (BOPO), Non-Performing Loans (NPL) and Inflation Rate (INFL) that have significant relationship to NIM previously. In addition to that, this research also examine Gross Domestic Products Growth (GDP) as one of the independent variable, as the economic condition in Indonesia may differ from the other countries that have been observed in the previous research.

3. Methods and Variables

This research will use secondary data which obtained from the website of Bank Indonesia and Otoritas Jasa Keuangan (OJK). This includes the balance sheets, income statements, and other quarterly financial reports of 19 commercial banks in Indonesia, which included in BUKU 3 & 4, over the period of 2008Q1 to 2017Q4. The data will be processed using panel data regression.

Using the previous research as the basis, this research uses "Net Interest Margin (NIM)" to be examined as the dependent variable with several independent variables, which are "Bank Size (LNSIZE)", "Capital Adequacy Ratio (CAR)", "Credit to Total Asset Ratio (CRDTA)", "Operating Expense to Operating Income Ratio (BOPO)", "Non-Performing Loan (NPL)", "Inflation Rate (INFL)" and "Gross Domestic Products Growth (GDP)".

ICMEM

Table 3.1 Variables explanation and formula

Variable	Explanation	Formula	Unit
NIM	The difference between the interest income and interest expenses, compared to the total productive assets.	$NIM = \dfrac{Net\ Interest\ Income}{Average\ of\ Earning\ Assets}$	%
LNSIZE	Natural logarithm of a bank's total assets.	$LNSIZE = \ln(Total\ Asset)$	
CAR	The amount of a bank's capital to its risk weighted assets.	$CAR = \dfrac{Tier\ 1\ Capital + Tier\ 2\ Capital}{Risk\ Weighed\ Exposures}$	%
CRDTA	The portion of credit that the bank distributed to the public compared to its total asset.	$CRDTA = \dfrac{Credit}{Total\ Asset}$	%
BOPO	The efficiency of a bank management in controlling their operating expenses to their operating income	$BOPO = \dfrac{Total\ Operating\ Cost}{Total\ Operating\ Income}$	%
NPL	The ratio of default risk to a bank's credit.	$NPL = \dfrac{Total\ Non\ Performing\ Loans}{Total\ Credit}$	%
INFL	An increase of Consumer Price Index for all goods and services in a country.	$INFL = CPI\ Index - 1$	%
GDP	The total economic activity in a country	$GDP = \dfrac{GDP_t - GDP_{t-1}}{GDP_{t-1}}$	%

4. Techniques and Model Specification

Firstly, the author identifies the problem in Indonesia's banking industry and defines the research questions and objectives. Then, the author makes theoretical foundation which presents the theory that support the research from multiple sources, including papers, journals, textbook, and other publications. After that, the author collects the data needed in order to conduct the research and analyze the data using panel data regression, as the data used are two dimensional – cross section and time series.

Before conducting the regression test, the data will gone through BLUE Classical Linear Assumption Test, which consists of Multicollinearity Test, Heteroscedasticity Test, Autocorrelation Test, and Normality Test. When the data fulfill the BLUE requirement, the suitable regression approach will be selected. Likelihood test and Hausman test will be conducted in order to choose the most appropriate method between fixed effect and random effect. Then, the regression test will be conducted once the suitable method is chosen.

The regression model of this research is formulated as shown below:

$NIM_{it} = \beta_0 - \beta_1 LNSIZE_{it} - \beta_2 CAR_{it} + \beta_3 CRDTA_{it} + \beta_4 BOPO_{it} + \beta_5 NPL_t + \beta_6 INFL_{it} + \beta_7 GDP_{it} + \varepsilon_{it}$

Where,
β_0 = Constant Term
β_1 = Coefficient for Bank Size
β_2 = Coefficient for Capital Adequacy Ratio
β_3 = Coefficient for Capital to Total Asset Ratio
β_4 = Coefficient for Operating Expense to Operating Income Ratio
β_5 = Coefficient for Non-Performing Loans
β_6 = Coefficient for Inflation Rate
β_7 = Coefficient for Gross Domestic Products Growth

ε_{it} = Error Component

ICMEM

5. Findings

Descriptive Statistics

Table 5.1 Descriptive Statistics Result

	NIM	LNSIZE	CAR	CRDTA	BOPO	NPL	INFL	GDP
Mean	0.062897	18.418140	0.205057	0.648693	0.789349	0.024763	0.056515	0.013442
Median	0.055000	18.312460	0.175500	0.660254	0.804310	0.021800	0.045700	0.013115
Maximum	0.261200	20.796920	1.178000	0.821893	1.507700	0.221600	0.121400	0.021719
Minimum	0.000295	15.480280	0.001981	0.037416	0.017400	0.000000	0.027800	0.001485
Std. Dev.	0.033391	1.018831	0.099764	0.084505	0.110787	0.022363	0.023445	0.002692
Skewness	2.184212	0.195905	4.066836	-1.254082	-0.536631	3.753195	1.024326	-1.371454
Kurtosis	10.589300	2.637255	29.527960	7.183860	8.308753	26.185480	3.396736	12.158850
Jarque-Bera	2428.219	9.028	24379.830	753.526	928.934	18807.230	137.889	2894.589
Probability	0.000000	0.010954	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	47.80134	13997.790	155.8430	493.0065	599.9051	18.81979	42.9514	10.21557
Sum Sq. Dev.	0.846234	787.8546	7.554210	5.420097	9.315739	0.379567	0.417201	0.005502
Observations	760	760	760	760	760	760	760	760

Based on Table 5.1, the mean of NIM is 6.2897%, which indicated that in general, commercial banks in Indonesia have a fairly high net interest margin, according to Regulation of Bank Indonesia No. 6/23/DPNP of May 31st, 2004. The NIM also appeared to be fluctuating, as the maximum value is 26.12% while the minimum value is 0.0295%. The mean of LNSIZE is 18.41814, with a maximum of 20.79692 and a minimum of 15.48028. The mean of CAR is 20.5057%, which indicated that the commercial banks in general maintained their capital at a good level. The CRDTA shows that in general, 64.8693% of the commercial banks' total assets is distributed to their customers as credit. The BOPO of the commercial banks has the average of 78.9349%, which is falls into the good efficiency category based on Bank Indonesia regulation. The mean of NPL is 2.4763%, which is below the maximum NPL that regulated by Bank Indonesia.

For the macroeconomic factors, INFL appeared to be fluctuating, as the gap between the maximum and minimum value is quite big. The value is 12.14% and 2.78% respectively. The GDP has a mean of 1.3422%, with a maximum value of 2.1719% and a minimum value of 1.3115%.

Panel Data Regression

Before conducting the regression analysis, the Classical Linear Assumption Test is done to ensure the data fulfill the BLUE requirement. The data used in this research fulfilled the BLUE requirement as there is no multicollinearity between the variables, homoscedasticity is detected, there is no autocorrelation in the model, and the data is normally distributed. Then, based on the result of Chow Test and Hausman Test, the random effect model will be used as the appropriate method. The regression estimation output using five independent variables is shown in Table 5.2.

ICMEM

Table 5.2 Regression Estimation Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.260234	0.057471	4.528103	0.0000	***
LNSIZE	-0.013588	0.002892	-4.698736	0.0000	***
CAR	0.103675	0.011292	9.181441	0.0000	***
CRDTA	0.052874	0.010164	5.202343	0.0000	***
BOPO	-0.022142	0.010923	-2.027078	0.0430	**
NPL	0.255703	0.027596	9.265917	0.0000	***
INFL	0.214208	0.065432	3.273753	0.0011	**
GDP	-0.26765	0.693871	-0.385735	0.6998	
R-squared	0.670545				
Adjusted R-squared	0.667478				
Prob(F-statistic)	0.0000				

The regression model of this research can be written as:

NIM = 0.260234 – 0.013588*LNSIZE + 0.103675*CAR + 0.052874*CRDTA – 0.022142*BOPO + 0.255703*NPL + 0.214208*INFL – 0.26765*GDP + ε

5.3 Coefficient of Determination

Based on the regression estimation output that written on Table 4.8, the value of the model adjusted R-squared is 0.670545, which indicates that all independent variables in the model (LNSIZE, CAR, CRDTA, NPL, INFL) explain 67.0545% of the dependent variable, Net Interest Margin. The rest, 33.2252%, is explained by other variables outside the model.

2. 4. T-Test

Based on the second regression estimation output, it can be concluded that CAR, CRDTA, NPL and INFL have positive significant relationship to the dependent variable, LNSIZE and BOPO have negative significant relationship to the dependent variable, while the other variable, GDP, does not have a significant relationship to NIM with 5% significance level.

F-Test

In this model, the p-value of F-statistic is 0.0000, which means that all the independent variables are significant to the dependent variable at once, when examined with 0.05 level of significance.

ICMEM

Regression Analysis

Based on the result, bank size appeared to have a significant relationship with Net Interest Margin. It can be concluded that while bigger banks tend to have more assets that may generate more potential interest income, the risk of default loan is also increasing, which might decrease the overall net interest margin of the bank. Capital Adequacy Ratio also has a positive significant relationship with Net Interest Margin. This finding is different with the result of previous research done by Raharjo et al (2014), which also found CAR to have negative significant effect towards NIM. Based on this result, it can be concluded that an increase in CAR, which can increase the cost of capital, might lead banks to increase their interest margin in order to cover the increasing cost. Credit to Total Asset Ratio has a positive significant effect toward Net Interest Margin. The larger portion of assets that distributed in form of loans, the potential interest income is also increasing, which eventually may increase the overall net interest margin. BOPO has a negative significant effect to NIM. This finding is different with the previous findings by Raharjo et. al (2014). The difference may be caused by the changes in the industry characteristics due to the different time period that is examined by each research. Non-Performing Loan appeared to have a significant impact toward Net Interest Margin. This result is different with previous research conducted by Yuksel and Zengin (2017), but consistent to the research done by Raharjo et al (2014). This may be caused by the differences between each country economic condition and characteristics that used in the model. From this result, it also can be concluded that when the non-performing loan ratio is increasing, banks may try to cover the losses by increasing the interest rates for the loan, which may resulted in an increase in the overall interest margin. Finally, Inflation rate appeared to be positively correlated with Net Interest Margin. This result is also differs with previous research in Indonesia which stated that it has a significant negative relationship (Raharjo et. al, 2014). While higher inflation rate may result in a decrease in interest rate, the decrease may attract more people to borrow money to spend from the bank, which can increase the overall interest margin.

6. Conclusion

This research examined the determinant of Net Interest Margin which represent a bank's efficiency level in Indonesia. The research includes 19 banks which listed in BACB 3 and 4 over the time period of 2008-2017. The data is processed using panel data regression with random effect method. The result suggest that Capital Adequacy Ratio, Credit to Total Assets Ratio, Non-Performing Loan, and Inflation Rate appeared to have positive significant relationship to Net Interest Margin, while Bank Size and Operating Expense to Operating Income Ratuio indicated to have a negative significant effect toward Net Interest Margin in the significance level of 0.05. The findings suggest that bank should pay attention to its assets, especially credit distribution in order to maintain and increase the profitability of the bank while monitoring the inflation rate in order to increase the efficiency of the bank. For future research, other variables with a longer time period should be included to improve the variability of the data and improve the ability of the model in explaining the Net Interest Margin.

References

Alper, D. and Anbar, A. (2011). Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability : Empirical Evidence from Turkey. Business and Economics Research Journal, 2(2), pp. 139-152.

Bikker, J.A. & Bos, J.W.B. (2008). Bank performance: a theoretical and empirical framework for the analysis of profitability, competition and efficiency. New York: Routledge.

Demirguc-Kunt, A., Lauven, L. & Levine, R. (2004). Regulations, market structure, institutions, and the cost of financial intermediation. Journal of Money, Credit, and Banking, 36(3, Part 2), pp. 593 -622.

Dumičić, M. & Ridzak, T. (2012). Determinants of Banks' Net Interest Margins in Central and Eastern Europe. Financial Theory and Practice, 37(1), pp. 1-30.

Gitman, L. J., & Zutler, C. J. (2012). Principles of Managerial Finance 13th edition. New York: Pearson.

Gujarati, D.N. (2003). Basic Econometrics. Singapore : McGraw-Hill/Irwin.

Hamadi, H. and Awdeh, A., 2012. The Determinants of Bank Net Interest Margin: Evidence from the Lebanese Banking Sector. Journal of Money, Investment and Banking, (23), pp. 85-98.

Kasmir, D. (2012). Dasar-dasar perbankan edisi revisi.

Kosmidou, K. (2006). The Determinants of Banks' Profits in Greece during the Period of EU Financial Integration.

ICMEM

Naceur, S. B. (2003). The determinants of the Tunisian banking industry profitability: panel evidence. Universite Libre de Tunis working papers.

Perry, P. (1992). Do Banks Gain or Lose From Inflation. Journal of Retail Banking, 14(2), 25-30.

Raharjo et al. (2014). The Determinant of Commercial Banks' Interest Margin in Indonesia: An Analysis of Fixed Effect Panel Regression. International Journal of Economics and Financial Issues, 4(2), pp. 295-308.

Saunders, A. and Schumacher, L., 2000. The determinants of bank interest rate margins: an international study. Journal of International Money and Finance, 19(6), pp. 813-832.

Van den Heuvel, S.J. (2002). Does bank capital matter for monetary transmission?, Economic Policy Review, 8, pp. 259–266.

Yuksel, S. and Zengin, S. (2017). Influencing Factors of Net Interest Margin in Turkish Banking Sector. International Journal of Economics and Financial Issues, 7(1), pp. 178-191.Fachinger, J. (2006). Behavior of HTR fuel elements in aquatic phases of repository host rock formations. *Nuclear Engineering & Design,236*, 54.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Optimizing BRIlink Branchless Bank Model in Papakmanggu Village

Steven Hans[a]*, Sylviana Maya Damayanti[b]

[a,b]*Bandung, Institute of Technology, Jl. Ganesha no 10, Bandung, 40132, Indonesia*

Abstract

There is branchless banking program in Papakmanggu village called BRIlink. This program aims to enhance the villager's economic condition. However, this program has not been optimized. The villager lacks of financial literacy and it is shown by there are many of villager still borrowed money from loan sharks even though they already have saving account in bank. Therefore, the researcher conducts a research to find a financial literacy module that suitable for farmer in Papakmanggu. The researcher got the data by qualitative approach with interview method. This data will be analyzed by descriptive statistic. The analysis is used to conducted the financial literacy module. Then the module was evaluated by using pretest and posttest. The result of pretest and posttest was analyzed by paired sample T-Test and gain score to know the increasing of financial literacy level of farmer in Papakmanggu. There were 72 farmers that joined this research. The result show that the mean of pretest is 4,6389 and the mean of posttest is 7,0139. The posttest is increasing 2,375 points from the pretest. Moreover, the financial literacy module increases the level of farmer's financial literacy with the gain score of 0,443 and it is categorized as medium improvement

Keywords: BRILink; Financial Conclusion; Financial Literacy; Papakmanggu

1. Introduction

The World Bank (2008) found out that the financial literacy can improve the efficiency and quality of the financial services. This is also supported by Lusuardi (2009) and Greenspan (2002). They said that the financial literacy can empower and educate the people so they can have enough knowledge to evaluating the different of financial services. This evaluation can affect their financial decisions so they can choose the suitable financial services that fulfill their needs.

Financial Service Authority Republic of Indonesia also said that financial literacy can increase the number of people who using the saving account in banking industry. This people can affect the financial inclusion index. This is also supported by Grohmann, Theres Kluhs, and Lukas Menkhoff (2017). They found that financial literacy has a significant and positive relationship with financial inclusion, especially in lower income countries. This means increasing the financial literacy can improve the financial inclusion index.

To maximize the banking potential, Financial Service Authority Republic of Indonesia engage Bank Industry to launch several programs that increase financial inclusion index by increasing the saving account in the bank. One of the program that have been applied in the bank is branchless banking. According Financial Service Authority Republic of Indonesia branchless banking is one of the *Otoritas Jasa Keuangan's* that provide the banking services with increasing the financial inclusion by cooperating with banking industry and supported by information technology facilities. Bank put agent as the bank representative, especially in the rural area. They educate the agent so they can understand the process of the bank system. This program applied because there are many people have not known or use the banking product. It is happened because their location is far from bank's office and they also think that the

---

bank administrative cost is very burdensome. This program can connect the people with the bank. Because this opportunity, many banks applied this program so this program is growing rapidly.

BRI as the state own enterprises banking also applied this program. They called it agent BRILink. They empower the agent by the EDC machine so they do not have to go to the bank to do the transaction. This EDC machine he agent also get a reward for every transaction that done in that EDC machine. The agent also gets more convenient that provided by BRI. In return, the agent should convince the environment to do transaction in BRI and get BRI more member.

By the end of 2016, BRI has a big market proportion in total branchless banking agent. BRI already has 84,5550 BRILink agents that spread across Indonesia. It is more than 30% of the total branchless banking agent in Indonesia. It is also increasing 68.2% than December 2015 which is 50,259 agents. This amount is equivalent with the total number of village and "kelurahan" in Indonesia. Of all agent, 84% of them transact actively with an average 196 times transaction per month. For the proportion of the agents, BRILink agents are 53% in Java, 22% in Sumatera, and 23% in central and east Indonesia. The growing number of BRILink agents is increasing the total transaction volume of BRILink. Through 2016, BRILink agents registered 98.4 million transactions which is increasing 316.8 % and the total volume of transaction is 139.1 trillion rupiah or increasing 281.5% from 2015. With these spreading and growing agents, BRILink is really important to support the government's program to increase the Indonesia's financial inclusion index.

In 2018, BRI set a goal for their BRILink agent. For 2018 BRI has targeted the BRILink agent to record a certain amount of transaction every month. BRILink agent has to record a total of 200 transactions every month. After a grace period of 6 months, if the agents have not fulfilled the target, they have to pay for IDR 1,000 times transaction shortages.

One of the BRILink agent is "Teh Eneng" in the Papakmanggu village. She is one of the influential persons in the Papakmanggu village. She will be Agent BRILink until 2018 and she said that with this BRILink, people in Papakmanggu can get a lot of benefit such as they do not need to go to the bank to do the transaction anymore. The people also can get loan with lower interest. She also said that people in Papakmanggu can get the education about how the banks works.

"Teh Eneng" as the BRILink agent in Papakmanggu only recorded 74 transactions in 2017. The highest transaction that has been recorded by "Teh Eneng" was 18 transactions in March 2017 with total nominal of IDR 16,195,000. The most common transactions are pay the electricity, buy pulse and transfer money. The farmer has not use all the feature in BRILink. "Teh Eneng" want to increase the total transaction of BRILink to increase the economy of Papakmanggu's farmer. "Teh Eneng" has tried several strategies to increase the total transaction of BRILink such as reducing her profit and fee but the strategies did not increase the total transaction of BRILink because the villager did not have enough financial knowledge.

With BRILink, economic condition in Papakmanggu can grow faster and bigger than before. BRILink allowed people in Papakmanggu who occupied majority is farmer to know more about the banking product to boost their economy but it is have not reach its maximum capabilities.

2. Literature Review

2. 1. Financial Literacy

Financial literacy is a series of processes or activities to increase the community's knowledge, skills, and confidence so they are able to manage their personal finances properly (OJK 2013). According to OECD International Network on Financial Education (INFE) (Atkinson and Messy 2012), the Financial Literacy Index is a measured value based on several components of financial literacy, which are financial knowledge, financial behaviors, and financial attitudes.

ICMEM

3. Methodology

3. 1.   Program Setting

Researchers conduct this research directly to the field that is in the Papakmanggu Village. Papakmanggu village has an area of 40,212 sqm, with its. Papakmanggu village is precisely in the southern Bandung city. Papakmanggu Village is currently led by Ms. Risma. There are 4 *RW (Rukun Warga)* and 8 *RT (Rukun Tetangga)*. The timing of this research takes place at June 21[st,] 2018. The research take place in the *Rupin* of Papakmanggu. *Rupin* is a substitute of kindergarten and elementary school in Papakmanggu.

3. 2.   Financial Literacy Course

The financial literacy module has adjusted with the data that the researcher got from the define and design process so the financial literacy module can be suitable with the farmer in Papakmanggu village.

The process of financial literacy started by delivering the information of this event to the farmer in Papakmanggu. The researcher delivered the information through the farmer community because it is faster and farmer community is a place where the farmer gets information.

In the execution day, there were 72 farmers that participated in the event. The event starts when the farmer took a pretest. This test will determine the financial level of the farmer in Papakmanggu before the financial literacy module. The test consists of 10 questions. The questions are based on the farmer's financial needs which is banking concept, interest calculation, and financial management.

Then the researcher starts presented the financial module. The first presentation used financial education for farmer slide from the Bank Indonesia. This slide presentation is aim to teach the audience about the financial management by showing how to make a standard financial planning. Slide presentation is suitable with financial management because the slide presentation is two-way communication. The farmer can ask anytime if they have questions since they have not known about the financial management before.

Next presentation used video presentation to tell the farmer about the bank concept. The video explained how to open a saving account in the bank. It also explained about the requirement and every step that should the farmer do in the bank to open a saving account. Video presentation is suitable to explain about the banking concept to farmer in Papakmanggu. Video presentation can explain banking concept with short of time because the farmer in Papakmanggu already had a knowledge about saving account and they already embrace banking product.

Next, the researcher held a quiz for the farmer. In the quiz, the farmer had to make a group and they competed against each group. They had to answer a real-life case with a given tool. The question was around real-life simple interest calculation in saving or loan concept. The farmer will use mobile application as a tool to help them to answer the question. The question consists of 9 questions. The fastest with a right answer will get 1 point for their group. The group with most point after 9 questions will get a prize. Interest calculation has several complicated formula. Therefore, mobile application is a good tool for interest calculation. Mobile calculation can calculate the complicated formula with a simple user interface so the farmer can understand the interest calcution faster and easier.

After all the presentation, the farmer was asked to do the posttest. this test will determine the level of farmer's financial literacy after the financial literacy module. This test had 10 questions and the questions asked about the farmer's financial literacy needs which are banking concept, interest calculation, and financial management. The question in the pretest and posttest are same.

Table 1. Financial Literacy Module

ACTIVITY	TOOLS	OBJECTIVE
Information Distribution	Farmer Community	The farmer knew about the financial literacy module.
Pretest	DEFINIT-SEADI_OJK (2003)	The researcher know the financial literacy level before the financial literacy module.

ICMEM

Slide Presentation	Bank Indonesia (2017). *EDUKASI KEUANGAN UNTUK PETANI, BURUH, NELAYAN, MASYARAKAT DI KEPULAUAN/WIL. PERBATASAN*	The farmer understand the financial management.
Video Presentation	Annisa, A. (2015). *Cara Membuka Rekening Tabungan*	The farmer understand the banking concept
Games	Mobile Application	The farmer can calculate the interest concept with the given tools
Posttest	DEFINIT-SEADI_OJK (2003)	The researcher know the financial literacy level after the financial literacy module.

3. 3.   Participants

Total farmer in Papakmanggu is 238 farmers and with confidence level is 90%. It will give the margin of error of 10%. Using the Slovin's formula, therefore the minimum sample size for this research is 71 farmers. There were 72 farmer that participated in this research. In the demographic questionnaire, the respondents are asked about their age, gender, and income to identify their demographic. This is the result of respondent's demographic profile. There were 42 women of total of 72 respondents or 58%. Men took 42% of the total respondent or 30 men. There were 42 people or 42% of the respondent that below 31 years old. This category is the majority of the respondent. The second highest percentage is 31-40 years old. This category has 28% or 20 people. Next, the 41-50 years old has 23% of the total participant or 17 people. Last, there were 5 people that is above 50 years old or 7% of the respondent. The majority of the participant have income per day of IDR 30.000 to IDR 45.000 which is show by 23 participants of 32% of total participants that participated in this research. Second majority of the income per day is IDR 15.000 to IDR 30.000. This category represents 24% of total participant or 17 people. The third majority is above IDR 60.000. There were 12 people in this category or 17%. The below IDR 15.000 show 15% of total participants or 11 people. Last, the IDR 45.000 to IDR 60.000 represent 12% of total participants or 9 people.

3. 4.   Measure

The researcher found 3 major financial literacy needs for farmers in Papakmanggu. First is the banking concept so farmer that have not had the saving account can open it in the bank. Second is the interest calculation so the people know the difference of interest between bank and loan sharks. Third is the financial management so they can have a better financial planning. Therefore the researcher conducted a questionnaire that consist 10 question about the financial literacy needs. The researcher used DEFINIT-SEADI_OJK (2003) questionnaire that measure the level of financial literacy into basic knowledge of financial literacy. The questionnaire is distributed to the farmer with a pretest and posttest method. Every right answer will get a value of 1 point and blank or wrong answer will get 0 point. With this measurement, the researcher can know the farmer's financial literacy level. To analyze the data from test result, the researcher use sample paired sample T-Test to understand the difference of financial literacy level of farmer in Papakmanggu before and after the financial literacy module. Paired sample T-test are used to know if there are any difference between the mean of two independent variables.

If the paired sample t-test shows that there are the differences between the mean of pretest and the posttest result, then the data analyzed by using gain test. The data analysis technique is gain test is to calculate the gain value (g).

$$g = \frac{mean\ posttest - mean\ pre\ test}{maximum\ score - mean\ pre\ test}$$

Based on the formula above, the researcher obtained a score that represented the increasing financial literacy level of farmer in Papakmanggu. Then the score interpreted into the category of gain value criteria to get information about the increasing level of farmer's financial literacy. It can be classified as high, medium, or low.

Table 2. Gain Score Criteria

ICMEM

g Score	Criteria
g> 0,7	High
$0,7 \leq g \leq 0,3$	Medium
g < 0,3	Low

4. Findings and Analysis

4. 1. Paired sample statistics

Table 3. Paired sample statistics

Code		Indicator	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pr_BnkCncpt	Banking Concept	,9074	72	,16990	,02002
	Po_BnkCncpt		1,0000	72	,00000	,00000
Pair 2	Pr_IntrstCal	Interest Calculation	,1898	72	,30554	,03601
	Po_IntrstCal		,5324	72	,26631	,03139
Pair 3	Pr_FnclMngt	Financial Management	,3368	72	,30593	,03605
	Po_FnclMngt		,6042	72	,28381	,03345
Pair 4	PreTest	Overall result	4,6389	72	1,71411	,20201
	PostTest		7,0139	72	1,60539	,18920

The table show the average result of every Indicator before and after they take the financial literacy module. There were 72 farmer that participate in this test. Before they took the financial literacy module, the mean of the right answer is 4,6389 per farmer with standard deviation of 1,71411 and standard error mean of 0,20201 in overall result. After they took the financial literacy module, the mean of the right answer is 7,0139 per farmer with standard deviation of 1,60539 and standard error mean of 0,18920 in overall result. There is increasing level of financial literacy level before and after the financial literacy module for the farmer in Papakmanggu.

The banking concept indicator increase 0,0926 in the mean of right answer. The Interest calculation indicator increase 0,3336 in the mean of right answer. The Financial management indicator increase 0,2674 in the mean of right answer. This is show that the financial literacy module increases the financial literacy level of farmer in Papakmanggu in every indicator.

4. 2. Paired Samples T-Test

`Table 4. Paired Samples T-Test

Code		Indicator	Sig. (2-tailed)
Pair 1	Pr_BnkCncpt - Po_BnkCncpt	Banking Concept	,000
Pair 2	Pr_IntrstCal - Po_IntrstCal	Interest Calculation	,000
Pair 3	Pr_FnclMngt - Po_FnclMngt	Financial Management	,000
Pair 4	PreTest - PostTest	Overall result	,000

This table show the sig of every indicator before and after the financial literacy module. The sig of every indicator and overall result is 0,000. There are differences in the result of every indicator and overall result before and after the financial literacy module since the sig is below the 0,05.

4. 3. Gain score

There are differences in score between the pretest and posttest of the financial literacy module. the researcher uses gain score calculation to measure the increased level of financial literacy level. In gain score calculation the researcher need a mean of posttest, mean of pretest and the maximum score of the test. The total mean of the posttest is 7.0139, the mean of the pretest is 4.6389. In banking concept indicator, the mean of posttest is 10 and the mean of pretest is 9.074. In interest calculation indicator, the mean of posttest is 5.324 and the mean of pretest is 1.898. In financial management indicator, the mean of posttest is 6.042 and the mean of pretest is 3.368. The maximum score of every indicator is 10.

ICMEM

Table 5. Gain Score Result

Indicator	Test	Mean	N	Gain Score	Category
Banking Concept	Pretest	9.074	72	1	High
	Posttest	10	72		
Interest Calculation	Pretest	1.898	72	0.423	Medium
	Posttest	5.324	72		
Financial Management	Pretest	3.368	72	0.403	Medium
	Posttest	6.042	72		
Overall result	Pretest	4.6389	72	0.443	Medium
	Posttest	7.0139	72		

Based on the table, the gain score of overall result is 0.443 and based on Hike criteria, the score is categorized as medium gain. It means that the financial literacy module for farmer in Papakmanggu increasing the financial literacy level in banking concept, interest calculation and financial management in medium category. The highest gain is shown by banking concept indicator with total gain score of 1 and categorized as high gain. While, the lowest gain is shown by the financial management indicator with total gain score of 0.403 and categorized as medium gain. Therefore, the financial literacy module give the best gain result on banking concept indicator.

5. Conclusion

The farmer showed a better result of financial literacy knowledge after the financial literacy module. The farmer showed an improvement in every indicator of financial literacy. The biggest improvement is shown in interest calculation indicator with increasing of 3,426 points level from the pretest. The mean of pretest is 4,6389 and the mean of posttest is 7,0139. The posttest is increasing 2,375 points from the pretest. The financial literacy module increases the level of farmer's financial literacy with the gain score of 0,443 and it is categorized as medium improvement.

6. Future Research

Future research have to obtain more general finding and result. The subject for this research only farmer of Papakmanggu Village. Therefore the financial literacy should be tested on bigger area and scale. The future research should develop the mobile application since the mobile application is a tools that show the biggest improvement in the financial literacy.

Reference

Ali, I. (2007). Pro-Poor to Inclusive Growth: Asian Prescriptions. ERD Policy Brief, No.48.

Amidžić, G., Massara, A., & Mialou, A. (2014). Assessing Countries' Financial Inclusion–A New Composite Index. IMF Working Paper. WP/14/36.

Anderson, S., Zhan, M., & Scott, J. (2004). Targeting financial management training at low-income audiences. Journal of Consumer Affairs, 38, 167–177. doi:10.1111/j.1745-6606.2004.tb00470.x

Arikunto, S. 2011. Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: Rineka Cipta

Asikin, Zainal. (1997). The book of Fockema Andrea. Jakarta: Grafindo Persada.

Atkinson, A., & Messy, F. A. (2012). Measuring financial literacy.

Bank Republik Indonesia (2016). Bank Republic Indonesia annual report. Jakarta: Bank Republik Indonesia

Bayer, P. J., Bernheim, B. D., & Scholz, J. K. (2009). The effects of financial education in the workplace: Evidence from a survey of employers. Economic Inquiry, 47, 605–624. doi:10.1111/j.1465-7295.2008.00156.x

Bernheim, B. D., Garrett, D. M., & Maki, D. M. (2001). Education and saving: The long-term effects of high school financial curriculum mandates. Journal of Public Economics, 80, 435–465. doi:10.1016/S0047-2727(00)00120-1

Danes, S. M., & Haberman, H. (2004). Evaluation of the NEFE High School Financial Planning Program 2003–2004. Retrieved from http://www.hsfpp.org/ Portals/0/Documents/NEFE%20HSFPP%20Impact% 20Study%202003-2004.pdf

ICMEM

Elliehausen, G., Lundquist, E. C., & Staten, M. E. (2007). The impact of credit counseling on subsequent Financial Literacy Classes 201 borrower credit usage and payment behavior. Journal of Consumer Affairs, 41, 1–28. doi:10.1111/j.1745- 6606.2006.00066.x

Greenspan, A. (2002). Financial literacy: A tool for economic progress. The Futurist, 36(4), 37.

Grohmann, A., Klühs, T., & Menkhoff, L. (2017). Does financial literacy improve financial inclusion? Cross country evidence.

Hake, Richard. (2012). Analyzing Change/Gain Scores. www.physics.indiana.edu/~sdi/AnalyzingChange-Gain.pdf.

Hirad, A., & Zorn, P. M. (2001). A little knowledge is a good thing: Empirical evidence of pre-purchase homeownership counseling (Working Paper LIHO.01-4). Cambridge, MA: Harvard University, Joint Center for Housing Studies. Retrieved from http://www.jchs. harvard.edu/sites/jchs.harvard.edu/files/liho01-4.pdf

Ihsanuddin (2017). Pemerintah targetkan angka kemiskinan dibawah 10 persen. Retrieved from: https://nasional.kompas.com/read/2018/01/03/20201961/tahun-ini-pemerintah-targetkan-angka-kemiskinan-di-bawah-10-persen

Levine, R. (2005). Finance and growth: theory and evidence. Handbook of economic growth, 1, 865-934.

Leyshon, A., & Thrift, N. (1995). Geographies of Financial Exclusion: Financial Abandonment in Britain and the United States. Jstor, New Series, Vol. 20, No. 3, 312-241.

Lusardi, A. (2008). Household saving behavior: The role of financial literacy, information, and financial education programs (No. w13824). National Bureau of Economic Research.

Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare?. American Economic Review, 98(2), 413-17.

Lyman, T., Ivatury, G., & Staschen, S. (2006). Use of agents in branchless banking for the poor: rewards, risks, and regulation. Focus note, 38.

Lyman, T. R., Pickens, M., & Porteous, D. (2008). Regulating transformational branchless banking: Mobile phones and other technology to increase access to finance.

Klasen, S. (2010). Measuring and Monitoring Inclusive Growth: Multiple Definitions, Open Questions, and Some Constructive Proposals. ADB Sustainable Development Working Paper Series, No.12.

Mulyatiningsih, Endang. 2014. Metode Penelitian Terapan Bidang Pendidikan. Bandung: Alfabeta.

Nasution. (1998). Yield stability studies in short-season maize. I. A descriptive method for grouping genotypes. Canadian Journal of Plant Science, 58(4), 1029-1034.

OJK. (2014). Peraturan Otoritas Jasa Keuangan Nomor 19/Pojk.03/2014, Tentang Layanan Keuangan Tanpa Kantor Dalam Rangka Keuangan Inklusif.

Permadi, Ayodya Dwi (2017). Presepsi Masyarakat Desa Pendem Berbah Terhadap Teknologi Branchless Banking. Yogyakarta

Purwati & Fransiska. (2014). Mobile money for financial inclusion. Information and Communications for development, 61(1), 61-73.

Reich, Catherine M., & Berman, Jeffrey S. (2015) Do Financial Literacy Classes Help? An Experimental Assessment in a Low-Income Population Journal of Social Service Research, 41:193–203

Sanjaya, I Made (2016). Inklusi Kenuangan dan Pertumbuhan Inklusif: Analisis Antar Provinsi di Indonesia. Denpasar

Sarah, H. (2015). Dampak Branchless Banking Terhadap Kinerja Keuangan PT Bank Muamalat Indonesia Tbk. AL-MUZARA'AH, 3(2), 136-157.

Sarma, M. (2008). Index of financial inclusion (No. 215). Working paper.

Sarma, M. (2012). Index of Financial Inclusion–A measure of financial sector inclusiveness. Money, Trade, Finance, and Development Competence Centerin cooperation with DAAD Partnership and Hochschule für Technik und Wirschaft Berlin University of Applied Sciences. Working Paper, (07).

Sarma, M., & Pais, J. (2011). Financial inclusion and development. Journal of international development, 23(5), 613-628.

Slovin, E. (1960). Slovin's formula for sampling technique. Retrieved on February, 13, 2013.

Sugiyono, D. R. (2000). Metode Penelitian. Bandung: CV Alvabeta.

Trochim, W. M. (2006). Descriptive statistics.

Undang-undang Nomor 10 Tahun 1988 tentang Perubahan atas Undang-undang Nomor 7 Tahun 1992 tentang Perbankan (LN No. 182 Tahun 1998, TLN No. 3709)

Waksberg, J. (1978). Sampling methods for random digit dialing. Journal of the American Statistical Association, 73(361), 40-46.

World Bank (2008). World Bank Annual Report

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants of Capital Structure of Banking Sector in Indonesia: Case Study on Commercial Banks in Indonesia from 2008 to 2017

Nanda Bagus Nurhidayat[a*], Achmad Herlanto Anggono[b]

[a, b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10 Bandung 40132, Indonesia*

Abstract

This study examines the determinants of capital structure of banking sector in Indonesia using a sample of commercial banks categorized as BUBA (Bank Unit Business Activities) 3 and BUBA 4 during the period of 2008 to 2017. As much as 19 commercial banks are selected from the result of purposive sampling. Debt to Assets Ratio (DAR) used as the proxy of capital structure. While determinants being observed in the research are profitability which measured by Net Interest Margin (NIM), risk is determined by Non Performing Loan (NPL), Loan to Deposit Ratio (LDR) is used as the indicator of liquidity, capital adequacy is calculated by Capital Adequacy Ratio (CAR), size that measured from natural logarithm of total assets, growth is calculated by percentage change in total assets, tangibility is determined by fixed assets to total assets ratio, and efficiency that measured by *Beban Operasional terhadap Pendapatan Operasional* (BOPO) ratio. Panel data regression used to analyze the data using statistical tools of EViews 9.0. The result shows that capital adequacy, size, tangibility, and efficiency are having a negatively significant relationship to the capital structure, while liquidity and growth found to be positively significant to the capital structure. Overall pecking order theory become the most suitable prediction in explaining the capital structure decision made by the bank in Indonesia.

Keywords: *Debt to Asset Ratio (DAR); Net Interest Margin (NIM); Non Performing Loan (NPL); Loan to Deposit Ratio (LDR); Capital Adequacy Ratio (CAR); Size; Growth; Tangibility; Beban Operasional terhadap Pendapatan Operasional (BOPO); Panel Data Regression.*

1. Introduction

To survive and adapt in the business, firms must cope with changes involving choosing optimal capital structure for financing decisions. Firms would ideally want to have as minimal cost as possible therefore they are keen to seek for more financing alternatives (Block et al., 2017). All of that comes with an eye to maximize the value of firms. However, maximizing firm value will require concentrated efforts as it associates with selection of debt and equity securities (Sheikh & Wang, 2011).

Question about defining the composition of debt and equity for firms has been extensively studied in the corporate finance literature. A wrong judgement in the selection process of securities may be resulted in firm's financial distress and yet bankruptcy. The capital structure itself is company's choice of financing access both internally and externally. Funds that retained and reinvested act as internally generated fund which required no explicit cost at all. Therefore, retained earnings serve as the cheapest fund available for financing firms.

Meanwhile, external sources of fund come in the form of debt and equity. Securing benefits from its interest tax shield may be the benefit of firms issuing debt. However, company's high exposure to financial risk and cost of capital will be the impact as the result of issuing debt. Moreover, firms need to determine the decision regarding using debt itself such as debt maturity, debt structure, mixed debt decision, etc. For firms that issue equity as its capital structure, they can keep a substantial amount of cash then attempt to invest for other beneficial options. In the unfavourable circumstances, issuing equity means to lessen current owner's authority in the firms and both common stocks and preferred stocks are not tax deductible (Brealey et al., 2009; Handoo & Sharma, 2014).

---

* Corresponding author.

E-mail address: nanda.bagus@sbm-itb.ac.id

ICMEM

In Indonesia, a tremendous economic development has been grasped by the firms after suffering the Asian financial crisis in 1997. Many companies in Indonesia was going bankrupt at that time as the economic, politics, and social are significantly affected (Chandra, 2015). During the crisis, most of the firms are competing to get foreign loans as the cost of borrowing in the country is more expensive. However, in the 2008 crisis, Indonesia did not get through financial distress as much because the anticipation for the loans is more prepared already. As for the capital structure, studies show that most of the firms in Indonesia are still complying to pecking order preference (Chandra, 2009). However, some factors needed to be examined on whether or not they significantly affect the capital structure of firm in Indonesia. Findings from this research will shed light regarding the determinants of capital structure of the publicly listed firms in Indonesia and analyze the relationship of determinants affecting firm's capital structure in Indonesia.

2. Literature Review

Theories of Capital Structure

Determining how a firm finance its operation and investment is one of the most critical decisions in corporate finance. Firm's blend of financial resource securities which widely known as its capital structure is an important concern for financial manager in order to maximize firm's value. Although an optimal capital structure is remained as question, plenty capital structure theories help to enlighten based on firm's specific circumstances. Principally, two schools of thought have developed their idealism in regards to capital structure. In the first school, distinct matters have been pointed out on how capital structure doesn't affect the valuation of the firm. The patrons of the other school, however, believe that composition of capital structure will determine cost of capital if some of the things that do make significant difference are taken into account, for example costs of financial distress, taxes and signaling prospects through financing decisions (Brealey et al., 2018).

2.1.1. Modigliani-Miller Theory

Modigliani and Miller proposed three propositions which underlined the influence of capital structure on firm's value. Under idealized condition, Modigliani and Miller (1958) implied that neither the value of the firm nor its operating income are unaffected by the choice of its capital structure. Therefore, market value of any firm is derived from capitalizing its expected return and independent from the influence of mix of securities used to finance the company. Yet in 1963, corrections have been made to prior findings. They suggested that tax advantages of using debt financing are somewhat greater thing to the firm. By undertaking debt, the amount of tax that the firm pay will be reduced as the interest is tax-deductible expense unlike equity income that subject to corporate tax. Reduction in tax payment will eventually lead to an increasing of the firm's value (Modigliani & Miller, 1963).

2.1.2. The Trade-Off Theory

In the development of previous capital structure theories, the proposed use of debt had received some critics. Kraus and Litzenberger (1973) argue in tradeoff theory that as the use of debt increase the risk of bankruptcy, this will also increase firm's cost of bankruptcy because corporate bonds are not bundle of claims but legal obligation. Therefore, the advantages of tax-shield will be offset by increasing cost of financial distress. Thus, firms will try to tradeoff between the higher costs of financial distress with the availability of larger tax shields in the presence of high leverage (Warner, 1977).

2.1.3. Pecking Order Theory

There is no particular debt-equity mix target in pecking order theory, however, Myers (1984) suggested the hierarchy of a firm's financial resources. The first and most popular financing is internal finance through retained earnings. If internal accruals are not adequate and external financing options are needed, firms will proceed to use debt financing as debt is safer securities than equity. Also, debt issue is less likely to be interpreted as worrisome signal by the investors. Equity financing will become the last resort for a firm's financing option as firms will bear riskier financing option as the ownership of the firm itself is on the stake.

ICMEM

Determinants of Capital Structure

Profitability

Profitability is regarded as essential to determine capital structure. Low in profitability may lead the firm into financial distress. According to Jensen (1986) with the backup of tradeoff theory, positive relationship is expected from profitability and leverage since high profitability firms have more ability to take debt and require its advantage of tax shelter. On the other hand, the pecking order hypothesis by Myers (1984) opposed the argument because firms would rather use internal financing than external and therefore negative relationship is expected.

Firm Size

The size of the firm gives insights of firm's financial ability to conduct the business during the period. Net sales or number of owned sales are one of the criterion example to be considered in determining firm's financial ability. According to tradeoff theory, in deciding the level of debt, large firms don't regard bankruptcy costs as a pushing variable. However, according to evidences on firms using pecking order theory, Rajan and Zingales (1995) stated that larger firms are encouraged to finance using equity as there was less asymmetrical information to larger firms making the probability of undervalued new equity issue become reduced. Therefore, negative relationship between firm size and leverage can be derived from the pecking order theory.

Effective Tax Rate

Modigliani and Miller (1963) stated that firms need to prioritize using debt financing as interest payments on debt will result in tax deductions. Therefore, align with tradeoff theory, there should be a positive influence between effective tax rate and level of debt.

Asset Tangibility

Tangible assets are naturally serve more as guarantee relative to intangible assets because then these collaterals will minimize risk for lender. And as predicted by tradeoff theory, tangible assets can support more leverage and reduce the cost of bankruptcy therefore making a positive relationship between asset tangibility and level of debt. Nonetheless, Titman and Wessels (1988) predicted that managers tend to apply more debt than the optimal level and may resulted in negative influence between leverage and collateralized assets.

Risk/Earnings Volatility

Risk can be defined as the deviation between the expected and real results. Higher volatility can be resulted in higher probability of financial distress for firms as they are unable to meet their debt obligation contracts. Firm's debt capacity will also be affected due to the increased earnings volatility. Consequently, negative relationship is expected between risk and leverage.

Growth Opportunities

Tradeoff and pecking order theory predicted that there is a negative influence for growth opportunities and debt level. Firms with high growth opportunity have the option to use more of equity financing because firms can refrain from getting underinvestment. Moreover, growth opportunities are considered as intangible assets which cannot be collateralized.

Liquidity

The tradeoff theory suggests positive correlation between liquidity and leverage. This is because firms with high liquidity ratios may use more leverage due to the fact that they can meet the contractual obligations on time. Even so, few empirical studies indicated that greater liquidities firms are, in fact, using internally generated funds more rather than external in financing new projects (Deesomsak et al., 2004; Viviani, 2008). In this case, the pecking order theory match accordingly with negative association between liquidity and leverage.

Non-Debt Tax Shield

Negative influence is expected between non-debt tax shield and level of debt according to pecking order theory. Besides, interest expenses have been responsible to reduce firm's taxable income, depreciation of tangibles and intangible assets have also contributed to the tax deduction. Thus, benefits of financing is being substituted by non-debt tax shield.

Short Term Debt to Total Assets

Short-term debt to total assets ratio (STD/TA) measures the capability of a firm to finance its assets by utilizing the short-term liabilities. It is generally employed to support firm's working capital. According to tradeoff theory, there is a positive influence between capital structure and STD/TA ratio. Scott (1977) mentioned that a firm's ability to compromise high liquidity is reflected in a greater capacity to secure debt.

Hypotheses Development

According to the theories of capital structure, this study particularly picks one dependent variable and nine determinants as the independent variables. Debt to Equity Ratio (DER) act as the dependent variable. Meanwhile the independent variables are consisting of nine determinants which are profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total assets.

- Hypothesis 1: Profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset simultaneously have significant influence toward capital structure in Indonesia publicly listed firms during the period of 2013-2017
- Hypothesis 2: Determinants (profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset) individually has significant influence toward capital structure in Indonesia publicly listed firms during the period of 2013-2017.

3. Methodology

Data needed for the research samples is secondary data of Indonesia publicly listed firms in LQ-45 index which consists firms with large capitalization value from the year of 2013 to 2017. For all of the data, both dependent variable and independent variables are collected from Datastream, Indonesia Stocks Exchange website (idx.co.id), and official firms annual report during the period of 2013 to 2017.

Capital structure acts as the dependent variable of this research. It is defined as the funding mix that a firm finance its operation, expressed in both debt and equity capital. In this research, capital structure is measured using the formula of total debt divided by total equity ratio (Pahuja & Sahi, 2012; Velnampy & Niresh, 2012). The independent variables of this research consist of nine variables which are profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset. Measurement of each variable presented in table below (Deesomsak et al., 2004; Khrawish & Khraiwesh, 2010; Noulas & Genimakis, 2011; Handoo & Sharma, 2014; Chandra, 2015; Fauziah & Iskandar, 2015; Tandya, 2015; Sunarto & Rely, 2017).

In this research, the strategy employed is quantitative approach with descriptive statistic, assumption test, and multiple regression analysis utilized. Multiple regression analysis is adopted to investigate the influence of determinants to the capital structure. From the data and variables obtained, this research analyze data using linear regression with analysis model as follows.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e$$

Where Y: Value of dependent variable, Debt to Equity Ratio (DER); α: Constant or intercept of the regression line; β: Slope of the regression line; X_1: Profitability; X_2: Firm Size; X_3: Effective Tax Rate; X_4: Asset Tangibility; X_5: Risk / Earnings Volatility; X_6: Growth Opportunities; X_7: Liquidity; X_8: Non-Debt Tax Shield; X_9: Short Term Debt to Total Assets; e: Error Term.

ICMEM

Prior to using multiple regression analysis, several assumption tests are employed to satisfy the model. Durbin-Watson statistic test detects for autocorrelation in the residual of the multiple regression analysis. multicollinearity test which seeks the relationship among predictors and understand the significant and insignificant variables. The assumption is tested by checking the tolerance value and Variance Inflation Factor (VIF)

Data incorporated in this research is Indonesia publicly listed firms registered in LQ-45 index during the period of 2013-2017. Corporations for the data sample have to be actively traded in the market, not having negative number of total debt, equity, and income, and provide available complete annual report data during the research. Corporations from banking industry are not included as the data sample since government have particularly regulate the industry. Yet, by using this purposive sampling, only 32 qualifying firms are selected as data sample.

Table 1. Distribution of Sector Classification in Sample.

Sector	Frequency	Sector	Frequency
Basic Industry & Chemicals	1	Mining	3
Cement	2	Miscellaneous Industry	1
Construction & Property	3	Palm Oil	1
Consumer Goods	1	Pharmaceuticals	1
Food & Beverage	2	Telecommunication	2
Gas Distribution	1	Textile & Garment	1
Heavy Equipment	1	Tobacco Manufacturers	1
Infrastructure & Transportation	1	Trade	1
Media	3	Real Estate	6

4. Empirical Results and Discussion

Empirical Results

This section presents the estimation results and discusses the empirical findings. The first analysis is descriptive analysis which help to describe a set of relatively large data by involving many techniques. It is reflected in the form of descriptive statistics whose purpose is to summarize the collection of quantitative data from the research samples.

ICMEM

	Minimum	Maximum	Mean		Std. Deviation	
	Statistic	Statistic	Statistic	Std. Error	Statistic	N
DER	.410	313.44	63.60675	4.22795	53.479812	160
PROF	-6.090	141.83	20.52955	1.777388	22.270603	157
SIZE	22.097	26.398	24.10072	.067676	856045	160
TAXR	-3165583333.00	300498256.10	17887466.894	20500618.6739	259314593.809417	160
TANG	.020	1.057	.42745	.022439	.283833	160
RISK	-206.984	302.484	10.23913	3.882713	49.112864	160
GROW	.550	71.61	5.03591	.810620	10.221533	159
LIQ	.450	9.717	2.19599	.118603	1.500225	160
NDTS	.004	.956	.21650	.017389	.219953	160
STD/TA	.001	.324	.07694	.005726	.071973	158

The table presents the minimum, maximum, mean, and standard deviation of both dependent variables Debt to Equity Ratio and independent variables Profitability, Firm Size, Effective Tax Rate, Asset Tangibility, Risk, Growth Opportunities, Liquidity, Non-Debt Tax Shield, and Short Term Debt to Total Asset. The table presents the number of valid observation of publicly listed firms in Indonesia during the period of 2013-2017. The dependent variable DER is calculated as the ratio of debt to equity. Independent variables PROF is measured as return of equity, SIZE is measured using natural logarithm of total assets, TAXR is measured as ratio of income tax to gross profit, TANG is measured as ratio of fixed assets to total assets, RISK is measured as percentage changes of earnings before interest and taxes, GROW is measured as ratio of market value of equities to book value of equities, LIQ is measured as ratio of current assets to current liabilities, NDTS is measured as ratio of depreciation to total assets, STD/TA is measured as ratio of short term debt to total assets.

From the descriptive table above, the mean of debt to equity ratio among the sample firms is 63.606 which is pretty high. The high number can be interpreted that most of the sample firms are taking on more debt relatively to equity value. The average profitability among the firms of LQ-45 index is 20.52% shown by the ratio of return of equity. It can be inferred from the number that firms more or less can generate 20.52% of the money that shareholders have invested to the firms. The size of the firm is 24.10 on average as the result of natural log of total assets. Average effective tax rate paid by the firms is Rp17,887,466.89 to the country. Assets of the sample firms are quite tangible with the ratio of 0.42 on average. The average earnings volatility expressed in the number of 10.23 from the extreme range between -206.98 to 302.48. The average amount of market to book value is 5.3. The average number of liquidity ratio is 2.19 which can be concluded that the firms are pretty illiquid. Depreciation expenditures as non-debt tax shield for firms can be reckoned quite low in comparison to total assets with the number of 0.216. Average ratio of short-term debt to total asset is 0.07 which can be implied quite low from the range.

In order to examine the quality of regression model, F-test, t-test, and adjusted coefficient model of determination are investigated. F-test is being conducted for the purpose of understanding the simultaneous effect among the independent variables against dependent variable. The result of F-test is being done by looking through the p value.

ICMEM

Table 3. Analysis of Variance (ANOVA) of Dependent Variables to Independent Variables.

		ANOVA[a]			
Model	Sum of Square	df	Mean Square	F	Sig.
Regression	141442.480	9	15715.831	7.621	.000[b]
Residual	299011.430	145	2062.148		
Total	440453.910	154			

[a] Dependent Variable: Debt to Equity Ratio

[b] Predictors: (Constant), PROF, SIZE, TAXR, TANG, RISK, GROW, LIQ, NDTS, STD/TA

Table 4. Result of Regression between Dependent Variables and Independent Variables

Variable	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.	Collinearity Statistics	
	Beta	Std. Error	Beta			Tolerance	VIF
(Constant)	-14.80	125.039		-.118	.906		
PROF	-1.07	.461	-.446	-2.326	.021*	.127	7.861
SIZE	5.08	5.166	.081	.983	.327	.685	1.460
TAXR	-1.307E	.000	-.063	-.856	.394	.853	1.172
TANG	-45.35	17.491	-.241	-2.528	.013*	.516	1.936
RISK	.05	.078	.055	.762	.447	.913	1.096
GROW	1.44	.983	.276	1.468	.144	.133	7.536
LIQ	-7.22	2.810	-.203	-2.571	.011*	.753	1.327
NDTS	-33.22	26.377	-.137	-1.259	.210	.398	2.514
STD/TA	165.97	60.269	.223	2.754	.007*	.712	1.405

The table presents the regression analysis of dependent variable DER and independent variables PROF, SIZE, TAXR, TANG, RISK, GROW, LIQ, NDTS, and STD/TA. For definitions of the variables, refer to table 2. *indicates the determinant is significant at 0.05 level.

Based on the F-test result above, p value shows the number of 0.000 which can be said statistically significant as it is less than 0.05. Thus, it can be concluded that profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short-term debt to total asset simultaneously have significant influence toward debt to equity ratio.

According to the above table of t-test, p value of the independent variable profitability shows the result of 0.021 which is statistically significant since it is smaller than the significant level of 0.05. Therefore, profitability individually has significant value toward debt to equity ratio. From the result of standardized beta, profitability has negative significant influence. The standardized beta coefficient is -0.446 which means by holding the other predictors constant, every increasing unit of profitability standard deviation will be resulted in 0.446 unit decrease of debt to equity ratio standard deviation on average.

The p value of firm size is 0.327 which is higher than significant level of 0.05. Therefore, in spite of the positive influence of beta equals to 0.81, firm size does not have significant influence. The same case happened with effective tax rate. In the independent variable of asset tangibility, p value shows the result of 0.013 below the significant level of 0.05. The result can be concluded that asset tangibility has significant value with standardized coefficients beta of -0.241, meaning every unit increase in standard deviation of asset tangibility resulted in 0.241 unit decreased of standard deviation of debt to equity ratio. In the remaining independent variable of risk, growth opportunities, and non-debt tax shield, the result of p value shows 0.447, 0.144, and 0.210 respectively. Both risk and growth opportunities show positive relationship with the standard coefficients beta of 0.055 and 0.276. In the other hand, non-

debt tax shield has negative influence with standard coefficients beta of -0.137. However, the three independent variables are not statistically significant since the p value is more than 0.05.

In the independent variable of liquidity, the p value is 0.011 with the standard coefficients beta of -0.203. Therefore, it can be concluded that liquidity has negative significant value toward debt to equity ratio. In the independent variable of short-term debt to total asset, the p value shows the result of 0.007 with standard coefficients beta of 0.223. Hence, short-term debt to total asset has positive significant value toward debt to equity ratio. Both independent values are significant since the p value is less than 0.05.

In the next step, using the stepwise method, independent variables which are not significant with dependent variable are being removed. This is conducted in order to make sure that the multiple regression model only have highly correlated variable.

Table 5. Analysis of Variance (ANOVA) of Model Entered Independent Variables.

		ANOVA[a]			
Model	Sum of Square	df	Mean Square	F	Sig.
Regression	131708.234	4	32927.058	15.997	.000[b]
Residual	308745.676	150	2058.305		
Total	440453.910	154			

[a] Dependent Variable: Debt to Equity Ratio

[b] Predictors: (Constant), Short Term Debt to Total Asset, Asset Tangibility, Liquidity, Profitability

F-test result from the table above shows that short term debt to total asset, asset tangibility, liquidity, and profitability simultaneously have significant relationship corresponding to debt to equity ratio since the p value shows significant result of 0.00

In order to ensure the regression model have satisfied the best linear unbiased predictor, Assumption of multicollinearity will initially test the relationship among the independent variables. It is the indication of multicollinearity case when the predictor or independent variables are highly correlated to each other. The presence of redundant variables will make the model less accurate and cumbersome in comparison to merely using one independent variable to predict the same thing. Collinearity statistic tools will help to test and investigate the multicollinearity by looking through tolerance and VIF value.

From the table, it can be concluded that there is no case of multicollinearity between entered independent variables of short term debt to total asset, asset tangibility, liquidity, and profitability since all of the tolerance values are close to 1 or either way no variables are < 0.3

Table 6. Result of Multilinear Regression of Entered Variables

Variable	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.	Collinearity Statistics	
	Beta	Std. Error	Beta			Tolerance	VIF
(Constant)	98.47	11.769		8.367	.000*		
STD/TA	199.37	56.649	.268	3.520	.001*	.804	1.244
TANG	-55.82	12.956	-.296	-4.309	.000*	.988	1.012
LIQ	-7.66	2.739	-.215	-2.800	.006*	.792	1.263
PROF	-.46	.167	-.193	-2.777	.006*	.970	1.031

The table presents the result of multilinear regression of dependent variable DER and independent variables STD/TA, TANG, LIQ, and PROF that being entered to the analysis using stepwise method. * indicates the determinant is significant at 0.05 level.

The t-test have been conducted particularly for these entered variables in which p value plays a crucial part to examine the significant influence. As seen from the table, the p value of all entered variables are statistically significant

ICMEM

with value of 0.001, 0.000, 0.006, and 0.006 respectively. The standard coefficients beta then will be the value that determine the relationship. In the independent variable of asset tangibility, liquidity, and profitability, significant negative relationships are encountered. This is relevant because the standardized coefficients show the value of -0.296, -0.215, -0.193 respectively. Meanwhile, positive significant influence occurred to short term debt to asset with beta of 0.268.

Summary of the model involves the adjusted coefficient of multiple determination (adjusted R square). The purpose is to describe of how the independent variables can explain the variation of dependent variable to some extent.

Table 7. Result of Model Summary

Model Summary	
Multiple R	.547
R Square	.299
Adjusted R Square	.280
Std. Error of the Estimate	45.368
Durbin-Watson	.778

Based on the model summary result, the value of adjusted R square is 0.280. The result can be inferred that 28.0% variation of debt to equity ratio as dependent variable can be interpreted by firm's short term debt to asset, asset tangibility, liquidity, and profitability as independent variables. The above model summary table also gives result of Durbin-Watson test. Durbin Watson is testing the detection of auto collinearity from the model. Auto collinearity test gives the information of correlation regarding successive residuals. The model is said to have no autocorrelation when the Durbin Watson value is either greater than 2.118 or less than 1.881. Therefore, with the result of 0.778 for this model's Durbin Watson test means there is no autocorrelation in the residuals. In accordance with the result of t-test and model summary above, the multiple regression model can be derived from the unstandardized coefficients beta and standard deviation. The final equation is shown as follows.

$$Y = 98.47 + 199.37X_1 - 55.82X_2 - 7.66X_3 - 0.46X_4 + 45.368$$

Where Y: Value of dependent variable, Debt to Equity Ratio (DER); X_1: Short Term Debt to Total Asset; X_2: Asset Tangibility; X_3: Liquidity; X_4: Profitability.

Discussion

Firstly, regarding the first hypothesis, F-test need to be conducted to find the hypothesis answer. The result shows that p value is 0.000 that is less than 0.05 and can be said as statistically significant. Hence, there is enough evidence to support hypothesis 1 that is profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset simultaneously can be regarded as the determinants of capital structure. Next, hypothesis 2 cover about all the determinants (profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset) individually has significant relationship to the capital structure. T test has to be conducted to find the hypothesis answer.

According to the result of t-test, it can be inferred that individually profitability has negative significant influence towards capital structure contrast to theory postulated by Modigliani and Miller. However, this result is supported through pecking order theory by Myers (1984) argued an inverse relationship to leverage. Firms with higher level of profitability will have more retained earnings as their internal generated funds hence firms would rather use internal generated funds rather than external financing through debt or equity. Therefore, publicly listed firms in Indonesia tend to follow the pecking order preference.

In accordance with the result, it can be inferred that individually asset tangibility has negative significant influence towards capital structure. The result is contrast to tradeoff theory which imply firms with high level of tangible asset will expect higher level of debt. However, in accordance with research conducted by Titman and Wessels (1988), a

ICMEM

manager of a firm tends to apply more debt than the optimal level therefore gradually making an inverse relationship between asset tangibility and capital structure. Managers of highly levered firms will be less able to expend additional perquisites due to the closely monitor from bondholders or bankers. For that reason, firms with less tangible assets, by means less collateralize assets, can choose to confine perquisite consumption of managers.

Based on the result, it can be inferred that individually liquidity has negative significant influence towards capital structure. This result is supported by pecking order theory and several empirical studies. It is proven that greater liquidities firms are usually prefer to use retained earnings rather than external source in financing new projects since firms with more cash will use their cash rather than borrow. Thus, most of firms with higher liquidity will have low debt ratio. This can be explained that Indonesian firms could take into account the benefits of debt and tradeoff in their financing decisions.

From the result, it can be inferred that individually short term debt to total asset has positive significant influence towards capital structure. This result is the enactment of a significant positive tradeoff theory. In the research conducted by Scott (1977), firm's ability to trade off high liquidity can be resulted in greater ability to secure debt since short term debt is typically used to finance working capital. Therefore, for some companies, a decrease in short term debt to total asset will be followed by a decline in capital structure. And vice versa, an increase in short term debt to total asset will be followed by an increase in capital structure. According to the result of t-test, the other five independent variables do not have significant influence towards capital structure because all of them have p value above the significant level of 0.05.

5. Conclusions and Recommendations

This research is aiming to investigate the determinants of capital structure in publicly listed firms in Indonesia. Literature review have showed some factors affecting capital structure which then adopted to this research, the variables are profitability, firm size, effective tax rate, asset tangibility, risk or earnings volatility, growth opportunities, liquidity, non-debt tax shield, and short-term debt to total assets. Data is obtained from Datastream and Indonesia Stock Exchange during the period of 2013 to 2017. Based on the result conducted on research variables, profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short term debt to total asset simultaneously have significant influence toward capital structure. However, from nine independent variables, merely four of them have significant influence to capital structure namely profitability, asset tangibility, liquidity, and short term debt to total asset.

Moreover, this research further explains the relationship of each significant determinants to capital structure. Supported by pecking order theory by Myers (1984), profitability has negative relationship with leverage due to the preference of internal financing. Asset tangibility has negative significant influence due to manager's preference of applying more debt than the optimal level (Titman & Wessels, 1988). Liquidity has negative relationship to leverage ratio. This can also be explained by pecking order theory. And the last significant determinant is short term debt to total asset which has positive significant effect towards capital structure. The result is corresponding to tradeoff theory.

LQ-45 involves large capitalization firms which operation is the most liquid among all publicly listed firms in Indonesia. Thus, roughly said, these firms are the top high ranking firms in Indonesia from across the industries. There is, however, limitation lies on the sector classification from the firm samples. Since there is no particular characteristics of industries which can be used as standard in determining the debt-equity mix target, result of this research is less consistent in comparison to research with focus in specific sector. Suggestions for further research is to classify each of the companies into their industry or sector. Either way, this research does not rule out the possibility of having greater number of firms as the samples. Incorporating the samples from companies registered in LQ-45 index was intended to represent the publicly listed company and stock exchanges of Indonesia. However, merger of different sectors make the results less specific thus further research is encouraged to not necessarily analyze firms in LQ-45 index but all available publicly listed firms in Indonesia in order to achieve more specific results, furthermore to include

ICMEM

industry-level determinants. Additionally, capital structure can also be explained by other theories for instance agency theory, signaling theory, market timing theory, etc. since variables included in this paper is only from Modigliani-Miller, tradeoff and pecking order theory. Possibly, different variables and theories might be more relevant in explaining capital structure in Indonesia thus future research is recommended as so.

References

Block, S. B., Hirt, G. A., Danielsen, B. R. (2017) Foundations of Financial Management, 16th edition. New York: McGraw-Hill Irwin.

Booth, L., Aivazian, V., Demirguc-Kunt, A. & Maksimovic, V. (2001) Capital structures in developing countries. *Journal of Finance,* 87-130.

Brealey, A. B., Myers, S. C., Marcus, J. C. (2018) Fundamentals of Corporate Finance, 9th edition. New York: McGraw-Hill Irwin.

Chandra, T. (2009) The effects of environment risk, capital structure, and corporate strategy on assets productivity, financial performance and corporate value: A study on go public companies registered at Jakarta Stock Exchange. The International Journal of Accounting and Business Society, 17(1), 35–53.

Chandra, T. (2015) The determinants of the capital structure: Empirical evidence from Indonesian stock exchange companies. Revista Kasmera. 43.

Cooper, D. & Schindler, P. (2014) Business Research Methods. New York: McGraw-Hill.

Deesomsak, R., Paudyal, K., Pescetto, G. (2004) The determinants of capital structure: Evidence from the Asia Pacific region. Journal of Multinational Financial Management, 14(4-5), 387-405.

Fauziah, F. & Iskandar, R. (2015) Determinants of capital structure in Indonesian banking sector. International Journal of Business and Management Invention, 4(12), 36-44.

Frank, Murray Z. and Goyal, Vidhan K. (2009) Capital structure decisions: Which factors are reliably important? Financial Management, 38(1), 1-38.

Handoo, A. & Sharma, K. (2014) A study on determinants of capital structure in India. IIMB Management Review, 26, 170-182.

Indonesia Investments (2017) LQ45 index. Available online: https://www.indonesia-investments.com/finance/stocks-bonds/lq45-index/item6426? [Accessed 7/12/17]

Indonesia Stock Exchange (2018) LQ45 Index Methodology. Available online: http://www.idx.co.id/Portals/0/StaticData/Information/ForInvestor/StockMarketIndicies/FileDownload/LQ45%20Index%20Methodology%20By%20IDX.pdf [Accessed 7/12/17]

Khrawish, H. A. & Khraiwesh, A. H. A. (2010) The determinants of the capital structure: Evidence from Jordanian industrial companies. Journal of King Abdulaziz University: Economics & Administration, 24(1), 173–196.

Kraus, A. & Litzenberger, R.H. (1973) A state preference model of optimal financial leverage. Journal of Finance, 911-922.

Jensen, A. W. (2013) Determinants of capital structure: An empirical study of Danish listed companies. Master thesis. Aarhus University, Business and Social Sciences.

Jensen, M. (1986) Agency costs of free cash flow, corporate finance and takeovers. American Economic Review, 76, 323–9.

Modigliani, F., & Miller, M. (1958) The cost of capital, corporation finance and the theory of investment. The American Economic Review. 48(3), 261-297.

Modigliani, F., & Miller, M. (1963) Corporate income taxes and the cost of capital: A correction. The American Economic Review, 53(3). 433-443.

Myers, S. (1984) The capital structure puzzle. Journal of Finance, 39(3), 575-592.

Myers, S. C. & Majluf, N. S. (1984) Corporate financing and investment decisions when firms have information the investors do not have. Journal of Financial Economics, 13, 187-221.

Noulas, A. & Genimakis, G. (2011) The determinants of capital structure choice: evidence from Greek listed companies. Applied Financial Economics, 21:6, 379-387.

Pahuja, A. & Sahi, A. (2012) Factors affecting capital structure decisions: Empirical evidence from selected Indian firms. International Journal of Marketing, Financial Services & Management Research, 1(3).

Rajan G. R. & Luigi, Z. (1995) What do we know about capital structure? Some evidence from international data. Journal of Finance, 50, 1421-1460.

Scott, H. (1977) Bankruptcy, secured debt, and optimal capital structure. The Journal of Finance, 32(1), 1–19.

ICMEM

Sheikh, N. A. & Wang, Z. (2011) Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan. Managerial Finance, 37(2), 117-133.

Sunarto, H. & Rely, G. (2017) The determinants of capital structure (Indonesia manufacturing companies listed in Indonesia Stock Exchange period 2010-2014). GSTF Journal on Business Review (GBR), 5(2).

Tandya, C. (2015) The Capital Structure Determinants of Indonesia Publicly Listed Firms. iBuss Management, 3(2), 19-27.

Titman, S. & Wessels, R. (1988) The determinants of capital structure choice. The Journal of Finance, 43(1), 1-19.

Utami, S. R. (2012) Determinants of capital structure of firms in the manufacturing sector of firms in Indonesia. DBA thesis. Maastricht School of Management.

Velnampy, T. & Niresh, J. A. (2012) The relationship between capital structure & profitability. Global Journal of Management and Business Research, 12(13).

Viviani, J. (2008) Capital structure determinants: an empirical study of French companies in the wine industry. International Journal of Wine Business Research, 20(2), 171-194.

Warner, J. (1977) Bankruptcy costs: Some evidence. Journal of Finance, 32, 337-34

ICMEM

The 3rd International Conference on Management in Emerging Markets

Financial Literacy and Demographic Factors Impact on Investment towards Undergraduate Students in Bandung

Nathania Kristiana[a*], Ahmad Danu Prasetyo[b]

[a,b]*School of Business and Management ITB, Bandung, Indonesia*

Abstract

For providing income in the future, assets that is now owned can be invest and sold at a higher price compared with the buying price. This effort for obtaining greater amount of assets in the future called investment. Unfortunately, the number of investors in Indonesia is still considered low, means the knowledge of managing their financial resources effectively through investment still poor. For this reason, financial literacy is expected to impact investment. Different previous studies found that financial literacy or demographic factors impact investment. This study combined previous findings and observes how financial literacy and demographic factors could impact undergraduate student to have investment. This research uses quantitative method to collect data using online questionnaire towards undergraduate student from 3 selected colleges in Bandung. Methodology that being used are multiple linear regression to know the impact of financial literacy and demographic factors towards investment. The findings show that financial literacy, monthly income, and working income are significantly impact undergraduate student's investment value.

Keywords: Investment; Financial Literacy; Demographic; Undergraduate Student

1. Introduction

Financial resources have to be managed effectively to make a lifetime financial well-being. Investment can be one of the way to obtain this result. In Indonesia, the investment opportunities are widely open through many investment instruments, but the number of investors that starting to sacrifice their assets for obtaining the greater amount of assets is still considered low. To increase people tendency to start investing, we should know what are the significant factors that impact someone to invest their money for future orientation. Previous studies have found that financial literacy can impact investment (Bhushan, 2014). Other studies showed that demographic factors can impact investment (Aren & Aydemir, 2015). In the other hand, the demographic factors also impact financial literacy (Shaari et al., 2013). Those previous studies were combined and observed in this research, where this research purpose is to find whether the demographic factors that affect financial literacy also give impact to investment, and how financial literacy and demographic factors impact investment. Due to researcher time and place limitation, the scope and limitation of this study are college students at chosen 3 colleges located at Bandung which are *Institut Teknologi Bandung, Universitas Katholik Parahyangan, and Universitas Kristen Maranatha*. The data collected by using online questionnaire started from January – May 2018. It is expected that financial literacy, gender, financial education, year of study, monthly income, and working income impact investment value for this study case.

2. Literature Review

Investment

Investments are sacrificing asset that is now owned with the purpose for obtaining the greater amount of assets in the future (Sharpe, 1999). Individuals subsequent will invest their funds in various instruments of investment such as

---

* Corresponding author.

ICMEM

deposit, common stock / preferred stock, government / corporate bonds, mutual funds, exchange traded funds, real estate, and others. There are some objective of people doing investment that are to enhance current income, save for a major purchase, for retirement, and shelter from taxes (Gitman et al., 2011).

There are many previous studies done to observe the relationship between financial literacy and demographic factors, but not much of them observe the relationship between demographic factors, financial literacy and investment. Some of them construct a separate research to show the relationship with investment. Individuals' gender, financial education, age, and income level (Aren & Aydemir, 2015) can give impact to investment. Some research also conclude that financial literacy can be a factor impacting investment (Bhushan, 2014). Therefore, this research showed the impact of financial literacy and demographic factors to investment.

Financial Literacy

Financial literacy will lead individual knowledge to manage their financial resources effectively also for their financial security (Huston, 2010). To know the financial literacy of someone, we should do a measurement so that we can know their financial literacy level.

The book concept of financial literacy (Hung et al., 2009) set 2 type of measurement which are self-assessment and performance test. The concept was used by many previous studies to measure financial literacy with different operation of test. The strategy that commonly used for measuring financial literacy is measured by performance test with the operation of 10 multiple choices and true/false items (Volpe, Chen, & Pavlicko, 1996). The study content domain mostly measuring financial literacy based on their knowledge and conceptual definition about investment.

A person's financial literacy is influenced by several factors. From studies that have been published, there are many different perspectives that the experts said about the factors affecting financial literacy level. Financial literacy influenced by gender and parental income (Margaretha & Pambudhi, 2015). Age, gender, education, and the year of entering college will affect the financial literacy (Shaari et al., 2013)

Hypothesis

There are 7 hypotheses that were tested in this research:
- H1: There is significant impact between financial literacy and investment
- H2: There is significant impact between gender and investment
- H3: There is significant impact between financial education and investment
- H4: There is significant impact between year of study and investment
- H5: There is significant impact between monthly income and investment
- H6: There is no significant impact between parental income and investment
- H7: There is significant impact between working income and investment

3. Methodology

The data collected by using online questionnaire (Google Forms). The forms were divided into 3 parts which are general information, financial literacy measurement, and investment data. For demographic factors data were collected from general information part. The measurements of financial literacy used the operation of 10 multiple choices and true/false items, included knowledge about risk and return, investment instrument such as stocks, bonds, and the concept of portfolio diversity. From this part, the score of respondents' financial literacy was collected from score 0 to 10. The last part is investment data that were used as the dependent variable.

The research target was undergraduate students from 3 colleges in Bandung which are *Institut Teknologi Bandung, Universitas Katholik Parahyangan, and Universitas Kristen Maranatha,* this is due to researcher limitation of time and place to finished this research. There are 226 qualified respondents used as the research sample. The data will be processed by using Statistical Package for Social Science (SPSS) version 21 software and Microsoft Excel as the data analysis tools.

ICMEM

The methodology that were used for this research are Multiple Linear Regression (MLR). The general purpose of MLR is predicting a dependent variable from several independent variables vary in the level of measurement and type of the variables (Leech, 2005). MLR was run for finding the significant factors of financial literacy and investment. The models have passed validity and reliability test, also classical assumption.

For multiple linear regression, the dependent variable should be continuous variable and the independent variables should be continuous variables, or dichotomous which are called dummy variables. After the data collection, the results of demographic factor were recoded into dichotomous variables. Other variables which are financial literacy was coded as the result of the score itself. The dependent variable (investment) was coded from score 0 to 5, where 0 means that the respondents had not started invest their money to investment instruments, and scale 1 to 5 show that the respondents had started to invest with certain amount. The variables measurement was explained in Table 1.

Table 1. Variables Measurement

Variable	Scales of Measurement	Category	Score
Dependent Variable			
Investment	Ordinal	Have No Investment	0
		Have Investment < Rp.1.000.000	1
		Have Investment Rp.1.000.000 – Rp.4.999.999	2
		Have Investment Rp.5.000.000 – Rp.9.999.999	3
		Have Investment Rp.10.000.000 – Rp.14.999.999	4
		Have Investment > Rp.15.000.000	5
Independent Variable			
Financial Literacy (X_1)	Interval	Score from 0 to 10	0 - 10
Gender (X_2)	Dummy	Male	1
		Female	0
Financial Education (X_3)	Dummy	Have Formal Financial Education	1
		Have No Formal Financial Education	0
Year of Study (X_4)	Dummy	Senior (Year 2015 & below 2015)	1
		Junior (Year 2016 & 2017)	0
Monthly Income Rate (X_5)	Dummy	High Income (Rp.3.000.000 - above Rp.5.000.000)	1
		Low Income (below Rp.1.000.000 – Rp.2.999.999)	0
Parental Income (X_6)	Dummy	Get Income from Parents	1
		Don't Get Income from Parents	0
Working Income (X_7)	Dummy	Get Income from Work	1
		Don't Get Income from Work	0

4. Findings and Argument

The result explained that not all demographic factors that significantly impact financial literacy are also significantly impact respondents' investment. As a result, the significant demographic factors that impact financial literacy is gender, financial education, and year of study, whereas variables that impact investment are financial literacy, monthly income, and working income. The other variables are not significantly impacting investment, so some of the hypotheses were proved wrong. The data analysis was proceeded by SPSS based on the result of value in the significant column (sig.) which is lower than 0.1. The significance level was calculated by using t-test.

Table 2. t-test for Financial Literacy as Dependent Variable

ICMEM

Model		t	Sig.
1	(Constant)	2.577	.011
	Gender (X2)	3.041	.003
	Financial Education (X3)	6.647	.000
	Year of Study (X4)	3.204	.002
	Monthly Income (X5)	-.973	.332
	Parental Income (X6)	.048	.961
	Working Income (X7)	.721	.472

a. Dependent Variable: Financial Literacy

The result of t-test by multiple linear regression that processed with financial literacy as dependent variable and 6 demographic factors as independent variables was described on Table 2. Variables that has sig. value < 0.01 are significantly affecting financial literacy. Table 2 shows that gender, financial education, and year of study has sig. value < 0.01, while monthly income, parental income and working income have sig. value > 0.01 which is not significantly affecting financial literacy. It can be concluded that someone's income and source of income have no direct impact towards their financial literacy.

Table 3. t-test for Investment as Dependent Variable

Model		t	Sig.
1	(Constant)	-1.144	.254
	Financial Literacy (X1)	4.129	.000
	Gender (X2)	1.076	.283
	Financial Education (X3)	.507	.613
	Year of Study (X4)	-.664	.507
	Monthly Income (X5)	3.170	.002
	Parental Income (X6)	.773	.440
	Working Income (X7)	1.743	.083

a. Dependent Variable: Investment (Y)

The same test was done with investment as dependent variable and financial literacy also 6 demographic factors as independent variables (described on Table 3). With the same method, the sig. value was used to show the impact towards investment. In this case, the different result was shown. The demographic factors that have significant impact towards financial literacy, have a total different result with investment, where gender, financial education, and year of study has sig. value > 0.01 indicates as not significantly impact investment. Table 3 shows that monthly income and working income are the demographic factors that has sig. value < 0.01, as well as financial literacy. T-test point that the source of income generated different result regarding the impact to investment, where working income significantly impact investment, unlike parental income that not significantly impact investment.

Based on the statistic results, the hypothesis testing could be proved. From 7 hypotheses that were tested, there are 4 hypotheses that were proved correct and 3 hypotheses were wrong.

- H1 accepted because financial literacy significantly impact investment. It can be concluded that someone that have high financial literacy tend to have investment and have higher value as well.
- H2 rejected because gender not significantly impact investment. Gender has no direct impact towards investment, meanwhile it has significant impact towards financial literacy.
- H3 rejected because financial education not significantly impact investment. Financial education has no direct impact towards investment, meanwhile it has significant impact towards financial literacy.
- H4 rejected because year of study not significantly impact investment. Year of study has no direct impact towards investment, meanwhile it has significant impact towards financial literacy.

ICMEM

- H5 accepted because monthly income significantly impact investment. It can be concluded that someone that have higher income tend to have investment and have higher value as well.
- H6 accepted because parental income is not significantly impact investment. It can be concluded that someone that have income from their parent not tend to have investment for their future.
- H7 accepted because working income significantly impact investment. It can be concluded that someone that have working income tend to have investment for their future and have higher value as well.

5. Conclusions

This study was to observe the impact of financial literacy and demographic factors to investment value. This research combined some previous studies about demographic factors, financial literacy, and investment. Literature of previous studies are being reviewed related to the matter of investment, financial literacy, and demographic factors being used. There are 226 qualified data gathered by using online questionnaire towards undergraduate students from 3 colleges in Bandung which are *Institut Teknologi Bandung, Universitas Katholik Parahyangan, and Universitas Kristen Maranatha*. The methodology that were used for this research are Multiple Linear Regression (MLR).

The findings show the factors that significantly impacting financial literacy not directly affect investment. The factors impacting financial literacy are gender, financial education, and year of study, whereas those factors did not significantly affect investment value. The significant factors that impacting investment value are financial literacy itself and 2 demographic factors which are monthly income and working income. This study found that in order to make the model better, other significant variables impacting investment should be added into future studies.

References

Aren, S., & Aydemir, S. D. (2015). The factors influencing given investment choices of individuals. *Procedia - Social and Behavioral Sciences, 210,* 126 – 135.

Bhushan, P. (2014). Relationship between Financial Literacy and Investment Behavior of Salaried Individuals. *Journal of Business Management & Social Sciences Research, 3(5),* 82 – 87.

Billingsley, R. S., Gitman, L. J., & Joehnk, M. D. (2011). *Planning Your Personal Finance*. China: South-Western, Cengage Learning.

Hung, A. A., Parker, A.M., and Yoong, J.K. (2009). *Defining and Measuring Financial Literacy*. (RAND Corporation Working Paper No. 708). Retrieved from Santa Monica, CA: RAND Corporation website https://www.rand.org/pubs/working_papers/WR708.html

Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs, 44(2)*, 296-316. https://doi.org/10.1111/j.1745-6606.2010.01170.x

Leech, N. L., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for Intermediate Statistics: Use and Interpretation* (2nd ed.). New Jersey: Lawrence Erlbaum Associates

Margaretha, F., & Pambudhi, R. A. (2015). Tingkat Literasi Keuangan pada Mahasiswa S-1 Fakultas Ekonomi. *JMK, 17(1)*, 76–85.

Shaari, et. al. (2013). Financial literacy: A Study Among the University Student. *Journal of Contemporary Research in Business, 5(2),* 279- 299.

Sharpe, W. F., Alexander, G. J., & Bailey, J. V. (1999). *Investments* (6th ed.). New Jersey: Prentice Hall

Volpe, R. P., Chen, H., & Pavlicko, J. J. (1996). Personal investment literacy among college students: a survey. *Financial Practice and Education, 6(2)*, 10. Retrieved from http://maagblog.ysu.edu/financialliteracy/files/2009/03/volpe4.pdf

ICMEM

The 3rd International Conference on Management in Emerging Markets

Identifying the Proper Crowdfunding Design for Entrepreneurs in Indonesia

Jennifer Yusan Changifer[a*], Deddy Priatmodjo Koesrindartoto[b]

*a,b*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10, Bandung 40132, Indonesia

Abstract

A start-up business used to borrow money from bank, venture capitalists, grants, angel investors, financial institutions or any traditional funding to develop their business. This conventional method spent a lot of time and not easy as they are still new on the market. Crowdfunding can be an alternative especially for start-up in term of funding. The rapid advancement technology in supporting crowdfunding to be more happening. Through a website, start-ups can spread a campaign without time and space barrier targeting their prospectus investors to give them funding. The concept of crowdfunding has existed from a long time ago but it appearance in a form of crowdfunding globally has begun since 2003. Followed by the first crowdfunding platform happened in Indonesia 8 years later. This beginning actually not left behind compared by others Asian countries but the development seems being hung up. The early movers could not survive due to poor respond from the market. Whereas, Asian shown a positive headway from time to time.

This study is identified the situation in Indonesia regarding to crowdfunding environment. Then, finding the gap by looking at the crowdfunding practices in European Union and Asian countries and also the role of regulation in crowdfunding. Target of the study is entrepreneur that is why authors focusing the finding on equity and reward-based crowdfunding. So, at the end, the best practice that have found from the implementation in EU and Asian country will lead to a conclusion that mostly a homogeneity among platforms according to the characteristics that being analyzed. At the end, The practices which is successfully implemented by the prior platform can also giving a view for Indonesian crowdfunding start-up and knowledge for all.

Keywords: Start-up; Reward-Based Crowdfunding; Equity-Based Crowdfunding; European Crowdfunding Platforms; Asian Crowdfunding Platform; Crowdfunding In Indonesia

1. Introduction

Over the past decades, economy in Indonesia has enlarged dynamically in spite of the Asian financial crisis in 1997 - 1998 that caused a terrible economic contraction. Through this phenomenon of growth, it has been proved that Indonesia cannot be underestimated as they are also one of the important roles in the global economy (Elias, 2011). In 2016, Indonesia's size of the economy is the largest or twice the size of Thailand with total GDP around $859 billion (IMF, 2015). Solikin M Juhro as the Director of Economic and Monetary Policy at Bank of Indonesia (2015) stated that it has been slowed but still shows positive record on the second half of 2015 but Indonesia's economy will be higher, more inclusive and sustainable. By looking at the number of population, Indonesia is also considered as the most populous country in ASEAN with more than 265 million people and growth of 1.06% yearly (worldometers, 2018). This huge number of population can cause higher competition for people in productive age. In fact, in 2030, Indonesia demography projected a peak of people aged 15-64 which categorized as working age group (Jones,2014). That is why to give solution for unemployment that may increase in the future, Start-up can be an opportunity. Indonesia's governments nowadays are looking to boost the number of start-ups company as it is believed to be an asset of a country. Through this program, hopefully by 2020, Indonesia has a potential to become "The digital Energy of Asia" by successfully issuing 1000 high-tech start-ups. While startupranking (2017) which define rank by the numbers of start-up in each country, state that surprisingly Indonesia is on the third place with 1,559 start-ups. However, building a start-up is not that easy. One of the aspects that they find it difficult is when they have to raise

---

* Corresponding author. Tel.:+62-8788-3969-296

  *E-mail address:*Jennifer.yusan@sbm-itb.ac.id

ICMEM

capital (Cosh, Cumming and Hughes, 2009). Bootstrapping or using their personal, friends or family source of funding will be the first choice. Bank and any other conventional method spent a lot of time and effort in finding investors as they cannot prove their own financing effort for the business (Lam, 2014). Small entrepreneurial firms have another way to secure financing without going through traditional sources (Mollick, 2013). Other Asian, United States, and Europe have formerly had a funding solution for start-ups through crowdfunding. There is some crowdfunding company that has been introduced to this business model in Indonesia but most of them has failed.

This study is conducted to analyze the crowdfunding market in Indonesia by comparing with other countries' development, specifically with the European and Asian market. By using the data which is publically available, including; previous study and crowdfunding platform website analyses. To gather data from the start-up or the fundraiser in the crowdfunding, an online survey is conducted to understand their perceptions and preferences towards crowdfunding. In the end, there will be a propose of best design that may be implemented in Indonesia based on the acquired results.

2. Literature Review

Crowdfunding is a way for entrepreneurs to fund their "projects or businesses with small contributions from large numbers" (Collins & Pierrakis, 2012). In addition, crowdfunding can provide funding to young and innovative firms supporting them to be sustained through job creation and economic growth (OECD, 2013; Haltiwangner et al, 2011; Stangler and Litan, 2009). According to Agrawal, Catalini & Goldfarb (2011, p.4) "Crowdfunding systems enable users to make investments in various types of projects and ventures, often in small amounts, outside of a regulated exchange, using online social media platforms that facilitate direct interaction between investors as well as with the individual(s) raising funds".

Before we go deeper, here some universal definitions of crowdfunding and terms that may relate and beneficial based on (Tomczak & Brem, 2013) There are;
- Crowdfunding: A way for entrepreneurs to fund their "projects or businesses with small contributions from large numbers" (Collins & Pierrakis, 2012). This could be done either online or by physical interactions.
- Crowdfunding model: A way of crowdfunding a project that defines what will be invested, loaned, or donated by funders, and what the funders receive in return
- Payout model: Rules regulating how, when, and if a crowdfunding platform transfers funds to the entrepreneur
- Funder: An individual that funds a project via crowdfunding
- Entrepreneur: The individual looking for investors for their project
- Crowdfunding platform: A website dedicated to raising funds via crowdfunding. Such platforms typically make money by adding a fee to the amount funded.

2. 1.Crowdfunding Project Business Models

Based on Kirby and Worner (2014) classification of crowdfunding models, they divide crowdfunding into two as financial return crowdfunding and community crowdfunding. It is differing by looking at their obligation to give a return of funders or not after they received funding. In another word, Mollick (2014) stated that the difference is about the goals of the entrepreneurs and supporters.

For financial return crowdfunding, it consists of Peer-to-peer lending and Equity-based crowdfunding. Equity and lending based models rely on relatively traditional investment mechanisms. (frydych et al., 2017). Based on Ahlers et al. (2006) article mention the definition of equity-based crowdfunding which is: "Equity crowdfunding is a method of financing whereby an entrepreneur sells equity or equity-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms"

While Social lending/ donation-based crowdfunding and reward-based crowdfunding are all categorized as community crowdfunding. Backers do not receive financial return but non-financial or social return. Donation-based crowdfunding is a type that made donation easier. Through the platform, people who in need can create a campaign whether it was made on their own or helped by others then the philanthropies can transfer their charity through it.

ICMEM

Reward-based are mostly open for creative projects as they will give non-monetary tangible (products) or intangible (reputation) (De Buysere et al., 2012).

2. 2.Previous Research

Blace (2017) have done a research about crowdfunding in China by analysing USA and UK market and also review the regulatory aspects. The researchers conclude that China has an incredible growth in economic and crowdfunding sector whereas brief regulation is needed.

A research *named Crowdfunding as a tool for startups to raise capital: Why and how to use it* by Klaebo and Mauritzen (2015) done an exploratory study to educate the reader about the characteristics differences of crowdfunding. They found out that reward based can be an alternative for raising fund in Norway, equity and loan crowdfunding are often restricted due a regulation constraint and crowdfunders are heterogeneous.

Stefani (2014) identified the crowdfunding in the Italian market using literature review method. The study aim to find opportunities, advantages and risks that should be concerned on investing in a crowdfunding project. As the result, Italy is the first in making the regulation for crowdfunding implementation. An also from the models, reward is the one who get a higher success rate there in Italy.

Neugebauer & Medziausyte (2017) determined factors that influenced the success of equity platform crowdfunding project. They have done an empirical analysis by using both qualitative and quantitative analysis method in case of start-ups and SMEs funded on Europe.

Klocek (2012) contributed to give a suggestion for start-ups in Poland to use crowdfunding effectively. The research title is Crowdfunding as a way of financing start-ups in Poland through literature review and multi-method qualitative study. She found that crowdfunding has developed but has not yet became a regular financing form in Poland

Šoltés and Štofa (2016), studied about the crowdfunding in Slovakia and Czech Republic as they realized the underdevelopment of crowdfunding market there. The methodology that has been used by them is through an active crowdfunding platforms analysis, comparison and distribution.

This research is done with the awareness about the lagging advancement of crowdfunding in Indonesia. The prospect is huge and the Asian market is supportive. Compared to the previous study in other countries, the study about crowdfunding in Indonesia is still rare to find. That is why, looking back with many failures in implementation, besides identifying the situation in Indonesia and best practices in EU and Asia, this research is also supported by a survey that target start-up companies that is owned by a college student to hear their voice. So that, the crowdfunding in Indonesia is not about copying and pasting but truly suitable with the market.

3. Methodology

This study is conducted based on these three steps of data collection, including;
- Literature Review : Current crowdfunding state in Indonesia
- Crowdfunding Platform Comparison: Reward and equity-based crowdfunding platform in European and Asian countries. This platforms analysis is done in order to find the key features of each crowdfunding platform. There are 10 features that is categorized into four sets of relevant variables.
- Reward-based crowdfunding

Table 1. Reward-based crowdfunding variable

Fees	
Initial Fee	Fee that should be paid as listing fee or registration
Platform (Success) Fee	Fee that should be paid when a campaign success in reaching their target
Transaction Fee	Fee of any transaction (credit fee, tax, international payment, etc)
Membership	
Who can raise fund?	Terms & conditions for entrepreneurs and start-ups
Who can invest?	Terms & conditions for investors
Reward Prices	

ICMEM

Reward Prices	Terms of reward return
Campaign Duration	
Campaign Duration	Period of time for start-ups to promote their project
Campaign Goals	
Goal Change Allowance	After the campaign live on the website, is it possible to change the targeted goal or not
Pay-out Policy	How if the campaign is not success on the due date? Keep-it-all or All-or-Nothing
Overfunding Possibility	Possibility of gather an additional funding in the campaign timeframe

- Equity-based crowdfunding

Table 2. Equity-based crowdfunding variable

Fees	
Platform (Success) Fee	Fee that should be paid when a campaign success in reaching their target
Transaction Fee	Fee of any transaction (credit fee, tax, international payment, etc)
Membership	
Who can invest?	Terms & conditions for investor
Who can funding?	Terms & conditions for entrepreneurs and start-ups
Investment amount	
Amount to invest	Minimal and maximal amount of investment
Campaign Duration	
Campaign Duration	Period time for start-ups to promote their project
Campaign Goals	
Goal Change Allowance	After the campaign live on the website, is it possible to change the targeted goal or not
Pay-out Policy	How if the campaign is not success on the due date? Keep-it-all or All-or-Nothing
Company stage to fund	Stage of the company that are allowed to get fund
Overfunding Possibility	Possibility of gather an additional funding in the campaign timeframe

The variables above were taken from platforms' crowdfunding website. To be more precise by looking from the about us, how it works, terms and conditions, and frequently asked questions (FAQ) section. Some particular crowdfunding platforms also responded to the question that was sent through email.
- Online survey
An online survey through questionnaires are conducted as it is able to reach a wide demographic spread and not time consuming. As for the focus on this study, college students who own a start-up company is about to be analyzed is what are their perception and preferences towards crowdfunding. The sample is chosen based on convenience sampling method which is considered to be easier to access by the researcher (S & Given Lisa, 2008). But still, this non-random probability of sampling still reach the respondents that fulfil the criteria and willing to take part on the survey (Dörnyei, 2007).
The sample size determined with Slovin's formula as follows (Simamora, 2004)

$$n = \frac{N}{1+Ne^2}$$

$$n = \frac{20.000.000}{1+20.000.000 \, (0,1)^2}$$

$$n = 96$$

Where:

n = sample size

N = Population

ICMEM

e = margin of error

This research used 90% confidence level, and the margin of is 10%. Using the Slovin's formula, the minimum sample size for this research is 96. The research used 101 respondents to define the start up's preferences according to crowdfunding design.

4. Findings

4. 1. Crowdfunding in Indonesia

Local crowdfunding platforms in Indonesia was established since the beginning of 2011. BursaIde, gagas.web.id, Mari Membantu, Linimas(s)a and Patungan are the example of the initiators (Rahayu,2013). Wujudkan appeared one year after as a platform for creative ideas (techninasia,2015). Followed by modal.in, Kitabisa.com, Ayo Peduli and Gandeng Tangan (Bhawika,2017). Then, Gofund, as the platform which was not only accessible through a website but can also be opened by Facebook (Rosalina, Handojo, & Wibowo, 2012).

Crowdfunding seems suitable with the culture and has a huge potential to expand the market here in Indonesia. Why? There are some factors such as; Indonesian people is known to have high solidarity among others and warm togetherness. It is already believed to run in our blood sunce long time ago. In another word, it has become the identity of Indonesian people (Sari, 2015). In addition, an increase in internet penetration also give some influence. From the technical aspect, crowdfunding offers an interesting mechanism which is easy, cost efficient and accessible for all kind of projects (Rahayu,2013).

However, some of them are already closed down by today. On their official website, Patungan.net released an announcement that they would vacuum their business started from August, 5th 2015. Until today, 2018, there is still no hint that they are going to reopen the business (Rahayu,2013). Wujudkan is the other example of crowdfunding failure in Indonesia. This platform was established in 2012 for creative ideas such as films, comics, and games. This start-up was made by Mandy Marahimin, Dondi Hananto, Wicak Soegijoko and Zaki Sani however at the end of March they planned to close their business. Through their official blog, they stated the reason behind their closing. They said that there was too few number of project that successfully gets funded through their platform. They achieved no more than 12% while they have a bigger operational cost to handle (Pratama,2017).

In Indonesia, financial activities are regulated by Otoritas Jasa Keuangan (OJK) to create one national standard that should be obeyed by all. Specifically talking about crowdfunding, until today, OJK has not released rules regarding terms and conditions of Crowdfunding in Indonesia. They plan to release guiding principle for digital financial service provider including registration mechanism and regulation about crowdfunding.

Through this regulation, OJK wants to show their support for financial technology (Fintech) innovation and establishment in Indonesia. As long as they follow the fundamental values of transparency, accountability, responsibility, and fairness (Novalius, 2018).

Table 3. Indonesian local crowdfunding platforms

6. Crowdfunding Platform	7. Business Model	8. Establishment
9. BursaIde	10. Reward	11. 2011-n/d
12. Patungan	13. Reward	14. 2011-2015
15. Wujudkan	16. Reward	17. 2012 - 2017
18. Kitabisa	19. Donation	20. 2013-now
21. AyoPeduli	22. Donation	23. 2013-2016
24. Gandengtangan	25. Lending	26. 2015-now
27. Modalku	28. Lending	29. 2016-now
30. KoinWorks	31. Lending	32. 2016-now

Source:Author's compilation

4. 2. Crowdfunding in European Union Countries

Zopa is a crowd lending platform based in the UK that established in 2005 and shown as a pioneer of the birth of crowdfunding in Europe (Tasca, 2016).

ICMEM

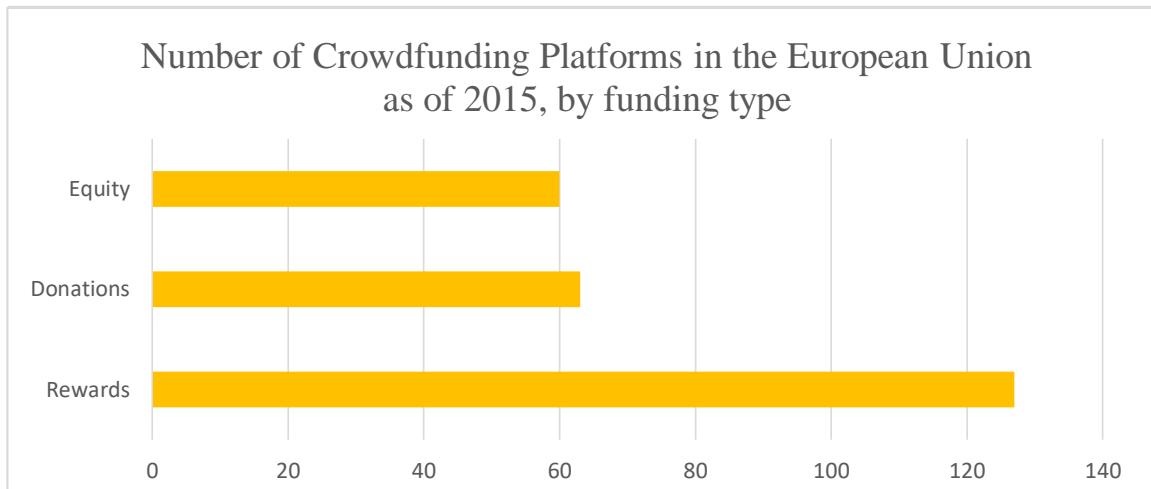Number of Crowdfunding Platforms in the European Union as of 2015, by funding type

Fig. 1. Crowdfunding number in European Union

Based on fig. 1 above, we can see the distribution of crowdfunding type in the EU. Majority of crowdfunding platform is reward-based with more than 120 platforms. Followed by donations and equity- based platform. Both of them stands nearly on the same amount which is around 60 platforms. Data owned by The European Commission (2014) also shows that crowdfunding platforms keep increasing positively. Starting from €445m in 2011, €735m in 2012, and €1bn in 2013.

A report called Current State of Crowdfunding in Europe is a report based on research that conducted by CrowdfundingHub had collected data from 27 countries in Europe regarding crowdfunding situation in their country. The report was made in 2016 and looking from the data back in 2015. At that time, crowdfunding regulation in European countries is still regulated by each country itself. Most of them even do not have specific legal act, they just use alternative or other applicable act. Except, France as the leader of specific crowdfunding regulation implementation.

Starting from March 2018, European Commission declares a proposal for the regulation on crowdfunding providers as a part of the Fintech action plan. This regulation is made to create an easier transaction between investors and entrepreneurs in the European Union area but only applicable for crowdfunding services with the financial return for investors. Which means, investment and lending-based crowdfunding only. Other than that, European Commission also stated that once adopted at EU level, the new regulation will allow platforms to apply for an EU passport based on a single set of rules.

By this proposal, investors will get some benefit according to protection regime and a higher level of guarantees, based on:
- clear rules on information disclosures for project owners and crowdfunding platforms
- rules on governance and risk management
- a coherent approach to supervision
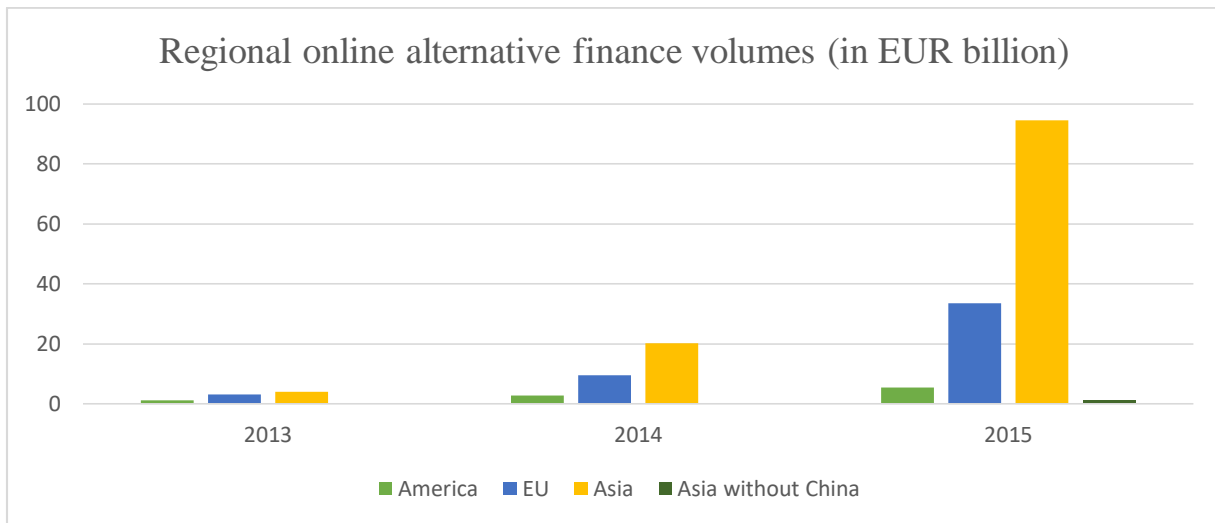
Crowdfunding in Asian Countries

ICMEM

Fig. 2. Number of regional online alternative finance volume (Source: Sustaining momentum, the 2nd European alternative finance industry report, Cambridge Centre for Alternative Finance, September 2016)

Online finance volumes in global significantly jumped in a one-year period. This 2013-2015 data show that Asia has the highest leap with 2290% of development. But if Asian and China data are separated, we can be amazed with the real number of the volume in Asia without including China. China even beat the growth that took place in America and EU. Due to an astonishing economic growth, China becomes as one of the most favorable places for venture capital and private equity firms (Blace, 2017).

From the legal perspective, before 2013, China has a status quo regarding the legislative law of crowdfunding. Then in 2014 Securities Association of China (SAC) communicate a draft for equity crowdfunding regulation and until in December 2016, China had their own official legislation. Specific rules also beneficial in the future as there will be more specific rules that applied (Erdenebileg, 2016). In ASEAN countries, Malaysia is the earliest in releasing crowdfunding regulation. ASEAN also held roundtable meeting in 2017 to deliberate about the findings and recommendations to promote and facilitate equity crowdfunding. As a conclusion, they found out that securities and exchange regulations have to be introduced in a specific way so that the business activity will be safe, supported and more encouraged (ASEAN, 2017)

4. 3.   Analysis of Crowdfunding Platform in Europe & Asia

Equity-based Crowdfunding

Table 4. Equity-based crowdfunding platforms in EU and Asia

	Country	**Platform name**
Asia	Malaysia	Crowdplus asia
	Singapore	FundedHere
Europe	Sweden	Fundedbyme
	United Kingdom	Crowdcube
	Spain	Startupxplore

Fees

When start-ups look for funding through equity crowdfunding, there are some kinds of fees that are charged for the crowdfunding activity, such as; initial fee, platform or success fee, and transaction fee. From all the equity crowdfunding platform on the table, most of them are charged for the initial fee while some of them are only charged if the campaign successfully reach the target. In another side, to be backers are free as they are just required to sign in and they can get the latest update from the company.

ICMEM

They also implement other fee known as transaction and success fee. Transaction fee occurs when the payment activity from investors is made through credit card or using a different currency. While the success fee is taken from the start-ups company after they successfully achieve their company's goal. They are all charged with the percentage so the amount depends on the total funding that start-up companies earn, it varies between 4-7%. This section shows where the platform is getting money from.

Membership

Anyone can invest anywhere; this sentence defines the wide opportunity that is offered by the crowdfunding company. Almost all of them does not restricted that investors must come from the local country but can be anyone from all over the world. In fact, if there are rules that prohibit one or some specific residents of a country to be a part of the crowdfunding it may be because of bilateral relationship between both countries or some agreement. They mostly open for individual or company. Beside regional restriction, there is an age minimum to be an investor which is allowed for everyone over 18. As that age is considered to be legal age and people are already able to do their own responsibility. Another possible requirement is that investors should have the local bank account to make the transaction process easier. Except for FundedHere that specifies criteria of people who are willing to be an investor. As a MAS-licensed crowdfunding platform, they only allow Institutional, Accredited, and Professional Investors.

In fact, the role of technology makes it possible to connect people from the other side of the world to see and support business from far. So, giving a bigger chance for start-ups to get funded from no matter where they are, is truly a bright idea.

Campaign Duration

The campaign is a time for entrepreneurs to exhibit their idea. They have to show interesting side of their products, services or ideas to attract investors. The length of campaign duration all depends and decided by the project owners. They must be consider the target amount they needed and any other aspects. The crowdfunding company only set the minimum and maximum period for the campaign which almost all crowdfunding platform set 90 days as the maximum. Ideally, the campaign suggested by the crowdfunding platform to hold it about 30-60 days and not exceed of 90 days. The longer the campaign duration is the less effective it will be.

Campaign goals

All of these crowdfunding platforms agrees on the goal change allowance rules. Once entrepreneur set their target and publish their campaign, they are not able to change it. It is because of the accountability and trustworthy matters towards the investors. Entrepreneurs should make sure that the goal is correct

Regarding what will happen after the campaign successfully achieving their goals before the campaign period ends, all of the crowdfunding platform giving them options to finish the campaign or continue it and get overfund. Overfund here means that they still can get additional investment from the investors. Moreover, if the campaign fails, All-or-nothing scenario is taken by 4 platforms except for crowdplus.asia. They have an underfunded campaign policy which if the campaign hits >80% of its target they will have access to the funds and closed the campaign but if it does not reach 80%, entrepreneurs get options to continue or stop the campaign. Both of the options are good and able to motivate the entrepreneurs to present their best as if the project fail on achieving the target they will not gain the expected target.

Reward-based Crowdfunding Platform

Table 5. Reward -based crowdfunding platforms in EU and Asia

	Country	Platform name
Asia	South Korea	Tumblbug
	Malaysia	Mystartr
Europe	Italy	Derev
	France	Ulule
	Ireland	Fund It

Fees

Fees that are charged on the reward based crowdfunding is kind of similar with the equity based.

Membership

ICMEM

Everyone has the same opportunity to be backers as both of this European and Asian crowdfunding platform. They are open to people without age and nationality barrier. It can also come from individual, private body or company as long as they sign up to be the member of the crowdfunding investors.

Reward Prices

This is the main different part between reward and equity-based crowdfunding. The reward is given by the entrepreneurs to investors who already support their projects. Reward crowdfunding platform is mostly used for creative industry such as games, music, art, book, films and so on. That is why the form of the return on investment is mostly unique like a pre-order items and movie screening tickets. They are not allowed to give a voucher or any financial rewards.

Campaign Duration

The campaign is varying some set minimum days starting from one while the rest the minimum days are 7. The maximum also diverse in between one to three months. All of the crowdfunding platforms states that the success rate of the long campaign is lower than the one that has average duration. They recommend 30 to 45 days as the most effective one.

Campaign goals

All of the crowdfunding company agree that once the entrepreneurs launch their campaign they are not able to edit or make any change. Maybe some of them still let the entrepreneurs to make changes in some information but not the set target.

When the campaign successfully reached their target every platform implemented all-or-nothing concept which means the investors' money are charged only if the campaign successfully reach their target, if they are not able to make it so, the money will not be taken from them. But, the Italian crowdfunding, Derev, they adopt other concept which is called Keep-it-all. The investors' contribution that is collected during the 90 days' campaign will still be charged even though their objective is failed to be achieved. Both of this options are chosen by the project creator during their campaign planning. This one is applied for a campaign that still possibly run without reaching the targeted amount. In contrast, if the campaign received their funds before the deadline, all of the platforms allow them to get an extra funding.

Online Survey through Questionnaire

The survey is divided into 5 sections, there are; **respondent profiles** (age & demography), **profile of the start-up** companies (industry, location, motivation, year of establishment, start-up business stage, business development activity), **crowdfunding familiarity** (aware & knowledge), **start-up current source of funding** and **crowdfunding scheme** that expected by the start-ups.

Respondents' Profiles

The survey successfully collected 101 responses from Indonesian college students who own a start-up business with the majority of people in between 18-22 years old. But it does not close the possibility for them who have not reach 18 or more than 22 years old. The sample is gathered from students all over Indonesia from both state and private university.

Profile of the Start-up Companies

Start-up profiles are used to map the background of the respondents' business. Looking at the industries, it varies but more than sixty percent is creative industry including; fashion, culinary, music, etc. Followed by education, marketing/branding and transportation/ logistic. Almost all of the business domicile are influenced by their university location, that is why Bandung is still dominant continued by Jabodetabek.

Even though they are still young and have not finished their study yet, most answered that they started the business this early based on their own will while the rest is because of taking the opportunity, coursework or family/friends encouragement.

Most of them has established in less than 1 year and between 1 until 2 years which can be considered as new. However, the business stages are varying, from pre-seed to series B. More than 75% of the respondents' business monthly income does not achieve 5 million IDR as their monthly income. The organization on their start-up business are also still in a simple form that only consist of 1-3 people.

ICMEM

To support their start-up development, one-third of the entrepreneurs do not attend any development program while the rest are attending. Looking at the frequency of the answers most of them answered once while those who have attend the program 1-3 times and more than 3 times in a year are distributed evenly.

Crowdfunding Familiarity

For this section of the survey, Author is about to find out how well entrepreneurs as the respondents are familiar with the definition of crowdfunding. There are two questions are in this part that aims to know if they have heard about crowdfunding or not and to check its validity, the second question is to test their knowledge about the definition of crowdfunding.

The term is:
- If they never heard about crowdfunding – they must answer the wrong answer or else, they are just lucky to pick the right one
- If they have heard but still do not know the different with other funding method (aware) – it is possible for them to answer both right or wrong answer
- If they know but never use it and they who have use it already – they have to answer it correctly

Then, the results showed up that crowdfunding is not really a new thing for new start-up owner in Indonesia. Only one-fifth that stated they do not know and chose the wrong answer, means that the bigger part shows that they at least have heard about it or even know and have used it already. The thing is, those who are already aware with the existance of crowdfunding still have a wrong definition on their mind. Majority of respondents still cannot distinguish crowdfunding definition with angel investors and venture capital.

Start-up Current Source of Funding

Start-up business are known to consume a lot of money especially on their early formation. Including research and development, market testing and so on. Most of the business are still covered by their own or family, it is answered almost by 75% of the respondents. 13% are shared with their business partner, 5% use grant funds and 2% are through angel investor and venture capital. From their aspiration, ease, low risk, and not finding the right investor yet are the reasons behind why they use that kind of funding resources. Then move to the next question which is asking about their additional fund for business development, more than 57.8% need less than Rp50.000.000 but 10% need more than Rp200.000.000. The result shows a high number of fund that entrepreneurs needed to spend more but it could be difficult if they just depend on personal source of funding.

Expected Crowdfunding Scheme

To identify what kind of crowdfunding that are favourable for the entrepreneur, they can choose based on the kind of return. Which is; capital and interest also known as lending-based, equity based with share as a return and reward based for non-financial return. The survey result has resulted to pick share as majority followed by capital and interest and reward. So from 101 respondents, we can conclude that 41 entrepreneurs prefer equity-based crowdfunding as they choose shares as a return on investment. It also makes sense as the equity-based scheme is more familiar in Indonesia compared with reward-based.

From the given scheme, they choose no initial fee, low platform fee, high target limitation, early stage is not allowed. The survey gives three options of campaign duration, they are: less than 30 days, between 30-60 days, and maximum in between 60-90 days. More than 50% of the respondents are preferred to have a moderate campaign duration which is 30-60 days. When a campaign has successfully reaches the target, there are a possibility for entrepreneur to add more of their target amount as long as the campaign period has not over yet. Almost 80% or majority of the entrepreneurs agree to allow overfunding and the rest choose no. As an investor on a project, entrepreneur can give an opportunity for them to not just help from financial aspect but also can give a chance to involve more. Almost three fourth of the respondents agrees by answering yes.

5. Conclusion

Indonesia is not late-comers on starting the crowdfunding business. Crowdfunding has started in 2011 which is on the same year with the establishment in China. The popular crowdfunding types that are currently implemented in Indonesia donation and lending-based crowdfunding. Crowdfunding concept actually aligns with Indonesian culture and identity but people still does not understand about it. This is what makes crowdfunding can successfully operate
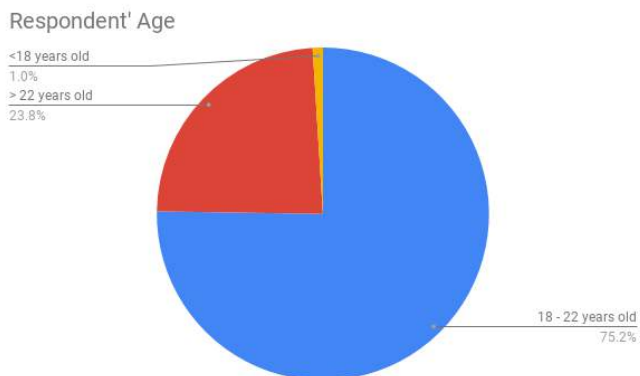
ICMEM

in other countries but not here in Indonesia. The scheme that is ongoing here are also mostly based on copy and paste which can be not suitable with the market and will lead to failure.

Regulation is important especially to create a specific regulation about equity-based crowdfunding. To give a protection for investor and safety transaction, OJK should ratify the regulation for Indonesia as soon as possible. For reward based, as the relationship is contractual they only need agreement for both investors and entrepreneurs.

From looking at the scheme that is used in the crowdfunding platform based in European Union and Asian countries, they mostly agree on the same principal or in another word they can be categorized as homogenous. They have all applied the same kind of fees but difference in apparent on the percentage. They applied all-or-nothing and some still open a possibility for Keep-it all. Overfunding is permitted but not for goal changing allowance. For campaign duration, the standard duration is about 30-45 days which is considered as the most effective time period. This scheme has to lead a success for them and hopefully can be used as a guideline for Indonesian who are willing to start the crowdfunding start-up business and to increase the familiarity of Indonesian people related to crowdfunding issue.
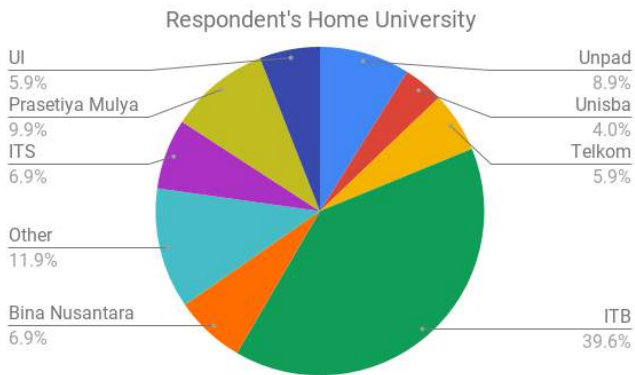
Meanwhile, these young entrepreneurs' surveys had come into a conclusion. Indonesia entrepreneurship is emerged as almost 70% of the respondents build the start-up company based on their self-willed motivation. They come from diverse cities in Indonesia but the majority comes from Jabodetabek and Bandung. The business is still considered to be freshly established that mostly are less than 1 year or in between 1-2 year. It is also relatable to their monthly income which almost 75% have not reach 5 million IDR as their monthly income while they need quite much of additional fund. Based on these 101 entrepreneurs, crowdfunding actually is not new for them as most of them have heard about it but there is still a misinterpretation. Regarding the crowdfunding models, equity-based are the most chosen scheme as they prefer a financial return to their investors. They prefer 30-60 days of campaign period, no initial fee, low platform fee, high target limitation, early stage is not allowed, allow overfunding and give more right for investors to participate. Looking at the EU and Asian implementation, these young entrepreneurship preferences are still relatable. But again, the crowdfunding design cannot just take from others and paste but should be in line with the regulation that applies.
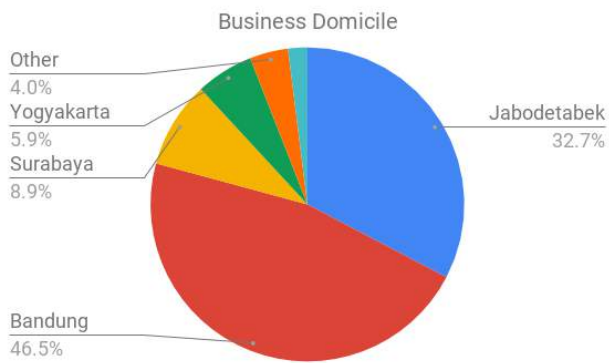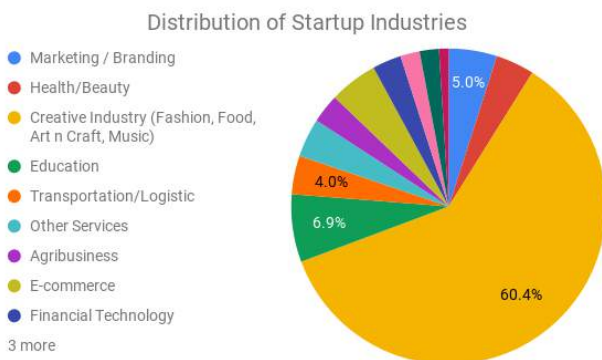
Appendix A. Entrepreneurs' Age

ICMEM
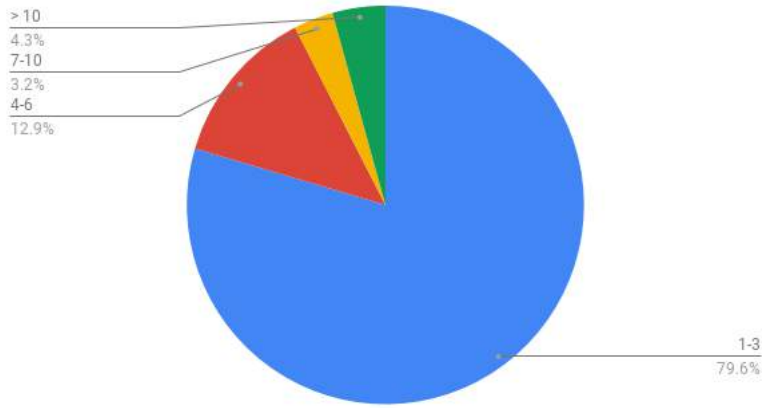
Appendix B. Entrepreneurs' Home University

Respondent's Home University

- UI 5.9%
- Prasetiya Mulya 9.9%
- ITS 6.9%
- Other 11.9%
- Bina Nusantara 6.9%
- Unpad 8.9%
- Unisba 4.0%
- Telkom 5.9%
- ITB 39.6%

Appendix C. Start-ups' Profiles

Business Domicile

- Other 4.0%
- Yogyakarta 5.9%
- Surabaya 8.9%
- Bandung 46.5%
- Jabodetabek 32.7%

Appendix D. Start-ups' Industry

Distribution of Startup Industries

- Marketing / Branding
- Health/Beauty
- Creative Industry (Fashion, Food, Art n Craft, Music)
- Education
- Transportation/Logistic
- Other Services
- Agribusiness
- E-commerce
- Financial Technology
- 3 more

5.0%, 4.0%, 6.9%, 60.4%

Appendix E. Start-ups' Number of Employees

ICMEM

Number of Employee(s)

> 10
4.3%
7-10
3.2%
4-6
12.9%

1-3
79.6%

Appendix F. Entrepreneurs' Motivation

Motivation behind building a Start-up

Family/Friend Encouragement
8.8%
Coursework Encouragement
8.8%

Take the opportunities
13.7%

Self-willed
68.6%
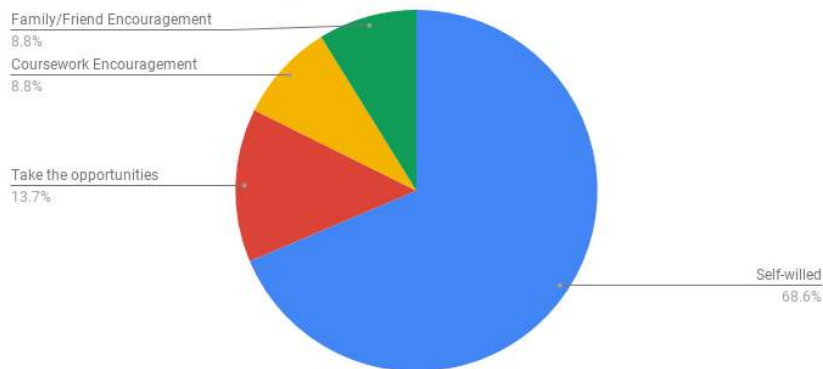
Appendix G. Start-ups Stages of Fund

Startup's stages of fund

Series B
13.7%

Pre-Seed
27.5%

Series A
22.5%

Seed-Funding
36.3%
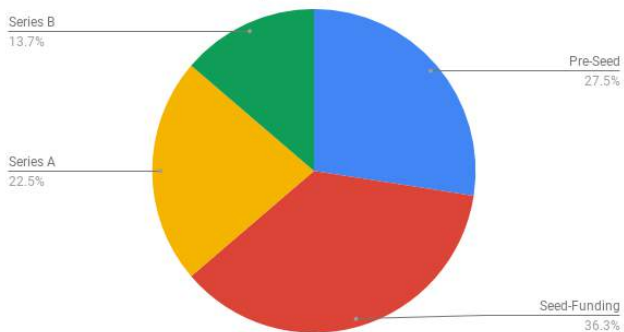
Appendix H. Start-ups Monthly Income

ICMEM
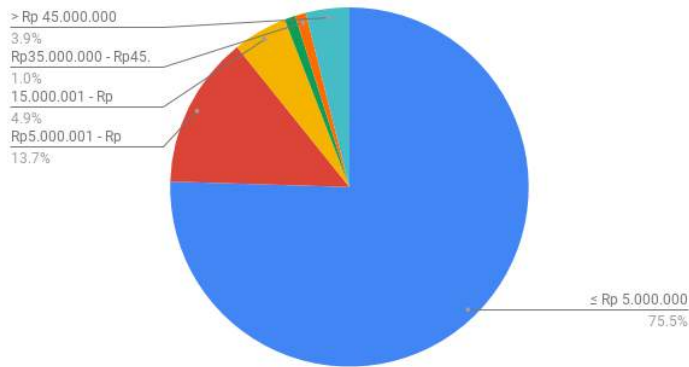
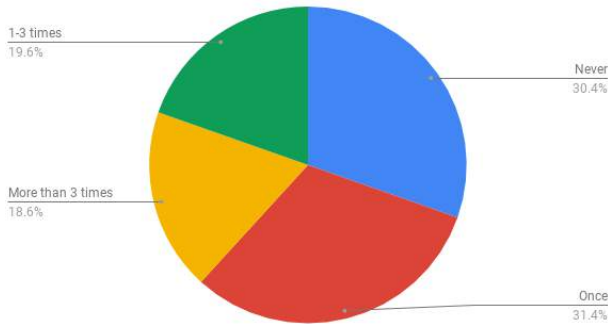**Appendix I. Start-ups Year(s) of Establishment**
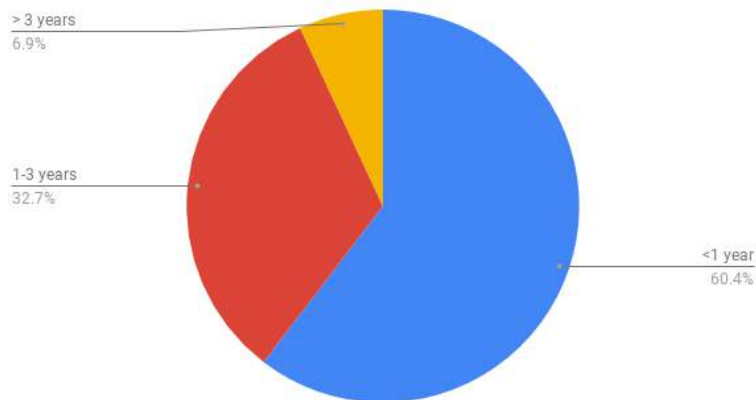
Appendix J. Start-ups Development Activity
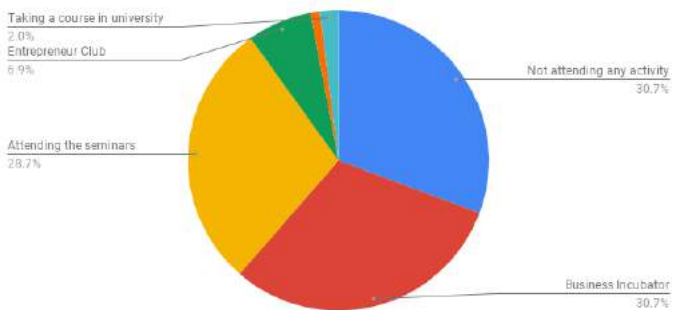
Appendix K. Start-ups Development Activity Frequency

ICMEM

Frequency of the development activity
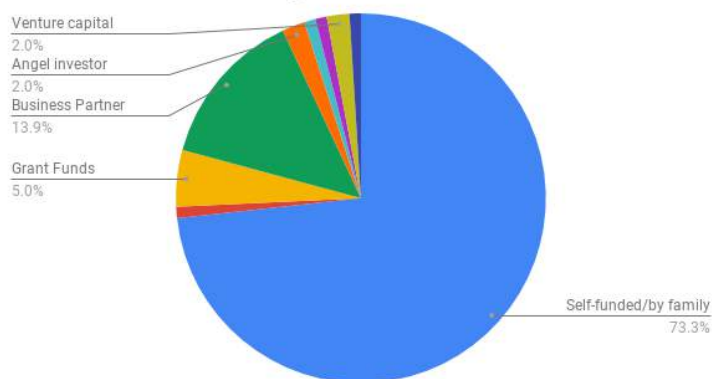
- 1-3 times 19.6%
- Never 30.4%
- More than 3 times 18.6%
- Once 31.4%

Appendix L. Entrepreneurs' Familiarities towards Crowdfunding

Crowdfunding Familiarities

- Use - Right Answer 8.9%
- Don't Know - Wrong 18.8%
- Aware - Right Answer 14.9%
- Aware - Wrong Answer 21.8%
- Know - Right Answer 35.6%
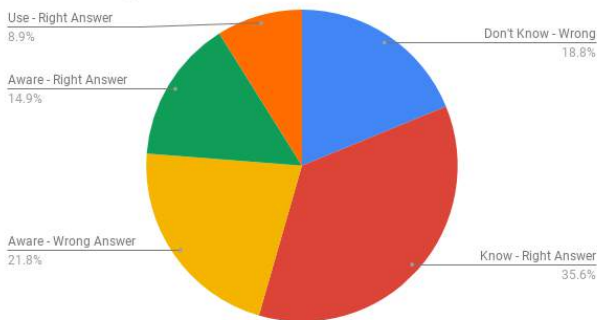
Appendix M. Start-ups Current Source of Funding

Current Source of Funding

- Venture capital 2.0%
- Angel investor 2.0%
- Business Partner 13.9%
- Grant Funds 5.0%
- Self-funded/by family 73.3%

Appendix N. Additional Fund Needed by Entrepreneurs

ICMEM

Additional fund needed

- Rp150.000.001 - 1.2%
- Rp50.000.000 - Rp100. 24.1%
- Rp100.000.001 - 6.0%
- > Rp 200.000.000 10.8%
- < Rp50.000.000 57.8%
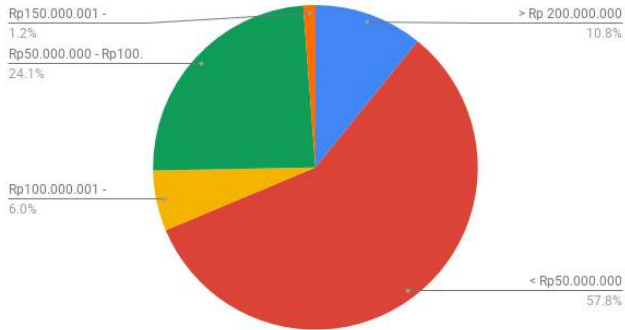
Appendix O. Crowdfunding Scheme Preferences

Scheme Preferences

- Scheme 3 20.8%
- Scheme 4 11.9%
- Scheme 2 18.8%
- Scheme 1 48.5%
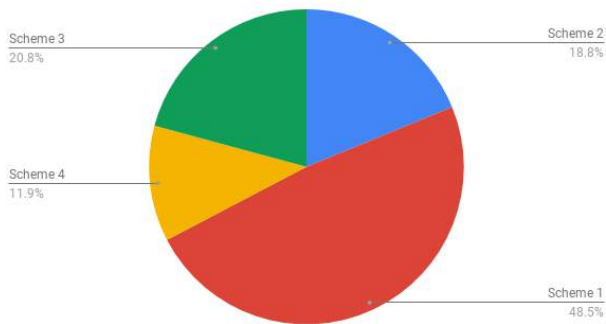
Appendix P. Campaign Duration

Campaign Duration

- 30-60 days 57.4%
- ≤ 30 days 15.8%
- 60-90 days 26.7%
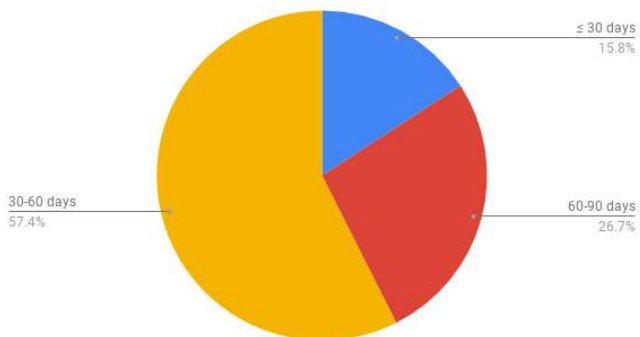
ICMEM

Appendix Q. Overfunding Possibility

Overfunding possibility

Not allow
22.8%

Allow
77.2%
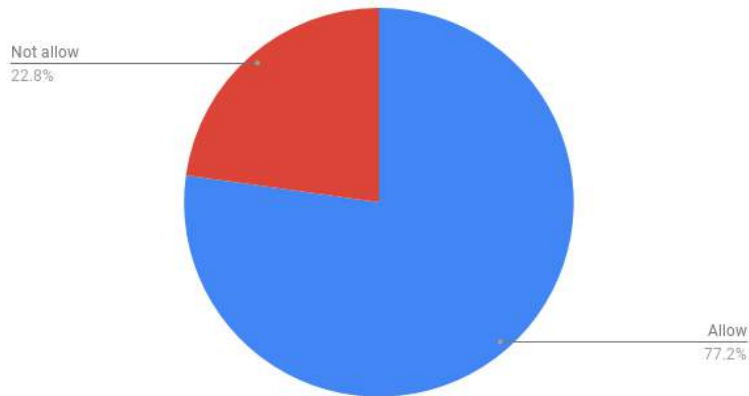
Appendix R. More Rights to Investors'

More Rights to participant for Investors

No
25.7%

Yes
74.3%
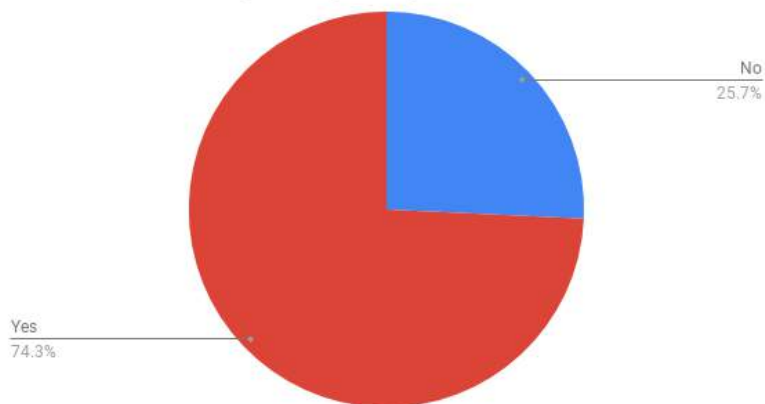
Appendix S. More Rights to Investors'

Crowdfunding type preferences

Reward
20.5%

Share
41.0%

Capital and Interest
38.5%
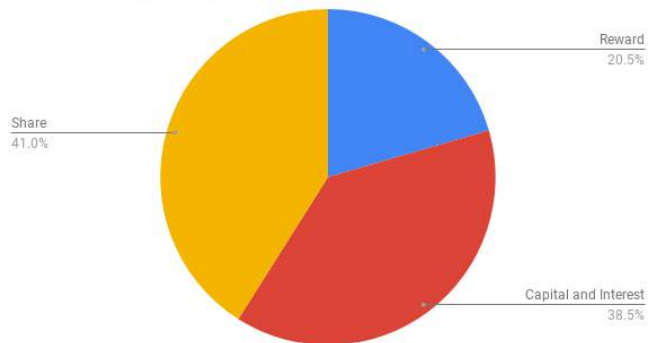
ICMEM

References

1000startupdigital. (2018). *faq*. Retrieved from 1000startupdigital.id: 1000startupdigital.id/i/faq

(2018). Retrieved from crowdplus.asia: https://www.crowdplus.asia/

(2018). Retrieved from fundedhere.com: fundedhere.com

(2018). Retrieved from fundedbyme.com: fundedbyme.com

(2018). Retrieved from crowdcube.com: crowdcube.com

(2018). Retrieved from startupxplore.com: startupxplore.com

(2018). Retrieved from tumblbug.com: tumblbug.com

(2018). Retrieved from mystartr.com: mystartr.com

(2018). Retrieved from derev.com: derev.com

(2018). Retrieved from ulule.com: ulule.com

(2018). Retrieved from fundit.ie: fundit.ie

Asia News Monitor. (2016, August 01). Indonesia: Indonesia`s economy improves: Bank of indonesia. Bangkok, Bangkok, Thailand.

Bhawika, G. W. (2017). Risiko Dehumanisasi pada Crowdfunding sebagai Akses Pendanaan Berbasis Teknologi di Indonesia. Jurnal Sosial Humaniora, 10(1).

Blace, M., & Grubisic, A. (2017). Crowdfunding in China - Development Perspectives . Economic and Social Development: Book of Proceedings (pp. 188-196). Melbourne: Varazdin.

Borello, G. P., De Crescenzo, V. P., & Pichler, F. P. (2015). The Funding Gap and The Role of Financial Return Crowdfunding: Some Evidence From European Platforms. Journal of Internet Banking and Commerce (pp. 1-20). ottawa: Array Development.

Charting Indonesia. (2018). Charting Indonesia's Economy, 1H 2018. Pathum Thani: ChartingEconomy.com.

Cosh, C. H. (2009). Outside Enterpreneurial Capital. Economic Journal, 119(540).

DailySocial id. (2014, January 9). AyoPeduli Diluncurkan Ulang, Ajak Lakukan Aksi Sosial Lewat Konsep Crowdfunding. Retrieved from dailysocial.id: https://dailysocial.id/post/ayopeduli-relaunching-ajak-pengguna-melakukan-aksi-sosial-lewat-konsep-crowdfunding

De Buysere, K. G. (2012). A framework for European crowdfunding.

Dörnyei, Z. (2007). Research methods in applied linguistic. New York: Oxford University Press.

Erdenebileg, Z. (2016). Better Together: The Potential of Crowdfunding in China . China Business Review.

Freischlad, N. (2015, May 1). Five crowdfunding sites in Indonesia. Retrieved from techinasia.com: https://www.techinasia.com/crowdfunding-future-indonesia-crowdfunding-sites

Gedda, D., Nilsson, B., Såthén, Z., & Søilen, K. S. (2016). Crowdfunding: Finding the Optimal Platform for Funders and Entrepreneurs. Technology Innovation Management Review. 6, pp. 31-40. Ottawa: Talent First Network.

Gerrit K.C. Ahlers, D. C. (2006). Signaling in Equity Crowdfunding. University of Colorado Boulder.

Irfan, M. (2016). Crowdfunding sebagai Pemaknaan Energi Gotong Royong Terbrukan. Social Work Journal, 6, 1--153.

Jones, G. W. (2014). The 2010 – 2035 Indonesian Population Projection Understanding the Causes, Consequences and Policy Options for Population and Development. Sinfapore: UNFPA.

Kirby, E. a. (2014). CrowdFunding: An Infant Industry Growing Fast.

Michal Šoltés, T. Š. (2016). Crowdfunding – The Case of Slovakia and the Czech Republic . Quality Innovation Prosperity. 20. Trencin.

Mollick, E. R. 2013. The Dynamics of Crowdfunding: An Exploratory Study. Journal of Business Venturing, 29(1): 1–16.

Mollick, E. (2014). The Dynamics of Crowdfunding: An Exploratory Study," Journal of Business Venturing.

Muthmainah, D. A. (2018, April 11). OJK Rilis Aturan Equity Crowdfunding usai Uji Coba Fintech. Retrieved from CNN Indonesia: https://www.cnnindonesia.com/ekonomi/20180410200753-78-289827/ojk-rilis-aturan-equity-crowdfunding-usai-uji-coba-fintech

Novalius, F. (2018, January 18). OJK Segera Rilis Aturan Terkait Crowdfunding. Retrieved from okezone.com: https://economy.okezone.com/read/2018/01/18/320/1847102/ojk-segera-rilis-aturan-terkait-crowdfunding

OECD. (2013). Technology and Industry Scoreboard 2013: Innovation for Growth, Organisation for Eco- nomic Cooperation and Development.

Paolo Tasca, T. A. (2016). Banking Beyond Banks and Money: A Guide to Banking Services in the Twenty-First Century. Springer.

Phuc, L. (n.d.). How to start a company? Analysis of three start-up companies in Finland: ClipMe , JerryBag and Tutor Tigers. Arcada.

Pratama, A. H. (2017, February 16). Pelajaran yang Bisa Dipetik dari Tutupnya Situs Crowdfunding Wujudkan. Retrieved from techinasia.com: https://id.techinasia.com/pelajaran-dari-tutupnya-situs-crowdfunding-wujudkan

Preston, J. (2014, October 20). How Marillion pioneered crowdfunding in music. Retrieved from virgin.com: https://www.virgin.com/music/how-marillion-pioneered-crowdfunding-music

ICMEM

Putra, J. S. (2011, April 4). BursaIde.com, The First Indonesian Crowdfunding Site. Retrieved from techinasia.com: https://www.techinasia.com/bursaide-com-the-first-indonesian-crowdfunding-site

Rahayu, C. (2013). Penggalangan Dana Model Crowdfunding di Indonesia. Universitas Indonesia.

Rosalina, H. A. (2012). Aplikasi Crowdfunding Sebagai Perantara Gita Widi Bhawika 58 - JSH Penggalangan Dana Berbasis Website dan Facebook Application. (pp. 1-5). Komputer, 2(Jaringan Komputer).

S, K., & Given Lisa, M. (2008). Convenience Sample. Dalam In The SAGE Encyclopedia of Qualitative Resarch Methods . Thousand Oaks, CA: Sage.

Simamora, B. (2004). Riset Pemasaran. Gramedia Utama.

Stephen Elias, C. N. (2011, December). The Growth and Development of the Indonesian Economy. Bulletin.

Tomczak, A., & Brem, A. (2014). A Conceptualized Investment Model of Crowdfunding. Venture Capital : an International Journal of Entrepreneurial Finance, 15, 335-359.

Trading Economics. (2018, June). Indoneisa Unemployment Rate. Retrieved from tradingeconomics.com: https://tradingeconomics.com/indonesia/unemployment-rate

worldometers. (2018). Retrieved from worldometers.info: http://www.worldometers.info/world-population/indonesia-population/

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants of Bank Capital Structure and Adjustment Speed: Evidence from Indonesian BUBA3 and BUBA4 Banks (Case Study: Period 2008-2017)

Randy Perdana Lawrentius[a*], Achmad Herlanto Anggono[b], Atika Irawan[c], Imlati Helmi[d]

[a,b,c,d]School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10 Bandung 40132, Indonesia

Abstract

This paper provides the empirical evidence of the bank capital structure determinants and the adjustment speed to reach the capital structure target in Indonesian Commercial Banking categorized as BUBA3 and BUBA4 during the period between 2008Q1 until 2017Q4. The method used is panel data regression with two distinct stages of estimation using Estimated Generalized Least Squares. Standard determinants and bank-specific determinants of capital structure variables are used in this study with capital adequacy ratio held in voluntary buffer as dependent variable. The result shows that lagged size, lagged profitability, lagged growth opportunity, lagged asset risk from standard determinants have significant relationship toward capital structure. In bank-specific determinants, lagged credit risk in loan loss provision, lagged liquidity risk, lagged asset risk in risk-weighted assets, lagged efficiency and lagged earnings in return on equity show significant relationship toward capital structure. Indonesian BUBA3 and BUBA4 Commercial Banks have target capital structure and made adjustment towards the target within 16 quarters or four years with the speed of adjustment is 25% quarterly, which means one-fourth of the gap in optimal capital structure were closed within two quarters.

Keyword : Capital Structure; Bank, Capital Adequacy; Trade-off Theory; Pecking Order Theory; Adjustment Speed; Partial Adjustment Model

1. Introduction

There are two types of funding to run a company: Equity and Debt. Equity funding can be from shareholders/owners while debt funding is from third party. However, funding through equity encountered problems such as limited source of fund from owners or else requirements from capital market's authority that must be fulfilled if a company wants to offer its equity to public (Bougatef & Chichti, 2010). Meanwhile, funding through debt has several advantages. Tax shield is one of the advantage that can lower company's taxes cost and eventually will increase a company's profitability and its value (Tanimura, 2001); (Brealey et al., 2014).

In line with increases in proportion of debt used, risk also increases thus may led a company into a financial distress condition (Altman & Hotchkiss, 2006); (Narongtanupon, 2000); (Bar-Or, 2000); (Chen & Merville, 1999). Therefore, the existence of trade-off between cost and benefit in the preference between debt and equity challenge the decision of company's capital structure. A company's debt proportion in capital structure may vary from 0 to 100%, from unleveraged firm to full leveraged firm. This proportion varies between industries, even in a kind of similar industry, indicating there is no general rule that set each company capital structure (Hardiyanto et al., 2014). In their study between period 2007 and 2012, there were no difference pattern in capital structure of Indonesian Capital Market firms, except financial industry with relative consistent on its capital structure. Tangvongchai (2012) found that ASEAN banks, especially Indonesian banks held the highest and lowest excess amount of capital adequacy ratio from regulatory requirement of 8% at 11.74% and -0.55% respectively. Banks are well-known regulated and supervised, one of the regulation is banks are obliged to hold a minimum of 8% capital ratio in relative to their risk weighted

---

* Corresponding author.

E-mail address: randy.perdana@sbm-itb.ac.id

ICMEM

assets. Otherwise, violation in this rule might invite supervisory immediate intervention or notice to increase capital held.

Although there is a rule regarding minimum capital to hold, banks decision in their capital structure is important. Banks assets, which is mainly loans may decrease in value when borrowers are unable to pay back their obligation, whether in the form of interest or principal (Demirguc-Kunt & Detragiache, 1997) and in consequence, banks may decrease in value instead of increase. Anggono (2017) mention that during global financial crisis in 2007 to 2008, Bank Century was bailed out by Indonesian Deposit Insurance Corporation amount at IDR 6.7 Trillion due to negative capital adequacy ratio. Meanwhile, three state-owned banks were injected additional capital each IDR 5 Trillion by Indonesian Government to increase liquidity and systemic risk anticipation (Indonesia, 2010). Banks are subject to regulatory capital requirement in control of financial distress. However, Indonesian BUBA3 and BUBA4 banks show average 17.43 % capital adequacy from 2008 to 2017, which is around twofold that of 8% capital requirement by regulatory. Figure 1 present the gap between capital adequacy ratio held and minimum required level.
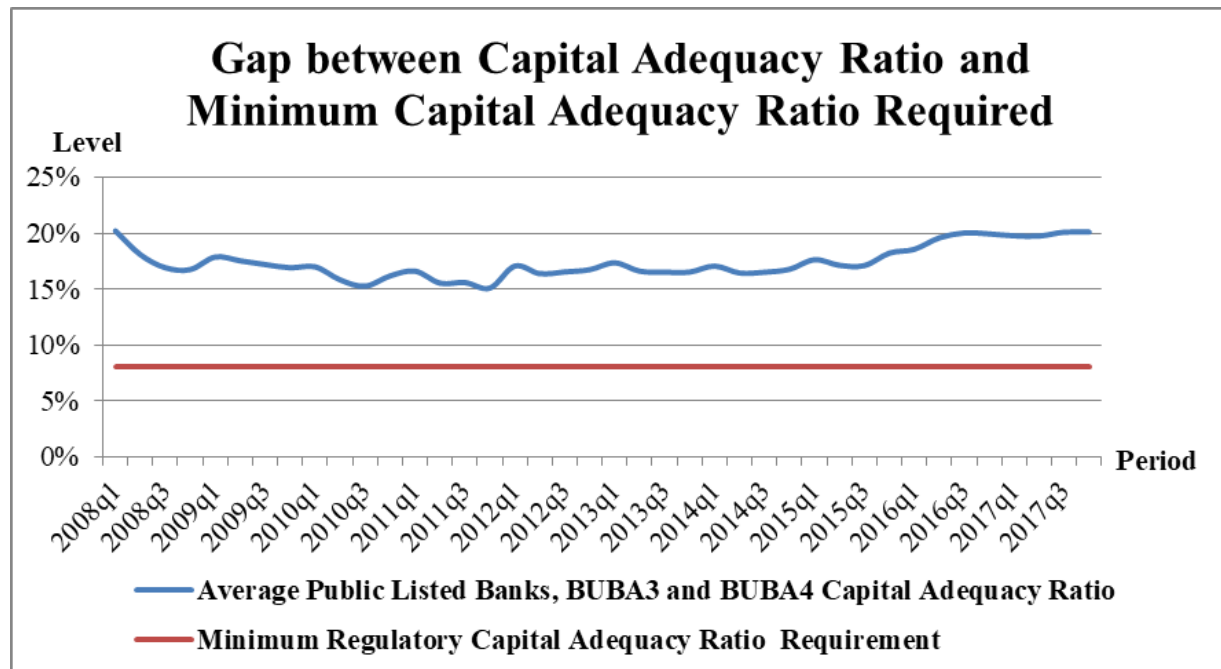

Figure 2   Capital Adequacy Ratio Graph (Source: Graph Processed by Researcher)

As can be seen in Figure 1, the gap between minimum capital ratio requirement and capital ratio held by Indonesian banks categorized as BUBA3 and BUBA4 suggests that minimum capital adequacy ratio required might not binding banks capital structure decision. Like any other industries, banks also experience tax shield advantage from debt proportion. As mentioned before, overusing debt might cost banks in financial distress, accordingly banks may need to set their capital structure proportion that maximize the benefit in tax shield and minimize the cost of financial distress. Berlin (2011) and Memmel & Raupach (2010) suggest that in order to balance the benefits and costs of increasing the capital level, banks should chose a target of capital ratio. Two conflicting goals that banks face in capital ratio decision by using more debt to maximize return and at the same time the capital ratio can't be too low to avoid disadvantageous intervention from supervisory (Memmel & Raupach, 2010). The approach of optimal/target capital structure is the expected optimal/target capital structure will be form in next period of depends on current firm's financial condition (Kayhan & Titman, 2007); (Hovakimian, 2004) with a model called partial adjustment model that allow to know the attempt of banks in adjusting their capital structure and how fast is the adjustment speed.

ICMEM

Accordingly, the existence of gap in capital adequacy ratio and minimum capital adequacy ratio required consistently and capital structure relevance motivate researcher to investigate bank capital structure with research questions as follow:

- What current standard and bank specific financial condition that determines banks target/optimal capital structure for the next period?
- Do banks have target level of capital ratio or they just fluctuate randomly, driven by only stochastic shocks without tendency to a mean and predicted?
- If there exist target capital ratio, what is the banks average speed of adjustment?

Previous studies in capital structure literatures often exclude bank as the sample. This study will enrich capital structure literatures and increase bank's capital structure comprehension. This study also may benefit academics, bank managers and investors to certain extent.

2. Literature Review

According to Laux (2011), capital structure is a mix of debt and equity that used in funding a company's assets. Capital structure is an important issue for a company because it has direct impact on financial condition and financial risk of a company. Modigliani & Miller (1958) proposed a theory that a company's capital structure did not have impact on company's value, later on referred as irrelevant theory of capital structure. It propose firm's capital structure is not influenced by its capital cost which led to there is no existence of optimal capital structure. None the less, Brealey & Myers (2003) stated that in reality, there is always asymmetric information, taxes, cost of transaction, and difference in interest rates thus rising complexity and variation in capital structure, contrary to Modigliani and Miller (1958) constraints assumptions. Critics over critics regarding irrelevant capital structure theory by Modigliani and Miller (1958) result in two new theories that eventually referred as Trade-Off Theory and Pecking Order Theory.

Trade off theory suggestion is where a company will determine the debt proportion that balance the marginal benefit of using debt for tax shields against the marginal cost of financial distress (Myers. 2001). On the other hand, Myers and Majluf (1984) suggest Pecking Order Theory where companies prioritized their financing sources based on lower risk to higher risk. Aside from these, asymmetric information suggests that investors are considered lack of information about the company's true value, including the appearance of opportunities. The arguments in Market Timing Theory fit the Pecking Order Theory where manager's decision is based on the market conditions. Market timing especially suggests to equity issuance when the price of stocks is high based on market perspective and avoid to equity issuance when the stock's price is undervalued, due to manager do know it's company's true value. Baker and Wurgler (2002) supporting statement in capital structure decision, suggest that low leveraged companies tend to choose external source of financing when the market value their stocks is high and higher leverage when they have low stocks value. Another suggestion in capital structure decision is there may exist conflict of interest between shareholder and agent relationship. This condition arises due to different goals and attitudes toward risk (Jensen and Meckling, 1976).

The choice of a company in capital structure and adjustment is one thing and draw attention of corporate financial economists. In banking context, what matter is the question about relevancy of bank's equity ratio toward its total funding cost. The capital structure characteristic in banking industry is generally holding less capital than non-financial companies (Pettersen, 2014). The higher reliance on equity will increase bank's funding costs since equity holders always demand higher return compared to debt holders, thus equity is expensive compared to debt. Lindquist (2004), Stolz & Wedow (2005) and Berger et al. (2008) in their study argue that the reason behind banks hold capital in excess of the regulatory minimum is to reduce the likelihood of intervention, notified to raise capital at short or forced to reduce existing assets. At the moment that a bank's capital ratio decrease close or below the minimum requirement, bank is subject to supervisory intervention where it can lead to new costs that turn out decreasing bank's value. In this study, the researcher will focus on the excess amount of capital adequacy from 8% required by regulatory, following Tangvongchai (2012) reasoning that Capital Adequacy Ratio (CAR) is known as BCBS rules and part of the Bank of International Settlements ratio (BIS ratio) which implied that the higher the BIS ratio, the more secure a bank is. Firm's size that describes how big or small a company can be assessed through its total assets or revenue. Bigger firm usually indicate that its already reaching maturity stage where in this condition the cash flow is seen positive and have

ICMEM

good prospect in the future for relatively long time. In addition, a bigger firm reflects stability and capable in generating profits compared to that small sized firm (Pangemanan & Mawikere, 2011).

According to Haryanto (2016), management act as agent that authority is granted by owners have duty to manage a company's resources efficiently and effectively to increase operational performance in objective for reaching high profitability and maximizing shareholder value. According to Static Trade-Off Theory, banks which have high market-to-book ratio will likely to be less in leverage. This statement is supported by Pettersen (2014) finding, where market-to-book ratio has negative relationship with leverage. Rajan & Zingales (1995), Frank & Goyal (2004) and Gropp & Heider (2010) stated that collateral has positive relationship with leverage. Signaling Theory lead up to Pecking Order Theory that the company exploits information asymmetric to obtain better price in equity capital and lower costs of issuing equity (Gropp and Heider, 2010).

Tangvongchai (2012) stated that asset risk represents the operational, credit and market risks encountered by each banks in each country. This risk is capable in capturing the risk effect from capital regulatory risk adjustments. Berger et al. (2008) argue that business borrowers prefer well-capitalized lenders because borrower-lender relationships are costly in case the lenders do fail. According to Kok & Schepens (2013), when banks are faced with higher risk, banks may require more capital to be held, thus they include loan loss provisions in determining optimal capital structure in banking study. Anggono (2017) argued that bank should transmit third party funds to loan to prevent the funds become costly. On other hand, banks that successfully transmit third party funds into loan may incur more risks, thus loan to deposit ratio may affect banks decision in capital ratio. Francis and Osborne (2009) argued that bank capital decisions with expected cost of failure that depends on the risk profile of the bank. The existence of regulations and debt guarantees, or insured environment may increase the risk appetite of banks. Banks Risk-Weighted Assets to Total Assets can be another measurement of risk (Pettersen, 2014). Cebenoyan et al. (1999) found that net interest margin has positive relationship toward bank's capital adequacy ratio. Nuviyanti & Anggono (2014) found that bank efficiency has significant and negative relationship toward capital adequacy ratio. Irawan & Anggono (2015) found that return on assets is significantly affecting capital adequacy ratio. According to Jokipii & Milne (2008), higher return on equity may exceed the demanded profitability by equity holders, thus reflecting a bank's to raise capital levels through retained earnings and resulting in positive relationship between return on equity and capital adequacy ratio. However, return on equity might serve as alternative cost of capital, hence negative relationship towards capital ratio is expected (Ayuso et al., 2004).

3. Methodology

On behalf of this study, 17 commercial banks categorized as BUBA3 and BUBA4 listed in Indonesia Stock Exchange by the end of year 2017 are chosen. There are two reasons behind 17 public listed banks and BUBA3 and BUBA4. The uses of public listed banks because in previous studies there are variables based on market price that are relevant in capital structure study. The reason researcher didn't include the rest of listed banks, such as from BUBA 1 and BUBA 2. BUBA 3 and BUBA 4 banks ought to be representation of systemic system and systemic in banking sector with examined banks capital structure determinants, moreover resiliency level of BUBA3 and BUBA4 banks are dependable as there are several requirement for a bank to be considered as BUBA3 and BUBA4. For example, the total tier 1 capital of a bank must be above IDR 5 Trillion and IDR 30 Trillion respectively in order to be included as BUBA 3 and BUBA 4.

This study uses secondary data, which are quarterly financial reports and publications data of chosen 17 listed public BUBA3 and BUBA4 banks in IDX. The source of the data used is from the OJK (Financial Service Authority) website in Indonesia.

This research will use two distinct stage panel data regression estimation. Panel data regression provide benefits such as data heterogeneity control, information are more extracted, less collinearity between variables and higher degree of freedom. The data will be tested for the classical assumption to achieve the Best Linear Unbiased Estimator (BLUE) like multicollinearity, normality, heteroscedasticity and autocorrelation. Chow test and Hausman test will be conducted in choosing better estimation method between common effect, fixed effect and random effect that is more suitable.

ICMEM

Variables used are dependent and independent variables. Capital Adequacy Ratio Buffer (CARBUFF) serves as the main object in this study (dependent variable) while several standard and bank's specific level determinants and measurement factors selected as independent variables presented in Table 1,

Table 1 Variables Concept and Operationalization (Source: Content Processed by Researcher)

Variables	Concept	Measurement	Notation	References	Expected Effect
Capital Structure Proxy					
Dependent variable	Capital Adequacy Ratio Buffer	Core capital tier1 + tier2 to risk-weighted assets and subtract with 8%	CARBUFF	(Tangvongchai, 2012); (Kontbaybusun & Kasman, 2015); (Mahakud & Dash, 2013)	
Standard Determinant of Capital Structure Proxy					
Independent Variables of Bank's Capital Structure	(Size)	Natural logarithm assets	LNSIZE	(Tangvongchai, 2012); (KONTBAY BUSUN & Kasman, 2015); (Reinhard & Li, 2010)	- CARBUFF
	(Profitability)	Net Operating Income to Total Assets	PROF	(Tangvongchai, 2012); (Zhou et al., 2016); (Lemmon et al., 2008)	+/- CARBUFF
	(Growth Opportunity)	Market Value of Assets to Book Value of Assets	MTB	(Tangvongchai, 2012); (Reinhard & Li, 2010); (Frank & Goyal, 2009)	+ CARBUFF
	Collateral (Tangibility)	Liquid Assets from Cash to Fixed Assets (exclude Credit Loan) to Total Assets	COLL	(Sha'ban et al., 2016); (Frank & Goyal, 2004); (WOJEWODZKI et al., 2014)	- CARBUFF
	Dividend Dummy	1 if dividend payer, otherwise 0	DIVDUM	(Tangvongchai, 2012); (Frank & Goyal, 2009); (Oliveira & Raposo, 2016)	+ CARBUFF
	(Asset Risk)	Standard Deviation of Annualized Stock Return multiplied by Market Value of Equity to Market Value of Assets.	ASSRISK	(Tangvongchai, 2012); (Frank & Goyal, 2004); (Oliveira & Raposo, 2016)	- CARBUFF
Bank Specific Determinant of Capital Structure - Risk Proxy					
Independent Variables of Bank's Capital Structure	Non-Performing Loan (Credit Risk)	Non-performing loan to total earning assets ratio	NPL	(Kontbaybusun & Kasman, 2015); (Sha'ban et al., 2016); (Ayuso et al., 2004)	+ CARBUFF
	Loan Loss Provision (Credit Risk)	Loan loss provision to total earning assets ratio	LLP	(Pettersen, 2014); (Kontbaybusun & Kasman, 2015); (Malovana, 2017)	+ CARBUFF
	Loan to Deposit (Liquidity Risk)	Loan to deposit ratio	LDR	(De Jonghe & Öztekin, 2015); (Bakkar et al., 2017)	+ CARBUFF
	(Asset Risk)	Total Risk Weighted Assets to Total Assets	RWA	(Pettersen, 2014); (Drakos, 2012); (Jokipii & Milne, 2011)	+ CARBUFF
Bank's Specific Determinant of Capital Structure - Good Corporate Governance Proxy					
Independent Variables of Bank's Capital Structure	Net Interest Margin (Market Discipline)	Net interest margin to total earning assets	NIM	(Nuviyanti & Anggono, 2014); (Drakos, 2012); (De Jonghe & Öztekin, 2015)	+ CARBUFF
	Cost to Income (Efficiency)	Operating cost to operating income ratio	COIN	(Gropp & Heider, 2010); (Berger et al., 2018); (De Jonghe & Öztekin, 2015)	- CARBUFF
Bank's Specific Determinant of Capital Structure - Earnings Proxy					
Independent Variables of Bank's Capital Structure	Return on Asset (Earnings)	Net profits before tax to total assets	ROA	(Pettersen, 2014); (Kontbaybusun & Kasman, 2015); (De Jonghe & Öztekin, 2015)	+ CARBUFF
	Return on Equity (Earnings / Cost of Capital)	Net profits after tax to total equity	ROE	(Pettersen, 2014); (Kok & Schepens, 2013); (Francis & Obsborne, 2009)	+/- CARBUFF

ICMEM

3.1 Research Model

Two distinct stage panel data regression analysis technique used for this research. Following the partial adjustment model of Flannery & Rangan (2006) that is dynamic model. The first stage model is to test the influence of standard and bank-specific variables to the bank capital structure. The second stage model is to identify the adjustment speed of bank capital structure.

3.1.2 Bank Capital Structure and Its Determinant Model (First Stage Model)

In dynamic model, the target capital structure of $CARBUFF^*_{i,t}$ is estimated by a function of lag variables determinants in capital structure which can be written as follows:

$$
\begin{aligned}
CARBUFF^*_{i,t} = \alpha_0 &+ \beta_1 LNSIZE_{i,t-1} + \beta_2 PROF_{i,t-1} + \beta_3 MTB_{i,t-1} \\
&+ \beta_4 COLL_{i,t-1} + \beta_5 DIVDUM_{i,t-1} + \beta_6 ASSRISK_{i,t-1} + \beta_7 NPL_{i,t-1} \\
&+ \beta_8 LLP_{i,t-1} + \beta_9 LDR_{i,t-1} + \beta_{10} RWA_{i,t-1} + \beta_{11} NIM_{i,t-1} \\
&+ \beta_{12} COIN_{i,t-1} + \beta_{13} ROA_{i,t-1} + \beta_{14} ROE_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
$$

Where,

$CARBUFF^*_{i,t}$	= Capital Adequacy Ratio Buffer of bank i in quarter t
$LNSIZE_{i,t-1}$	= Natural logarithm assets of bank i in quarter t-1
$PROF_{i,t-1}$	= Profitability of bank i in quarter t-1
$MTB_{i,t-1}$	= Growth Opportunity of bank i in quarter t-1
$COLL_{i,t-1}$	= Tangibility of bank i in quarter t-1
$DIVDUM_{i,t-1}$	= Dividend Payer of bank i in quarter t-1
$ASSRISK_{i,t-1}$	= Asset Risk of bank i in quarter t-1
$NPL_{i,t-1}$	= Non Performing Loan of bank i in quarter t-1
$LDR_{i,t-1}$	= Loan to Deposit of bank i in quarter t-1
$RWA_{i,t-1}$	= Risk Weighted Asset of bank i in quarter t-1
$NIM_{i,t-1}$	= Net Interest Margin of bank i in quarter t-1

3.1.2 Bank Capital Structure and Adjustment Speed (Second Stage Model)

Partial adjustment model is to test whether bank have target capital structure or not. Where the capital structure moves towards its target partially, which can be written as follows:

$$
CARBUFF_{i,t} = (1 - \delta)CARBUFF_{i,t-1} + \delta CARBUFF^*_{i,t} \tag{3.2}
$$

Where,

$CARBUFF_{i,t}$	= Capital Adequacy Ratio Buffer of bank i in quarter t
$CARBUFF_{i,t-1}$	= Capital Adequacy Ratio Buffer of bank i in quarter t-1
$CARBUFF^*_{i,t}$	= Optimal/Target Capital Adequacy Ratio Buffer of bank i in quarter t-1
δ	= Speed of Adjustment to target capital structure
$\varepsilon_{i,t}$	= Error Term

3.1.3 Capital structure target and time to reach

Following Soekarno, Kitri & Utomo (2016) study of the capital structure and adjustment speed, the estimated time needed to reach the capital structure target can be calculated by using Equation 3.3 below:

$$
\begin{aligned}
Y_1 &= \delta \\
Y_2 &= \delta + \delta(Y^* - \delta) = \delta + \delta(1 - \delta) \\
Y_{n+1} &= Y_n + \delta(1 - Y_n) \\
&= Y_n + \delta - \delta Y_n \\
&= (1 - \delta)Y_n + \delta \\
&= (1 - \delta)\big((1 - \delta)Y_{n-1} + \delta\big) + \delta \\
&= (1 - \delta)^2 Y_{n-1} + \delta + \delta(1 - \delta) \\
&= (1 - \delta)^2\big((1 - \delta)Y_{n-2} + \delta\big) + \delta + \delta(1 - \delta) \\
&= (1 - \delta)^3 Y_{n-2} + \delta + \delta(1 - \delta) + \delta(1 - \delta)^2 ,
\end{aligned}
\tag{3.3}
$$

Where,

Y^* = Capital Structure Target = 1

$n \geq 1$

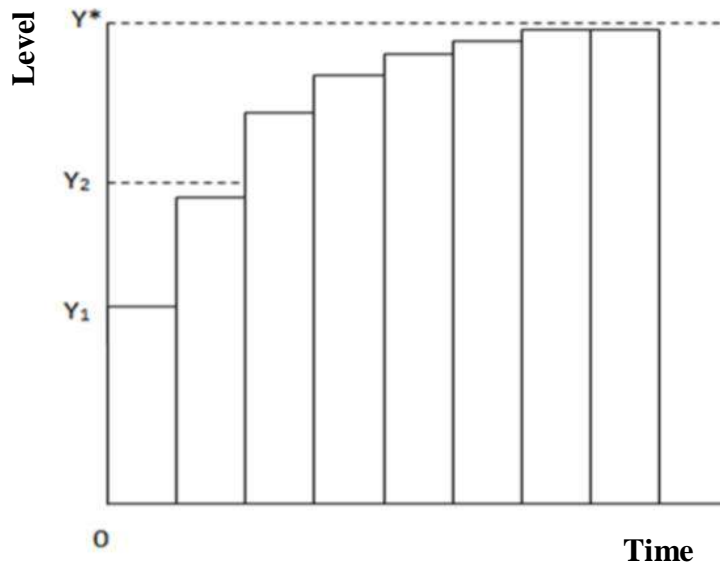Equation 3.3 visual explanation is presented in Figure 3:

Figure 3   Partial Adjustment to Capital Structure Target (Source: Soekarno, Kitri & Utomo (2016)

Equation 3 can be simplified by using Euler's elimination, as follows:

$$
\begin{aligned}
Y_n &= \delta + \delta(1 - \delta) + \cdots + \delta(1 - \delta)^{n-2} + \delta(1 - \delta)^{n-1} \\
(1 - \delta)Y_n &= \delta(1 - \delta) + \cdots + \delta(1 - \delta)^{n-1} + \delta(1 - \delta)^n \\
(1 - 1 + \delta)Y_n &= \delta - \delta(1 - \delta)^n \\
Y_n &= \frac{\delta(1 - (1 - \delta)^n)}{\delta}
\end{aligned}
$$

ICMEM

$$Y_n = (1 - (1 - \delta)^n$$
$$(1 - \delta)^n = 1 - Y_n$$
$$n \log(1 - \delta) = \log(1 - Y_n)$$

Finally, the concluding equation is:

$$n = \frac{\log(1 - Y_n)}{\log(1 - \delta)} \qquad (3.4)$$

Using this Equation 3.4, the time needed to reach capital structure target n can be calculated, with Y_n is the capital structure target and δ is the adjustment speed that determined from model Equation 3.2.

4. Findings and Arguments

4.1 First Stage Model

The regression result of capital structure determinant in first stage model can be seen from Table 2.1.

Table 2.1 Capital Structure Determinants Regression (Source: Data Processed by Researcher)

	Dependent Variable - CARBUFF			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.239	0.052	4.633	0.000
LNSIZE(-1)***	0.006	0.002	3.056	0.002
PROF(-1)***	0.552	0.150	3.683	0.000
MTB(-1)*	0.020	0.011	1.841	0.066
ASSRISK(-1)***	0.044	0.014	3.089	0.002
LLP(-1)**	0.252	0.117	2.151	0.032
LDR(-1)***	0.051	0.019	2.715	0.007
RWA(-1)***	-0.115	0.020	-5.686	0.000
COIN(-1)***	-0.244	0.030	-8.149	0.000
ROE(-1)***	-0.392	0.031	-12.459	0.000

Effects Specification - Cross-section fixed (dummy variables)

ICMEM

R-squared	0.697	Mean dependent var	0.101
Adjusted R-squared	0.685	S.D. dependent var	0.042
S.E. of regression	0.020	Sum squared resid	0.237
F-statistic	55.365	Durbin-Watson stat	0.809
Prob(F-statistic)	0.000		

The study results from first stage model regression after the process of stepwise dropping insignificant variables, show that lagged size LNSIZE(-1), lagged profitability PROF(-1), lagged standard & bank-specific asset risk ASSRISK(-1) & RWA(-1), lagged liquidity risk LDR(-1), lagged efficiency COIN(-1) and lagged return on equity ROE(-1) have significant effect to the next period capital adequacy ratio at 1% level. While lagged credit risk LLP(-1) have significant impact at 5% level and lagged growth opportunity MTB(-1) have significant impact at 10% level. LNSIZE(-1), PROF(-1), MTB(-1), ASSRISK(-1), LLP(-1), LDR(-1) have positive relationship with the capital adequacy ratio in excess of 8%, while RWA(-1), COIN(-1) and ROE(-1) have negative relationship with capital adequacy ratio in excess of 8%. Lagged collateral COLL(-1), lagged dividend payer DIVDUM(-1), lagged credit risk NPL(-1), lagged good corporate governance NIM(-1) are not significant in this model. Lagged earnings ROA(-1) was dropped from the model due to multicollinearity problem.

Lagged size shows significant positive relationship imply that Indonesian Commercial Banks not consider "too big to fail" concept. This result is not consistent with Pettersen (2014) and Kontbaybusun & Kasman (2015) finding. The positive relationship suggests that larger banks tend to be more distinguished thus is more straightforward to issue equity in the market (Gropp & Heider, 2010). Pangemanan & Mawikere (2011) state that more prominent firm reflects stability and capable in generating profits compared to that small sized firm.

Lagged profitability shows significant positive relationship imply that pecking order theory by Myers & Majluf (1984) implied in this study result and consistent with Frank & Goyal (2009) finding. Banks with higher profitability prefer to use internal source of funding compared to external, such as debt rather than convey a signal by taking more debt regarding their business prospect.

Lagged growth opportunity shows significant positive relationship consistent with Rajan & Zingales (1995), Frank & Goyal (2004) and Gropp & Heider (2010) finding. Market Timing theory is relevant due to asymmetric information exist in the friction world; banks may issue equity to benefit from arbitrage opportunity when managers perceive that the market is overpriced to enlarge the current shareholder's wealth.

Lagged standard asset risk shows significant positive relationship that consistent with Frank & Goyal (2004) argument that risk is detrimental and debt isn't preferred as risk increase.

Lagged credit risk - loan loss provision shows significant positive relationship consistent with Pettersen (2014) and Peura & Keppo (2006) study suggests that when banks perceive their portfolio risk increasing, they tend to increase the capital ratio or hold more capital in response.

Lagged liquidity risk shows significant positive relationship relevant to trade-off theory, which is as LDR increase, the risk of the bank follow, especially liquidity. Thus the cost of financial distress in presence and banks tend to offset the risk by increasing the capital ratio in preparation.

Lagged bank-specific asset risk, risk-weighted assets show significant negative relationship consistent with Pettersen (2014) finding indicating a moral hazard behavior between Indonesian banks. Lindquist (2004) and Francis & Obsborne (2009) suggest that negative relationship between risk and capital may because banks evaluate and respond vary to risk, doesn't mean that banks are poorly capitalized in relative to risk level result.

ICMEM

Lagged good corporate governance-efficiency shows significant negative relationship is consistent with Nuviyanti & Anggono (2014) finding that decreases in efficiency decrease the capital adequacy ratio.

Lagged earnings-return on equity shows significant negative relationship support return on equity serve as alternative measurement in the cost of equity (Ayuso et al., 2004); (Francis & Osborne, 2009). Signaling theory also relevant in this return on equity finding where Indonesian banks may take more debt to convey a signal that they are confident in their business and would expect a higher stock price from investor response. Trade-off theory suggests that companies with high profitability tend to reduce their taxable income by increasing debts proportion.

Insignificant variables lagged dividend payer is consistent with Tangvongchai (2012). Pecking Order Theory suggests that dividend-paying firms prefer internal financing rather than debt financing. Lagged standard determinant collateral insignificant may indicate that tangibility in banking sector is different from non-financial firms. Non-financial firms rely on tangibility to increase external source of funding, is slightly different from how banks are getting the external source of funding which are from third party fund. Lagged credit risk non-performing loan insignificant may imply that banks have already mitigated the risk of increases in a non-performing loan with loan loss provision, and through increases in loan loss provision, will increase the capital ratio held by banks. Lagged good corporate governance market discipline net interest margin insignificant may imply that bank may have high costs waiting in the line ready to reduce the amount of net interest margin generated by banks due to raises of complexity in the financial services industry.

Table 2.2 Comparison result summary between previous studies and study result (Source: Content Processed by Researcher)

No.	Variables	Previous Studies	Expected Sign (+/-)	Study Result
		Standard Determinants of Capital Structure		
1	Size	Significant (+/-)	Significant (+/-)	Significant (+)
2	Standard Profitability	Significant (+)	Significant (+)	Significant (+)
3	Dividend Payer	Significant (+)	Significant (+)	Insignificant (+)
4	Growth Opportunity	Significant (+)	Significant (+)	Significant (+)
5	Collateral/Tangibility	Significant (-)	Significant (-)	Insignificant (+)
6	Asset Risk	Significant (+)	Significant (+)	Significant (+)

ICMEM

Table 9.2 Comparison result summary between previous studies and study result (Source: Content Processed by Researcher) (continued)

No.	Variables	Previous Studies	Expected Sign (+/-)	Study Result
Bank Specific Determinants of Capital Structure				
7	Credit Risk – Non-Performing Loan	Significant (+)	Significant (+)	Insignificant (+)
8	Credit Risk – Loan Loss Provision	Significant (+)	Significant (+)	Significant (+)
9	Liquidity Risk – Loan to Deposit	Significant (+)	Significant (+)	Significant (+)
10	Asset Risk – Risk Weighted Asset	Significant (-)	Significant (+)	Significant (-)
11	Good Corporate Governance – Net Interest Margin	Significant (+)	Significant (+)	Insignificant (+)
12	Good Corporate Governance – Cost to Income	Significant (-)	Significant (-)	Significant (-)
13	Earnings Proxy – Return on Assets	Significant (+)	Significant (+)	Variable Dropped
14	Earnings Proxy – Return on Equity	Significant (+/-)	Significant (+/-)	Significant (-)

Table 2.3 Capital Structure Theorem Relevancy Summary (Source: Content Processed by Researcher)

Variable	Relevant Capital Structure Theory(s)
Standard Determinants of Capital Structure Proxies	
Size	Pecking Order
Standard Profitability	Pecking Order
Growth Opportunity	Market Timing
Asset Risk	Trade-Off
Bank Specific Determinants of Capital Structure Proxies	
Credit Risk - Loan Loss Provision	Trade-Off
Liquidity Risk – Loan to Deposit	Trade-Off
Asset Risk – Risk Weighted Asset	Moral Hazard
Good Corporate Governance - Cost to Income	Pecking Order/Trade-Off
Earnings Proxy - Return on Equity	Signalling

ICMEM

4.1 Second Stage Model

The regression result of capital structure determinant in first stage model can be seen from Table 2.4.

Table 2.4 Speed of Adjustment Regression (Source: Data Processed by Researcher)

Dependent Variable - CARBUFF				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.001	0.002	0.401	0.688
CARBUFF(-1)	0.750	0.032	23.237	0.000
CARBUFF*	0.241	0.035	6.879	0.000
Effects Specification				
			S.D.	**Rho**
Cross-section random			0.000	0.000
Idiosyncratic random			0.013	1.000
Weighted Statistics				
R-squared	0.846	Mean dependent var		0.092
Adjusted R-squared	0.845	S.D. dependent var		0.034
S.E. of regression	0.013	Sum squared resid		0.109
F-statistic	1710.365	Durbin-Watson stat		1.941
Prob(F-statistic)	0.000			

This model is the second stage regression after the obtaining the first stage target capital structure that influences the adjustment speed of capital structure towards the target as part of adjustment cost. If the speed of adjustment is fast, then the cost of adjustment is low. While the cost of adjustment is high, reflected in slow speed of adjustment.

The coefficient of lagged one period CARBUFF, this study can examine the adjustment speed of Indonesian Banks capital structure. The coefficient based on Table 2.4 results above, which is 0.75. According to reviewed literatures on capital structure and adjustment speed model, namely partial adjustment model, the coefficient of lagged explanatory dependent variable is $1-\delta$. Since $0.75=1-\delta$, $\delta=0.25$ or 25%. This result implies that there is evidence of Indonesian Banks tend to adjust their capital structure to the target/optimal level, since $0<\delta<1$ and the lagged dependent coefficient, $\beta>0$, with t-stat probability significant level of 1% indicate this study have enough evidence to accept the alternative hypothesis that Indonesian Banks did adjust their capital structure to the optimal level. The speed

of adjustments is 25% for a quarter. Tangvongchai (2012) study found that there is evidence in ASEAN Banks that have target capital structure and the speed of adjustment is 95.27% a year. Another result from Soekarno, Kitri & Utomo (2016) on their study of capital structure determinants and the adjustment speed is 45.65% a year. To find out when will the target capital structure fully reached by using Equation 3.4, with δ=0.25, n = 16.008 or 16 quarters, which is four years.
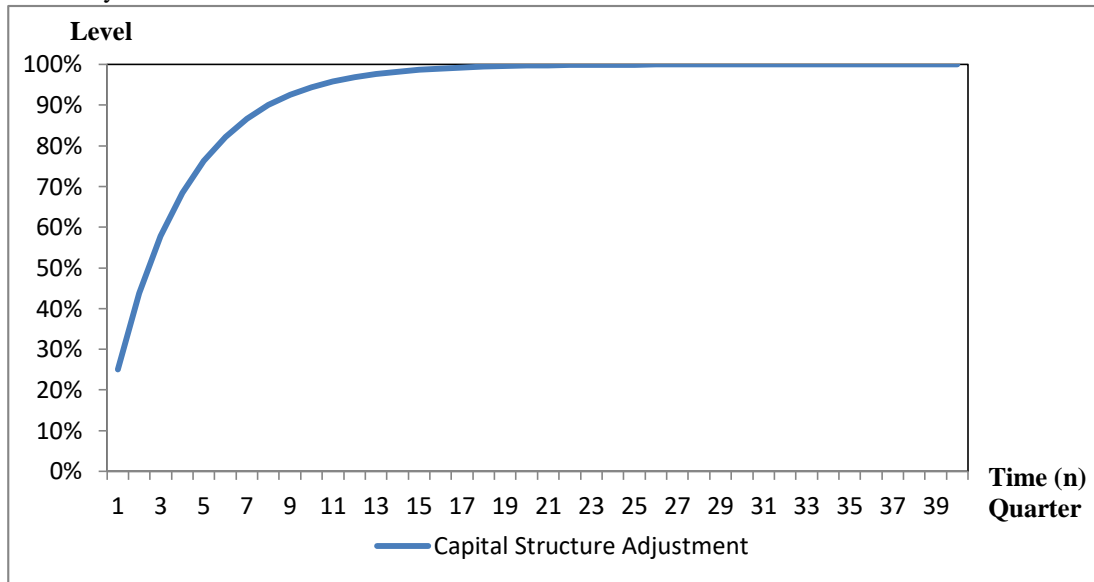

Figure 3.1 Capital Structure Adjustment Movement (Source: Graph Processed by Researcher)
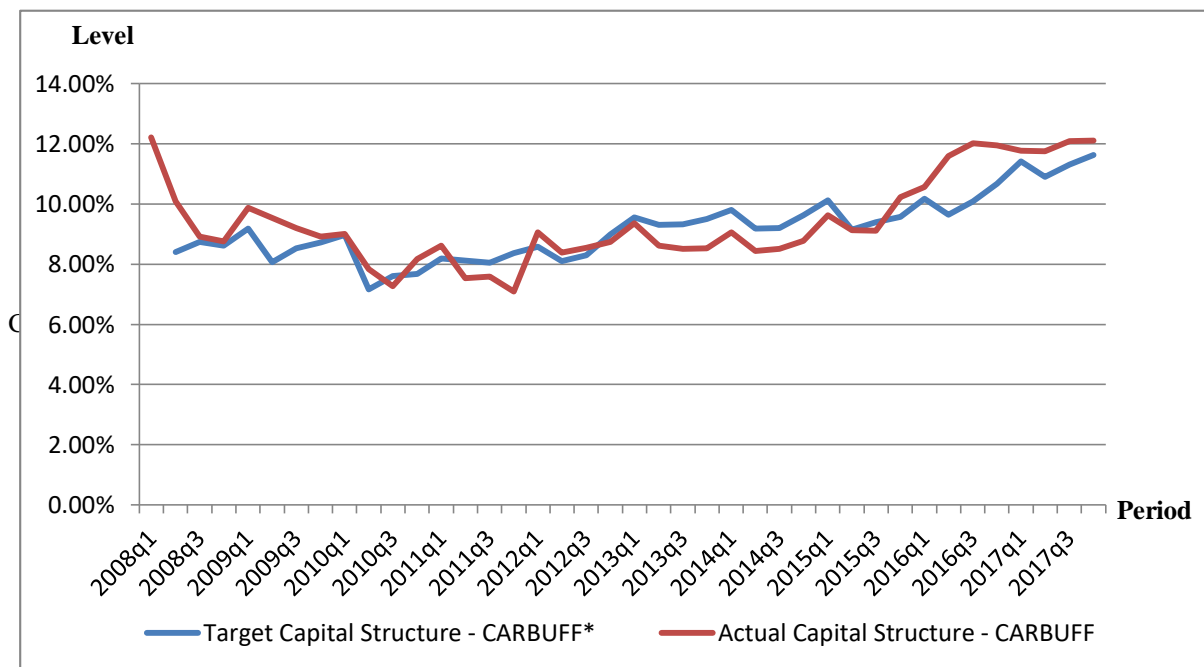

Figure 4.2 Target Capital Structure and Actual Capital Structure Movement (Source: Graph Processed by Researcher)

ICMEM

The results on the Table 2.5 below suggest that Indonesian Banks are relatively lower in adjustment speed of capital structure in ASEAN and European Banks context. On the other hands, Indonesian Banks are relatively faster compared to its local non-financial firms. This may connect and consistent with the statement by Memmel & Raupach (2010). The arguments that banks can quickly adjust their capital structure because of their assets nature are more liquid than non-financial firm; therefore banks are known in adjusting their target capital ratio faster under such condition, provided evidence from ASEAN, European and Indonesian Commercial Banks.

Table 2.5 Speed of Adjustment Results Comparison (Source: Content Processed by Researcher)

Research Study	Context	Capital Structure Proxy	Period	Speed of Adjustment	Time to reach the optimal capital structure
This Study	Indonesian Commercial Banks	CARBUFF	2008Q1-2017Q4	25% / Quarter	16 quarters or, 4 years.
Tangvongchai (2012)	ASEAN Commercial Banks	CAR - 8%	2000-2011	95.27% / Year	1.51 years
KONTBAY BUSUN & Kasman (2015)	Turkish Commercial Banks	BUFF	2002Q1-2012Q2	27% / Quarter	9.97 quarters or, 2.49 years
Kok & Schepens (2013)	93 European Banks	ETA	2004Q1-2011Q4	27.2% / Quarter	14.51 quarters or, 3.63 years
Malovana (2017)	14 Czech Banks	CA	2002Q4-2016Q4	31.8% / Quarter	12.03 quarters or, 3.01 years
Soekarno, Kitri, & Utomo (2016)	Indonesian State-Owned Enterprise (non-financial firms)	LEV	1995-2013	45.65% / Year	7.55 years
Reinhard & Li (2010)	Indonesian Public Listed Companies	LTTA	2001-2005	36% / Year	10.32 years

Banks may not adjust their capital structure immediately towards the target because as stated by Faulkender et al. (2011) there exist costs of adjustment in companies capital structure. Soekarno, Kitri, & Utomo (2016) suggest that when the costs of adjustment exceeding the benefit of operating in the optimal capital structure, the company will make slow adjustment or not at all, thus indicating the force of pecking order theory. Contrarily, quickly done adjustment towards the target capital structure implying the trade-off theory is in force.

In summary of Indonesian BUBA3 and BUBA4 Commercial Banks capital structure adjustment, the banks have faster adjustment speed compared to non-banks firm thus implying that the trade-off theory is in force. The banks can made adjustment according to trade-off theory that maximize the benefit of operating in the optimal capital structure and minimize the cost of operating in the optimal capital structure. Fundamental factors in first stage regression that have significant influence in the target capital structure and the adjustment speed are lagged size, lagged profitability, lagged growth opportunity, lagged standard asset risk, lagged credit risk – loan loss provision, lagged liquidity risk – loan to deposit, lagged risk-weighted asset, lagged efficiency – cost to income and lagged earnings – return on equity. Lastly, raising equity might be costly because equity holders have high expectation and taking more risk by investing in the banks. While raising debt is the cheapest because debt holders' interest are protected due to the term that banks

ICMEM

will pay back their interest and principal prioritized over equity holders. However, overusing debt may give rise to financial distress that eventually will decrease the value of the banks instead of increases in value. Therefore, the banks should choose appropriate of debt and equity mix that maximize the value of the banks and minimize the total cost of using debt and equity.

5. Conclusions

This study investigates the determinants of bank's optimal capital structure, between standard determinants and banks specific determinants of capital structure. Data used in this study, BUBA 3 and BUBA 4 public listed commercial bank from period of 2008 to 2017 that the source of data can be obtained through Indonesian Financial Service Authority website.

Two distinct stage of regression are used in this study, first stage is to find the predicted value of bank capital ratio through its determinants and the second stage to regress the predicted value with structural model, which is partial adjustment model. FEM method is used in the first stage model, while the second stage use REM method of estimation, which implicitly imply there is no correlation between independent variables and error term anymore, which validate that the second model have no endogeneity problem and the estimated coefficient is consistent.

First stage regression result can conclude that lagged risk proxies LDR(-1), ASSRISK(-1) and LLP(-1) have positive relationship due to bank's decision in raising capital adequacy ratio to control the risk exposed or financial distress. However, there exists moral hazard if when we found that one of risk proxy lagged bank-specific RWA(-1) shows negative relationship on its sign. On other hand, lagged earnings ROE(-1) shows negative relationship, thus Indonesian Banking view ROE(-1) as alternative cost of equity. In addition, increases in lagged profitability PROF(-1) may led bank to have more internal source of funding according to pecking order theory. While increases in lagged efficiency COIN(-1) may reduce bank's profitability thus lack of internal source of funding which led to lower capital adequacy ratio in excess. Finally, Indonesian banks seemed dedicated in their operation, as LNSIZE increase, the "too big to fail" hypothesis is not affecting the relationship negatively toward capital adequacy ratio in excess of 8% (CARBUFF).

Second stage regression result shows that bank conclude that Indonesian Commercial Banks have capital structure target. Banks managers made adjustment on their capital structure towards the target partially each quarter with speed of adjustment at 25% each quarter. The time to reach the target capital structure is within 16 quarters or four years. This fast adjustment in Indonesian BUBA3 and BUBA4 Commercial Banks compared to other non-financial studies indicate that the banks have lower cost of adjustment indicating trade-off theory is in force and support Memmel & Raupach (2010) arguments that banks assets are relatively more liquid compared to other non-financial firms.

References

Altman, E. I., & Hotchkiss, E. (2006). Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt. Hoboken: John Wiley & Sons, Inc.

Anggono, A. H. (2017). The determinant factors of asset and liability management and the bank performance: empirical study on foreign exchange commercial banks in Indonesia from 2008 to 2013. International Journal of Business and Globalisation, 19(4), 512-527.

Ayuso, J., Pérez, D., & Saurina, J. (2004). Are capital buffers pro-cyclical?: Evidence from Spanish panel data. Journal of financial intermediation, 13(2), 249-264.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. The journal of finance, 57(1), 1-32.

Bakkar, Y., De Jonghe, O., & Tarazi, A. (2017). Does Banks' Systemic Importance Affect Their Capital Structure and Balance Sheet Adjustment Processes?

Bar-Or, Y. D. (2000). An investigation of expected financial distress costs.

Berger, A. N., DeYoung, R., Flannery, M. J., Lee, D., & Öztekin, Ö. (2008). How do large banking organizations manage their capital ratios? Journal of Financial Services Research, 34(2-3), 123-149.

Berlin, M. (2011). Can we explain banks' capital structures. Business Review Q2.

Bougatef, K., & Chichti, J. (2010). Equity Market Timing and Capital Structure: Evidence from Tunisia and France. International Journal of Business and Management, 5(10), 167-177.

ICMEM

Brealey, R. A., & Myers, S. C. (2003). Corporate Finance: Capital Investment and Valuation. McGraw Hill Professional.

Brealey, R. A., Myers, S. C., Allen, F., & Mohanty, P. (2014). Principles of Corporate Finance. India: Tata Mcgraw-Hill Education.

Cebenoyan, A. S., Cooperman, E. S., & Register, C. A. (1999). Ownership structure, charter value, and risk-taking behavior for thrifts. Financial Management, 43-60.

Chen, G. M., & Merville, L. J. (1999). An analysis of the underreported magnitude of the total indirect costs of financial distress. Review of Quantitative Finance and Accounting, 13(3), 277-293.

De Jonghe, O., & Öztekin, Ö. (2015). Bank capital management: International evidence. Journal of Financial Intermediation, 24(2), 154-177.

Demirguc-Kunt, A., & Detragiache, E. (1997). The determinants of banking crises: Evidence from developed and developing countries. World Bank, mimeo July.

Drakos, K. (2012). US banks' capitalization speed-of-adjustment: a microeconometric approach. Journal of Financial Economic Policy, 4(3), 270-286.

Faulkender, M., Flannery, M. J., Hankins, K. W., & Smith, J. M. (2011). Do adjustment costs impede the realization of target capital structure. AFA 2008 New Orleans Meetings Paper.

Flannery, M. J., & Rangan, K. P. (2006). Partial adjustment toward target capital structures. Journal of Financial Economics, 79(3), 469-506.

Francis, W., & Obsborne, M. (2009). Bank regulation, capital and credit supply: measuring the impact of prudential standards. Occasional paper, 39.

Frank, M. Z., & Goyal, V. K. (2004). The effect of market conditions on capital structure adjustment. Finance Research Letters, 1(1), 47-55.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? Financial management, 38(1), 1-37.

Gropp, R., & Heider, F. (2008). The Determinants of Capital Structure: Some Evidence From Banks, ZEW Discussion Papers, 08-015. Center for European Economic Research.

Gropp, R., & Heider, F. (2010). The determinants of bank capital structure. Review of finance, 14(4), 587-622.

Hardiyanto, A. T., Achsani, N. A., Sembel, R., & Maulana, N. A. (2014). Testing trade-off theory of capital structure: Empirical evidence from Indonesian listed companies. Economics and Finance Review, 3(6), 13-20.

Haryanto, S. (2016). Determinan Permodalan Bank Melalui Profitabilitas, Risiko, Ukuran Perusahaan, Efisiensi dan Struktur Aktiva. Jurnal Ekonomi dan Bisnis, 19(1), 117-138.

Hovakimian, A. (2004). Hovakimian, Armen. "The role of target leverage in security issues and repurchases. The Journal of Business, 77(4), 1041-1072.

Indonesia, B. (2010). Krisis Global dan Penyelamatan Sistem Perbankan Indonesia. Jakarta: Humas Bank Indonesia.

Irawan, A., & Anggono, A. H. (2015). Determinant Analysis Financing to Deposit Ratio Sharia Commercial Bank in Indonesia (Case Study Period 2010-2012). Journal of Islamic Finance and Business Research, 3(1).

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of financial economics, 3(4), 305-360.

Jokipii, T., & Milne, A. (2008). The cyclical behaviour of European bank capital buffers. Journal of banking & finance, 32(8), 1440-1451.

Jokipii, T., & Milne, A. (2011). Bank capital buffer and risk adjustment decisions. Journal of Financial Stability, 7(3), 165-178.

Kayhan, A., & Titman, S. (2007). Firms' histories and their capital structures. Journal of financial Economics, 83(1), 1-32.

Kok, C., & Schepens, G. (2013). Bank reactions after capital shortfalls.

Kontbaybusun, S., & Kasman, A. (2015). A Note on Bank Capital Buffer, Portfolio Risk and Business Cycle. Ege Academic Review, 15(1).

Laux, J. A. (2011). Topics in Finance: Part VI-Capital Budgeting.

Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: persistence and the cross - section of corporate capital structure. The Journal of Finance, 63(4), 1575-1608.

Lindquist, K.-G. (2004). Banks' buffer capital: how important is risk. Journal of International Money and Finance, 23(3), 493-513.

Malovana, S. (2017). Banks' Capital Surplus and the Impact of Additional Capital Requirements. IES Working Paper, 28.

Memmel, C., & Raupach, P. (2010). How do banks adjust their capital ratios? Journal of Financial Intermediation, 19(4), 509-528.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. The American economic review, 48(3), 261-297.

Myers, S. C. (2001). Capital structure. Journal of Economic perspectives, 15(2), 81-102.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of financial economics, 13(2), 187-221.

Nuviyanti, A. H., & Anggono, A. H. (2014). Determinants of Capital Adequacy Ratio (CAR) in 28 Commercial Banks (Case Study: Period 2008-2013). Journal of Business and Management, 3(7), 752-764.

ICMEM

Oliveira, V., & Raposo, C. C. (2016). The Determinants of European Banks' Capital Structure during the Last Decade and the Role Played by Regulation and Supervision: Do they really matter?

Pangemanan, S., & Mawikere, L. (2011). Pengaruh ukuran perusahaan dan pertumbuhan perusahaan terhadap earning per share pada industri tekstil di bursa efek Indonesia. Jurnal Riset Akuntansi dan Auditing Goodwill, 2(1).

Pettersen, P. M. (2014). Bank regulatory capital adjustment: evidence from Norwegian savings and commercial banks (Master's thesis).

Peura, S., & Keppo, J. (2006). Optimal bank capital with costly recapitalization. The Journal of Business, 79(4), 2163-2201.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. The journal of Finance, 50(5), 1421-1460.

Reinhard, L., & Li, S. (2010). A note on capital structure target adjustment–Indonesian evidence. International Journal of Managerial Finance, 6(3), 245-259.

Soekarno, S., Kitri, M. L., & Utomo, S. (2016). Capital structure determinants and the speed of adjustment towards capital structure target: evidence from Indonesian state-owned enterprises. International Journal of Monetary Economics and Finance, 9(4), 388-400.

Stolz, S., & Wedow, M. (2005). Banks' regulatory capital buffer and the business cycle: evidence for German savings and cooperative banks.

Tangvongchai, S. (2012). Bank Capital Structure and Speed of Adjustment Evidence from ASEAN Countries. Faculty of Commerce and Accountancy, Thammasat University.

Tanimura, J. K. (2001). Taxes, financial distress, and capital structure in the United States and Japan (Doctoral dissertation).

Zhou, Q., Tan, K. J., Faff, R., & Zhu, Y. (2016). Deviation from target capital structure, cost of equity and speed of adjustment. Journal of Corporate Finance, 39, 99-120.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Gas Field Development Alternatives Evaluation Using Real Options – Case in Production Sharing Contract in Indonesia

Dony Ilham Ratman[a*], Erman Arif Sumirat[b]

[ab]School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha 10, Bandung, Indonesia

Abstract

Increased volatility of oil price and the shift of oil and gas field to frontier location such in offshore deep water has made it more important for investment decision shall reflect understanding of all risks to economic value. Capital budgeting valuation method using Discounted Cash Flow (DCF) which performed under rigid assumptions underestimate the extent of uncertainty and flexibility in project alternatives. Real Options method which acknowledge the value of uncertainty and flexibility has been introduced to complement DCF to sufficiently provide references for investment decision making. This study utilizes DCF and Real Options approach for valuation of offshore deep water gas field development in Indonesia under production sharing contract fiscal term to extent the degree of project development alternatives evaluation. Analysis conducted using quantitative modelling and simulation utilize Monte Carlo and Real Options binomial method. Initially, under static DCF approach, analysis suggested that no other alternatives more compelling than initial alternative of built new FPU (Floating Production Unit). However, by incorporating managerial flexibility and uncertainties using Real Options, the results advise different alternative to be pursued under different considered scenarios and also indicate that approval of production period extension is crucial factor to overall profitability of the project.

Keywords: Binomial, Capital Budgeting, Production Sharing Contract (PSC), Real options, Oil and Gas Exploration and Production

1. Introduction

The investment decision should be made on the basis of valuation and evaluation. Valuation provides decision makers with economic perspectives of investment opportunities, while evaluation techniques estimate whether cash returns from the investment are large enough to make initial investment worth pursued (Kvalevaag, 2009). Traditional discounted cash flow analysis (DCF) is the most common method in the valuation of oil and gas projects (Fonseca, et al., 2017). However, traditional DCF ignores the value of flexibility and uncertainty of real asset investment (Pindyck, 1991). Evaluation in capital budgeting involves requirement for recognition of uncertainty factors and management flexibility factors attach to the investment. Uncertainty factors may include output prices, operational and capital costs, product output demand, technology and other known or unknown factors (Kvalevaag, 2009).

The real options approach originating from the financial option principle regards the value of management flexibility which could generate revenue, with Myers (1977) analysed the value of real options in investment opportunities for the first time (Qiu, Wang, Xue, 2015). Real options acknowledge the value of uncertainties in investment alternative and provide a solution for handling these uncertainties where traditional capital budgeting techniques often underestimate its extent and implications. (Peters, 2016).

This study is implemented DCF and real options approach to evaluate development opportunity of the offshore deep-water natural gas field in Indonesia which involve major capital investment. The recent changes in market condition have increased the importance of holistic analysis in project valuation that captures as many uncertainties factors in the investment to achieve quality decision making and increase assurance to the return on investment.

---

*Corresponding author.

ICMEM

1.1. Upstream oil and gas industry in Indonesia

Upstream oil and gas business in Indonesia consisting of activities from field acquisition, exploration activities, development, production, and abandonment phase. Oil and gas profit sharing mechanism between Contractors and Government in Indonesia using a model called Production Sharing Contract (PSC). Under a PSC, the Government and the Contractor agree to take a split of the production, measured in terms of revenue, based on PSC-agreed percentages.
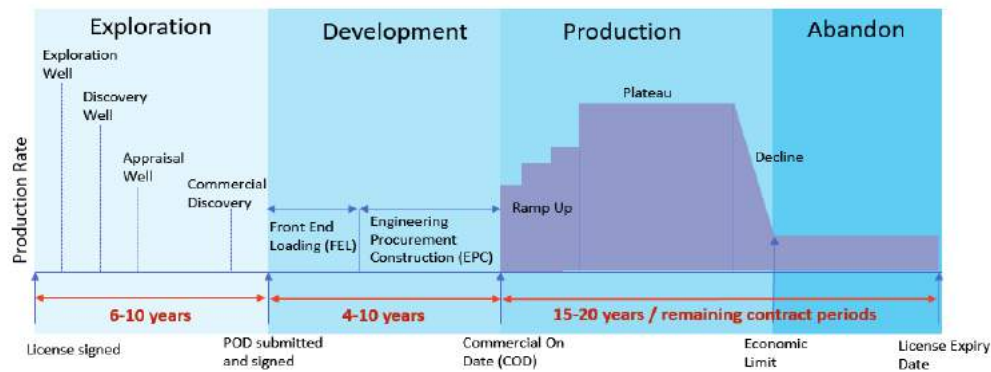
A Plan of Development (POD) represents development planning on one or more oil and gas fields in an integrated and optimal plan to produce hydrocarbon reserves which considering technical, economic and environmental aspects. Based on MEMR Law No.22/2001, an initial POD in a development area needs approval from both SKK Migas and the Minister of Energy and Mineral Resources where subsequent PODs in the same development area only need SKK Migas approval. A POD revision could be performed if these following conditions happen; changes in the development scenario, significant changes to the oil and gas reserves compared to the initial POD submitted and changes in the investment cost.

6. Methods

2.1. Objectives of study and questions

This study evaluates the economic feasibility of capital investment in the situation, where knowing the project alternative worth investing is not enough, and the challenge is knowing whether available worthier project alternatives to be pursued in dynamic market conditions of oil and gas industry. The selection of the topic of the study, the Author also have been motivated by these subjective purposes:
- To contribute and present worked example of implementation of real options approach in capital budgeting.
- Develop a framework for oil and gas project alternatives evaluation to improve the quality decision-making process.

2.2. Structure of analysis

Analysis methods utilized in this study are quantitative modeling and simulation. The selected project case study is an investment opportunity for offshore deepwater natural gas field project development in Indonesia under fiscal term PSC Cost Recovery. The primary data consists estimation data of field production profile, Capex, Opex and development alternatives are obtained from the Company through document review and interview with subject matter expert inside Company project team. The secondary data consist of oil and gas market conditions and risk identification in deep water project are obtained through the trusted source of market data in the internet, literature review from research paper and books and interview with practitioners in the project. The structure outlined in Figure 2. is developed to provide systematic capital budgeting analysis process of the investment from the perspective of

ICMEM

Discounted Cash Flow (DCF) method, risks, and Real Options. Common economic criteria considered for making a decision in the capital budgeting analysis are Net Present Value (NPV) and Discounted Profitability Index (DPI).
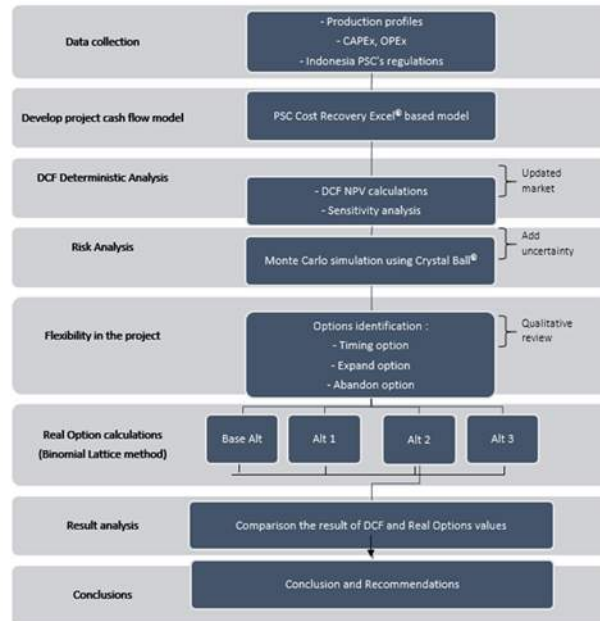

Fig. 2. Structure of analysis

7. Conceptual Framework

3. 1. Real Options in Oil and Gas

Real options are defined and valued by analogy with financial options (Trigeorgis, 1996, pp. 127-129). The analogy between Black-Scholes-Merton financial option and the real option value of an undeveloped reserve illustrated in Table 1.

Table 1 Analogy between financial and real options

Black-Scholes-Merton's financial options	Paddock, Siegel & Smith's real options
Financial option value	Real option value of an undeveloped reserve (F)
Current stock price	Current value of developed reserve (V)
Exercise price of the option	Investment cost to develop the reserve (D)
Stock dividend yield	Cash flow net of depletion as a proportion of V (d)
Risk-free interest rate	Risk-free interest rate (r)
Stock volatility	The volatility of developed reserve value (s)
Time to the expiration of the option	Time to the expiration of the investment right (t)

Real options models give two linked outputs, the investment opportunity value (the real option value) and the optimal decision rule (the threshold for the optimal option exercise). As described in Dias (2004), for petroleum concessions, it is reasonable to assume that the NPV is a linear function of the oil price P. The simplest linear model is to consider that the market value of the developed reserve V is proportional to the oil prices. The proportional model is given by:

$$V = q'BP - C\text{-}D \tag{1}$$

Variable q is the economic quality of the reserve for this model, C is a part of the Opex in the present value and D is development cost in the present value.

3. 2. Real Options – Binomial Model

Cox et al. (1979) (CRR) presents a numerical procedure for valuing options using a simple discrete-time model with contingent claims approach known as binomial lattice approach. The CRR-method is applicable to both European and American options and assumes the movement of stock or asset value follows geometric Brownian motion. Binomial means that a stock price has two possible outcomes: it can go up dan go down. Up movement of asset value, V_u derives from multiplication with an ascending factor (u) and down movement V_d from multiplication by descending factor (d). The values of u and d are based on the volatility of the value of the underlying asset (σ) and time interval (Δt) presented in Equation (2) and (3).

$$u = e^{(\sigma\sqrt{\Delta t})} \tag{2}$$

$$d = \frac{1}{u} = e^{(-\sigma\sqrt{\Delta t})} \tag{3}$$

Once risk-free rate (r) and convenience yield (δ) value obtained, continue with the calculation of neutral risk probability (P_u and P_d) which can be determined using Equation (4) and (5).

$$P_u = \frac{e^{(r_c - \delta_c)\Delta t} - d}{u - d} \tag{4}$$

$$P_d = 1 - P_u \tag{5}$$

The inputs required to build the binomial trees and calculate the option value are σ, δ, r, S0, X, T, and dt. Where X is the cost of exercising the option, T the life of the option and dt is time step chosen for the calculation. Binomial asset (S) tree obtained using forward calculation and option value (C) obtained using backward induction calculation. With the option value (Cj, i), the risk-neutral probability (p), option value can be calculated using backward induction using Equation (6). Where j is the index for the time period and i is the index for the state at the time period.

$$C_{j,i} = \frac{p \times C_{j+1,i} + (1 - p) \times C_{j+1,i}}{e^{r_f \times dt}} \tag{6}$$

3. 3. Common Real Options

Real options approach (ROA) highlights the managerial flexibility (the "option") value to respond optimally to the changing scenario characterized by the uncertainty. Most common options that exist in the investment such as:
- Option to delay or defer making the investment
- Option to adjust or alter production schedules as price changes
- Option to expand at later stages based upon observing favorable outcomes at early stages
- Option to stop production or abandon the investment if the outcomes are unfavorable at initial stages

4. Analysis

4. 1. Project Under Evaluation

The project case study is deepwater offshore natural gas field development project located in Indonesia. The new development field called Piper Hub is under pseudonym Malacca, the South Pole, and North Pole Production Sharing Contract (PSC) areas. Columbus Energy, an US-based multinational oil, and gas company with other investment around the globe serves as the operator of PSC areas

Piper Hub is consists of three development fields Alpha, Beta and Piper on the water depth ranging from 3,500 up to 6000 feet. The development project will be required state-of-the-art deepwater technology and world-class project management to safely and efficiently develop the resources. In the initial Piper Hub development plan (POD) proposal

, all the fields : Alpha, Beta and Piper would be developed using integrated development concept, where subsea wells facilities from that three fields tied back to single production facility, a newly build FPU (Floating Production Unit) and export pipelines to existing onshore facilities and LNG delivery point. This initial development plan considered as base case alternative for Piper Hub. Timeline of the project used in the analysis assumes that plan of the development to be completely approved by the end of 2017 and the project development phases continue accordingly with first gas in the year 2023.

Export and domestic sales of gas products from the fields will be through existing LNG plant and Petrochemical market tie-in to existing onshore delivery pipeline. Condensate products will be delivered for export and domestic market obligations. Export pipelines will be built to flow oil and gas from FPU to existing onshore receiving facilities prior delivered to final customers. In the analysis assumed that all production from the fields absorbed by the market either export or domestic. Capital expense on gas facilities and pipelines is the biggest proportion in the investment costs. Total investment for the project reached USD 3,7 billion which include USD 1 billion of development drilling cost. Estimated total operational expenses reached USD 1,4 billion for 15 years production period.

4. 2.   Data Assumptions

Condensate pricing and volatility

Oil product from this fields refers to specific condensate product to be called Piper Return Condensate (PRC). Base case oil price assumption uses WTI – West Texas Intermediate price of January 2017 at $52,5 per barrel. This assumption aligns with the price of ICP in September 2017 at $52,47 per barrel. With a base assumption of $52,5 per barrel WTI, assume equates to a price of $47,25 per barrel for PRC or price of PRC is 90% of WTI price.

Risk-free rate and Convenience yield

Risk-free rate (r) is defined refer to the result obtained by Fonseca, et al. (2017) by calculating the yield of US Treasury bonds with a maturity of 10 years from January 2000 to August 2015. The average real annual rate of interest was found to be 2.65%. The convenience rate (δ) which is related to the possibility of a product shortage is calculated and using monthly data of WTI oil (NYMEX, traded in New York) from September 1989 to April 2015 resulted in annual convenience rate of 2,92%.

Gas Price and volatility

LNG base price formula for Piper Hub assumes defined using following Equation (8).

$$P_{LNG} = 0,12 \times P_{WTI} + TE \qquad\qquad (8)$$

Where P_{LNG} is the price of LNG delivered ex-ship in USD/mmbtu, P WTI is the oil price West Texas Intermediate in USD/bbl, and TE is the cost of transportation to the delivery point in USD/mmbtu, assumed to be 0,5 USD/ mmbtu. Gas HHV (Higher Heating Value) assume to be 1,0604. At P_{WTI} = 52,5 USD/bbl of spot price in January 2017 selected as the base value.

PSC equity share

PSC fiscal term used in the POD proposal is Indonesian 5th generation PSC Cost Recovery with 63,5% for Contractor oil split share and 71,4% for Contractor Gas split share.

4. 3.   Discounted Cash Flow and Sensitivity Analysis

DCF static model assumes that average price of oil along the production period is equal to initial price P_0(Oil) = 52,5 $/ bbl and equates to P_{NET} (LNG) = 5,41 $/mscf. The weighted average cost of capital (WACC) used is 10% refer to the Columbus Energy corporate hurdle rate standard. The results of DCF deterministic economic analysis for Piper Hub using PSC Cost Recovery cash flow model presented in Table 5.

Table 10 DCF Static results

Project Economics	-	-
DCF-NPV	**500,4**	**MM $**

IRR	16%
Profitability Index (PI)	0,30

The analysis in the DCF static model resulting in a positive NPV of $500,4 MM, meaning that proceed the project with this base case alternative will give positive returns to Columbus Energy. In normal DCF decision rule disregarding the risks and flexibilities in the project, any positive NPV suggests the Company to proceed with the investment and the fields under evaluation maybe declared commercial. Discounted Profitability Index (DPI) found to be 1,3. Thus, with this DPI value, Piper Hub project categorized as a project with marginal profitability refers to Columbus Energy corporate minimum DPI hurdle rate which set at 1,3.

From the sensitivity analysis results, found out that oil price is the most sensitive parameter to overall project economics. A 10 percent decrease in oil price shown reducing 38 percent of overall project return NPV, while the same percentage of change in Capex resulting only 17 percent reduction of overall project return NPV. From the perspective of oil price and deterministic DCF, the project considered economic in the scenario of oil prices above 39,43 $/ barrel.

4. 4.   *Monte Carlo Simulation*

The Monte Carlo simulation performed using the same PSC Cost Recovery cash flow model developed in the previous DCF deterministic analysis. The Monte Carlo simulation result will provide a risk measure in the project evaluation and compare the result with DCF deterministic model. The result of Monte Carlo simulation with 10.000 iterations presented in Figure 4.
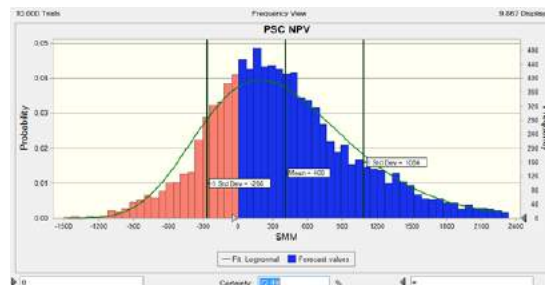

Fig. 4 Probability distribution project NPV

4. 5.   *Real Options Analysis of Base Case Alternative*

Identification of potential options embedded in the base case development alternative of Single FPU for Piper Hub described in Table 6. Real options analysis for base case alternative single FPU will evaluate these two management options of delaying or abandon the development decision for Piper Hub. For the base case alternative of development, a newly built FPU for Piper Hub, there are two possible scenarios considered in the analysis related with the decision to delay or abandon the project (timing and abandon option): (i) Scenario without production period extension, (ii) Scenario with production period extension.

Table 6 Options embedded in base case alternative

Alternative	Option type				
	Timing	Expand	Abandon	Switch	Contract
Single FPU	Yes	No	Yes	No	No

ICMEM

Description	Delay decision on starting the development phase	Expand the production facilities requires new major capital investment	Relinquish concession to government accept the sole cost	Once the development phase started, it's not possible to change to another alternative	There is possible option to farm-out the block. Not considered in the analysis due to no available data

Decision rule on the terminal point of the binomial lattice in year 5 represents management decision where Columbus Energy should make the final decision to develop the fields or abandon. In the intermediate lattice of year 0 to 4, management of Columbus Energy has the options whether to develop, abandon or wait for next period. Management decision will select to develop the field only if the NPV of developing is higher than the cost to relinquish or abandon with amount assumed $ 500 MM.

Table 7 Binomial real options calculation result timing and abandon base case

	Deterministic DCF	DCF with Risk (mean)	Option to Delay up to 5 years (Without production period extension)	Option to Delay up to 5 years (with production period extension)
Project NPV	500 $MM	409 $MM	291 $MM	721 $MM
Option premium (DCF- RO)			(209) $MM	221 $MM

The result of Real Options analysis in scenario (i) is 291 $MM which lower than DCF NPV, meaning that option to delay the investment without any extension in the production period deteriorates project profitability as much as 209 $MM. The result indicated that delaying the investment decision without extending production period is not valuable. This option value affected by the factor of abandon cost which is very high and opportunity loss which represented by convenience yield value equals to yearly production rate 6,5%.

The result of Real Options analysis under scenario (ii) is 721 $MM which indicated option premium value of 221 $MM. This option premium value is potential profit gain impacted by the volatility of asset that driven by volatility of oil prices. The result of scenario (ii) indicates that delaying the development decision until market conditions favorable is valuable when also extending the production period respectively.

4. 6.   Real Options for Alternatives Evaluation

Columbus Energy project team currently come up with three development alternatives to lower capital investment, there are tie-back to existing FPU, built facilities at the offshore platform and use onshore receiving facilities (ORF). Each alternative has different contingent conditions during the project period. Calculation of Real Options binomial tree performed using Real Options Super Lattice Solver (ROSLS)® software develop by Real Options Valuation Inc. Input parameters used in the Real Options binomial tree calculations aligned what being used in previous base case real options analysis.
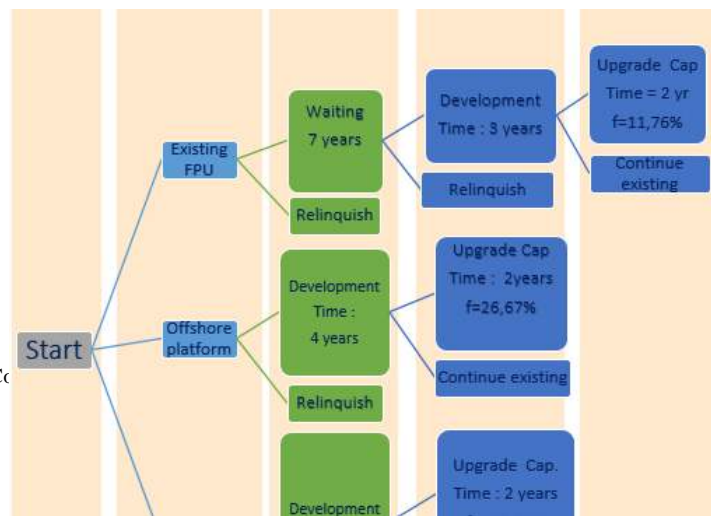
ICMEM

Fig. 5. Project alternatives and its contingent conditions

Alternative 1 – FPU Existing

Timeline of the project and type of option identified in each phase for alternative FPU existing described in Table 8.

Table 8. Project timeline alternative 1

Year	0 -7	8-21
Activities	Waiting for spare capacity of existing FPU	Development phase
Option type	Timing and abandon	Option to expand
Considered Scenarios	1. No extension of production period (waiting time reduce production lifetime) 2. With extension of production period (production period remains 15 years)	In the year 8, there is option to develop with base capacity or directly executed upgrade option with subsea compression.

The scenario of no-extension production period considers 6,5% leakage rate (dividend) equal to average annual production rate as the cost of delay. For the second scenario with extension production no cost of delay applied and dividend rate equal to 2,92%.

Calculation of the first scenario where there is no-production period extension resulted in NPV of 166,11 $MM. This result is lower than the NPV of base case alternative newly FPU without production period extension which obtains a value of 291 $MM. The lower NPV result affected by the long delay time of alternative 1 – existing FPU which is 7 years compared to 5 years in base case newly FPU. Meanwhile in the second scenario where there is an option to extend production period as much as the waiting period resulted in NPV = 539,46 $MM. This result also found to be lower than base case alternative newly FPU with period extension. Reduction of Capex and Opex and 11,76% expansion factor in this alternative found not sufficient to compensate for the reduction of asset value which affected by recovery rate factor of 85%.

Alternative 2 – Offshore Platform

Timeline of the project and type of options identified in each phase for Offshore Platform alternative described in Table 9. The value of an underlying asset used in the expand option will consider leakage rate during production phase that lasted 2-year prior the availability the expand option. Leakage rate (γ) of 6,5% will be used in the model. Calculation of expand option in alternative 2 resulted in a total strategic value of 2059,36 $MM. To derived the value of overall alternative NPV, that strategic value shall be subtracted with development cost executed in the previous phase. Thus, NPV value of alternative Offshore Platform equal to 2059,36 -1850,1 = 209,26 $MM.

ICMEM

Table 9. Project timeline alternative 2

	Development	Production	Expansion
Year	0 -4	5-6	7-21
	Engineering and construction of production facilities	Production phase	Development phase
Option type	No option (yes or no situation)	No option	Option to expand

Alternative 3 – Onshore Receiving Facilities (ORF)

Timeline of the project and type of option identified in each phase for Onshore Receiving Facilities alternative described in Table 10.

Table 10. Project timeline alternative 3

	development	Production	Expansion
Year	0 -3	4-5	6-21
	Engineering and construction of production facilities	Production phase	Development phase
Option type	No option (yes or no situation)	No option	Option to expand

Calculation of expand option in alternative 3 resulted in a total strategic value of 1974,30 $MM. To derived the value of overall alternative NPV, that strategic value shall be subtracted with development cost executed in the previous phase. Thus, NPV value of alternative Onshore Receiving Facilities equal to 1974,30 -1570 = 404,3 $MM. This NPV value is significantly higher than NPV alternative 2 - an Offshore Platform which only 209,26 $MM under the same scenario.

Sensitivity analysis of the binomial lattice model of alternative 3 Onshore Receiving Facilities (ORF) indicated that the key variable affecting the option value is Upgrade factor which directly correlated with the value of the underlying asset. In this alternative, assume that Upgrade could increase recovery rate up to 95% of base case alternative, thus the upgrade factor is 1,73. Reduction Upgrade factor to 1,56 will reduce the strategic value to 1756,87 $MM equal with significant reduction alternative NPV to 186 $MM make it lower than NPV of alternative 2 – offshore platform (upgrade factor 1,26).

5. Analysis Results

From a traditional DCF point of view based on NPV, the most favorable alternative is a newly FPU followed by alternative Tie-Back to existing FPU, Offshore platform and Onshore Receiving Facility (ORF) respectively. Alternative 3 resulted in negative NPV due to the decrease of reserves value much higher than the total capital investment required.

Table 11. Result analysis of traditional DCF

	Newly **FPU** (Base case)	Existing **FPU**	**Offshore Platform**	**ORF**
NPV DCF Static ($MM)	500,3	383,5	101,6	-138,7
Preferred alternative	(1)	(2)	(3)	(4)

From Real Options point of view with consideration that decision shall be made in 2018 and production period for existing FPU could be negotiated to remain 15 years, alternative of Tie-Back to existing FPU (DPI 1,35 – NPV 539 $MM) become more attractive compared to base case alternative of newly FPU (DPI 1,30 – NPV 500 $MM).

Table 12. Result analysis of real option with extension – decision in 2018

	Newly **FPU (Base case)**	Existing **FPU**	**Offshore Platform**	**ORF**

Real Option NPV - with extension ($MM)	**721** *5 years delay **500** *no delay	**539,46**	**209,26**	**404,3**
DPI RO – with extension (Decision in 2018)	**1,30**	**1,35**	**1,13**	**1,25**
Preferred alternative	**(2)**	**(1)**	**(4)**	**(3)**

From Real Options point of view under circumstances that Columbus Energy have the privilege to postpone decision up to 5 years and production period remain 15 years for all alternatives as seen in comparison in Table 13., base case alternative of Newly FPU remain the preferred alternative with the highest DPI and NPV value (DPI 1,42 – NPV 721 $MM).

Table 13. Result analysis of real options with full extension – decision delay 5 years

	Newly **FPU** (Base case)	Existing **FPU**	**Offshore Platform**	**ORF**
Real Option NPV – with extension ($MM)	**721** *5 years delay **500** *no delay	**539,46**	**209,26**	**404,3**
DPI RO (Delay up to 5 years)	**1,42**	**1,35**	**-**	**-**
Preferred alternative	**(1)**	**(2)**		

Based on Real Options approach, if Columbus Energy failed to negotiate the full production period of 15 years from the fields in the POD, the project feasibility will drop drastically due to existence opportunity lost as much as the yearly average rate of field production. Under these circumstances, alternative ORF becomes a feasible alternative that potentially delivers the greatest return. Delaying decision of development newly FPU up to 5 years with the end of production period remain in 2038, shown in the real options view potentially deliver a greater return than immediate decision to develop with Tie-Back to existing FPU or Offshore platform. Alternative of Tie-Back to existing FPU without production period extension deliver the lowest return and investment efficiency.

Table 14. Result analysis of real options without extension

	Newly **FPU (Base case)**	Existing **FPU**	**Offshore Platform**	**ORF**
Real Option NPV - No extension **($MM)** - Decision in 2018	**291** * 5 year delay	**166,11**	**209,26**	**404,3**
DPI	1,17	1,1	1,12	1,2
Preferred alternative	(2)			(1)

6. Conclusion and Recommendations

Based on the results of the analysis, extension of concession will significantly affect the value of the alternatives proposed. Thus, Columbus Energy shall focus the negotiation to the government of Indonesia (GoI) on potential approval of the extension of the concession up to 15 years' production period. First priority is to negotiate to postpone decision newly FPU alternative in 5 years and to obtain an extension of full production period (DPI 1.42). If those efforts were failed, pursue with negotiation for alternative 2 of Tie-Back to existing FPU with the extension of full production period (DPI 1.35). If immediate decision alternative required in 2018, in order to prevent the sole cost in the development phase, the preferred option would be ORF alternative (DPI 1.25) or continue to develop Newly FPU in year 5 (1.17) with the provision of Company financial condition permitted.

Real Options analysis required more complex contingent analysis of alternatives, thus difficult to implement directly but found to be beneficial to avoid misleading evaluation when comparing alternatives that have embedded options. In Real Options approach the higher volatility factor in the project, resulting in higher potential return or option premium.

Real options approach implemented in the case of Piper Hub is capable to value flexibility embedded in the project such in the ORF alternative with the presence of expand option that can be executed anytime when favorable, change

ICMEM

project NPV from negative into positive. The framework used in the analysis of Piper Hub, possible to implement for other project and combine with sensitivity and scenario analysis to help in the project decision making process.

References

Cox, J. C., Ross, S., & Rubinstein, M. (1979). Option Pricing: A Simplified Approach. *Journal of Financial Economics, 7*, 229-263.

Dias, M. A. (2004). Valuation of exploration and production assets: an overview of real options models. *Journal of Petroleum Science and Engineering, 44*, 93-114.

Dixit, A. K., & Pindyck, R. S. (1995, May - June). The Options Approach to Capital Investment. *Harvard Business Review*.

Fonseca, M. N., Pamplona, E. d., Valerio, V. E., Aquila, G., Rocha, L. C., & Junior, P. R. (2017, Oct/Dec). Feasibility analysis of the development of an oil field: a real options approach in a production sharing agreement. *Review of Business Management, 19*(66), pp. 574-593. Retrieved 2017.

Gibson Dunn. (2017). Indonesia Legal Alert The Indonesian PSC : The End of an Era. Singapore: Gibson Dunn.

Gitman, L. J., & Zutter, C. J. (2013). *Principles of Managerial Finance* (Thirteenth Edition ed.). Pearson Addison Wesley.

Haq, N. (2009). *A New Era of Project Economics and Investment Decision Techniques*. FIRA Publishing.

Kodukula, P., & Papudesu, C. (2006). *Project Valuation Using Real Options : a practitioners guide*. J. Ross Publishing, Inc.

Haq, N. (2009). Advance Petroleum Economics for Making Decisions with The High Volatility of Oil Prices: An Application of Dynamic DCF and Real Options Approach in the PSC Regime. *Proceedings Indonesian Petroleum Association, 33rd Annual Convention & Exhibition*.

Kvalevag, T., & Svendsen, C. G. (2009). *How do discounted cash flow analysis and real options differ as the basis for decision making about oil and gas field developments?* Copenhagen Business School.

Lund, M. W. (1999). *Real Options in Offshore Oil Field Development Projects*. Stavanger: Natural Gas Marketing & Supply, Statoil.

Mun, J. (2006). *Modeling Risk - Applying Monte Carlo Simulation, Real Options Analysis, Forecasting and Optimization Techniques*. John Wiley & Sons.

Peters, L. (2016). *Real Options Illustrated*. Switzerland: SpringerBriefs in Finance.

Pindyck. (1991). Irreversibility, Uncertainty, And Investment, *Journal of Economic Literature*

PwC. (2016). Indonesia Oil and Gas Guide

Qiu,X.-H., Wang, Z., &Xue,Q. (2015). Investment in deepwater oil and gas exploration projects : a multifactor analysis with a real options model. *Petroleum Science Journal (1), 525-533*

ICMEM

The 3rd International Conference on Management in Emerging Markets

Analyzing Campaign Characteristics Influenced Backers Decision to Fund in a Reward-Based Crowdfunding to Create Campaign Strategy in Indonesia: A Preliminary Study

Dita Anindya Kartika[a*], Deddy Priatmodjo Koesrindartoto[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, 40132, Bandung, West Java, Indonesia.*

Abstract

Crowdfunding platform has become an alternative way of financing to funding in a social aspect, creative project or business idea. This platform has been helping to fund a specific amount of money to help the creator realizing the idea. In Indonesia, a few number of crowdfunding platform start to grow and being a well-known platform to fund money. But the number of the crowdfunding platform in Indonesia is still low compared with other country scattered around Indonesia. Because of that fact, is still unclear for the creator in Indonesia to determine which one is the best campaign strategy that can be suitable to use in Indonesia to attract a large number of backer to contribute in the project. Thus, this study is conducted to determine what are the factors in the campaign affect the successfulness of the project. Therefore, from this research will come out the suitable campaign framework to be implemented in crowdfunding campaign in Indonesia so it can attract a lot of backers. The analyze will be conducted based on source credibility model such as attractiveness and trustworthiness.

Keywords: Crowdfunfding; Crowdfunding Platform; Campaign; Campaign Strategy

1. Introduction

Crowdfunding, in this era, is still a new phenomenon for some people. Crowdfunding itself can be explained as a practice of funding some specific money in some period of time from a large number of people, especially the online-community, with each of them give mostly small amount of money via the internet. People who has creative idea, or projects, and needs specific amount of money can use crowdfunding to collecting money, it helps them to pool the money from the online-community.

Crowdfunding provides a new way to collecting funds has grown rapidly with the creators can share their project through online platform so it connecting the creators with a large crowd and a lot of potential backers (Kobberø, 2014). Crowdfunding platform is just a third-party connecting the creators and the backers. Each of the creator share their project through the platform and define the specific amount needed and limit of time to collect it (Press - Kickstarter). Nowadays, these are a lot of crowdfunding platform in the internet to help people fund their ideas. Each platform has sets their rules differently from one another, some of them let the creator keep doing their projects with the amount of money they already collected in specific period, while some of them only let the creator get their money if their project is fully funded or receive more than the target. Those platforms also focused on helping people with their difficulties or any other personal needs, while some of them focused on creative project or business idea.

However, the crowdfunding project cannot attract investor by itself. That is how the platform give really big helps. Almost all crowdfunding need the platform to do a crowdfunding campaign to attract the online-community. The time gap between the start-date and the deadline date is called campaign period, it is the time when the creator communicates about their project through several sources, mostly through internet, to promoting their project, as this is the time the creator has a chance to collecting money from the potential backers (Kobberø, 2014).

---

* Corresponding author.

ICMEM

As the crowdfunding platform uses has risen year by year, the crowdfunding platform become increasingly famous. One of the famous crowdfunding platform website is Kickstarter (kickstarter.com) that launched in 2009. Kickstarter is founder-controlled website helping people with bringing their ideas into reality using crowdfunding, with total successfully funded projects of 146.069 (Kickstarter.com, 2018).

As a crowdfunding platform, each project available in Kickstarter is independently created by the creator that fully has the responsibilities and control in the project they put in Kickstarter (Kickstarter Team, 2009). Kickstarter only provide a website page that can be fulfilled with project details, images, video, and even a web site designing by the creator to help them make a campaign to attract potential backers (Kickstarter Team, 2009). The deadline and funding goal are also set by the creator, while the Kickstarter set the rule of *"all-or-nothing",* means that the money collected from the crowd will only be given if the project is reaching its funding goals (Kickstarter Team, 2009).

The crowdfunding phenomenon is happening anywhere, including Indonesia. In Indonesia, the crowdfunding platform is also started to become popular to raising some fund to make project; whether it is a social project or a creative project. However, in this early stage of implementing the crowdfunding, the creator barely knows about the key factors moving the crowd to fund their project. As study about crowdfunding in Indonesia is just a few and very rare, there is still not clear what the most suitable strategies to be implemented in Indonesia to create campaign that can attract a lot number of potential backers. This research study will study more further about the crowdfunding campaign strategies that can be implemented in Indonesia, with the main focus a project that focus in technology or creative industry.

2.   Literature Review

2.1 Crowdfunding

In the rapid development of financial technology and the easy access to the internet, crowdfunding become alternative way of funding money. A crowdfunding is a new method of online financial for social and cultural project, creative project, start-ups or business idea to raising small amount of money from the crowd, who mostly coming from the online-community. Crowdfunding is capable of providing solutions by enables the creator to get in contact with the crowd as potential backers while communication between them is happening through the internet (Dietrich & Amrein, 2017).

The existence of the crowdfunding helps a lot of individuals, start-ups or early-stage business to step in the next stage to create a project, a product or a service. And they see the potential given by the crowdfunding to make it easier the reach a wider range of the crowd through the internet that can give them a lot of small contribution (Wright, 2015). Crowdfunding give a benefit for the creator because the use of it is similar of the use of social media, creating connection to personally contact and communicate with a large amount of people in the internet who share the same interest and attached to their project too (Kuti & Madarász, 2014). The quality of the crowdfunding project also has main impact to attract the potential backers, as it can be attracting attention from other potential backers with different interest but think the project is great (Mollick, 2013). While a big number of backers that relatively give small amounts of money from each of backers and with the help from the internet to connect them is being the key elements of the crowdfunding (Pekmezovic & Walker, 2016).

2.2 Crowdfunding Platform

Crowdfunding Platform is an internet-based platform that facilitate the creator to creating a crowdfunding project and its campaign and connect them with the crowd as potential backers. The creator will explain their project on the crowdfunding platform that helps them connect with potential backers, where in that platform they will also put the funding goal, funding period and propose a reward given to those who willing to back their project (Devodets & Sundstrom, 2017). The platform developing the crowd to shares information about the project through a media channel or social media to spreading the news about the project so it can leads to increasing awareness about the project and the product or service (Moisseyev, 2013).

ICMEM

The Creator

A person or an organization who has idea or project and raising a fund through crowdfunding are called The Creator. They are mostly entrepreneur using online platform as an alternative way to attract finance from the society (Koberrø, 2014). The creator can be anyone who meets the terms to fund some money in crowdfunding platform, that later has responsibilities for using the funds raised to develop and produce the specific product or service according to the campaign description. They also have full responsibilities to informing and communicating with public, especially the backers (Kobberø, 2014).

The Backers

The backers whose primary role are to provide the capital necessary for the entrepreneurs to develop their idea, are the ones who have intention to become a part of the project by donating their money to the project they interested in. They usually have motivation or intention when deciding to invest to some crowdfunding project, while there is more number of investor that attracted intrinsically (Wechsler, 2013).

Campaign

To attract money to come inside their project's wallet, the creator needs to think and create some creative way to promoting their project. The campaign could be asking a financial support by open call or make a social media and another way to promoting their project; can be art, music, video, or anything as creative as possible. The creator must create campaign and pay attention to what makes it a successful campaign that can attract investor; whether is a intrinsic or extrinsic factors. The creator needs to know that the investor sometimes has some motivator in fund a project like the wants of helping other people, to get some rewards, supporting some specific reason or they want to be a part of a group of people or community (Wechsler, 2013). To make it better, a campaign project should be followed by project description, step to achieve the goal of the project, the transparency of money usage and also providing image or video to make it more interested (Jascha-Alexander Koch and Michael Siering, 2015).

The characteristic of the campaign also give impact to its success level, while the early funding link, product can be easily understood, the amount of the money needed is still acceptable and the period of the campaign also give important role as success driver (Anna Lukkarinen, Jeffrey E. Teich, Hannele Wallenius and Jyrki Wallenius, 2016). Social media is still a popular way to create a campaign and Facebook is still the most favorite platform among others followed by Twitter, web site, email, blog, and others media (Wechsler, 2013).

Campaign Goal

Campaign Goal is affecting the chance of crowdfunding being successfully funded. The higher goal set by the creator will decreasing the success chance of the project (Mollick, The dynamics of crowdfunding: An exploratory study, 2013), as the same also being said by (Marelli & Ordanini, 2016) that the chance of success of collecting money from the crowd will be decreasing if the goal set being increased by the creator.

Campaign Duration

The more days taken to fund the crowdfunding will be negatively affect the success of the project (Mollick, The Dynamics of Crowdfunding: An Exploratory Study, 2013), as the longer the duration make the crowd taken a signal that the project is pesimistic and lack of confident

Project Updates

Creator's interaction is the communication the creator put to create a connection between the creator and the backers. The interaction is in the form of updating the progress of the project, as provide update positively related with the success of the project because it makes the backers feel being a part of the project (Mollick, The Dynamics of Crowdfunding: An Exploratory Study, 2013).

Project Description

Project description is one of the content in the campaign pages. The creator can put any information about the project and product, as the amount of information given by the creator to the crowd has positive impact in the campaign progress (Koch & Siering, 2015). The project description can also be consisting about the progress of the project and specific step by step to achieve their goal and realizing the project. With the availability of the description, it is easier for the creator to reach their backers as it is giving the backers better access to the project (Koch & Siering, 2015).

Graphical Accompaniment

The availability of graphical accompaniment is giving a better understanding about the project and can help the potential backers recall the images they have been seen while they go through lot of projects (Koch & Siering, 2015).

ICMEM

(Drabløs, 2015) said that the way images taken, the quality of the image and the content of the image are affected the backers' decision to fund in the project or not.

Provision of Video Material

Videos signaling a positive message to the potential backers as it means the creator is put effort and preparation into the project (Mollick, 2013). (Wheat, Wang, Byrnes, & Ranganathan, 2013) explained that video has important role of the campaign as it can fascinate the potential backers. It also can capture the attention of the potential backers, as long it is connected with the product and no need to spend long time to watch the video (Forbes & Schaefer, 2017).

Reward

Reward has a diverse range of option, as there are almost no limitations to what the creator could and would to offer to their backers (Drabløs, 2015). Rewards itself can be explained as the tangible or intangible product offers by the creator to the people who fund their project (Mollick, 2013). The most common product given by the creator are the final product of their project while sometimes the creator could propose a dinner, lunch or meeting as rewards or also t-shirt or thank- you card (Drabløs, 2015). Reward can be the main reason of the backers to fund in a crowdfunding project, so the more attractive the offered reward the higher success chance the project has (Marelli & Ordanini, 2016).

Social Media Owned

Other social media put by the creator in the campaign pages make the potential backers can get further information through another network. The availability of the social media linked with the campaign give a big impact of spreading words about the project, as the social media give the crowd more insight about the project (Forbes & Schaefer, 2017). Updates about the project also can be put or uploaded through the social media.

Being Featured

Being featured or reviewed give positive impact to crowdfunding success chance. Through this process, the creator can establish connection with the potential backers and distribute its value as it is spreading the crowd's awareness and reaching out potential backers (Arkrot, Unger, & Åhlström, 2017). According to (Kaur & Gera, 2017), it is one of crowdfunding's marketing activities to promote the project. The reviewed information can be used by the backers through many media platform to increasing relationship between creator and potential backers (Zheng, Li, Wu, & Xu, 2014).

3. Methodology

The secondary data collection is done by first exploring literature studies to find the characteristics that will be used to analyze the campaign as the object of this study. The campaigns are gathered from a reward-based crowdfunding platform, Kickstarter.com. The data used in this research study is a campaign of crowdfunding project with the criteria of successfully funded project.

The primary data collection is done by constructing a questionnaire to figure out the characteristics of successful campaign from backers' point of view. It is constructed to support the result generated from the thematic content analysis as the characteristics of the successfully funded campaign is aimed to be implemented in Indonesia. The questionnaire provides a set of questions regarding the options of each campaign characteristics that already previously analysed from the existing campaign in crowdfunding project.

Analyzing the data will be conduct after collecting and processing the data. While analyzes the data, descriptive explanation for analysis will be elaborating the data. The thematic content analysis will be use to analyze all the data to exploring and find out the aspects that affected the independent variables.

3. 1.   Literature Review Synthesis

The explanation about definition of each variables and the correlation existed between variables. Comparing the previous study is also needed and done in this section with the intention to collecting further explanation and evidence and also to exploring all the previous phenomenon that happens in the past and still elaborate and has correlation with this research study. The literature review itself can be seek in journals, articles, books, scientific writing and website.

3. 2.   Content Analysis

ICMEM

To analyze the characteristics of the campaign, content analysis is performed. The characteristics used on analyzing the campaign are based on the characteristics found in the previous studies about success characteristics in crowdfunding campaign. This analysis aimed to figure out whether the characteristics that have been found in the previous studies are actually exists in the existing crowdfunding campaign. Thus, the characteristics are being summarized and to be tested with the questionnaire given to the potential backers, which result will be analyzed using the next analysis method, which is descriptive analysis.

3. 3.   Descriptive Survey Analysis

For analyzing the questionnaire in this study, the descriptive analysis will be used by looking over the response frequencies for each question. The result will be presented using pie chart and bar chart to provide a clear explanation. Thus, the response with high frequencies will be taken as a result to determine which campaign characteristics that are desired by the backers.

4.   Discussion and Analysis

4. 1.   Campaign Analysing

From analysing 50 successfully funded campaign, this research found that all of the 50 projects provide project description, updates and rewards. 49 projects provide video and graphical accompaniments while only 39 projects have another social media platform and 27 projects are being featured or reviewed.

4. 2.   Descriptive Survey Analysing

Respondents Demographic
Respondents are dominated by female and most of them are 17-22 years old and all of them owned a bank account.
Respondents Perception
Most of the respondents (48%) are familiar with the crowdfunding but they never use it before.
Respondents Preference
1. Funding Preference
Most respondents interested in funding a crowdfunding project with productive project being the most attractive type of project. The majority of the respondents also willing to fund until Rp500.000 and think the project need to be done even though it failed to reach its goal.
2. Scheme Preference
Project with 3 months funding period and goal below Rp50.000.000 followed with brief explanation also give updates occasionally are attract most respondents. Pictures and Videos explaining the product and also complimentary products as rewards are also being the main attraction for the majority of the respondents. Most of them prefer project having a communication features, Instagram and also being reviewed in online platform.

5.   Conclusion

1. Characteristics that should be considered in order to make a successful crowdfunding campaign: goal and duration, communication feature, graphical accompaniment, project description, review, project update, reward, provision of video material, and online platform ownership.

2. The respondents are familiar with crowdfunding but they never use it. The respondents are interested in funding if they found a project that fits their preferences
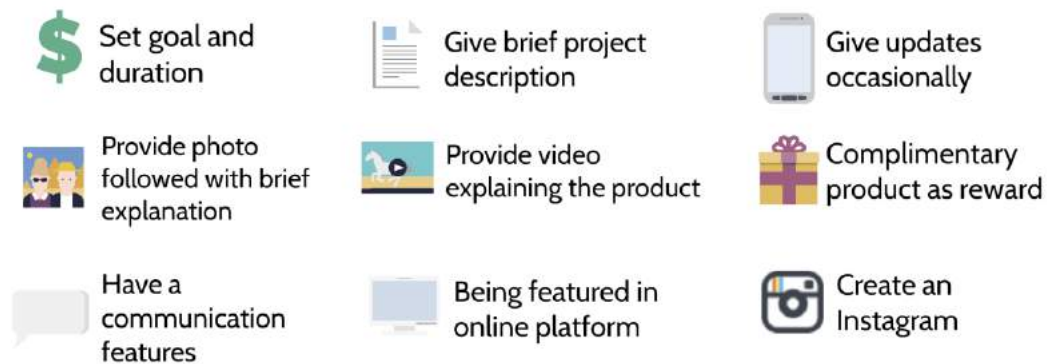
ICMEM

Campaign Framework

Figure 1. Campaign Framework

References

Kickstarter.com. (2018, June 26). *Stats*. Retrieved from Kickstarter: https://www.kickstarter.com/help/stats?ref=hello

Kickstarter Team. (2009, 04 28). *Pressroom*. Retrieved from Kickstarter: https://www.kickstarter.com/press?ref=about_subnav

Statista. (2015). *Number of crowdfunding platforms worldwide as of December 2014, by region*. Retrieved from Statista: The Statistic Portal: https://www.statista.com/statistics/497227/number-of-crowdfunding-platforms-globally-by-region/

Dietrich, P., & Amrein, S. (2017). Crowdfunding Monitoring Switzerland 2017.

Wright, T. (2015). Introduction to Crowdfunding. *Big Lottery Fund*.

Kuti, M., & Madarász, G. (2014). Crowdfunding. *Public Finance Quarterly*.

Mollick, E. (2013, August 13). The Dynamics of Crowdfunding: An Exploratory Study. *Journal of Business Venturing*, 2.

Pekmezovic, A., & Walker, G. (2016). e Global Signi cance of Crowdfunding: Solving the SME Funding Problem and Democratizing Access to Capital. *7*(2).

Devodets, A., & Sundstrom, C.-H. (2017, May). Crowdfunding: How motives behind creating a reward-base campaign affect campaign creator's communication strategies .

Moisseyev, A. (2013, March 5). EFFECT OF SOCIAL MEDIA ON CROWDFUNDING PROJECT RESULTS. *Digital Common*.

Seiler, R., & Kucza, G. (2017). SOURCE CREDIBILITY MODEL, SOURCE ATTRACTIVENESS MODEL AND MATCH- UP-HYPOTHESIS – AN INTEGRATED MODEL. *International Scientific Publications*.

Umeogu, B. (2012). Source Credibility: A Philosophical Analysis. *Open Journal of Philosophy*.

(n.d.).

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants Bank Deposits by Using Bank Specific Variables and Macroeconomic Factors of Commercial Banks in Indonesia

Fasya Nur Fadilah Putri[a]*, Achmad Herlanto Anggono[b]

a,b Jl. Ganesha No.10, Bandung and 40132 , Indonesia

Abstract

The purposed of this study is to relationship the relationship between bank specific variables; Net Interest Margin (NIM), Loan to Deposits Ratio (LDR),Net performing loan (NPL) and macroeconomic factors; Inflation rate (INFL) and Growth Domestic Product (LnGDP) toward Bank Deposits in Indonesia. This research is done by using panel data regression analysis with Random Effect Method (REM) and the sample used 19 commercial banks in Indonesia which are included in the BACB 3 and 4 category in the period 2008-2017 and use quarterly data
The result shows that NIM, LDR have negative significant relationship with Bank Deposits and Inflation rate and Growth Domestic Product have positive significant relationship toward Bank Deposits. Meanwhile for Net performing loan (NPL) has insignificant relationship to Bank deposits.

Keywords: Bank Deposits; Indonesia; Bank Specific Variables; Macroeconomic Factors

1. Introduction

Commercial banks are at the core of a financial system. The function of the bank itself according to the Act No. 10 of 1998 is a financial institution where the public can save their funds, once the funds are collected the bank distributes back to the community in the form of credit, in other words the function of the bank is as *financial intermediaries*. When the funds collected the bank must pay interest expense to the customer and will get interest income from interest credit paid by the customer.

Banks collect money from customers using Third party funds consisting of savings accounts, current accounts, and bank deposits accounts. Judging from its development bank deposits have the greatest composition among Third party funds. Bank Deposits have a small risk among other investments but have high returns among third party funds (Kasmir, 2014).

The development of high deposit banks in Indonesia makes banks more and more to channel money in the form of credit and allow banks to earn more profit. In addition, bank deposits can help increase economic growth because with the higher bank deposits, the bank deposits can be the significant component of the money supply used by the public and the changes in money growth are strongly correlated with the changes in prices of goods and services in the economy.

Thus, deposit banks are deeply involved in the function of the bank as and also the component of the country's economy, to avoid the worst possibility that disturbs deposit banks is important to know the factors that affect the deposit bank itself. In this paper will find out the influence of bank specifics variables consisting of Net Performing Loan, Net Interest Margin, Loan to Deposits ratio and macroeconomic factors consisting of Inflation and Growth Domestic Product to bank deposits in Indonesia.

---

* Corresponding author.

ICMEM

2. Literature Review

Several studies have conducted research on what variables affect bank deposits, the following three studies are the basis of research in this paper:

Pradhan & Paneru (2011) discusses the determinants of bank deposits of Nepalese commercial banks. They used Statistical package SPSS in searching for the relationship between independent variables with bank deposits. Independent variables used in their study consist of GDP growth rate, inflation, numbers of branches and ROA. In their research they found from sample 18 commercial banks listed in NEPSE for the period 2008-2013 that there is a significant positive relationship of ROA and Number of branches to Bank deposits, in contrast to the GDP growth rate and inflation in their research has a significant negative relationship to the bank deposits

The next study was conducted by Finger & Hesse (2009) who also investigated the factors affecting demand bank deposits in Lebanon. They use two variables: bank specific variables consisting of the perceived riskiness of individual banks, liquidity buffers, loan exposures, interest margins and macroeconomics level uses consisting of specific risks, business cycle, supply of funds and global market volatility. In processing their data using vector error correction models (VECMs) and getting the result that in terms of macroeconomic level, economic activity, prices, and the interest differential between the Lebanese pound and the U.S. dollar is significant in explaining deposit demand. For bank specific variables liquidity buffers, loan exposure, and interest margin have a significant influence on demand deposits. They also said that the factors affecting bank deposits could continue to support the attractiveness of deposits in Lebanon

The last research that became the basic foundation of this paper is a study of Safe (2013) that examines bank deposits due to banks in U.S are increasingly at risk. They use ROA, NPL, Bank size, Liquidity and equity to assets as independent variables to see the effect on bank deposits. We found the difference in the difference between the estimation of the model and the fixed rate model of 382,370 bank-quarter observations and found that ROA and bank size have a significant negative influence on deposit banks, NPLs and liquidity have positively significant and equity to asset have a significant influence.

3. Methods and Variabels

This study will use 19 commercial banks in Indonesia which are included in the BACB 3 and 4 category in the period 2008-2017 and use quarterly data. This study will use 19 commercial banks in Indonesia which are included in the BACB 3 and 4 category in the period 2008-2017 and use quarterly data. The data used are secondary data that have been officially published by Indonesia Financial Service Authority for bank specific variables and for macroeconomic variables issued by Bank Indonesia. The method used in data processing by using regression data panel because the data used is time series and cross-section data (Gujarati, 2004).

According to the literature review above, given the availability of data, the author uses 5 variables that become independent variables to see the effect on the dependent variable that is Bank deposits. Independent variables consist of two categories: bank specific which consist of Net Performing Loan, Net Interest Margin, Loan to Deposits ratio and macroeconomic factors consisting of Inflation and Growth Domestic Product. The explanation and calculation of the ratios of dependent and independent variables are as follows:

Table 11 Variables, Explanation, formula, and unit

Variable	Explanation	Formula	Unit
LnDep	Natural logarithm of bank Deposits	LnDep= $\log_e$(Total Bank Deposits)	
NPL	The ratio of Credit risk of bank	NPL = Non-performing loan / Total gross loan	%
NIM	measures the difference between interest income and the amount of interest paid to the depositor, relative to the amount of the asset	Net Interest Margin = net interest income / average earning assets	%
LDR	relationship between third party fund and credits given	LDR= Total Loans Given/ Total of Third Paty funds	%
lnGDP	Natural logarithm of real Growth Domestic Product	LnGDP= $\log_e$(Real GDP)	

ICMEM

Inflation	An increase in the general price imitated by the money supply in the market	Inflation = CPI Index-1	%

4. Techniques and Model Specifications

At first, the author will determine research problems, determine research topics, research questions and research objectives. Next, the author collect the data sample, the sample used in this study using data 19 commercial banks in Indonesia which are included in the BACB 3 and 4 category in the period 2008-2017 and use quarterly data. After collecting the data, the author uses tools to process the data to get the results to be analyzed later. In analyzing the results, the author collects previous theories and research from books, journals / papers and articles to enrich the insight of the author.

In analyzing this research, this research will use panel data regression analysis which will be processed by using E-views 9.0. The selection of this model is caused by the data used in this study using two dimension namely time series and cross sectional. Panel data regression analysis can process panel data of the same cross-sectional unit is surveyed over time. In other words, the data panel has space as well as time dimensions. (Gujarati, 2004).

Before performing the regression, first the data used must satisfy the BLUE requirements consisting of Multicollinearity Test, Heteroskedasticity Test, Autocorrelation Test and Normality Test. The data of regression model must fulfill the assumption requirement to obtain acceptable regression results. After that, the author determine model to be used in this research between fixed effect model (FEM) and random effect model (REM) using likelihood test and Hausman test. After the whole process has been done the author will get the results that will be in the analysis later. Thus, the panel data regression is formulated as follows:

$$y_{it} = \beta 0 + \beta 1* NPL_{it} + \beta 2* NIM_{it} + \beta 3* LDR_{it} + \beta 4* LnGDP_{it} + \beta 5 *INFL_{it} + \varepsilon_{it}$$

Where:
 y = Dependent Variable (LnDep / Bank Deposits)
$\beta 0$ = Constant Term
$\beta 1$ = Coefficient for NPL
NPL = Net Performing Loan
$\beta 2$ = Coefficient for NIM
NIM = Net Interest Margin
$\beta 3$ = Coefficient for LDR
LDR = Loan to Deposit Ratio
$\beta 4$ = Coefficient for LnGDP
LnGDP= Natural logarithm of real Growth Domestic Product
$\beta 5$ = Coefficient for INFL
INFL = Inflation rate
ε = Error Component

5. Findings

The regression in this study will conduct one time by using five variables such as: LDR, NPL, and NIM for the specific variables and Inflation, and GDP for macroeconomic factors. The data already satisfy the BLUE requirements and will be using The Random Effect Model (REM) for processing the data. The result of regression by using Random Effect model is show below:

Table 12 Regression Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-25.1937	0.7585	-33.2153	0.0000

ICMEM

LNGDP	1.2091	0.0203	59.5004	0.0000
NIM	-3.3901	0.3726	-9.0984	0.0000
NPL	-0.0307	0.4257	-0.0721	0.9426
INFL	1.6781	0.3527	4.7572	0.0000
LDR	-0.0027	0.0007	-3.8887	0.0001
R-squared	0.7866			
Adjusted R-squared	0.7852			
S.E. of regression	0.2065			
F-statistic	555.9377			
Prob(F-statistic)	0.0000			

6. From The regression estimation result of the 5 variables can be shown in the following equation:

$$lnDep= -25.1937 - 0.0027LDR - 0.0307NPL - 3.3901NIM + 1.6781Infl + 1.2091LnGDP + e$$

Coefficient of Determination

Based to the regression result above, the value of R-squared of this regression analysis is 0.790734, which indicates that 78.66% of factors affecting dependent variables which Bank Deposits have been explained by independent variables which are LDR, NPL, and NIM for the specific variables and Inflation and GDP for macroeconomic factors. Meanwhile the rest of 31.34% can be shows from another variables.

Regression Analysis

Based on the result above shows that Net Interest Margin (NIM), Loan to Deposits Ratio (LDR), Inflation rate (INFL), and Growth Domestic Product (LnGDP) have the significant relationship toward Bank Deposits (LnDep) in 0.05 significant level. Meanwhile for Net performing loan (NPL) has insignificant relationship to Bank deposits. Inflation rate (INFL) and Growth Domestic Product (LnGDP) have positive relationship while for Net Interest Margin (NIM) and Loan to Deposits Ratio (LDR) have negative relationship.

The regression result implies that the higher bank deposits can be affected by bank specific which by reduce the amount of loan that give from bank to consumer that reflect from LDR, reducing of the amount can impact bank get a lower profit reflect by reducing in NIM. In this case, the lower NIM and LDR could be a disadvantage for bank to run their business as the function of bank as *financial intermediaries*, because bank cannot to transform the third party fund to become credit.

In the other hand the higher bank deposits can be affected by macroeconomic factor when Indonesia have the greater GDP and Inflation. When GDP in Indonesia increase its affect to the people in Indonesia spending become higher and one form to spend is by saving/ invest their money in Bank deposits. The higher inflation can impact the higher value of bank deposits to become greater.

6. Conclusion

The purposed of this study is to determine the connections between bank specific and macroeconomic variables with Bank Deposits in Indonesia. This research is done by using panel data regression analysis with Random Effect Method (REM) and the sample used 19 commercial banks in Indonesia which are included in the BACB 3 and 4 category in the period 2008-2017 and use quarterly data. The result of research shows the independent variables in this research can explained 78.66% of Bank Deposits, while the rest of 31.34% can be shows from another variables. The regression result shows that Net Interest Margin (NIM), Loan to Deposits Ratio (LDR), Inflation rate (INFL), and Growth Domestic Product (LnGDP) have the significant relationship toward Bank Deposits (LnDep). Bank specific variables give a disadvantages affect toward Bank deposits while Macroeconomics factor give the advantages. For future

ICMEM

research,other variables such as Capital Adequacy Ratio, exchange rate, deposits rate and money supply in Indonesian banks case can be used to upgrade the future research

References

Finger, H., & Hesse, H. (2009). Lebanon-determinants of commercial bank deposits in a regional financial center. *IMF Working Papers*, 1–21.

Gujarati, D. N. (2003). *Basic Econometrics*(4th ed.). Retrieved November 18, 2017. 58-636

Kasmir, D. (2014). *Dasar-dasar perbankan*(2014 ed.). Jakarta, IN: PT RajaGrafindo Persada. 102-109

Pradhan, P. R. S., & Paneru, D. (2011). Macroeconomic determinants of bank deposit of Nepalese commercial banks.

Safe, E. (2013). SAFE Working Paper No. 39

ICMEM

The 3rd International Conference on Management in Emerging Markets

Speed of Adjustment towards Capital Structure Target in Indonesian Property and Real Estate Companies

Nadia Nurlaila Badrina[a*], Subiakto Soekarno[b]

[a,b]*School of Business and Management Institut Teknologi Bandung, Jln Ganesa no. 10, Bandung. 40132, West Java, Indonesia*

Abstract

This study aims to explain the empirical evidence of the determinants of capital structure in both static and dynamic model of property and real estate industry in Indonesia during the period of 2008-2017. This study used multiple regression method to test the determinants of capital structure; growth opportunity, size of firm, dividend payout, profitability, tangibility, and liquidity. The dynamic method used the lagged version of the static variable plus lagged leverage. This paper proved that property and real estate industry has a target capital structure and the speed of adjustment towards said leverage is 47.65% each year.

Keywords: Leverage; Capital Structure; Dynamic Capital Structure; Speed of Adjustment; Property and Real Estate

1. Introduction

Capital structure decision is a substantial matter in doing business. There are a lot of factors that affect the decision of capital structure. None of capital structure theories can explain solely on what have been observed about target capital structure and its adjustment speed. To increase understanding about firms' capital structure decisions, testing empirical data by continuously applying new changes in methods is needed. The tested variables are growth opportunity, size of firm, dividend payout, profitability, tangibility and liquidity. This study will find the impact of the variables on the adjustment speed by using the static model and dynamic model of capital structure.

A company was founded for several reasons. These reasons are converted into goals a firm must achieve. The absolute goal of a company is be to maximize its shareholder wealth, and to achieve that absolute goal several steps are needed: to maximize company profit and to maximize company value reflected through its stock price. Each firm has its own policy regarding which goal is more weighted, although these three goals are the most essential for all firms.

One of the factors that determine shareholder wealth is the Capital Structure Policy of a firm. Capital structure is defined as the composition of long term debt and equity capital, according to Gitman (2013). Riyanto (2010), said the capital a firm can obtain to finance its expenditures comes from two, internal source and external source. Internal source can be defined as a form of capital in which the provenance comes from within the company itself, or often said as retained earnings, while external source is fund that comes from beyond the company's. Every firm needs capital to operate its daily expenses and long term financing so the firm can develop continuously and survive in the industry which makes a capital structure policy substantial. Capital structure policy talks about financial decision related to composition of debt, preferred stock, and common stock as the company's source of capital so the cost of capital can be minimized and get the highest profit, corresponding with the principle of economy.

Indonesian developer said that the property and real estate business can be used as a guide for future economic growth (Prabowo, 2018). The fast development of property & real estate industry ensure its continuous growth in the future. This is because the price of land that increases gradually due to the increasing number of population with a constant supply of land. The property and real estate industry fall behind due to the 2008 Indonesia crisis just like any

---

* Corresponding author.

ICMEM

other business but it managed to climb back and showed an improvement in 2010 until 2013, where property and real estate industry got the spotlight for growing up to 30% from the previous year (REI, 2014). In 2014, booming property happened. People especially from metropolitan area had high demand for real estate, the banks are more lenient in giving loans for mortgage. This boom benefits the industry to develop even more. This sub sector is very sensitive to the macro economy, thus the development of this sub sector can indirectly be translated into the economic condition of the nation. When the property and real estate were given the spotlight to grow, other sectors will be indirectly influenced. Growing property and real estate means more loans to lend, more job opportunity, more projects for the other industries as well. However, in 2015 until 2017, the property and real estate industry plummeted to the bottom. Observer said that this is due to the policies made by the government and bank itself that makes people difficult to get loan for buying properties (Sugianto, 2017). How would this change of trend affect the capital structure and the target for future planning? The property and real estate companies needs a huge upfront capital. It will need a bigger debt than the other industries for their capital. A precise source of fund needs to be established for these companies. Thus the decision of capital structure, with its sub-decisions, is essential for this sub sector, because it will affect the firm value which then affects the wealth of the shareholders.

Growth opportunity of a firm is the investment project that is expected to grow and expand significantly and generate profit for investors. Having future growth opportunity means that a company needs a capital to fund its investments, and this may affect the amount of debt the firms take. However, a growing company may generate profits and has more capability in reinvesting their own retained earnings and thus, may not pay dividends for the investors. Growth opportunity is assumed to affect both the amount of debt and equity of a firm, this is measured by the market to book value ratio just like Morri and Cristanziani (2009), Faulkender et al. (2012) and Soekarno (2018).

Size of firm has been one the most used variable in capital structure study because it has empirically shown positive correlation with capital structure. Large firms are more capable of taking long term debt for financing rather than firms due to the risk associated with taking loans such as bankruptcy risk. Larger firms also have cheaper access to the external funding because they are more established and diversified. Size of firm is assumed positively influencing to the asset it has, which means that the bigger the firm, the bigger the cost of asset they spend each year. In property and real estate companies where they have big fixed asset composition, leverage in order to finance these purchase may increase with the increase of the number of asset of a firm, measured by the natural logarithm of total asset as used by Morri and Cistanziani (2009).

Dividend payout is the distribution of cash or real asset to the shareholders as a part of firm ownership. Dividend comes from profits. When a firm generates profits, the managers need to decide if they want to keep the profit as retained earnings or to distribute it to the shareholders. This corporate action impact on the perception of investors towards the firm in assessing its value. When a company distributes dividends, they chose not to retain the profits, this may lead into increasing cost of external fund, which is leverage. Leverage is expected to increase when dividend payout increases, this study use proxy dividend payout ratio.

Profitability implies how much profit a firm can produce from the available capital. Firms tend to make use of retained earnings as their source of capital instead of external financing due to smaller cost it charges. Therefore the higher profitability a firm has, the more profit it generates and the tendency of using internal financing (retained earnings), makes profitability negatively influencing with capital structure, because more profitability means less debt a firm will use, minimizing the capital structure. Profitability can be measured by Return on Asset Ratio (ROA), as used by Warmana and Widnyana (2016) which implies the capability of a firm to generate profit by using its assets. Assets are included in capital that can be used to provide operational activity. Therefore the better the ROA, the better the firm can generate profits. Profits will be then used to buy new assets to expand the company into a bigger firm.

The tangibility of asset implies the structure of asset a firm possesses that shows a composition of current asset and fixed asset. More tangible firm means more fixed asset are in the balance sheet. Fixed asset are usually used for collateral in doing loan. The more fixed asset a firm possesses, the bigger the chance that it can take bigger loan. Tangibility is expected to have a positive correlation with capital structure. Tax will be bigger for firms with abundant of asset, but managers can avoid tax by adjusting the depreciation of asset, which is why firms with more tangible asset will seek more external fund. In this study, tangibility is measured by net fixed asset, land bank, and property investment relative to the total asset.

ICMEM

Liquidity means how quickly an asset is able to be bought or sold in the market. In capital structure context, liquidity shows how capable a firm is in paying its debt. Low liquidity means it is more difficult for the firm to pay its debt and may increase bankruptcy risk. High liquidity means that the firm will have no problem in paying off its debt. Liquidity is measured using current ratio.

Leverage in capital structure shows how much a firm is using debt in their capital structure composition. Leverage level of each firm depends on the cost of capital, which composition makes the lowest cost. This research will use the ratio of long-term debt relative to the total asset that a firm has like Soekarno (2018).

The capital structure field of research is vast, and therefore evolved a sub-field of target capital structure in order to find the empirical evidence for theories explaining capital structure. If firms has a target capital structure they need to reach, the MM theory does not explain the 'real world'. Instead, tradeoff theory, market timing theory, and the pecking order theory are promoted to evolve. Heshmati (in Drobetz and Wanzenried, 2004) argued that the capital structure theory consider not the observed differences in debt ratio but the optimal debt ratio instead. The problem lies if the observed capital structure adjustment is costly for the firm, with the existence of adjustment cost, it is better for firms to adjust to their target capital structure even though their existing leverage is not optimal. To explain the target capital structure, we use dynamic model instead of static model because we want to see the movement of leverage towards its target and how quick do they adjust, not just the optimal capital structure. There are evidence that other changes causes firms to temporarily deviate from their optimal capital structure then slowly back to its optimal capital structure. To explain this phenomenon, researchers use the dynamic model approach where adjustment cost exists and it deviated the optimal capital structure with the current capital structure. The difference between a firm's minimum and maximum debt ratios over time is found by using observed debt ratio range of firm approach.

1. 1. Research statement

Capital structure decision is a substantial matter in doing business. There are a lot of factors that affect the decision of capital structure. None of capital structure theories can explain solely on what have been observed about target capital structure and its adjustment speed. To increase understanding about firms' capital structure decisions, testing empirical data by continuously applying new changes in methods is needed. The tested variables are growth opportunity, size of firm, dividend payout, profitability, tangibility and liquidity. This study will find the impact of the variables on the adjustment speed by using the static model and dynamic model of capital structure.

1. 2. Research scope

The scope of this research is 30 Indonesian Sub Sector Property & Real Estate companies that has went public and listed in BEI (Bursa Efek Indonesia) in the period of 2007-2017.

Table 1. Sample List

NO	CODE	COMPANY NAME
1	ASRI	Alam Sutera Realty Tbk
2	BIPP	Bhuwanatala Indah Permai Tbk
3	BKDP	Bukit Darmo Property Tbk
4	BKSL	Sentul City Tbk
5	COWL	Cowell Development Tbk
6	CTRA	Ciputra Development Tbk
7	DART	Duta Anggada Realty Tbk
8	DILD	Intiland Development Tbk
9	DUTI	Duta Pertiwi Tbk
10	ELTY	Bakrieland Development Tbk
11	FMII	Fortune Mate Indonesia Tbk
12	GMTD	Gowa Makassar Tourism Development Tbk

ICMEM

13	GPRA	Perdana Gapuraprima Tbk
14	JRPT	Jaya Real Property Tbk
15	KIJA	Kawasan Industri Jababeka Tbk
16	LCGP	Eureka Prima Jakarta Tbk
17	LPCK	Lippo Cikarang Tbk
18	LPKR	Lippo Karawaci Tbk
19	MDLN	Modernland Realty Ltd Tbk
20	MTSM	Metro Realty Tbk
21	OMRE	Indonesia Prima Property Tbk
22	PLIN	Plaza Indonesia Realty Tbk
23	PUDP	Pudjiadi Prestige Tbk
24	PWON	Pakuwon Jati Tbk
25	RBMS	Rista Bintang Mahkotasejati Tbk
26	RDTX	Roda Vivatex Tbk
27	RODA	Pikko Land Development Tbk
28	SCBD	Danayasa Arthatama Tbk
29	SMDM	Suryamas Dutamakmur Tbk
30	SMRA	Summarecon Agung Tbk

Source: IDX, processed

2. Theoretical Framework

Capital structure is a financing decision between the composition of debt and equity, showing the company's portion of debt and equity (Gitman 2003). Capital structure decision that needs to be taken is whether the need for capital is fulfilled from retained earnings, issuing common stock, external debt, or both elements. An optimal capital structure, is an alternative of composition of debt and equity in which they give the smallest cost of capital and generates the highest value of firm which will makes the company profitable for owners because earning per share (EPS) will increase with the increase of company value (Gitman, 2013).

The standard static capital structure model does not explain the dynamic adjustments in leverage ratios. There are evidence that other changes causes firms to temporarily deviate from their optimal capital structure then slowly back to its optimal capital structure. To explain this phenomenon, researchers use the dynamic model approach where adjustment cost exists and it deviated the optimal capital structure with the current capital structure. The difference between a firm's minimum and maximum debt ratios over time is found by using observed debt ratio range of firm approach. Modigliani and Miller (1958) concluded that value of the firm solely depends on the future earning of the firm and is not relatable to the company's capital structure. However, this conclusion comes in absence of tax, bankruptcy cost, agency cost, asymmetric information, and in efficient market. Modigliani-Miller theorem often called the capital structure irrelevance principle (Brealey and Myers, 2008). On assumption in perfect market where tax exists, commonly interest paid for using debt can be used as tax deductible to minimize tax. In other words, if there are two companies with same operational profit, one using debt and paid interest and the other does not, the firm that paid interest will pay smaller tax than the firm with no debt. This benefits shareholders and will increase firm value. However in real life, the use of 100% debt is hard to see because with the use of debt, rise other costs such as agency cost, bankruptcy costs, cost of capital, etc.

Trade-off theory in capital structure means balancing debt and equity composition so the company can get the most tax deductible from debt, while still in the capacity so the company won't have financial distress. If debt is still under the limit of debt capacity, then the company should increase the debt to get advantages, but if the debt has reached its capacity limit, then managers should not decide to raise any more debt. This theory emphasize that to a certain extent,

ICMEM

debt gives advantages to the company (increases firm value and tax deductible) but over certain extent debt will lower firm value (Brigham and Houston, 2016).

Brealey and Myers (2008) said that equity has less preferences to managers to raise capital because when managers (assumed to know better about true condition of the firm than investors) issue new equity, investors think that the firm is overvalued and managers issue the new stock to balance the value of the firm. As a result, investors will place a lower value to the new equity issuance.

Huang (2004) said that in market timing theories, which financing alternatives have the lowest cost will be the one to be used. If the cost of equity is low, issuing equity should be prioritized and the other way around with issuing debt. Market timing theories argues that the implication of overvalued stock when issuing equity may or may not influence the way investors are behaving, and that even if it is, lowering cost of capital should be the first choice.

The dynamic capital structure theory claims that firms deviate systematically from their target capital structure/leverage due to the market imperfections and costs associated with the target adjustments (Fischer et al, 1989). It argues that even if the firm follows the static trade-off theory and used the prioritized financing, observed leverage will still deviate from the target leverage and managers will try to shift it back into the target when the deviation has become too far. In the static trade-off theory, the adjustments costs are irrelevant and therefore firms are assumed to adjust their capital structure into their optimal leverage. When the adjustment costs are considered, firms can only adjust partially and gradually instead of continuous adjustments. Imperfect information about adjustments cost, including issuing cost and opportunity cost, makes firms unable to reach the optimal target leverage fully. Firms can only adjust their capital structure continuously if there are no frictions to be considered.

Determinants of target capital structure to be computed in this research consist of growth opportunity t-1, size of firm t-1, dividend payout t-1, profitability t-1, tangibility t-1, and liquidity t-1.

3. Research Methodology

3. 1. *Research design*

This research aim to understand the variables that influence the capital structure decision in both static and dynamic model and the speed of adjustment to the target capital structure. Research type is descriptive-verificative. Descriptive because the research aim to understand the factors: growth opportunity, size of firm, dividend payout, profitability, tangibility, and liquidity. Verificative research because this thesis aim to test the hypothesis using statistical analysis to understand the significance level or the variables towards static and dynamic capital structure. Therefore, this research has a purpose to explain deeper into the topic of the factors that influence the speed of adjustment to target capital structure.

3. 2. *Data analysis method*

Classical assumption test

The data analysis method for this research will use data panel analysis. Data panel method is helpful in testing the relationship between independent variable, which are growth opportunity, size of firm, dividend payout, profitability, tangibility, and liquidity to dependent variable leverage in a data which is the combination of time series data and cross section data (Gujarati, 2009). Before regression, data testing will be done with classical assumption test, the classical assumption test used in this research would be Multicollinearity Test, Autocorrelation Test, Heteroscedastic Test, and Normality Test to prove if the data used in this research has fulfilled BLUE (Best Linear Unbiased Estimator) or not. If the model's requirement has filled out then we can perform the regression analysis to do hypothesis testing. This study use the balanced panel data observation, a combination of time series and cross-sectional data.

Hypothesis testing

Hypotheses testing will be done by using Partial influence Test, Coefficient Determinant R^2, and F test. Prior to regression analysis, Hausman test is done to see which one between Fixed Effect Model or Random Effect Model

appropriate for this study. R^2 indicates how the variance of dependent variable Y can be explained by independent variable X. The bigger the R^2 it indicates the more related the dependent variable to its independent variable, and F test has a purpose to prove the significance all independent variables have on the dependent variable simultaneously (Wooldridge, 2016).

Regression analysis

Static capital structure model

This study will use the capital structure model based on Soekarno (2018) static and dynamic capital structure model, the model is formulated as equation (1)

$$LEV_{it} = (\alpha_i + \alpha_t) + \beta_j X_{ijt} \varepsilon_{it}$$

(1)

Where:
X_{ijt} is the dependent variable sequence j, company i at time t.
J is the independent variable sequence consists of: growth opportunity, size of firm, dividend payout, profitability, tangibility, and liquidity.
ε_{it} is the random error term for company i at time t
LEV_{it} is the capital structure of company i at time t
α is the intercept coefficient
The formula for this study including all variables would be as equation (2):

$$LEV_{it} = \alpha_{it} + \beta_1 GRO_{it} + \beta_2 SIZE_{it} + \beta_3 DIV_{it} + \beta_4 PRO_{it} + \beta_5 TANG_{it} + \beta_6 LQDT_{it} + \varepsilon_{it}$$

(2)

Where:
LEV_{it} is the capital structure of a firm i at time t
GRO_{it} is the growth opportunity of a firm i at time t
$SIZE_{it}$ is the size of a firm i at time t
DIV_{it} is the dividend payout ratio of a firm i at time t
PRO_{it} is the profitability of a firm i at time t
$TANG_{it}$ is the tangibility of a firm i at time t
$LQDT_{it}$ is the liquidity of a firm i at time t
α_{it} is the intercept coefficient of a firm i at time t
ε_{it} random error term of a firm i at time t

Dynamic Capital Structure Model

Capital structure target of a firm is estimated using the same model as Flannery and Rangan (2006 in Soekarno 2018) which is the partial adjustment model formulated as equation (3) below:

$$LEV_{it} = (\lambda\beta)x_{it-1} + (1-\lambda)LEV_{it} + \varepsilon_{it}$$

(3)

Where:
LEV_{it} is the capital structure of a firm i at time t
x_{it-1} determinant of capital structure at t-1 consists of the independent variables used in this research
λ is the speed of adjustment towards the capital structure target
β is the coefficient determinant
ε_{it} is the random error term of firm i at time t

ICMEM

Value of λ is between 0 and 1. The closer it is to 1, it means that the firm has a target leverage. Closer to 0 or 0 means that the firm may not or does not have a target capital structure.

model which estimate the target first instead of estimating target leverage concurrently with speed of adjustment:

4. Empirical Results

4. 1. *Static model*

The result of regression for static capital structure model is as below:

Table 4.1 Static model regression

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	-0.891797	0.089579	-9.955414	0.0000
GRO	0.013246	0.006709	1.974378	0.0493
SIZE	0.036731	0.003102	11.84199	0.0000
DIV	-0.003832	0.003055	-1.254245	0.2108
PRO	-0.322008	0.080994	-3.975698	0.0001
TANG	0.077914	0.035735	2.180351	0.0300
LQDT	-0.001015	0.000536	-1.893456	0.0593

R-squared	0.120810	Mean dependent var	0.061999
Adjusted R-squared	0.102806	S.D. dependent var	0.105305
S.E. of regression	0.099745	Sum squared resid	2.915102
F-statistic	6.710190	Durbin-Watson stat	0.837978
Prob(F-statistic)	0.000001		

From table 4.1, we have found that growth opportunity is positively influencing the leverage level and is significant at significance level 5%. The coefficient is positive so growth opportunity positively affects capital structure. So, the higher the growth opportunity, the higher the leverage as well. This research found that in the property and real estate sector, companies that is on the process of expanding (having investments) are more in need on financing, thus explains the increasing amount of leverage along with the increasing number of investment. Property and real estate in specific always have investment planning under their sleeve for future development (explained by the property investment in their balance sheet) so the number of leverage will always increase when a property and real estate company is trying to expand its business. This action is feared to be a boomerang to the firm because the increasing number of leverage may mean the increasing level of bankruptcy risk. A company that is growing will receive more damage on the firm value if they have high bankruptcy risk, according to the static trade-off theory. The result of this study shows disagreement towards the static trade-off theory because growth opportunity is shown to positively affect the capital structure. In this case, this research supports the pecking order theory and the market timing theory that said the firms will not be able to fund themselves with only retained earnings and that firms will issue stocks when the market price is higher than the book price respectively. The result of this research has on growth opportunity effect on leverage follows the results from Soekarno (2018), Wayan and Widnyana (2016), and Le Dat Chi (2013 in Tran Nha Gi, 2016) but is opposed with result from Sheikh and Wang (2011).

Size of firm has been one of the most used variables in the capital structure research field. Size of firm determines whether the company is more exposed to risk or not, how diverse is it, how established is it, and whether a company has access to the capital market or not. These aspects all affects how a company operate day-to-day and also affecting the corporate actions, including the capital structure policy. In this research, size of firm uses the proxy of natural logarithm of total asset because the amount of asset is considered to be what determine a company size the best because asset is used as a capital to operate. The bigger the asset, the bigger the operation activities of said firm. Asset is also

ICMEM

the aspect that needs to be financed the most. This result means that the bigger the size of firm, the bigger the amount of asset of a firm, the more the level of leverage. This is because leverage is added in order to purchase and finance asset capital. Property and real estate sector is one of the sector that needs a huge asset as a capital (e.g. land for development). Other than asset, size of firm also ensures the level of bankruptcy risk. Smaller firms will be more exposed to risk than bigger firms, which is why bigger firms are more confident in adding its debt ratio. The positive influence size of firm has on leverage found in this study support the trade-off theory because bigger firms are more diversified and has lower bankruptcy risk. Bigger firms have access to the capital market and thus is able to issue debt when cost of debt is smaller or issue stock when the cost of equity is smaller. This finding is corresponding with results from Sheikh and Wang (2011) and Rajan and Zingales (1995). This also follows the static trade-off theory that said firms that have smaller debt cost will tend to use debt capital because it will gain benefit from tax shield.

Dividend payout shows no significant influence to the leverage level. This result happened because property and real estate companies are not able to distribute dividend as a part of a clausal in the contract with a bank when they ask for a loan. When a property and real estate borrow loan from a bank, the bank will give rules for the firm to oblige in order to ensure the firm will be able to pay off the debt and not go default. One of the rules is when a firm is asking a loan is that the firm is not allowed to distribute dividend. This can be seen from property and real estate's annual financial report. Thus, explains why 9 property and real estate companies do not distribute dividend in the period of 2007-2017 because they are bound by the law made by the bank who lend those loans and mortgages. However, this result is more appropriate to be called the effect of leverage towards dividend payout because dividend payout is the one affected by the number of leverage. This is why the dividend payout variable is not significant towards the capital structure. This result also supports the market timing theory because property and real estate firms distribute dividends in order to make the equity more attractive in the market when it is deemed valuable.

In this research, profitability is measured using return on asset (ROA) proxy, which is the amount of net income relative to the total asset. This ratio shows how much profit a firm can generate with their existing asset. Profitability affect the leverage negatively because property and real estate prefer to use the profits in retained earnings to finance its operating activities. Property and real estate companies use the debt capital on investment a lot, and if they add the debt to operate, bankruptcy risk may increase and their might lose a lot of firm value. To avoid risk, profits are kept as retained earnings. This might also explain why some companies do not distribute dividends, because profits are enough to finance the need instead of issuing new equity which might take bigger cost of capital. This result is against the static trade-off theory that said that firms with high profitability will ask for more debt because firms with high profitability will have lower bankruptcy risk and that asking for more debt will give the firms more tax shield from the debt. This result supports the pecking order theory that said firms will prefer source of financing with the lowest cost, and thus will tend to use retained earning instead of issuing new debt or equity. That is why the more profitable a company, the less leverage it will use.

This research measure tangibility using the total of net fixed asset, property investment, and land bank relative to the total asset. This variable proxy is unique as only property and real estate companies that have property investment and land bank accounts in their balance sheet. Tangibility is expected to be significant towards capital structure because property and real estate companies have huge fixed asset structure. Property and real estate company raise debt in order to finance their tangible assets, like lands for development. The more tangible asset a firm has, the more debt it needs to raise because tangible asset has fixed asset cost and depreciation cost. Tangible asset also mirrored a company's ability in offering collaterals to bank in order to borrow loans. Banks are more lenient in giving loans to firm with sufficient collaterals. So, a firm with more tangibility is expected to have more leverage. This result follows the trade-off theory because firms with more tangibility will raise more debt to gain tax shield benefit.

In this study, liquidity is measured by current ratio proxy as it describes the capability of a firm in paying off its current debt if using its liquidated asset. The result shows no significance towards the capital structure because liquidity only includes the short-term element of debt. Liquidity also shows the capability of a firm in financing its need by its retained earnings, and not by debt. This is opposed to static trade-off theory as the firms with more liquidity will prefer to use retained earnings as a source of financing instead of debt due to the high cost of capital. This case is corresponding to the pecking order theory instead.

ICMEM

4. 2.   Dynamic model

The result of regression for dynamic capital structure model is as below:

Table 4.2 Dynamic model regression

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	-0.355364	0.092585	-3.838243	0.0002
LEV1	0.731935	0.054581	13.40999	0.0000
GRO1	0.003142	0.001952	1.609287	0.1086
SIZE1	0.013730	0.003287	4.177427	0.0000
DIV1	0.003272	0.002651	1.234123	0.2181
PRO1	-0.003692	0.055210	-0.066866	0.9467
TANG1	0.017798	0.027520	0.646742	0.5183
LQDT1	0.000599	0.001061	0.565140	0.5724

R-squared	0.676748	Mean dependent var		0.186844
Adjusted R-squared	0.668999	S.D. dependent var		0.151641
S.E. of regression	0.087243	Sum squared resid		2.222521
F-statistic	87.33159	Durbin-Watson stat		2.015517
Prob(F-statistic)	0.000000			

From table 4.2, we can see that growth opportunity and size of firm t-1 are the only variables that are significantly influencing target capital structure. Growth opportunity t-1 positively affect capital structure. The higher the growth opportunity, the higher the leverage or debt ratio. This result follows the market timing theory where cost of capital is taken into consideration. If cost of equity increase, growth opportunity will decrease as well as leverage. If cost of debt increase, growth opportunity will increase as well as leverage. The growth opportunity t-1 in is not significant at significance level 5%.

The size of firm t-1 is proxied by the natural logarithm of total asset in the previous year. Size of firm t-1 shows how established and diversified a company is. Bigger firm has lower bankruptcy risk because they are less likely to fail. Because the previous year size ensures the firm to have lower risk, the firm has more options to adjust its current capital structure into the desired value. In property and real estate sector, low bankruptcy risk gives huge freedom for the firm to adjust their capital structure because all property and real estate sector raise debt for their investment, while in turn raising their own bankruptcy risk. The result supports the static trade-off theory that it raises debt level when it's able to in order to gain benefit from the tax shield.

Dividend payout shows difference result in the static model and the dynamic model. In the static model, dividend payout shows negative influence but in dynamic model it shows positive influence. This might be because if dividends are shared without future considerations, shortage of internal finance happened in the next period and thus the firm will need more financing, which comes from leverage. This variable t-test result follows the market timing theory because firms share dividend when the cost of retained earnings is low and add leverage in the next period because it has lower cost than keeping profit, which may also give benefit of tax shield, meaning this also support the static trade-off theory.

Profitability t-1 negatively affect capital structure target. Profitability in static model is significant, but not at the dynamic model. This could be explained by profitability does not give long term influence towards capital structure but gives immediate effect. Tangibility in the static model is significant but in dynamic model it is not significant. In this study, tangibility is measured using proxy total net fixed asset, property investment, and land bank. In the static model, more tangibility means the more capability of a firm to offer collaterals are a guarantee in raising debt. However, in land bank and property investment contain short-term tangible asset that is why they give immediate effect on capital structure but not on long term because in the span of one year, land banks and property investment

might be fluctuating/volatile. The result of tangibility follows the trade-off theory that a firm will raise leverage if they could in order to gain tax shield benefit.

Lagged leverage shows positive influence and significant at significance level 5%. In this model, lagged leverage is the most significant variable towards capital structure target because it offers information about the speed of adjustment towards capital structure in the next period. In the dynamic model of capital structure, the coefficient of variable lagged leverage is equivalent to $1 - \lambda$, whereas λ is the speed adjustment towards the capital structure target. So, the speed of adjustment is $1-0.731925 = 0.268075$ or 26.81%. So, each year, property and real estate companies adjust their leverage with a speed 26.81% each year.

4. 3. *Capital Structure and Firm Value*

The result of this research contribute to managers of property and real estate industry to understand which variables influence the capital structure and achievement of capital structure target impact on the optimal firm value. Optimal capital structure is when the composition of equity and debt is at certain level so that the cost of capital is at minimum. Trade-off theory claims that firms will increase debt as long as the benefit exist because firms will obtain tax shield from increasing debt level. However on certain level, the cost of debt will become bigger than the benefit due to the cost of financial distress and may increase bankruptcy risk. Debt holder and equity shareholder will ask for higher return due to increasing risk. Thus the result of this study is corresponding with trade-off theory that said property and real estate has a capital structure target and adjust them partially. If the firms operate at the range of optimal capital structure, firm value can be maximized and thus, maximizing shareholders wealth.

According to the t-statistic above, we can arrange corporate strategy by considering significant variables. Capital structure policy can be established by considering growth opportunity, size of firm, profitability, and tangibility while the speed of adjustment policy can be established by considering the size of firm t-1 and leverage t-1. These strategies are made in order to achieve the goal of maximizing firm value. Strategy implementation is categorized into three purposes: increasing firm value, increasing contribution to macro economy, and increasing efficiency of the firm.

Table 4.3 Corporate strategy

Strategy Purpose	Variables	Procedure
Increasing firm value	1. Growth Opportunity 2. Size of Firm 3. Profitability 4. Leverage	1. Choose investment project that gives high return 2. Minimize cost of capital 3. Increase profitability to be able to distribute more dividends 4. Increase of tax shield, increase rate of return for shareholders
Increasing contribution to macro economy	1. Profitability	1. Increasing profitability may increase tax payment
Increasing efficiency of the firm	1. Size of Firm 2. Profitability 3. Tangibility 4. Leverage	1. Minimize cost of operation 2. Achieving optimal capital structure target 3. Borrow more loans using collaterals and expand the business

By increasing firm value, shareholders wealth will be maximized. Equity shareholders will see the firm as more valuable if it pay more dividends. Shareholders are more attracted to firm with high return because it has profitable investment and not because of high business risk. For government, firms with high profitability is more valuable because it means that can pay more tax. Banks are more lenient to give loans to firms with high efficiency and tangibility. Also, if a property and real estate company is efficient, its operational activities may enable them to create products with lower price, in this case, lower house price for citizens in the lower class. This may also help the government in making solution to the housing problem in Indonesia.

ICMEM

5. Conclusion and Recommendation

5. 1. Conclusion

From this research we can find some conclusions:
1. Property and real estate companies have similar behavior with the other companies regarding capital structure, however there are some unique behavior that only property and real estate only do. For example, in their balance sheet, property and real estate companies have land bank (land for development) and property investment account that is not found on other sectors. This also describe property and real estate's unique asset structure, which affect the capital structure policy. This research tests the effect on determinants on capital structure using variables: growth opportunity, size of firm, dividend payout, profitability, tangibility, and liquidity. This research also tests the dynamic model of capital structure to see if the property and real estate industry has a capital structure target or not. If yes, what is the speed of adjustment and towards the independent variable leverage?
2. In the static model of capital structure, we found:
   a) New variables that is not commonly used in other research. Tangibility is a common variable in the capital structure field, but the proxy used in this research is uncommon, which is the total of net fixed asset, land bank, and property investment divided by the total asset
   b) The variables significant to the capital structure according to t-test are growth opportunity, size of firm, profitability, and tangibility. Dividend payout and liquidity are not significant to the capital structure.
3. In the dynamic model of capital structure, we found:
   a) Variables size of firm t-1 and lagged leverage active are significant towards the capital structure target active adjustment. Variables growth opportunity t-1, dividend payout t-1, profitability t-1, tangibility t-1, and liquidity t-1 are not significant to the capital structure target.
   b) From the data above, we found that property and real estate industry does have a capital structure target that they want to reach.
   c) The speed of adjustment is 26.81%. This means that property and real estate adjust their leverage very slowly and my take longer than 5 years to reach the optimal capital structure.

5. 2. Recommendation

This research still left so many questions. Some variables are not significant, some shows different result from previous researches. Property and real estate sector is still not explained fully by this research. For future research purposes, this research can be continued by:
1. Include all data from the first IPO of property and real estate companies to understand the movement of current capital structure towards the capital structure target better
2. Property and real estate industry are still considered as problem in Indonesia due to the unbalance demand and supply. Future research may include more government policies regarding housing that might give significance to the capital structure literature.
3. The same variables that have been proved significant might be used again but with different proxies in order to complete the capital structure literature.

For practical recommendations, this research offer:
1. Managers to pay more attention to the variables that have shown significant influence towards the capital structure and its target in order to accelerate the speed of adjustment towards the capital structure target. Managers may follow the procedures elaborated in this study in order to achieve optimal capital structure. It is important to maximize firm value and efficiency of firm operational activities because firms need to ensure the sustainability of property and real estate industry.
2. Government may also pay more attention to regulations regarding property and real estate industry because housing is a primary need for everyone, and thus improvement in property and real estate business could be mirrored on the economic growth of the nation.

ICMEM

References

Brealey, Richard A., & Myers, Stewart C. (2008) [1981]. *Principles of Corporate Finance* (9th ed.). Boston: McGraw-Hill/Irwin.

Brigham, E. F., Houstononh,, J. F. (2016). *Fundamentals of Financial Management*. Fourteenth edition. United States of America: Horcourt College.

Drobetz, W., & Wanzenried, G. (2004). *What Determines the Speed of Adjustment to the Capital structure target?*. WWZ Discussion Paper, No. 2004/04

Fischer, E. O., Heinkel, R., & Zechner, J. (1989) *The Journal of Finance, Vol. 44*, No. 1, pp. 19-40

Faulkender, M., Flannery, M. J., Hankins, K.W., & Smith M. J. (2012) *Cash Flows and Leverage Adjustments*. Journal of Financial Economics, 103, 632-646.

Ghozali, Imam. (2011). *Aplikasi Analisis dengan Multivariate Dengan Program IBM SPSS 19* (edisi kelima.) Semarang: Universitas Dipenegoro.

Morri, G., Cristanziani, F. (2009) *"What determines the capital structure of real estate companies?: An analysis of the EPRA/NAREIT Europe Index",* Journal of Property Investment & Finance, Vol. 27 Issue: 4, pp.318-372

Gitman, L. J. (2013). *Principles of Managerial Finance*, fourteenth edition. Massachusetts: Addison-Wesley Publishing Company. Gitman, Lawrence J

Warmana, G. O., Widnyana, I.W. (2015) *Determinan dan Kecepatan Penyesuaian Struktur Modal Perusahaan Pada Sektor Pertanian di Bursa Efek Indonesia* Vol 6 No 12 (2016): Agrimeta

Gujarati, Damodaran N,. Porter, & Dawn C. (2009). *Panel Data Regression Models. Basic Econometrics (Fifth international ed.)*. Boston: McGraw-Hill. Pp. 591-616

Modigliani, F. & Miller, M. H. (1958) *The Cost of Capital, Corporation Finance and the Theory of Investment. The American Economic Review*, 48, 261-297.

Sheikh, N. A., Wang, Z. (2011) *Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan*, Managerial Finance, Vol. 37 Issue: 2, pp.117-133

Prabowo, D. (2018, April 2) *Pengembang: Properti Bisa Jadi Acuan Pertumbuhan Ekonomi.* Retrieved from https://properti.kompas.com/read/2018/04/02/153000621/ pengembang--properti-bisa-jadi-acuan-pertumbuhan-ekonomi

Huang, R., & Ritter, J. R., (2004) *Testing the market timing theory of capital structure*

Rajan, R. & G., Zingales, L. (1995) *What Do We Know About Capital Structure? Some Evidence from International Data*. Jourrnal of Finance, Vol. 50 No. 5

REI (2014 December 4) Bisnis Properti Tumbuh 30%. *Real Estat Indonesia*. Retrieved from http://www.rei.or.id/liputan-57bisnis%20properti%20tumbuh%2030persen. php

Riyanto, B. (2010). *Dasar-dasar Pembelanjaan Perusahaan*. Edisi 4. Yogyakarta: BFPE.

Soekarno, S., (2018). *Capital Structure Active Adjustment of Indonesian State Owned Enterprises (SOEs).* International Journal of Monetary Economics and Finance 11(3):1

Sugianto, D (2017 December 20) *Mengintip Perkembangan Industri Properti Sepanjang 2017*. Retrieved from https://finance.detik.com/properti/d-3778476/mengintip-perkembangan-industri-properti-sepanjang-2017

Trần N. G. (2016) The determinants of the capital structure of the real estate firms in Vietnam. International Journal of Information Research and Review Vol. 03, Issue, 08, pp. 2734-2739

Wooldridge, Jeffrey M., (2016) *Introductory Econometric: A Modern Approach.* Mason, OH: South Western

ICMEM

The 3rd International Conference on Management in Emerging Markets

Relationship between Childhood Consumer Experience and Financial Literacy Index of Young Adult

Farissa Anindya Putri[a*], Sylviana Maya Damayanti[b]

*a,b*School of Business and Management Intitut Teknologi Bandung, Bandung, 40132, Indonesia

Abstract

As the complexity of financial world increase, the term financial literacy become globally recognized. Inadequate financial literacy on young adults resulted on the inability and tendency to choose wrong financial decisions in the adulthood. It is found that in Indonesia by 2016, out of 100, 67 people use financial product and service while only 29 understand how it actually works. This study try to examine the childhood consumer experience and parents' education which expected to influence the level of financial literacy. Linear regression is used to assess the correlation between financial literacy and each variable. To measure the financial literacy index, the author use factor analysis weight and categorize the level of financial literecy into three groups. The questionnaires dispersed in DKI Jakarta and West Java as the best two province which citizen are financially literate, yet both are the most targeted province to do investment scams. This study indicates that childhood consumer experience is significantly influence the level of financial literacy. Meanwhile, parents' education not significantly influence the level of financial literacy. It is important for the parents to teach their child more about financial practices so that they will have better financial literacy.

Keywords: Childhood Consumer Experience; Family Background; Financial Literacy; Financial Socialization; Parents' Education

1. Introduction

It is become important for a country to make sure their civilians are well literate to cope with the complexity of financial world. The new financial technology invention has increased, so does the needs of financial knowledge. Indonesia government, under the leadership of Jokowi and Jusuf Kalla, has targeted to have financial inclusion index of 75% by 2019. This goals are also supported by the making of Nawacita which consist of 9 agenda or the country vision and mission that will be the program for five year tenure of President Jokowi and Vice President Jusuf Kalla. All economic developments should take Nawacita as its references. This economic development should be supported by the financial literacy and inclusion to provide a better understanding of how the financial world acts on the economic. Financial literacy itself referred to the 7th agenda from Nawacita which is:
"Promoting economic independence by developing domestic strategic sectors"

Bank Indonesia—as the central bank—providing strategy to improve the financial inclusive that named as SNKI (Strategi Nasional Keuangan Inklusif) which consists of 6 (six) pillars. Furthermore, the program implementation to improve financial literacy and inclusion is regulated in SNLKI (Strategi Nasional Literasi Keuangan Indonesia) that consists of 3 (three) main pillars which is national financial literacy education and campaign; strengthening financial literacy infrastructure; and financial product and service development.

Lusardi & Mitchell (2014) proposed that level of financial literacy could be different based on age; gender; education and ability; income and employment type; geographic aspect; family background; as well as nationality. The previous research also indicates that childhood consumer experience is one of the factors which contributes to level of financial literacy. Sabri, MacDonald, Hira & Masud (2010) found that the earlier a child is financially educated by the family—whether it is in a form of having their own saving or managing their pocket money—will produce a well literate young adult in Malaysia. Out of these factors, this study will focus more on the fundamental aspect which

---

* Corresponding author. Tel.: +62-852-184-790-06.
  E-mail address: farissa.anindya@sbm-itb.ac.id

is childhood consumer experience as well as family background.

OJK indicates that DKI Jakarta has the highest financial literacy level out of 34 (thirty four) province with 40.00% in 2016, followed by West Java for 38.70%. Yet, this finding is counterattacked by the fact that DKI Jakarta and West Java, especially Jabodetabek, has the most number of investment scams even in first quarter of 2018. OJK's Chairman of Task Force on Investment Tongam L. Tobing on April 27th 2018—quoted from Pojok Jabar, KataData and Jabar Ekspres as the online newspaper of West Java—stated that West Java is the main target of investment scamming due to its economic growth rate and high population that made West Java seen as the best place to conduct the scams, as well as DKI Jakarta. These bring the researcher to choose DKI Jakarta and West Java as the scope of this research.

2. Literature Review

Not much research finds the correlation between childhood experience and level of financial literacy in Indonesia. Hence this research focused on the literature of childhood consumer experience, the financial socialization that influence the childhood experience of financial activities, as well as the personal and family background, that expected to control the level of financial literacy of young adults.

2. 1. Financial literacy

Financial literacy is now globally recognized as one of the important element to cope with wide development in financial marketplace as well as supporting economic stability (Pisa, 2012). The term financial literacy include financial attitudes, behavior and knowledge (Lyons, Scherpf, & Roberts, 2006; Shim et al., 2009) that combined into two categories of basic and advanced financial literacy (Van Rooij et al., 2007; Lusardi, 2008),

OJK on its survey of *Developing Indonesian Financial Literacy* Index in 2013 defined basic concept of financial literacy including of four domains related to behavior which are (1) managing money, (2) planning ahead, (3) making choices and (4) getting help. This concept used to evaluate the fundamental knowledge of economic; ability to compute basic financial numeracy; as well as knowledge of risk diversification. While the advance financial literacy variable comprised the knowledge of risk and return relationship; how bond, stocks and mutual funds work; and basic asset pricing.

A robust methodology of measuring the level of financial literacy is important in order to improve the financial literacy itself (Xu and Zia, 2012). With this development it will be easier for policy maker to analyze the current level of financial literacy and design more effective steps and policies for the current condition.

2. 2. Childhood consumer experience

Chandra & Memarista (2015) define childhood consumer experience as the financial related experience which happened during childhood. One of the examples is discussing finance with parents. The earlier the child learned and applied financial experience in their childhood the better their level of financial literacy.

Falahati, Sabri, & Paim (2012) found that the main cause of students' financial behavior is their financial experience during their childhood. This means that financial and consumer practice during childhood could have impacting the child financial practices and behavior once they reach adulthood.

Hira (1997) examined financial attitudes, beliefs and behavior which tested to college student. The findings indicate that different ways of handling money in their family will likely to influence the way individuals express money behavior and beliefs. Most of the students indicate that their mother and father play important part as a source of influence on one's financial beliefs and attitudes. One-third of the students select their friends as strong influencer on their money behavior. While two-thirds of the student said, regarding the family money communication, that finances were never discussed with children in their family.

Kim and Chattarje (2013) indicated that those who received allowance and had savings account carried a credit card balance in young adulthood and less worried about their finance. Those whose parents' managed their spending in childhood also resulted to less worried about their finance yet also did not fully responsible on managing their own finances.

2. 3. Personal and family background

Lusardi et al. (2010) investigate the family characteristics influence to financial literacy which resulted that family characteristics also an important variable of financial literacy. The education as well as the experience of using

ICMEM

financial product of their parent become a strong predictor of their child financial literacy. This is shown by the questionnaire result which indicated that those whose mothers graduated from college were more likely to answer the questions regarding inflation and risk diversification correctly. The result shows that the one who are highly financial literate mostly come from more educated family. As an example, the one whose parent are experienced in stocks were resulted in similar findings. Lusardi et al. (2010) also indicate that mother's educational background did improve her children financial literacy significantly yet its influence is not significant as the result also controlled by the children knowledge and cognitive ability.

Parents' education are expected to be one of the factor that support the financial capital for the child, those whose parents' are college and graduate degrees could provide more resource to support their children development (Shanks, 2007).

2. 4. Financial socialization

Financial socialization by definition is a process where children or young people obtain the standards, skills, values, knowledge, and attitudes needed on how to be a functioning consumers (Lueg et al., 2006). Beverly and Burkhalter (2005) in their research finds that financial socialization provides some advantages if applied in financial education at schools. It will help reaching all children in the school, not only those who have high chance to get financially literate outside the school and also improving the level of financial literacy in children. Furthermore, this also facilitate financial education to be integrated with other subjects, which will support the study of financial literacy.

Webley and Nyhus (2013) found that parental teaching as a way of financial socialization such as encouraging children to save had positive influence on their future orientation. The parenting style also becomes an important effect on the children economic orientation.

2. 5. Young adult

Many research found that young adult have difficulties in reaching financial independence due to the limited of financial knowledge (Norvilitis et al., 2006; Woolsey & Schultz, 2012), hence the researcher use young adult as the age of respondent for this study. Young adult age is the essential age for financial literacy, past research indicates that inadequate financial literacy—financial knowledge, attitudes and behavior—might resulted ones ability to make important financial decisions throughout their lives (Jorgensen et al., 2011).

Definition and age range of young adult broadly explained around the world. Petry, N. M. (2002) categorized young adult in her research from the age of 18 (eighteen) to 35 (thirty five) years old. On the other hand, Kandalaft et al. (2012), on the other hand, classified young adult as the age 18 (eighteen) to 26 (twenty six) years old. The United Nations, in the other hand, defines those whose age between 15 (fifteen) to 25 (twenty five) as youth.

2.6. Comparison with previous research

There only some research focusing on childhood consumer experience correlation with the financial literacy index of young adult. Sabri et al. (2014) define childhood consumer variable as saving account ownership and discuss finances with parents. Chandra & Memarista (2015) stated that the earlier the children known about finance the better their level of financial literacy. Susanti (2013) found that family education gives significant influence to the level of financial literacy that at least the child has to be trained to do the payment for their own additional needs, as well as managing money. Meanwhile, this research combined all these variable as the childhood consumer experience and try to find the overall correlation as well as the ability to describe the variance of young adults' financial literacy level. In addition the research provide possible recommendation to improve the financial literacy of young adults based on these variable as childhood consumer experience with its correlation to the financial literacy level.

3. Hypotheses, Sample and Methods

3.1. Sampling techniques

This research use primary data from questionnaire that consists of two parts. The first part is dedicated to find the respondent's childhood consumer experience which consists of questions that talked about their financial activities

ICMEM

childhood experience. Four questions will be asked with multiple choice answer of whether the respondents first experienced the childhood financial activities at the age below 7 years old, between 7 to 13 years old or after 13 years old. The second part will be done to know the respondent's level of financial literacy. The questionnaire will be derived from DEFINIT-SEADI-OJK questionnaire. Twenty one questions categorized in basic and advance financial literacy group including financial behavior, financial attitude and financial knowledge in form or multiple choice with one right answer for each question are being asked.

The questionnaire was distributed to 306 people in DKI Jakarta and West Java—especially in Bandung and Bekasi—and Jakarta. The sampling technique used probability sampling which is simple random sampling with respondent criteria of male and female about 18 to 25 years old.

3.2. Methods and hypotheses

The data analysis will consist of several steps. The method differ in order to find the best result for each variable as well as research question. First, descriptive statistics was used to find the mean and standard deviation of each variables. This techniques itself is used as a way to summarize large amounts of data which need to be interpreted.

Financial literacy is calculated by assigning weight to each variables. Two methods were used, simple weight and factor analysis. Simple method gives the equal weight to each variable in each variable group. Factor analysis is a statistical method which mainly used to explain correlated variable. The best combination of information—put together as a new, single variable—will then be derived from the range of question given. The factor analysis method makes the correlation of the variable to common factors at the best to give weight to a variable. The formula can be seen in appendix A.

Dummy variable was made for childhood consumer experience variable and parent education in order to make the next step easier as both independent variable is categorical. Linear regression was conducted to test the correlation between two variable—childhood consumer experiences, parents' education and level of financial literacy. Linear regression is a technique that helps to find the relationship between independent variable and dependent variable. In this research will be used simple linear regression as the independent variable will be tested separately, thus there will be two calculations.

Hypotheses are made based on the variable. Based on Sabri et al. (2010) following hypotheses that will be examined in this study is listed as follow:

Hypothesis 1: Financial literacy will be associated with parents' education
Hypothesis 2: Financial literacy will be positively related to childhood consumer experience

4. Result and Discussion

4.1. Demography profile

The questionnaires are dispersed in several area around DKI Jakarta and West Java, with total 306 respondents. The demography factors which analyzed in this research are gender, age, domicile, education, monthly income, monthly expenditure, father's education and mother's education. The results are shown in the table 1 as follows:

Table 13: Demography profile result

	Percentage		Percentage
Gender		Monthly expenses	
Man	39%	< Rp 1,000,000	31%
Woman	61%	Rp 1,000,000 – Rp 1,500,000	34%
Age		Rp 1,500,001 – Rp 2,000,000	19%
18 – 21 years old	80%	> Rp 2,000,000	16%
22 – 25 years old	20%	Father's education	
Domicile		Elementary School	3%
Bandung	22%	Junior High School	5%
Jakarta	36%	Senior High School	25%
Bekasi	34%	Diploma	9%

ICMEM

	Percentage		Percentage
Bogor	4%	S1 (Undergraduate)	40%
Cirebon	4%	S2 (Master)	17%
Education		S3 (Doctorate)	1%
Senior High School	23%	Mother's Education	
Diploma	9%	Elementary School	5%
S1 (Undergraduate)	67%	Junior High School	3%
S2 (Master)	1%	Senior High School	35%
Monthly Income		Diploma	18%
< Rp 1,000,000	31%	S1 (Undergraduate)	32%
Rp 1,000,000 – Rp 1,500,000	30%	S2 (Master)	6%
Rp 1,500,001 – Rp 2,000,000	12%	S3 (Doctorate)	1%
> Rp 2,000,000	27%		

Table 1 shows that most of the respondents are woman (61%) while the other 39% are man. The majority of respondents' age in 18 to 21 years old (80%) while only 20% of them who aged 22 to 25 years old. 36% of respondents live in DKI Jakarta, 34% of them live in Bekasi while others stay in Bandung (22%), Bogor (4%) and Cirebon (4%). Most of the respondents' level of education is S1 (Undergraduate) student (67%), with income under Rp 1,000,000 (31%). While the majority of spending of the respondents is around Rp 1,000,000 to Rp 1,500,000 (34%). Most of the respondents' father's last level of education is graduated from S1 (undergraduate) degree, while their mother's is senior high school graduate.

4.2. Calculating financial index

Determining variable weight is needed prior to calculating financial literacy index. The weight assign to each variables of basic and advance financial literacy. The weight are shown in the table below.

Table 14: Basic financial literacy variable weight

Basic Financial Literacy			
No.	Variable	Factor Analysis	Simple Weight
1	Requirement of ID	0.124	0.111
2	Deposit guaranteed by government	0.047	0.111
3	Simple interest	0.153	0.111
4	Compounded interests	0.149	0.111
5	Calculate interest on loan	0.163	0.111
6	Discount	0.085	0.111
7	Inflation	0.080	0.111
8	Time value of money	0.074	0.111
9	Money illusion	0.124	0.111

Table 15: Advanced financial literacy variable weight

Advanced Financial Literacy			
No.	Variable	Factor Analysis	Simple Weight
1	Function of stock market	0.138	0.1
2	Interest rate and bond price	0.056	0.1
3	Returns on stock versus bond	0.144	0.1
4	Risk of bond and stock	0.133	0.1

ICMEM

Advanced Financial Literacy			
No.	Variable	Factor Analysis	Simple Weight
5	The meaning of buying stock	0.128	0.1
6	The meaning of buying bond	0.091	0.1
7	Penalty when selling bond before maturity	0.074	0.1
8	Which investment give the highest return	0.097	0.1
9	Which investment produce the highest return fluctuation	0.089	0.1

Factor analysis and simple weight have shown in the table 2 and 3 for each variable in basic and advance financial literacy. For the next calculation, factor analysis weight will be used because it has a better weight distribution and more representative result.

The next step after finding the variable weight is calculating the financial literacy index. Both factor and simple analysis weight assigned to each variable are multiplied with respondents answer for each questions. As both weights did not show significant differences, hence factor analysis weight will be used for the further calculation.

Table 16: Descriptive statistics for financial literacy index found by using factor analysis weight

	Basic Financial Literacy	Advance Financial Literacy	Financial Literacy Index
Mean	47.00	38.40	42.70
Median	48.11	36.32	41.67
Std. Deviation	24.14	26.17	23.03
Minimum	0.00	0.00	0.00
Maximum	100.00	100.00	100.00

Table 4 shows result summary of the index, the score is scaled within the range of 0 to 100. The average result is 47.00 for basic financial literacy. For advance financial literacy, the average result is 38.40. Meanwhile the overall financial literacy index average is still under 60 which is 42.70 for factor analysis weight calculation. The variation of both basic and advanced financial literacy is quite diverse shown by standard deviation value 24.14 and 26.17 respectively. Meanwhile, the overall financial literacy index shows rather normal distribution comparing to the basic and advanced financial literacy variation.

4.3. Parents' education and financial literacy index

Linear regression is used to determine the correlation between parents' education and financial literacy index. Dummy variable coded for each father's and mother's education divide the variable into 7 (seven) categories based on the level of education, elementary school, junior high school, senior high school, undergraduate degree, master degree, and doctorate degree. The majority of respondents' answer for their father's level of education is undergraduate degree while for mother's education is senior high school, hence these variable is chosen as the reference variable. The results are presented in the table 5 as follow.

Table 17: Parents's education and financial literacy index linear regression analysis of variance

Model	Sum of Squares	df	Mean Square	F	Sig.

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2779.356	12	231.613	.427	.952[b]
	Residual	158937.366	297	542.448		
	Total	161716.722	305			
a. Dependent Variable: fin_lit_index						
b. Predictors: (Constant), M_S3, F_S3, M_JHS, M_ES, F_Dplma, F_S2, M_Dplma, M_S2, F_JHS, F_SHS, F_ES, M_S1						

Significant correlation is shown by the sig. 2 tailed value which is under .05. Table 5 indicates that there is no enough evidence to prove the relationship between parents' level of education and level of financial literacy of young adult(sig. > .05), meanwhile the sig. 2 tailed value need to be under .05 to show that the variable is significantly related to the dependent variable. From the calculation found that there is no significant correlation between father's nor mother's education with financial literacy index. Hence, H1 is rejected. This study obtain similar findings with Norvitilis & Maclean (2010) that the role of parents' become insignificant due to there is no significance difference result of financial knowledge based on the source of knowledge, means that parents' is not the only one who the young adult can learn from. Nidar & Bestari (2012) as well as Margaretha & Pambudhi (2015) also found that parents' education had no significant influence on the personal literacy of college student. In addition not all parents' level of education provide financial knowledge, hence not all parents' can teach financial knowledge to their children only based on their level of education.

4.4. Childhood consumer experience and financial literacy index

Dummy variable is used for childhood consumer experience as well. Each variable is divided into three dummy variables based on its age range, under 7 years old, between 7 to 13 years old, and above 13 years old. Most respondents answer 7 to 13 years old as the age when they start to do several experience asked in the questionnaires about their childhood consumer experiences, therefore this variable is used as reference variable. Then linear regression is used to determine the correlation and how much the childhood consumer experience could influence the level of financial literacy.

Table 18: Childhood consumer experience and financial literacy index linear regression analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12916.450	8	1614.556	3.223	.002[b]
	Residual	148800.272	297	501.011		
	Total	161716.722	305			
a. Dependent Variable: fin_lit_index						
b. Predictors: (Constant), mney_mngment_3, dscuss_fnnce_1, fam_fnnc_3, mney_mngment_1, sving_ownrshp_1, sving_ownrshp_3, fam_fnnc_1, dscuss_fnnce_3						

Table 19: Childhood consumer experience and financial literacy index linear regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.283[a]	.080	.055	22.38328	.080	3.223	8	297	.002
a. Predictors: (Constant), mney_mngment_3, dscuss_fnnce_1, fam_fnnc_3, mney_mngment_1, sving_ownrshp_1, sving_ownrshp_3, fam_fnnc_1, dscuss_fnnce_3									

It is presented in the table 7 with the F score of 3.223, the model including childhood consumer experience as the predictor of young adults' financial literacy level fit better for the regression. It is also shown that there is enough evidence which shows that childhood consumer experience has significant correlation with level of financial literacy of young adult (sig. < .05), hence, H2 is accepted. Yet, its ability to describe the variance of level of financial literacy is relatively small, only about 8% (R square = .080) as shown in table 8.

ICMEM

The equation to predict financial literacy index by determining the childhood consumer experience from the linear regression model is written as follow.

$$FLI = 41.428 + 11.787FF_1 + 8.356FF_3 - 10.8DF_1 + 1.638DF_3 + 2.024SO_1 + 6.171SO_3 - 11.753MM_1 - 8.330MM_3$$

(1)

Family financial introduction as well as saving ownership have positive influence to the financial literacy index of young adult. Based on the equation, the one who being introduced to family financial aspect would have better financial literacy in their adulthood than the one who experienced it later. Ironically, parents are reluctant to talk with their children about money, despite being the children's main agent of information (Alsemgeest, 2014). The earlier introduction, the better level of financial literacy of young adult. Children who start saving after reaching 13 years old would have better financial literacy then those who start earlier. As stated by Susanti (2013) that family education gave significant influence to the level of financial literacy, that to have better knowledge of finance matter at least the children has to be trained to save their money, do the payment for their own additional needs, as well as managing money. However, this study found that the timing of full management of money as a child—at the range under 7 years old or above 13 years old—give negative influence to level of financial literacy. Those who start managing their own money between 7 years old to 13 years old would have better financial literacy instead. The one who start managing their own money between 7 years old to 13 years old would have better financial literacy instead. It is found that discuss financial matter at the age above 13 years old provide better support to the level of financial literacy instead of starting early. This is because as the age increase the more complex financial matter experienced, hence it is better to start discussing at the above 13 years old.

4.5. Demography profile, childhood consumer experience and financial literacy index

Considering the lack of ability to describe the variance of financial literacy level by childhood consumer experience, demography profiles of respondents are added. The classical assumption had been done prior to finding the correlation between demography profiles, childhood consumer experience with financial literacy index. It is found that most variable had passed all the classical assumption except education variables. Therefore these variables should be eliminated. The regression result can be seen in the table as follows.

Table 20: Demography profiles, childhood consumer experience and financial literacy index linear regression analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19568.195	20	978.410	1.962	.009[b]
	Residual	142148.527	285	498.767		
	Total	161716.722	305			
a. Dependent Variable: FLI						
b. Predictors: (Constant), Exp_3, SO_1, JKT, Gender, MM_2, Inc_1, BGO, FF_2, Age, BDO, Exp_2, DF_3, Inc_4, SO_2, FF_1, Inc_2, Exp_1, DF_2, MM_3, BKS						

Table 21: Demography profiles, childhood consumer experience and financial literacy index linear regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.348[a]	.121	.059	22.33309	.121	1.962	20	285	.009
a. Predictors: (Constant), Exp_3, SO_1, JKT, Gender, MM_2, Inc_1, BGO, FF_2, Age, BDO, Exp_2, DF_3, Inc_4, SO_2, FF_1, Inc_2, Exp_1, DF_2, MM_3, BKS									

Based on table 8, it is shown that demography profile and childhood consumer experience is related to financial

ICMEM

literacy with the significant value under .05. The ability of the model to explain the financial literacy is presented by r-square score in table 9 which is 12.1%. With the F score of 1.962, this model prove to be fit enough for the regression yet the model with only childhood consumer experience fit better to describe the financial literacy of young adult.

5. Conclusion and Recommendation

Based on the questionnaires distributed to 306 respondents it is resulted that, by using factor analysis weight, most of young adults around DKI Jakarta and West Java still have low level of financial literacy (scored less than 60).

The research found that there is no significant influence from parent's education—either mother's nor father's level of education—to financial literacy index of their child. This show that parents'' education is not significantly support one children financial literacy index after reaching young adulthood, though Beverly and Burkhalter (2005) stated that parents' considered as the main agents of socialization for their children.

Childhood consumer experience is statistically proven to contribute to the financial literacy index either positively or negatively in his or her young adult age. The timing of family financial introduction and saving ownership give positive influence to financial literacy index, while timing of money management give negative influence. It is validated that the one who start discussing their financial matter with their parents' at the age above 13 years old have higher financial literacy index than those who start discussing earlier.

Another improvement should be done not only to fulfill the government's goals but also to prevent young adult to take wrong financial decision after they reach adulthood. It is important for the parents to know the usefulness of parents' participation in supporting the children's financial literacy. Parents' could try to teach their children more about financial aspect as childhood consumer experience do significantly influence the level of financial literacy. Alsemgeest (2014) stated that parents should have talked to their children about money mater, yet also need to be very careful so that they will not follow the negative information as it can influence the childrens' knowledge and attitute as well as there is a tendency of passing it on to other generations. Continuous education and discussion could also be important to their children who just start entering young adulthood (Sabri et al., 2010). Although the influence of childhood consumer experience is relatively low to the financial literacy index—below 10%—the result indicates that discussing money matters with parents' at the age over 13 years old still significantly influence their level of financial literacy.

6. Study limitation and future research

At last, further research need to be done to cope with this study limitation. The questionnaires were only distributed in DKI Jakarta and West Java, thus there is a need to do further study which can present the population of Indonesian young adult financial literacy index. The explanatory ability of the financial literacy regression by childhood consumer experience variable is statistically significant but still relatively low—only explaining <10% of the variance. Therefore, additional information is required to perform better description. It could be useful to include particular information regarding whether the students have experienced formalized consumer or financial education (Bernheim, Garrett, & Maki, 2001; Peng et al., 2007). Furthermore, the information about childhood consumer experience was self-reported. For that reason, supporting evidence from parents' and others educator is needed in future studies.

7. Financial Literacy Calculation

Step of calculating factor analysis weight and calculating financial literacy index is derived from "*Developing Indonesian Financial Literacy Index, 2013*" with the formula as follow:

A.1. Simple Weight
The weight of each variable categorized in the Basic Financial Literacy Group determined by the formula as follows:

$$Simple\ Basic\ Wi = \frac{1}{N}$$

Where,

Simple Basic Wi : the weight of variable i in the Basic Financial Literacy Group

N : the number of variables in the Basic Financial Literacy Group

Meanwhile, the weight for each variables in Advance Financial Literacy group determined by the formula as follows:

$$Simple\ Advance\ Wi = \frac{1}{M}$$

Where,

Simple Advance Wi : the weight of variable i in the Advance Financial Literacy Group

M : the number of variables in the Advance Financial Literacy Group

A.2. Factor Analysis

1. Rescale the rotated factor loading

The rotated factor loadings were then rescaled in order to derive an easier unit variance of the variables which is explained by the factor. The rescaled factor loadings were calculated by using the following formula:

$$ki = \frac{r_i^2}{\sum_{i=1}^{N} r_i^2}$$

Where:

k_i : rescaled factor loading

r_i : rotated factor loading

i : variable of each group

N : number of variable of each group

2. Calculate the variable weights

The weight of each variable in each variable group was calculated by multiplying the rescaled factor loading for each variable with the sum of square of the factor loading of all variables in the common factor to which the variable belonged. The formula is as follow:

$$Pc_i = k_i . R_c = k_i . \sum_{i=1}^{N} r_i^2$$

Where:

Pc_i : weight of variable i

k_i : rescaled factor loading for variable i

r_i : rotated factor loading

R_c : sum of square of the rotated factor loading of all variables in the common factor to which the variable *i* belongs

i : variable of each group

N : number of variable of each group

3. Rescale variable weight

For easier interpretation, each variable weight was rescaled in order to vary from 0 and 1. The formula to rescale of the variable weight is as follow:

a) Basic Financial Literacy

ICMEM

$$Pc\_bsc\_W_i = \frac{Pc_i}{\sum_{i=1}^{N} Pc_i}$$

Where:

Pc_bsc_W$_i$: the weight of variable i in basic literacy group

i : variable i in basic literacy group

N : number of variable in the basic literacy group

b) Advanced Financial Literacy

$$Pc\_advncd\_W_i = \frac{Pc_j}{\sum_{j=1}^{M} Pc_j}$$

Where:

Pc_advncd_Wi : the weight of variable i in advanced literacy group

i : variable i in advanced literacy group

M : number of variable in the advanced literacy group

4. Calculating Literacy Index

FLI = 0.5 FLI$_{i,obs}$. 0.5FLI$_{j,obs}$

Where:

FLI$_{i,obs}$: Basic financial literacy index of respondent *obs*

FLI$_{j,obs}$: Advanced financial literacy index of respondent *obs*

References

Alsemgeest, L. (2014). Family Communication about Money: Why the Taboo? *Mediterranean Journal of Social Sciences*, 516-523.

Bernheim, B. D., Garrett, D., & Maki, D. (2001). Education and saving: The long term effects of high school financial curriculum mandates. Journal of Public Economics. 80, 435–465.

Beverly, S. G., & Burkhalter, E. K (2005). Improving the financial literacy and practices of youths. Journal of Children of Schools. 27(2), 121–124.

Chandra, J. W., & Memarista, G. (2015). Faktor-FaktoFaktor-Faktor yang Mempengaruhi Financial Satisfaction pada Mahasiswa Universitas Kristen Petra. Finesta. 2(3), 1-6.

Falahati, L., Sabri, M. F., & Paim, L. H. (2012). Assessment a Model of Financial Satisfaction Predictors: Examining the Mediate Effect of Financial Behaviour and Financial Strain. World Applied Sciences Journal, 190-197.

Kim, J., & Chatterjee, S. (2013). Childhood Financial Socialization and Young Adult's Financial Management. Journal of Financial Counseling and Planning, 61-79.

Hira, T. K. (1997). Financial attitudes, beliefs, and behaviors: Differences by age. Journal of Consumer Studies and Home Economics. 21, 271–290.

Kandalaft, M. R., Didehbani, N., Krawczyk, D. C., Allen, T. T., & Chapman, S. B. (2012). Virtual Reality Social Cognition Training for Young Adults with High-Functioning Autism. Journal of Autism and Developmental Disorders. 43(1), 34-44.

Lusardi, A. (2008). Financial Literacy: An Essential Tool for Informed Consumer Choice?

Lusardi, A., Mitchell, O.S., and Curto, V. (2010). Financial Literacy among the Young. Journal of Consumer Affairs. 44(2)m 358-380.

Lusardi, A., & Mitchell, O. S. (2013). The Economic Importance of Financial Literacy: Theory and Evidence. Cambridge, MA: National Bureau of Economic Research.

Lyons, A. C., Scherpf, E., & Roberts, H. (2006). Financial Education and Communication Between Parents' and Children. Journal of Consumer Education, 23, 64–76.

Margaretha, F., & Pambudhi, R. A. (2015). Tingkat Literasi Keuangan Pada Mahasiswa S-1 Fakultas Ekonomi. Jurnal Manajemen Dan Kewirausahaan (Journal of Management and Entrepreneurship), 17(1). doi:10.9744/jmk.17.1.76-85

Nidar, S. R., & Bestari, S. (2012). Personal literacy among university students (case study at Padjajaran University students, Bandung, Indonesia. World Journal of Social Sciences. 2(4), 162–171

ICMEM

Norvilitis, J. M., Osberg, T. M., Young, P., Merwin, M. M., Roehling, P. V., & Kamas, M. M. (2006). Personality factors, money attitudes, financial knowledge, and credit-card debt in college students. Journal of Applied Social Psychology. 36, 1395–1413.

Otoritas Jasa Keuangan. (2013). Developing Indonesian Financial Literacy Index 2013

Otoritas Jasa Keuangan. (2016). Survei Nasional Literasi dan Inklusi Keuangan 2016.

Petry, N. M. (2002). A Comparison of Young, Middle-Aged, and Older Adult Treatment-Seeking Pathological Gamblers. The Gerontologist. 42(1), 92-99.

PISA 2012 Financial Literacy Framework, 2010. Australia.

Rooij, M. V., Lusardi, A., & Alessie, R. (2007). Financial Literacy and Stock Market Participation.

Sabri, M. F., Macdonald, M., Hira, T. K., & Masud, J. (2010). Childhood Consumer Experience and the Financial Literacy of College Students in Malaysia. Family and Consumer Sciences Research Journal, 38(4), 455-467.

Shanks, T. R. W. (2007). The impact of household wealth on child development. Journal of Poverty. 11(2), 93-116.

Shim, S., Xiao, J.J., Barber, B.L., & Lyons, A.C. (2009). Pathways to life success: A conceptual model of financial well-being for young adults, Journal of Applied Developmental Psychology, 30, 708-723.

Susanti. (2013). Faktor-faktor yang Mempengaruhi Literasi Keuangan Mahasiswa Fakultas Ekonomi Universitas Negeri Surabaya. Jurnal Ekonomi dan Bisnis Universitas Negeri Malang.

Webley, P., & Nyhus, E. K. (2013). Economic socialization, saving and assets in European young adults. Economics of Education Review. 33, 19-30.

Woolsey, B., & Schulz, M. (2012). Credit card statistics, industry facts, dept statistics. retrieved from: http://www.creditcards.com/credit-card-news/credit-card-industry-facts-personal-debt-statistics-1276.php

Xu, Lisa and Bilal Zia, (2012). Financial Literacy around the World: An Overview of the Evidence with Practical Suggestions for the Way Forward. Policy Research Working Paper, WPS6107, World Bank

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Effect of Chargeback Components and Transaction Cost in Capital Budgeting Development of Information Technology Projects (Case Study of PT Bank Mandiri, Tbk.)

Rully Feranata[a*], Zalmi Zubir[b]

[a]*Master of Management Faculty of Economics and Business Universitas Indonesia, Jl Salemba Raya No.4 Jakarta 10430, Indonesia*

Abstract

World economic conditions over the past few years have been marked by uneven growth in some countries, including ASEAN member countries. The recovery of the world economy is still categorized as weak followed by the slow economic growth of developed countries. Interesting facts need to be mitigate by market, especially banking. Banking in Indonesia is still considered less efficient, this can be seen from the ratio of net interest margin (Net Interest Margin) and operating expenses to operating income ratio (BOPO). The purpose of this study is to analyze the impact chargeback variables and transaction costs that may affect the realization of banking IT projects in Indonesia. This study will take a case in one of the Indonesian state-owned companies, namely PT Bank Mandiri. In the simulation test will apply two variables: chargeback and transaction cost variable in planning of investment budget of IT project. The results of this study prove significant influence in the use of chargeback and transaction cost variables in the preparation of capital budgeting, however Monte Carlo and sensitivity analysis is used to provide more in-depth analysis of the parameters and probabilities affecting investment projects, so that it can be used in assist decision-making by management.

Keywords: Capital Budgeting; Chargeback; Transaction Cost; Activity Based Costing; Discounted Cash Flow; Banking Industry

1. Introduction

PT Bank Mandiri Tbk., Is one of the largest asset banks in Indonesia, that has visions to be Indonesia's best and ASEAN's prominent bank by 2020. In order to achieve this vision, the bank has outlines three main topics which are *Deepen Client Relationship, Integrate the Groups, and Accelerate in Growth Segments*. Each of these strategies is then translated into high level business requirements, which in turns needs to be supported by IT capabilities within Bank Mandiri. However, in the past few years the composition of IT spending is almost comparable to OPEX vs. CAPEX but there is the possibility of under-spend and inefficiency in efforts to transform business. As described in Fig. 1.

This condition is very interesting in influencing the level of competition of the banking industry, where each industry is competing to seek efficient patterns, methods or investment policy approaches in terms of technology expansion into new channels, new customer acquisition and innovation of banking products and services, profitable and targeted. And on the other hand the addition of the financial services population of newcomers, among others,

---

* Corresponding author. Tel.: +62-21 31935080; fax: +62-21 3925339.
E-mail address: rully.feranata@ui.ac.id

foreign banks and start-up companies such as fin-tech, who helped to contribute to the financial service competition in Indonesia.
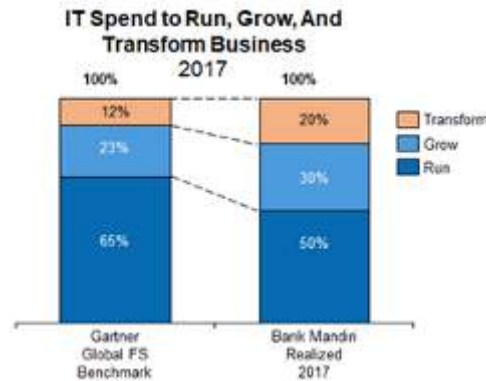
Fig. 1. Bank Mandiri Capex Vs Gartner ITKMD Surveys (2017)

Factors that may affect the operational efficiency of commercial banks based on some empirical studies are divided into micro and macro variables. Based on M. Anwar et al. (2012) as cited in (Muljawan, Hafidz, Astuti, & Oktapiani, 2014) micro variables include total assets as bank size proxy, return on assets (ROA) as bank profit proxy, capital adequacy ratio (CAR), loan to deposit ratio (LDR) as bank liquidity proxy, non-performing loan (NPL) as proxy of bank credit risk, bank ownership status, operating expenses, net interest margin (NIM), bank capitalization rate, market share, credit, operational risk, and product quality. While macro variables include growth of real gross domestic product (GDP), IHSG (Indonesia Composite Stock Price Index), rupiah exchange rate against dollar, inflation rate, market capitalization, and volatility of money market interest rate.

Another indicator that can be used to see the level of banking efficiency is the ratio of net interest margin (NIM). NIM provides an overview of the performance of the bank's main business lines reflecting the extent to which management manages assets (which generate interest income) and liabilities (which generate interest expense). The NIM ratio shows the bank's performance in generating profitability, so banks with NIM ratios are greater than their peers indicate better bank condition, high net interest margin value associated with lower efficiency and market conditions less competitive.

The influence of information technology utilization becomes the determinant factor of bank efficiency and also influence the level of competition between banks in both regional and international market, this is the basis of research where the effectiveness of information technology investment becomes the benchmark of efficiency and competitiveness in achieving bank function as the economic drivers of a country.

This research will be conducted at PT Bank Mandiri which is located at Bank Mandiri Head Office - Jalan Gatot Subroto Kav. 36-38, South Jakarta, Indonesia. Back in the period of 2014 - 2017 at PT Bank Mandiri, the process of capital budgeting for information technology projects investment valuation still using conventional approach whereby a proposed project that have concern of common assets that have benefits to multiple business units, the cost often neglected and tend not to include as part of project cost. Many organizations identifies cost of running operational data center in IT such as electricity, air conditioning, server space are considers indirect costs and un-measurable, therefore IT department will have to manage those costs as part of regular operational expenditure. The paradigm of IT department to be as cost center are often inevitable, but in the other hand, if one or more business units demand for higher service level agreement (SLA) in particular business services, such as electronic channel (internet banking, mobile banking, ATM and other channels for retail customer), cash management and trade finance for wholesale customer both of which are demanding additional cost, the higher the SLA then investment needed to achieve that will be higher. A proposed project concerns a common asset that benefits multiple divisions, then analysis derives a sharing rule for dividing the asset among the users and also capital charges are based on a hurdle rate that has effects on capital budgeting decisions (Baldenius, Dutta, & Reichelstein, 2007). Not many organizations are trying to measure the

ICMEM

benefits associated with IT investments, this lack of measurement means that organizations have no real idea what benefits they can get from IT investments or if these investments actually have an adverse effect on the organizations.

This research will focus on finding out the results of comparative analysis between the classical method of capital budgeting (which uses the costs identified in preparing cash flow) and the method of capital budgeting by taking into account the cost components previously indirect cost such as chargeback and revenue sources such as transaction cost revenue into components that can be traced and identified by analyzing the new variable factors that will be incorporated into the preparation of capital budgeting of information technology-based investment projects. These variables include chargeback and transaction cost in which the two variables have not been included as part of the process of preparing capital budgeting and the impact of the results of the use of these variables when compared with conventional methods such as cost benefit analysis and IRR are widely used by other organizations. The analytical methods to be used are sensitivity analysis, scenario analysis and capital cost analysis of project valuation calculation method such as Net Present Value (NPV), Internal Rate of Return (IRR), Discounted Payback Period, and Profitability Index (PI).

2. Literature Review

2. 1. Capital Budgeting

The definition of Capital Budgeting is the whole process of analyzing and deciding which projects should be accepted and then incorporated into the capital budget (Ehrhardt & Brigham, 2011). While the capital budget is a summary of asset investment plans that will last more than one year (Brigham & Ehrhardt, 2013). According to a survey conducted by (Szűcsné Markovics, 2016) on capital budgeting methods used by several EU countries and in the United States, there are several commonly used methods such as Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Payback Period (PP), Accounting Rate of Return (ARR) (Szűcsné Markovics, 2016). The subsequent research has been conducted in several Middle Eastern and Eastern European countries (Andor, Mohanty, & Toth, 2015) through 400 executives on capital budgeting practices that are influenced mostly by firm size, multi-national culture, corporate vision, and practice of ethical codes by executive ownership as well as the number of projects analyzed, and leverage targets.

The research results of capital budgeting methods in the United States are consistent with the results of research conducted in Asia Pacific regions such as Australia, Hong Kong, Indonesia, Malaysia, Philippines and Singapore (Kester et al., 1999) where the research results show that in Asia-Pacific countries including Indonesia use different discount rates for each project (42.8% of respondents), for example, projects fully financed by debt have a discount rate different from financing through sources of funds others. And for other percentages such as multiple-risk adjusted discount rate (28.6% of respondents) where the discount value is determined through the project risk level, the higher the risk level, the higher the resulting discount rate.

2. 2. Net Present Value

The Net Present Value (NPV) defines the present value of an in-flow cash from a project that has been subtracted by the present value of the costs that ultimately gives the project value contribution to shareholder wealth (Ehrhardt & Brigham, 2011). According to (S. A. Ross et al., 2015), any cash flows received should be discounted because the present value of an asset will be less than the future value of the asset.

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + ... + \frac{C_T}{(1+r)^T}$$

(1)

-C_0 = Initial Investment (Initial Outlay), C = Cash Flow, r = Discount rate, T = Time

To determine and assess an investment project acceptable or not, according to (S. A. Ross et al., 2015) there are commonly used criteria such as: 1) Project is accepted if NPV is greater than zero (NPV> 0), If the value of a project's NPV yields a value greater than zero, then it is believed the project is capable of generating profit for the company;2)

ICMEM

Project is rejected if NPV is less than zero (NPV <0), If the NPV value of a project yields a value of less than zero or negative, then it is believed the project has not been able to generate profits for the company and even potentially generate losses.

2. 3. Internal Rate of Return (IRR)

According to (Ehrhardt & Brigham, 2011), the Internal Rate of Return is the discount rate that causes the total present value of the cash flow to reach a state equal to the value of the project (initial cost) or in other words equal to zero. The following equation of internal rate of return (IRR) (S. A. Ross et al., 2015).

$$0 = -CF_0 + \sum_{t=0}^{n} \frac{CF_t}{(1+IRR)^t} \qquad (2)$$

CF_t = Cash flow projected at time-t, IRR = Internal rate of return, CF_0 = Initial outlay

With the criteria of project feasibility value through IRR equation are: 1) the project will be accepted if the value of the IRR calculation is greater than the discount rate; 2) The project will be rejected if the value of the IRR calculation is less than the discount rate.

2. 4. Discounted Payback Period

Another method to accept or reject a project is to use the payback period. According to (S. A. Ross et al., 2015) the payback method is divided into two types: payback period and discounted payback period. The difference is that the payback period method does not consider the time value of money aspect (Ehrhardt & Brigham, 2011). Therefore for this research, we use discounted payback period for indicating acceptability of the project.

2. 5. Profitability Index

Another technique that can be used to evaluate the feasibility of a project is to use a profitability index (PI) that is the ratio between the present value of the cash flow of a project with the initial amount of investment spent on the project (Brigham & Ehrhardt, 2013). Criteria for assessing the feasibility of a project can be seen with the results of the calculated profitability index ratio, among others (S. A. Ross et al., 2015): 1) Project will be accepted if PI> 1; 2) Project will be rejected if PI <1.

2. 6. Sensitivity Analysis, Scenario Analysis and Monte Carlo Analysis

Sensitivity analysis is a technique that examines how sensitive NPV calculations to the changes of a certain assumption. It is also widely known as what-if analysis and BOP (Best, Optimistic and Pessimistic) analysis (S. A. Ross et al., 2015). In this research, both method of calculation of capital budgeting will be done comparison between using conventional method by entering cash flow information from project and using same method but by taking into account component of chargeback and transaction cost through sensitivity analysis. While the scenario analysis is a sensitivity analysis by including external factors that influence the valuation of the project (S. A. Ross et al., 2015). Monter Carlo analysis presumes that all assumptions move up and down simultaneously in a certain range (minimum – maximum). We are using the following formula on Microsoft Excel spreadsheet to calculate value of assumptions between its minimum and maximum range:

$$Min + (Max - Min) * Rand() \qquad (3)$$

There are many possibility of outcomes. Based on experience, iteration of the process for 10,000 times will produce normal distribution of NPV. Another study of Monte Carlo analysis (Platon & Constantinescu, 2014) where the use of Monte Carlo analysis in project risk assessment of the project environment consists of studying the probability that the project will achieve satisfactory performance for the threshold - the internal rate of return (IRR) or (NPV), using this method, the distribution of all possible outcomes is generated by analyzing a model multiple times, with each run of the model using a random input value selected from a normally considered probability distribution of the components that make up the model.

ICMEM

2. 7. Cost of Capital

According to (S. A. Ross et al., 2015), the calculation of capital cost analysis can be determined by looking at the weighted average cost of capital (WACC) equation.

$$WACC = Equity \times Cost\ of\ Equity + Debt \times Cost\ of\ Debt \qquad (4)$$

2. 8. Chargeback Theory

According to (Drury, 2000) and (Baars et al., 2014), the management practice of billing cost centers or user departments for services provided by an in-house information technology center is referred to as a chargeback system. The chargeback system has key characteristics such as usage-based costs, stable rates, understandable bills, and so on, will help companies make effective decisions about investing and using IT (J. W. Ross, Vitale, & Beath, 1999). A general approach where IT costs are usually treated as overheads rather than direct costs. Such overhead costs are not properly absorbed either overall by the IT department or are evenly charged to all business units regardless of individual consumption of each business unit. This increased level of overhead spending has cost the traditional cost accounting system, which is likely to misunderstand IT costs, resulting in the determination of IT investment policies to be misplaced (Gerlach, Neumann, Moldauer, Argo, & Frisby, 2002)

However, the results of the previous research suggest four cost accounting methods included in the chargeback IT model: market-based pricing, negotiation provider-consumer, management set pricing and cost-based accounting has a weakness in describing the cost of comprehensive and optimal IT services. Therefore one of the studies (J. W. Ross et al., 1999) regarding the effective chargeback method is a method that is easily understood and rationally developed. According to (Gerlach et al., 2002), Activity-Based Costing (ABC) is one method of cost-based accounting that meets chargeback criteria, since ABC clearly communicates the "rates" of each activity that consumes resources and why resources it is used in IT services. Chargeback using ABC method also consistent with research by (Mihut & Tomai, 2010) where for the information technology context of three different components as another object such as: 1) product requires activities; 2) activities consume resources;3) resources cost money.

Based on the research of classification of shared assets approach which has been done by (Baldenius et al., 2007) as reference in doing cost allocation in writer and consistent in applying division of performance per division in its application into information technology based project for assets with service which are consumed together. One example of the implementation of ABC's use in calculating the cost of IT services included in the project cost component.

2. 9. Transaction Cost

According to (Williamson, 1981), transaction cost theory (TCT) aims to identify governance structures of various types of exchange between parties to maximize the economy for a particular organization. The relation with this research is the factor of transaction cost component whether it influences the valuation value of a project, so that it directly affects the decision about the IT project to be taken.

As well as the previous research (Alaghehband, Rivard, Wu, & Goyette, 2011) discussing the use of TCT in information technology outsourcing, as well as explaining the influence of TCT on IT outsourcing decisions and predicting IT outsourcing needs. In the research, the factors studied are the effect on asset specification, behavioral uncertainty, environmental uncertainty, frequency and cost difference, where the empirical findings have a positive effect on the cost difference component and others have a negative effect. The use of transaction cost is also reinforced by previous research (Winkler & Brown, 2013), where the perspective of transaction cost is introduced through the concept of transaction cost economy (TCE) which in its perspective is categorized into two, namely application specificity and space scope of application use in viewing applications with emphasis on transaction activity as the activity of the highest economic unit. In the context of the application specific category, TCE views if an application is very specific to a business unit and includes the process, transaction costs to the business unit to "contract" the application to the IT unit will increase as well as through greater efforts to communicate needs, requested changes to the system, and monitored operational of the application. Therefore we will discuss about the cost per transaction of each system in the object of study to determine the costs that affect the decision of capital budgeting information technology projects.

ICMEM

2. 10.   Theory of Efficiency in Banking

Efficiency is a commonly used measure in the production process. There are inputs and outputs in production. Higher efficiency means that each unit / company has the ability to use the same number of inputs to produce higher output volumes, whereas on the other hand, higher efficiency can also be interpreted because each unit / firm has the ability to minimize input to generate volume the same output (Tan, 2016). Factors that may affect the commercial operational efficiency of commercial banks based on some empirical studies are divided into micro and macro variables. Micro variables include total assets as bank size proxy, Return on Assets (ROA) as bank profit proxy, Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) as bank liquidity proxy, Non-Performing Loan (NPL)) as proxy of bank credit risk, bank ownership status, operating expenses, Net Interest Margin (NIM), bank capitalization rate, market share, credit, operational risk, and product quality. While macro variables include growth of real Gross Domestic Product (GDP), JCI (Composite Stock Price Index), rupiah exchange rate against dollar, inflation rate, market capitalization, and volatility of money market interest rate. The influence of information technology utilization becomes the determinant factor of bank efficiency and also influence the level of competition between banks in both regional and international market, this is the basis of research where the effectiveness of information technology investment becomes the benchmark of efficiency and competitiveness in achieving bank function as the driving of economy country.

3.   Methodology

This research uses quantitative and qualitative method. Quantitative method is done by designing capital budgeting by entering two variable chargeback and transaction cost at discounted cash flow (DCF) and measuring and comparison between conventional method of DCF with DCF method and two variable (*chargeback and transaction cost*) which become target of this research.

Then the qualitative method is done by analyzing the calculation result between the two methods (conventional and chargeback & transaction cost) will be analyzed. This research will use single-case holistic design, where there is one major case that is the problem but in the case there are two factors to be compared. Single-case will examine the case in an organization or company by considering several factors and aspects of the company (Yin, 2013).

In this research, the quantitative methods used are some financial ratios and investment valuations related to the project. Using data from the financial statements from 2014 to 2017, several relevant financial ratios will be developed for research purposes, including operational income operational expense ratio, IT spending to revenue ratio, IT spending expenditure to operational expenditure, CAPEX) and operational expenditures (OPEX).Through this comparison it aims to find a more effective, accurate and comprehensive valuation method of assessment in implementing future IT-based investment projects, refer to Fig. 2.

According to Lin (1983) as cited in (Drury, 2000) there are four types of chargeback systems based on the type of budgetary practice, such as: allocation chargebacks (use of soft money concept in which costs are only stated in memo form), use the hard money concept to transfer costs through the general ledger such as: average cost direct chargeback (divides total costs by recorded usage within each load center and assigns percentages to end users), standard cost chargeback (based on predetermined prices for computer usage for future periods), flexible price chargebacks (charge rate higher prices for scarce resources). And as for transaction cost valuation based on (Alaghehband et al., 2011) where value collected from calculation of total investment of particular system divided by total of transaction volume generated by that particular systems. The two new variables such as chargeback and transaction cost will be inserted as part of the calculation of capital budgeting and comparative analysis required to benchmark between conventional method of capital budgeting and the new approach of using chargeback and transaction cost of the same proposed IT project.

Through this qualitative method aims to perform an analysis of an event that requires a decision and obtain information about the problems that the goal of research. By analyzing data on the interview regarding the current methods of creating capital budgeting and several operational assumptions, then we can input those parameters as part of the calculation, afterwards we can do comparison with the newly proposed components into the calculation and analyze the results between those two methods.

ICMEM

Both methods will be using Capital Budgeting with Net Present Value (NPV), Internal Rate of Return (IRR), Discounted Payback Period, and Profitability Index (PI). And afterwards both methods will be compare with sensitivity analysis, scenario analysis and Monte Carlo Analysis for further result and give recommendation based on best preference of the organizations.
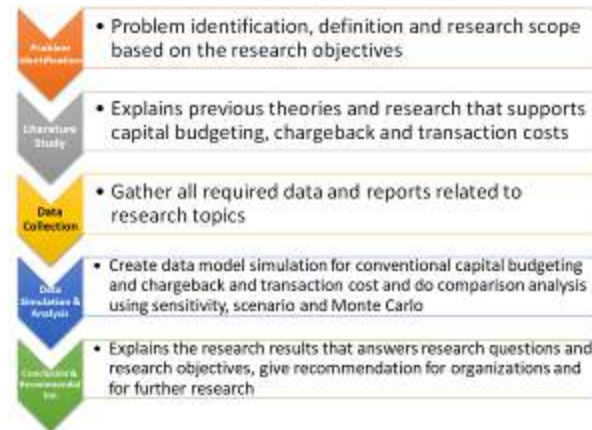

Fig. 2. Research Methodology

4. Data Collection and Analysis

One of the projects that will be the case study in this research is the Alfa-Bravo project being undertaken by Bank Mandiri which is included in the transform-the-bank strategic initiative. This project will be the object of research to develop the capital budgeting of the project with the ultimate goal of the feasibility of the project by comparing the method of conventional capital budgeting and capital budgeting by incorporating chargeback and transaction cost components and examining how significant the effect of the new components. The Alfa-Bravo Platform has been implemented in Bank Mandiri since 2006 and has been widely used to handle transaction activities from both business-to-business (financial) channel services and business integration. Some systems that have been integrated with the Alfa-Bravo platform include Cash Management, Host-to-Host, Remittance, Supply Chain Management, State Budget Treasury System (SPAN), and many more.

4. 1.   Cash Flow Analysis

Before we get into the calculation of cash flow (cash inflow and outflow), we will previously need the chargeback cost model to be calculated. This can be achieved by grouping cost components into "activity pools" rather than being grouped into indirect costs per department. The next step is to distribute the costs that have been accumulated to each product or service through cost drivers such as the relationships that can be explained by the following equation:

$$\text{Unit Cost}_{(\text{driver cost})} = \text{Cost}_{(\text{activity pool})} / \text{Quantity}_{(\text{driver cost})} \tag{5}$$

In grouping these costs, we first identify five major groups: (i) Software (software); (ii) Hosting (server, storage); (iii) Network; (iv) Personnel (staff); (v) Facility (electricity, room cost, air conditioning, UPS, telephone and fax). Each of these cost groups is grouped into service groups and sub-group services with an explanation through the Appendix A for the table of classifications and billing rates.

And as for transaction cost revenue, obtained through the calculation of total investment cost per application/system/channel divided by total transactions in one period (for example 1 year), the result of the division will be obtained transaction costs that will be generated through the application/system/channel. The following calculations for all applications/systems/channels are divided into three segments: (i) retail; (ii) wholesale; (iii) other system.

ICMEM

Table 1. Transaction Cost Calculation

	SysNo	System Name	Total cost (IDRm)	Total Txn Base (m)	Cost of Txn (IDR)
Base calculation					
Retail	1	ATM	135,000	300	450
	2	Branch	37,500	60	625
	3	EDC	185,000	300	617
	4	Internet Banking	35,700	324	110
	5	Internet Banking Business	27,490	96	286
	6	Call center	2,640	5	508
	7	Mobile Banking	3,274	120	27
Wholesale	8	Cash Mgmt	5,900	24	246
	9	Supply Chain	3,700	12	308
	10	Trade system	2,500	5	521
Other Systmers	11	EMV	5,000	240	21
	12	ICS	3,500	360	10
	13	Middleware	74,500	480	155
	14	Payments	13,800	144	96
	15	SWIFT	85	84	1
	16	Core Banking	32,000	540	59
	17	Clearing	990	96	10
	18	Base24	6,900	360	19

For the calculation of transaction cost revenue for the Alfa-Bravo project, because the project includes middleware applications, the amount can be used as revenue for the calculation of capital budgeting of this project. Calculations can be seen in the table above which refers to the other system for application number 13 - middleware which amounted to Rp 74,500,000,000. Furthermore, the value is included in the calculation of capital budgeting which also calculated the growth of transactions per year with an assumption of 25% per year starting from 2017 – 2022.

The initial cash inflow will be getting from the calculation of EBIT (1-tax) starting from 2018 onwards to 2022, the calculation will be comparing between the conventional method and addition of transaction cost revenue as part of the new parameters for cash inflow. The different between those two parameters are on the second following year (2019), there is slight declining as from conventional calculation recorded an inflow of Rp. 105,979 million and as for transaction cost revenue recorded Rp. 95,594 million. This number due to the operational cost that being added with the new component of chargeback cost, hence it will decrease the operational income significantly, although depreciation remains the same. At the end of the five-year project valuation of Alfa-Bravo, we will see some significant gap on year four which producing 48.5% difference (Rp. 153,221 million and Rp 103,211 million) and continuous to do so on year five with much less difference 6.64%, Fig. 3 explains the calculation.

For cash outflow the calculation coming from the incremental net working capital that comprises of cash, account receivable and account payable with the assumptions of information technology project there will be 90 days of procurement process that will become account payable also applied to the collection process of the delivered services from IT department to business users. We are comparing both model between conventional and chargeback cost, with the result of having the same identical pattern, which are significant declining of cash outflow on 2019, 77% of declining from the previous year 2018 to 2019 with Rp. 107, 924 million into Rp. 23,873 million on 2019 this also be found in the chargeback model with Rp. 131,205 million on 2018 into Rp. 29,694 million in 2019. Followed by the subsequent year, there will be increasing cash outflow from 2019 onwards with 23% in average up into 2022. Following Fig. 4(a) explain the calculation of the cash outflow of the project Alfa-Bravo

ICMEM
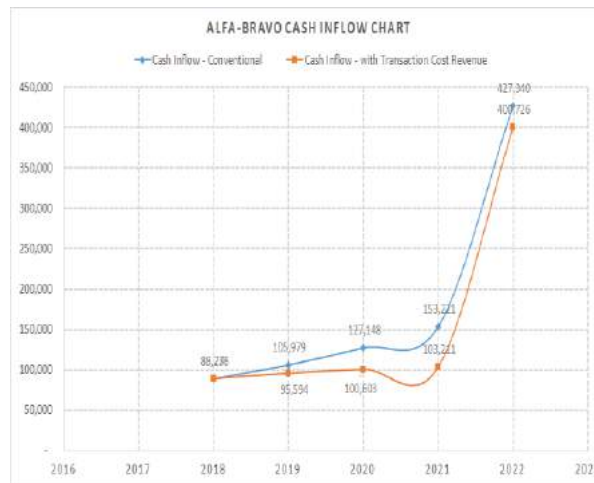
Fig. 3. Cash Inflow Chart on Alfa-Bravo Project

At the end of year 2018 for the project Alfa-Bravo cash flow will show positive this also applies on both models; conventional and chargeback cost, this calculation was based on the assumption of Cateris Paribus. But in the real world, all of the parameters are changing and have interdependency and sensitivity to one another, therefore we required Monte Carlo Analysis to actually determine the level of volatility and movement of the parameters also used in the sensitivity analysis, where in the risk assessment of the project environment consists of studying the probability that the project will achieve satisfactory performance for the threshold - the value of the internal rate of return (IRR) or the current net value (NPV), Fig. 4(b) showing the calculation of the projected cash flow from 2017 – 2022.
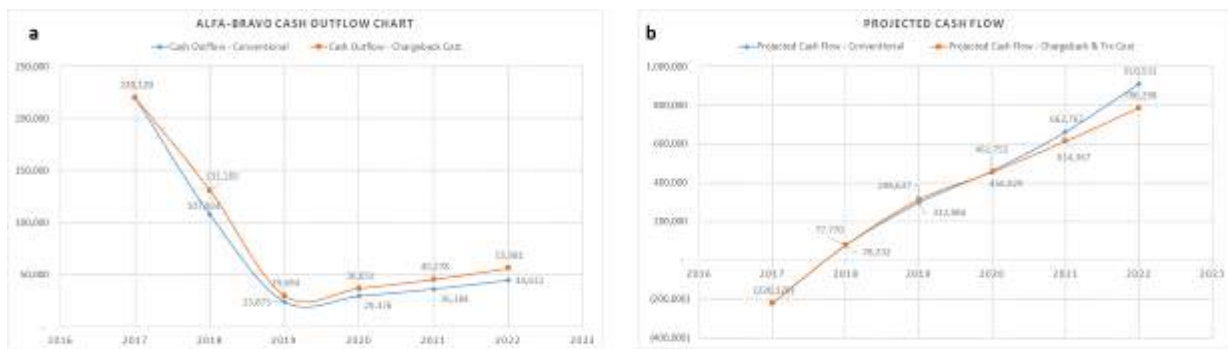
Fig. 4 (a) Cash Outflow Chart; (b) Projected Cash flow of Alfa-Bravo Project

4. 2.   *Net Present Value, Internal Rate of Return, Payback Period and Profitability Index*

Before we calculate the value of NPV, IRR, payback period (PBP) and profitability index (PI), previously we need to calculate the cost of capital by taking the cost of capital equation stated earlier. Since the all of the capital expenditure project at Bank Mandiri will be fully funded by equity, therefore the cost of debt will be consider as zero and cost of equity will 100%. Then return of equity will be measured with risk free rate (refer to SUN FR0064); equity market risk premium (refer to Damodaran online – Indonesia 2017); and beta from Pefindo on PT Bank Mandiri 2017, with end result of return of equity ~18%. Below table will give the comparison of both model.

ICMEM

Table 2. Comparison Table of NPV, IRR, PBP and PI

7. Baseline capital budgeting	8. New capital budgeting	9. Difference
10. NPV = 111,983	11. NPV = 12,835	12. Decrease of 88.54%
13. IRR = 30%	14. IRR = 19%	15. Decrease of 36.67%
16. PBP = 4.3	17. PBP = 4.9	18. Increase of 13.95%
19. PI = 1.5	20. PI = 1.1	21. Decrease of 26.67%

Investment decisions based on a single scenario cannot provide enough information to see the potential and risks of a project, the decision can be evaluated through several measures or criteria that are part of the equation of the vector function of the value drivers so that based on research done by (Marchioni & Magni, 2018) where there is consistency of NPV calculation result with investment decision to use sensitivity analysis. In the Alfa-Bravo project several parameter assumptions used in the calculation of net present value (NPV) will be tested for sensitivity analysis by making changes to the values that have been used as the basis of calculation. In the calculation of sensitivity analysis, we will make first three columns, namely first column: baseline is the base value that becomes the initial value of calculation, second column: simulated is the value used as simulation using what-if analysis function, while the third column is the change which states how big the value of change between baseline and simulated. Based on the simulation we can get information where the smaller percentage in the column changes the more sensitive these parameters to the NPV valuation to be achieved.

The analysis is done by changing the ranking of the 10 most influential parameters with the minimum and maximum scenarios while the remaining parameters are fixed and unchanged according to the baseline. The results of calculations on NPV, IRR, Payback Period and Profitability Index, can be seen through the calculation table as follows

Table 3. Scenario Analysis

Variable	Scenario Case (+/- 10%)		
	Minimum	Baseline	Maximum
1 BOPO	54%	60%	66%
2 Kenaikan Chargeback Cost	23%	25%	28%
3 NII	23%	25%	28%
4 Middleware Investment	67,050,000,000	74,500,000,000	81,950,000,000
5 Kenaikan Biaya Investasi	0%	0%	0%
6 Virtualization-per transaction	9%	10%	11%
7 Virtualization-per transaction	90	100	110
8 Principal License-per transaction	9%	10%	11%
9 Principal License-per transaction	90	100	110
10 Middleware Transcation Request	36,000,000	40,000,000	44,000,000
NPV	104,266	12,835	(88,330)
IRR	30%	19%	8%
Payback Period	4.4	4.9	5
Profitability Index	1.5	1.1	0.6

4. 3. Monte Carlo Analysis

In preparing the capital budgeting of a project in mitigating the state of uncertainty for investment decisions, organizations generally adopt several complex techniques (Verbeeten, 2006). Some of the most common sophisticated capital budgeting practices (SCBP) techniques are Monte Carlo simulation, game theory decision rules, real option pricing, decision trees, sensitivity analysis, and scenario analysis.

The result of the calculation of discounted cash flow (DCF) in the previous section will be used as a calculation in the Monte Carlo simulation. With Monte Carlo simulation, we can determine the volatility level and the movement of the parameters also used in the sensitivity analysis of 68 reference parameters, refer the 68 parameter list to Appendix C. Using values from the sensitive variables, we will get an optimal value based on Monte Carlo simulations that may affect the NPV of the Alfa-Bravo project. Graph of Monte Carlo simulation results of 68 sensitive variables can refer to Appendix B.

ICMEM

5. Conclusion and Recommendation

5. 1.   Concluding Remarks

Based on simulation of quantitative calculation from Alfa-Bravo project with traditional method we get result from NPV is 111,983, IRR is 30%, payback period is 4.3 with profitability index is 1.5. While using the new method is to include the component chargeback cost and transaction cost revenue has a NPV of 12.835, IRR of 19%, payback period 4.9 and profitability index of 1.1. This proves that by incorporating the two new components in the calculation of capital budgeting will affect the value of the feasibility of a project significantly. This calculation is also supported by performing Monte Carlo sensitivity and simulation analysis to obtain components of chargeback and transaction cost that are very sensitive and vulnerable to changes that significantly affect the value of the project feasibility. Management now has information to perhaps make some adjustments to project design and implementation. For example, the target percentage of net interest income (NII) rate is still very important for the success of the project. Does it justify an increase or decrease in interest rates can be done at any time? Is the growth of the number of customers in this case more important? Or rather the increase in transaction costs by corporations is far more important. Does it also show additional marketing or operational costs during the project period? The NPV analysis, sensitivity and Monte Carlo simulations can answer these questions.

5. 2.   Recommendation

This research provides an understanding of the impact on chargeback and transaction cost that shows the deficiency in measuring the unpredictable return on investment (ROI) in IT projects, measuring operational costs and the valuation of IT investments are big business that cannot simply be left to IT functions or financial functions. The IT department in one organization that continues to use the latest technology as part of operations, where technology is actually used as a cost-reduction tool will be a weak side, while those who have realized the concept of measurement that also uses IT as a value-creating tool and knowledge will ensure sustainable investment in IT. Sustainable growth within the organization will increase transaction volume and hope that IT can quickly respond to new business requirements means more pressure will be placed on current infrastructure. This makes the measurement of existing services more important, so that understanding can be achieved that will allow the proportion of IT investments used to maintain the current system to be adequately explained and communicated to senior management and charged to the entire organization. Investment costs for higher "*Change the Business*" programs tend to show that a larger proportion of IT spending and targeted at new programs that are aligned with business objectives, which in turn can lead to increased competitive advantage.

Recommendations that can be proposed based on the conclusions of this study among others; (i)The banking industry has a very competitive market, every business actor seeks to improve competitiveness, among others by improving services to customers through the development of new technologies, but on the other hand to maintain the operational efficiency of banks within certain limits in order to remain attractive to investors; (ii) The effectiveness of IT investment is a very significant factor in IT capability to deliver value to the company. IT management should make a reasonable effort to measure and monitor IT spending and once this effort is approved, IT management seeks to increase the proportion of expenditures for improvement and new services designed to transform the company and grow the overall value; (iii) Monte Carlo's sensitivity and simulation analysis is used in strategic assessments for investment decision making as well as identifying, analyzing and evaluating the economic risks, financial risks and qualitative risks of investment projects, with Monte Carlo simulations, management can look for different methods and approaches to manage and respond risk investment project.

The findings in this research can be leveraged by researchers to develop some other chargeback models that specific to organizations and methods that assist chargeback designers to create such models. This research empirically confirms the findings of a large body of literature validated with case study at PT Bank Mandiri, and can be extends with additional factors specific for chargeback and transaction cost in capital budgeting process. Other directions have been identified as of future work. The limitation from this research is the used of assumption for growth of the transaction and revenue generated are using average annual growth rate. This study could be replicated with different

ICMEM

companies on different industry or within different geographic areas to explore whether there are additional factors that influence chargeback and transaction cost and relevant in today's technology advancement, such as cloud computing where on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) can be rapidly provisioned and released with minimal management effort (Mell & Grance, 2009) in organization with specific environments and thus, contributing towards the generalizability of the research finding.

References

Alaghehband, F. K., Rivard, S., Wu, S., & Goyette, S. (2011). An assessment of the use of transaction cost theory in information technology outsourcing. *The Journal of Strategic Information Systems*, *20*(2), 125–138.

Andor, G., Mohanty, S. K., & Toth, T. (2015). Capital budgeting practices: A survey of Central and Eastern European firms. *Emerging Markets Review*, *23*, 148–172.

Baars, T., Khadka, R., Stefanov, H., Jansen, S., Batenburg, R., & Van Heusden, E. (2014). Chargeback for cloud services. *Future Generation Computer Systems*, *41*, 91–103.

Baldenius, T., Dutta, S., & Reichelstein, S. (2007). Cost Allocation for Capital Budgeting Decisions. *The Accounting Review*, *82*(4), 837–867.

Drury, D. H. (2000). Assessment of Chargeback Systems in IT Management. *INFOR: Information Systems and Operational Research*, *38*(3), 293–313.

Ehrhardt, M. C., & Brigham, E. F. (2011). *Financial Management: Theory and Practise*. Cengage Learning.

Gerlach, J., Neumann, B., Moldauer, E., Argo, M., & Frisby, D. (2002). Determining the cost of IT services. *Communications of the ACM*, *45*(9), 61–67.

Kester, G. W., Chang, R. P., Echanis, E. S., Haikal, S., Isa, M. M., Skully, M. T., … Chi-Jeng, W. (1999). Capital Budgeting Practices in the Asia-Pacific Region: Australia, Hong Kong, Indonesia, Malaysia, Philippines, and Singapore. *Financial Practice & Education*, *9*(1), 25–33.

Marchioni, A., & Magni, C. A. (2018). Investment decisions and sensitivity analysis: NPV-consistency of rates of return. *European Journal of Operational Research*, *268*(1), 361–372.

Mell, P., & Grance, T. (2009). The NIST definition of cloud computing (v. 15). *National Institute of Standards and Technology*, (v.15), 1–2.

Mihut, M., & Tomai, N. (2010). A cost model for the IT department. *Journal of Applied Quantitative Methods*, *5*(2), 358–364.

Muljawan, D., Hafidz, J., Astuti, R. I., & Oktapiani, R. (2014). *Faktor-Faktor Penentu Efisiensi Perbankan Indonesia Serta Dampaknya Terhadap Perhitungan Suku Bunga Kredit* (Working Paper/2/2014).

Platon, V., & Constantinescu, A. (2014). Monte Carlo Method in Risk Analysis for Investment Projects. *Procedia Economics and Finance*, *15*, 393–400.

Ross, J. W., Vitale, M. R., & Beath, C. M. (1999). The untapped potential of IT chargeback. *MIS Quarterly*, 215–237.

Ross, S. A., Westerfield, R., Jaffe, J. F., Lim, J. Y., Tan, R., & Wong, H. (2015). *Corporate finance*. [Singapore?]: McGraw-Hill Education (Asia).

Szűcsné Markovics, K. (2016). Capital budgeting methods used in some European countries and in the United States. *Universal Journal of Management*, *4*(6), 348–360.

Tan, Y. (2016). Chapter 3 - Theory of Bank Efficiency and Bank Competition. In Y. Tan (Ed.), *Efficiency and Competition in Chinese Banking* (pp. 45–66). Chandos Publishing.

Verbeeten, F. H. M. (2006). Do organizations adopt sophisticated capital budgeting practices to deal with uncertainty in the investment decision?: A research note. *Management Accounting Research*, *17*(1), 106–120.

Williamson, O. E. (1981). The economics of organization: The transaction cost approach. *American Journal of Sociology*, *87*(3), 548–577.

Winkler, T. J., & Brown, C. V. (2013). Horizontal Allocation of Decision Rights for On-Premise Applications and Software-as-a-Service. *Journal of Management Information Systems*, *30*(3), 13–48.

Yin, R. K. (2013). *Case study research: Design and methods*. Sage publications.

The 3rd International Conference on Management in Emerging Markets

ICMEM

What Factors that Influence Investor towards Peer-to-Peer Lending? Survey of Graduate Students in Indonesia

Ramadhanora[a*], Yunieta Anny Nainggolan[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung*

Abstract

The problem of the development financing gap and the uneven distribution of financing services are still faced in Indonesia. There are a lot of Small and Medium Enterprises (SMEs) in Indonesia that have not been reached by the Bank. The presence of Peer-to-Peer Lending in Indonesia, as an online lending borrowing service, is expected to support the government's program to make SME financing services and other financing needs in Indonesia more equitable. Related to the development of this industry in the future, funding is required from the lenders, therefore effort to attract new investors to invest on P2P Lending platform is needed. The effort is to know what factors are important determinants of an investor/prospective investors decision to be willing to invest on this platform. The method used in this study is a quantitative method (questionnaire) addressed to MBA ITB students. Data processing using regression analysis with binary dependent variable (logistic regression). Based on survey results and data analysis showed that from 14 variables tested, there are 7 significant variables that affect the willingness of the lender to lend. These 7 variables are safety protection, loan amount, verified document, accumulated transactions & repayment history, supplementary information, perceived risk, and transaction fee.

Keywords: Peer-to-Peer Lending, Logistic Regression, Safety Protection, Loan Amount, Verified Document, Accumulated Transactions & Repayment History, Supplementary Information, Perceived Risk, and Transaction Fee.

1. Introduction

Indonesia is the most populous countries in the worlds supported by abundant natural resources, large and growing domestic market, and an improving investment climate. This is evidenced by the "ease of doing business" index, Indonesia gained ranked 72nd in 2017 from its previous rank of 114 in 2015 (BKPM, 2017). Therefore, Indonesia has a great potential as a promising market target, especially in this digital era. The digital era has dominated the lifestyle, both social and business interactions. The development of communication technology is currently growing rapidly and directly give impact to economic progress in Indonesia. Emerging technologies have a positive impact on businesses, including opportunities for new jobs, increased productivity and innovation, simpler business processes, and better service toward customers.

One of the big potential businesses in Indonesia is the e-commerce industry. This industry is growing because it is supported also with high internet usage activity in Indonesia. If we viewed from the active internet users, based on data obtained from survey of the Association of Internet Service Providers Indonesia (APJII), internet user data in Indonesia in 2017 has reached 142 million people with penetration of 56.49% of the total population, and 48.40% of internet users it is a student and about 73% of its user activity to access social media (APJII, 2017). Fintech focuses more on companies that innovate in financial services with a touch of modern technology that has the potential to increase financial literacy, open access to finance to society to improve the welfare of society and also encourage economic growth of Indonesia. Some types of fintech in Indonesia ranging from asset management, fundraising, e-money, Peer-to-Peer lending, payment gateway, remittance, shares, to the insurance field. Based on data from katadata, Fintech's transactions in Indonesia are expected continues to increase until 2021.

One type of fintech that has great potential in Indonesia is Peer-to-Peer Lending. Fintech Peer-to-Peer Lending can be an investment alternative which is fast, easy and more transparent. In addition, the return offers are more

---

* Corresponding author.

E-mail address: ramadhanora@sbm-itb.ac.id

ICMEM

competitive, the rate of return and risks of p2p lending lies between stocks and bonds. This is supported by information from several existing p2p lending platforms (Koinworks, Investree, Modalku, and Amartha) showed in 2016, all four companies have a return level around 17-20%. This figure is higher when compared to the level of ROI Composite Stock Index in 2016. The number of benefits derived from investment, especially in peer to peer lending is expected to bring new investors to help the community in understanding the investment itself, thus making investment as a culture, because the investment itself aims to encourage economic growth in Indonesia to be more equitable.

Peer-to-peer lending is a type of loan that connects directly to those who need funds with those who have funds without financial intermediaries or the intermediation of traditional financial institutions. Peer-to-Peer Lending in its system serves to filter and clarify the borrower, such as the borrower's historical information, then shows the interest rate on the loan, and attracts the investor as the funder (Xue, 2017). Peer to Peer Lending aims to provide an exclusive space for lenders and borrowers to meet each other, to engage in practical and profitable online-based lending activities. In addition, the platform also selects, analyse, and approves lending applications submitted by borrower to generate quality funding to offer to lenders Under the regulation of the Financial Services Authority Number 77/ POJK.01/2016, Peer-to-Peer Lending is an information technology-based lending and borrowing service that aims to bring lenders and borrowers together in order to borrow money in rupiah directly through electronic system using internet. Investing through the Peer-to-Peer Lending platform generates many advantages, in addition to its fast and easy process, competitive returns, the investment on this platform is relatively cheaper. The amount of funding for each platform varies from Rp 100,000 to Rp 2,000,000,000, with a low transaction fee. Additionally, Peer-to-Peer Lending allows investors to manage their own investment activities, and this platform also helps perform risk analysis and diversification, where investors are educated to spread portfolios across different industry funding.

OJK shows that 49 million small and medium enterprises (SMEs) in Indonesia are still not bankable and require access to loans (Baskoro, 2017). Currently the problem of the development financing gap and the uneven distribution of financing services are still facing in Indonesia, where the financing services are still concentrated in Java. Therefore, with the presence of Peer-to-Peer Lending is expected the financing services for SMEs in Indonesia will be more evenly distributed and can continue to grow, so that it can boost economic growth and increase financial inclusion in Indonesia.

Today, investment interest in Indonesia is actually still low. In terms of regions in Indonesia, the highest investment realization is still held by Java Island. West Java is the region with the highest investment realization, and Bandung as the capital of West Java has great potential to trigger an increase in the number of investors. When viewed from active internet users in Indonesia, 48.40% of internet users are dominated by students. Business students have the potential and also more knowledge related to facilities or financial services especially investment. Students especially MBA students can be targeted for an investment instrument in an effort to attract investors or maximize student interest in investing. Furthermore, the issues raised in this research is the low number of local investors in Indonesia, Indonesia itself has great potential because it is supported by high internet active users where the majority of its users are students. MBA ITB students with the knowledge gained during the lectures related to finance as well as the financial, economic, risk management, etc. they possess, and are supported by ITB's own mission to create, share and apply existing technologies. This is the main reason to maximize student interest (MBA ITB) as a current businessman and prospective investor to invest especially on the Peer-to-Peer Lending platform. This paper aims to know how many percentage MBA ITB students know about peer to peer lending compared to other investment?; How many percentage MBA ITB students interest to invest in this platform?; What determining factors influence their decisions as investors/potential investors investing in this platform, which will be useful for the development of Peer-to-Peer Lending platform in the future; and what suggestion we can give to P2P lending platform on information that attracts investor/potential investor?

ICMEM

2. Literature Review

2. 1. Characteristic of Platform

Transaction Fee

Transaction fees are generally charged when the loan has been successfully funded and the money has been transferred from the lender to the borrower. In addition, the transaction fee includes the service charge of the investor, as well as the interest from the loan repayment (Milne & P, 2016). However, the provisions of whether or not the transaction fee will be different according to the rules applicable in the country. Just like in the US, Prosper.com website, transaction fee including 3 components: closing costs, payment penalties failed, and late payment fees. While in China, transaction fee are quite high because it includes 4 components (Chen & Han, 2012). As for Indonesia itself, transaction fee is still in the range 0-1%. Each platform has its own terms regarding transaction fee. Transaction fee become a tested variable, because one of the strengths of P2P Lending is its low transaction fee compared to traditional financing (Feng, Fan, & Yoon, 2015). Therefore, it is quite easy for this platform to build a portfolio for new investors to invest.

Service Quality

Regarding the trust of lenders to financial intermediaries in this case Peer-to-Peer Lending, lenders directly assess a financial intermediary (platform) based on the quality of security and services. While indirectly in accordance with experience with previous intermediaries (Chen, Lai, & Lin, 2014). Quality of service includes quality of functions and support activities provided by the platform. The quality of service consists of two categories, experiences such as responsive and reliability such as attractive and effective website performance, complete information: the general information about the operating procedures of the platform, and structural means providing more flexible services such as ease of providing funds, which is fast, easy and safe (Watson RT, 1998).

Safety Protection

As explained earlier, that the quality of security is the thing that is assessed from a platform directly by the lender. In this case, the lender has a higher risk than the borrower, so the lender needs the platform role as a financial intermediary to protect their funds. The trust of the lender is based on the security of transactions provided by the platform, such as escrow services, authentication, fraud protection, and verification (Chen, Lai, & Lin, 2014). Safety protection aims to reduce the risks that may occur to lenders such as the risk of default from the borrower. Previous research has suggested that security protection is important in increasing trust, especially for high-risk activities. The characteristics to measure safety protection in this study are significant security to protect users, transactional information to be protected from destruction or alteration during transmission on the internet, feel secure to conduct transactions, and licensed platforms from OJK (Kim DJ, 2008).

2. 2. Capacity of Borrower

Verified Documents

Peer-to-peer Lending requires document verification, as verifying documents increases trust and encourages lenders to invest their money (Greiner & Wang, 2007). Based on previous research, positively verification documents have a direct relationship related to the success of loan funding. Verification of this document is a process to ensure that the borrower is a real person and obtain valid information that aims to reduce the risk of information asymmetry. As mentioned in previous research that there are 4 items that have a significant effect on the verification of the document that is certificates of identification, cohabitation, income and credit (Yum, Lee, & Chae, 2012). Therefore, for document verification variables, the author uses 4 items of measurement.

Accumulated Transaction and Repayment History

Credit score is a determination of individual creditworthiness value that can be done by a platform as an effort to minimize risk by selecting prospective borrower (Thomas, 2000). Credit score scores generally use algorithms based on previous payment history, and timeliness of payments. One of the platforms in Indonesia which is Koinworks provide services such as protection funds by using a combination of inter-bank method, then using knowledge about big data. The credit score on this platform is in grade because it is considered that this method of assessment is more comprehensive (Koinworks, n.d.). Accumulated transaction and repayment history are factors that can be used as a reference in scoring credit scores (Yum, Lee, & Chae, 2012).

ICMEM

Demographic and Social Information

Demographic characteristics influence decisions in lending, this is based on previous research which says that demographic and social-related information is a critical determinant of funding success in P2P lending (Ravina, 2008) (Yum, Lee, & Chae, 2012) (Herzenstein, 2008). Demographic characteristics include age, gender, income level, education, employment, etc. Another function of determining demographic characteristics is to help the lender to evaluate the credibility of the borrower (Feng, Fan, & Yoon, 2015).

Geographic Resemblance

The similarity of location also has a high chance of success in funding the P2P Lending. Previous research analyzed the similarity factors of both sides, lenders and borrowers. Based on these studies it is known that similarities have a positive impact on lending decisions. Similarities include the resemblance of location of residence, sex, and ethnicity (Ravina, 2008).

Supplementary Information

Supplementary information such as borrower narrative, loan objectives, friends, group environment also influence the success of P2P Lending funding (Feng, Fan, & Yoon, 2015). Information relating to the objectives and narratives of these borrowers aims to obtain valid and reliable information in an effort to reduce risks and also foster trust between the lender and the borrower.

Social Capital

Trust in the borrower is a belief that the borrower will act cooperatively in fulfilling his responsibility to return the loan funds to the investor (Chen, Lai, & Lin, 2014). This variable is considered important regarding lending, therefore this variable is tested. The trust of the lender with the borrower can be through direct appraisal based on first impressions, then from the quality of information from borrowing requests, as well as indirectly based on social capital information (Chen, Lai, & Lin, 2014). Social Capital is a borrower resource that can be accessed through social networking on P2P lending platform (Kim, Feeein, & Rao, 2008).

2. 3. Capacity of Investor

Perceived Benefit

Perceived benefit can also be an important determinant of willingness to lend (Chen, Lai, & Lin, 2014). Previous research has shown that trust that begins with first impressions and perceived benefits determines the lender's desire to lend his money (Wan, 2016). Perceived benefit such as full control over investment such as portfolio management, then get high return through P2P lending, and the lender's own goal. Perceived benefits are considered necessary to be tested because they are directly related to the lender's wishes.

Perceived Risk

Perceived risk is a concept of a similar component, which occurs when the consequences of an action are unfavorable and there is something at stake. Knowing perceived risk is something that is necessary to establish a trust and the result of building that trust is an effort to reduce the perceived risk of the transaction being made (Mitchell, 1999). In addition, by knowing what risks will occur, the platform can create risk-related mitigation for the convenience of its customers. Therefore, perceived risk has the potential to be important in determining an investment decision.

2. 4. Characteristic of Loan Request

Interest Rate

The satisfaction of investors seeking to earn higher returns is from high interest rates (Puro L, 2010). Previous research also mentioned that with higher interest rates can increase success in funding (Barasinska, 2010). Therefore, it is quite easy for this platform to build a portfolio for new investors to invest, because for its own return some platforms in Indonesia is quite high that is in the range of 11-30%. Therefore, the interest rate is a factor that potentially influences the lender's offer decision.

Loan Amount

Low loans require fewer investors so the likelihood of P2P funding success will be higher. Smaller loan amounts can decreasing interest rates and help increasing funding success rate (Puro L, 2010). The small amount of funds aims to enable lenders to manage the potential risks of investments, so they are expected to attract more investors. Furthermore, this variable was tested, to see whether there is any influence between the low loan amount variable to

ICMEM

the lender's or investor's desire to lend.

Repayment Period

The repayment period is the third indicator of loan request characteristics. Shorter repayment period provide benefits to investors as they allow for higher liquidity (Feng, Fan, & Yoon, 2015). Investors, especially individual investors tend to prefer their assets quickly converted into money.

3. Methodology

Based on the previous literature it is known that the main step in P2P Lending decision is that lenders choose which platforms are deemed safe, reliable products and services, and the completeness of information related to the lending process is clearly and effectively delivered. Furthermore, it raises the trust between the lender and the borrower to reduce the risk of information asymmetry and also the risk of default from the borrower. In order to overcome those problem, it takes effort from the platform, such as providing valid information related to the characteristics or capacity of the borrower. In addition, P2P Lending as a financial intermediary between lender and borrower can help reduce the asymmetry of the information by assessing the borrower, then screening based on the borrower's history and using the collateral.

In addition to the characteristics of the platform, as well as the borrower's capacity, it is also necessary to know the capacities of the lender, such as perceived benefit and perceive what risks may occur and what efforts the platform takes in addressing these risks in order for lenders to be more confident and secure investing in this platform. The last thing is information related to the borrower's request which is also important, aiming to evaluate the eligibility of the borrower (Lin & Viswanathan, 2009). Therefore, the authors develop questionnaires based on these four characteristics: the characteristics of the platform, the capacity of the borrower, the capacity of investors, and the characteristics of demand in the lending.

In this research, data were collected using a quantitative method of questionnaire which is a series of questions that were formalized to obtain information from respondents (Malhotra, 2015). This research is conducted through the spread of questionnaires online targeted to prospective investors/investors in this case active MBA ITB students. The questionnaire consists of 3 parts, the first part is about personal information such as gender, age, occupation, type of investment that has been done, and other additional information. Then the next section is related to investing in Peer-to-Peer Lending, such as knowledge about P2P Lending and whether respondents have a desire to invest in this industry. The last part of the questionnaire is a core question to test the hypothesis and variables. There are 14 variables to be tested and put into 30 questions. The dependent variable in this research is the willingness of the lender to provide the loan. Dependent variables are categorical (nominal or non-metric variable). Logistic regression represents two interest groups as binary variables with values 0 and 1, where code 0 for those not willing to lend, and code 1 for those willing to lend (Hair & Black, 2010). Independent variable on logistic regression can be in the form of continuous variable (metric) or nominal (non-metric). In this research, the independent variable consists of 14 variables, which from previous research stated that the 14 variables have an important impact in the success of funding. To measure each variable, not all variables can be directly measured, some variables such as service quality, safety protection, verified documents, and perceived benefits require some measurement items to further test their impact on the willingness of lenders to lend. The questionnaire is processed using a likert scale which is a non-comparative measurement that typically has five response categories ranging from "strongly disagree" to "strongly agree," which requires the respondent to indicate the level of agreement or disagreement with each set of statements related to the stimulus object (Malhotra, 2015). Likert scale used is 1-5, where 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). In total the authors managed to collect data from 117 respondents. After data collected, data is processed using logistic regression analysis. Logistic regression represents two groups of binary variables with values 0 and 1. The binary nature of the dependent variable (0 or 1) has characteristics that violate multiple regression assumptions. As explained before, that independent variable used in logistic regression can use metric or nonmetric variable (Hair & Black, 2010). The estimated coefficients for the independent variables are estimated to use the logit value as a dependent measure. Logistic regression model is formulated as:

$$P = \frac{1}{1 + Exp\,(-Z)} \tag{1}$$

ICMEM

$$Z = \beta_0 + \beta_{TransactionFee} + \beta_{ServiceQuality} + \beta_{SafetyProtection} + \beta_{VerifiedDocuments} \qquad (2)$$
$$+ \beta_{AccumulatedTransaction} + \beta_{DemographicSoc} + \beta_{GeographicResemblance}$$
$$+ \beta_{SupplementaryInfo} + \beta_{SocialCapital} + \beta_{PerceivedBenefit} + \beta_{PerceivedRisk}$$
$$+ \beta_{InterestRate} + \beta_{LoanAmount} + \beta_{RepaymentPeriod} + e$$

Computing logarithm of the odds $\left(\frac{P}{1-P}\right)$, the equations for the regression model is:

$$\log\left(\frac{Willing\ to\ lend}{not\ willing\ to\ lend}\right) = \log\left(\frac{P}{1-P}\right) \qquad (3)$$

$$= \beta_0 + \beta_{TransactionFee} + \beta_{ServiceQuality} + \beta_{SafetyProtection} + \beta_{VerifiedDocuments}$$
$$+ \beta_{AccumulatedTransaction} + \beta_{DemographicSoc} + \beta_{GeographicResemblance}$$
$$+ \beta_{SupplementaryInfo} + \beta_{SocialCapital} + \beta_{PerceivedBenefit} + \beta_{PerceivedRisk}$$
$$+ \beta_{InterestRate} + \beta_{LoanAmount} + \beta_{RepaymentPeriod} + e$$

4. Findings and Argument

Based on data from 117 respondents, the distribution of demographic characteristics in this case is gender, age, and domicile can be seen in table 1. For gender, the distribution spread fairly evenly, i.e. 52% Women, and 48% Male. While based on age, 55% are 25-35 years old and 45% are 25-35 years old. For domicile, most respondents are domiciled in Bandung with 84% percentage, followed by Jakarta 12%, the rest are domiciled in Bekasi, South Tangerang and Sumatera.

Table 1. Respondent Characteristics (N=117)

Items		Frequency	Percent
Gender	Male	56	48%
	Female	61	52%
Age (years old)	<25	53	45%
	25-35	64	55%
	>35	0	0

As for the distribution of investment experience can be seen in Table 2. The investment experience of MBA ITB students is still relatively low with the percentage of 63% for students who are experienced in investment in the period of <1 year, and 37% for investment experience 1-5 years.

Table 2. Investment Experience (N=117)

Items		Frequency	Percent
Investment Experience	<1 year	74	63%
	1-5 year	43	37%
	>5 year	0	0%

For this type of investment, most of MBA ITB students choose the type of stock and deposit investment with a percentage of 35%. Then followed by mutual funds with a percentage of 22%, and for Peer-to-Peer Lending percentage

ICMEM

is only 2%. When viewed from the knowledge of MBA ITB Students in table 3.4 related to P2P Lending instruments, from 117 respondent data collection, 63 respondents do not have knowledge about P2P Lending, while 54 respondents know P2P Lending. This may be due to the lack of P2P Lending related information. As for the willingness to lend on this platform, MBA ITB students showed good enough enthusiasm, from 117 respondents, 74% of them have an interest to invest on this platform. The data can be an opportunity, because with the large number of respondents who do not know P2P Lending and after being given education about this industry on the questionnaire, most respondents even interested and want to try it. It can serve as an opportunity for P2P industry to grow, by increasing public awareness of P2P with more attractive education.

Table 3. Knowledge about P2P Lending (N=117)

		Understanding P2P Lending		Total
		Yes	No	
not willing to lend	Count	21	10	31
	Expected Count	16.7	14.3	31.0
	% within WillingnesstoLend	67.7%	32.3%	100.0%
	% within UnderstandingP2PLending	33.3%	18.5%	26.5%
	% of Total	17.9%	8.5%	26.5%
willing to lend	Count	42	44	86
	Expected Count	46.3	39.7	86.0
	% within WillingnesstoLend	48.8%	51.2%	100.0%
	% within UnderstandingP2PLending	66.7%	81.5%	73.5%
		35.9%	37.6%	73.5%

After doing the test above, then proceed with logistic regression analysis. The results of data processing are shown in Table 4. The results show that from 14 independent variables tested there are 7 variables that have significant influence on the willingness lenders to lend. Based on the logistic regression result, it is known that Exp (B) value for each variable that influences lenders willingness to lend. Furthermore, the significant Exp (B) value is sorted by the largest to the smallest. The rank order is the one that shows the order of the determinants, from the most important to the less important. The first important determinant is safety protection. Safety protection is important in increasing trust, especially for high-risk activities. Previous research has also shown that safety protection variables have an important influence in determining investors' decision to invest in p2p lending platforms in China, although they are in different order. The second important determinant is the loan amount. The variable used in this research is low loan amount, and the result shows that this variable has influence to lenders willingness to lend. These results are similar to previous studies, although the variables used are different (high loan amount). This shows that investors/prospective investors in Indonesia, especially MBA ITB students prefer a small loan amount because it can reduce the interest rate and reduce the risk of default from the borrower.

The third and the fourth determinant factor are those that directly relate to the borrower, i.e. document verification and accumulated transaction & repayment history. The verification of this document is intended to ensure that information obtained from the borrower is valid and qualified, so that the borrower can be trusted to pay back. The accumulated transaction and repayment history variable that is used as a factor affecting a creditworthiness assessment of the borrower. This factor is also an effort to reduce the risk and effort to select the borrower. Previous research has also shown that verified document and accumulated transaction & repayment history variables have an important influence in determining investors' decision to invest in p2p lending platforms in China, although they are in different order.

The fifth determinant factor is Supplementary Information. As mentioned before that this variable related to the objectives and narratives of these borrowers aims to obtain valid and reliable information in an effort to reduce risks. The sixth determinant factor that directly relate to the investor, which is perceived risk. High risk is still the main reason why people are still reluctant to invest their money in this industry. To that end, a platform is expected to be more concerned about matters related to risk mitigation, supported by the development of existing technology and innovation, is expected to reduce major risks such as default, so high risk is no longer a reason and investors increasingly believe and sure to invest in this platform. Last but not least is transaction fee. Low transaction fee is an

added value of the platform. Therefore, to attract more investors, the platform may consider reducing transaction fee.

Table 4. Logistic Regression (N=117)

		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
				Variables in the Equation			
Step 1ᵃ	TransactionFee	1.042	0.484	4.638	1	0.031	2.834
	ServiceQuality	-0.94	0.776	1.467	1	0.226	0.391
	SafetyProtection	2.892	1.251	5.347	1	0.021	18.032
	VerifiedDocuments	1.952	0.847	5.316	1	0.021	7.043
	AccumulatedTransaction	1.721	0.796	4.674	1	0.031	5.589
	DemographicSoc	-1.152	0.751	2.356	1	0.125	0.316
	GeographicResemblance	4.411	15.422	0.082	1	0.775	82.317
	SupplementaryInfo	1.46	0.68	4.615	1	0.032	4.307
	SocialCapital	-0.368	0.586	0.394	1	0.53	0.692
	PerceivedBenefit	-0.372	0.715	0.27	1	0.603	0.69
	PerceivedRisk	1.271	0.539	5.563	1	0.018	3.565
	InterestRate	-4.234	15.43	0.075	1	0.784	0.014
	LoanAmount	2.789	0.929	9.013	1	0.003	16.269
	RepaymentPeriod	-0.046	0.669	0.005	1	0.945	0.955
	Constant	-36.269	9.266	15.322	1	0	0

a. Variable(s) entered on step 1: TransactionFee, ServiceQuality, SafetyProtection, VerifiedDocuments, AccumulatedTransaction, DemographicSoc, GeographicResemblance, SupplementaryInfo, SocialCapital, PerceivedBenefit, PerceivedRisk, InterestRate, LoanAmount, RepaymentPeriod.

5.   Conclusion and further research

5. 1.   *Major Research Findings*

According with the research question in chapter 1, the author will answer it through the following research conclusions. Based on the results of the research, it is known that the awareness of MBA ITB students to invest is still low, especially investment on P2P Lending platform. Most respondents choose stock and deposit investment (35%), followed by mutual funds (22%) and for Peer-to-Peer Lending percentage is only 2%. Investment experience is still low, 63% of respondents with investment experience below 1 year, and 37% for investment of 1-5 years. This indicates that the investment culture of MBA ITB students is still not high. When viewed from the knowledge of MBA ITB Students around P2P Lending investment instrument, from 117 respondent data collection, 63 respondents do not have knowledge about P2P Lending, while 54 respondents know P2P Lending. This may be due to the lack of P2P Lending related information. As for the willingness to lend on this platform, MBA ITB students showed good enthusiasm, from 117 respondents, 53.8% of them have an interest to invest on this platform.

This research is also aims to know the factors that become important determinant of investor/prospective investor decision in investing in Peer-to-Peer Lending platform and suggest Peer-to-Peer Lending platforms about the criteria required for a platform to provide quality information to attract more investors. The results showed that from 14 variables tested, there are 7 variables that have influence in the decision of investor/potential investor to invest on this platform. The major findings are summarized below:

1. Safety protection is important in increasing trust, especially for high-risk activities.
2. The second important determinant is the loan amount. This shows that investors/prospective investors in Indonesia, especially MBA ITB students prefer a small loan amount because it can reduce the interest rate and reduce the risk of default from the borrower.
3. The third and fourth determinant factor are those that directly relate to the borrower, which are document verification and accumulated transaction & repayment history. As mentioned before, the verification of this document is intended to ensure that information obtained from the borrower is valid and qualified, so that the

ICMEM

borrower can be trusted to pay back. The accumulated transaction and repayment history variable is also an effort to reduce the risk and effort to select the borrower.

4. The fifth determinant factor is Supplementary Information. As mentioned before that this variable related to the objectives and narratives of these borrowers aims to obtain valid and reliable information in an effort to reduce risks.

5. The sixth determinant factor that directly relate to the investor, which is perceived risk. Platform is expected to be more concerned about matters related to risk mitigation, supported by the development of existing technology and innovation, is expected to reduce major risks such as default.

6. Last but not least is transaction fee. Low transaction fee is an added value of the platform. Therefore, to attract more investors, the platform may consider reducing transaction fee.

This study contributes to the online P2P lending by proposed the Peer-to-Peer lending platform about the 7 criteria required for the platform to provide quality information to attract more investors.

5. 2. *Future Research*

This study has some limitations which in that limitations can be used as a pioneer for other future research. This study only takes samples from MBA ITB Students, so it is expected that in future research may be samples taken wider e.g. Students of West Java, not fixated on major taken. Then, the tested variable may be added, such as protection funds and reference from colleague and friends. This research is conducted in Indonesia, which is characteristically cultural, social, and economic is definitely different from other countries. For that, future research can make a comparison between the behavior of lenders in Indonesia with other countries.

Acknowledgements

References

Barasinska, N. a. (2010). *Does Gender Affect Funding Success at the Peer-to-Peer Credit Markets? Evidence from the Largest German Lending Platform.* German: Discussion Papers of DIW Berlin 1094, DIW Berlin, German Institute for Economic Research.

Chen, D., & Han, C. (2012). A Comparative Study of Online P2P Lending in the USA and China. *Journal of Internet Banking and Commerce*, 17(2),1.

Chen, D., Lai, F., & Lin, Z. (2014, May 31). A Trust Model for Online Peer-to-Peer Lending: a Lender's Perspective. *Inf Technol Manag*, 239-254.

Feng, Y., Fan, X., & Yoon, Y. (2015). LENDERS AND BORROWERS' STRATEGIES IN ONLINE PEER-TO-PEER LENDING MARKET: AN EMPIRICAL ANALYSIS OF PPDAI.COM. *Journal of Electronic Commerce Research, 16*, 242-260.

Greiner, M., & Wang, H. (2007). Building Consumer-to-Consumer Trust in eFinance Marketplaces. *Americas Conference on Information Systems* (pp. 1-11). Georgia: AMCIS .

Hair, J., & Black, W. (2010). *Multivariate Data Analysis* (7th edition ed.). Pearson Prentice Hall.

Kim DJ, F. D. (2008). A trust-based consumer deci- sion-making model in electronic commerce: the role of trust, per- ceived risk, and their antecedents. *Decis Support Syst 44(2)*, 544-564.

Kim, D., Feeein, D., & Rao, H. (2008). A trust-based consumer deci- sion-making model in electronic commerce: the role of trust, per- ceived risk, and their antecedents. *Decis Support Syst 44(2)*, 544-564.

Lin, M. P., & Viswanathan, S. (2009). Can social networks help mitigate information asymmetry in online markets? *ICIS 2009 proceedings*, 202.

Malhotra, N. K. (2015). *Essentials of Marketing Research.* New Jersey: Pearson Education, Inc.

Milne, A., & P, P. (2016). The Business Models and Economics of Peer-to-Peer Lending. *European Credit Research Institute*, 16.

Mitchell, V.-W. (1999). Consumer Perceived Risk: Conceptualisations and Models. *European Journal of Marketing*, 163-195.

Puro L, T. J. (2010). Borrower decision aid for people-to-people lending. *Decis Support Syst , 49(1)*, 52–60.

Ravina, E. (2008). Beauty, personal characteristics and trust in credit markets. *American law and economics association annual meetings*, 67

Thomas, L. C. (2000). A survey of credit and behavioural scoring: forecasting financial risk of lending to consumers . *International Journal of Forecasting*, 149-172.

ICMEM

Wan, Q. C. (2016). Online peer-to-peer lending decision making: Model development and testing. *Social Behavior and Personality: an international journal, 44(1)*, 117-130.

Watson RT, L. F. (1998). Measuring information systems service quality: lessons from two longitudinal case studies. *MIS Q 22(1)*, 61-79.

Xue, X. (2017). *Financial Intermediary Competition, Information Acquisition and Moral Hazard: Evidence from Peer-to-peer Lending Platforms.* University of Virginia, Department of Economics. Charlottesville: Semantic Scholar

ICMEM

The 3rd International Conference on Management in Emerging Markets

Stock Valuation PT Astra Agro Lestari, Tbk - Impact of CPO Price Volatility

Denies Chrissteven[a]*, Taufik Faturohman[b]

*a,b*School of Business and Management ITB

Abstract

PT Astra Agro Lestari, Tbk (AALI) is one of Indonesian palm oil company and is listed company in IDX. Performance of AALI's stock price is very influenced by CPO price. It is proved by last research of Setyo, T.W. in 2005. Based on AALI's historical data from 2014 to 2017, average growth of AALI's stock price declined -12% but their average growth of revenue still increased with 10%. If AALI's sales is compared by average CPO price of AALI's, average CPO price of AALI has average growth with 4% from 2014 to 2017. Average sales CPO price of AALI in 2017 (Rp 8,271,-/kg) is almost close in 2014(Rp 8,282,-/kg). Root cause analysis is done to know others factor that impact AALI's stock valuation. In absolute valuation model will show fair value of AALI stock price at the end of 2017. Valuation model is calculated by DCF method. And then, sensitivity analysis is done on AALI's intrinsic value. AALI's stock price was Rp Rp 15.166,- per share and undervalued in the end of 2017. Based on CFA threshold, AALI's stock price had potential upside with 15.33% so investor should buy AALI' stock price in the end of 2017.

Keywords: AALI; CPO price; DCF Method; Sensitivity Analysis; Valuation

1. Introduction

Indonesia is an agrarian country and spread from Sabang to Merauke. Agriculture is the livelihood most Indonesians and contributes to the Indonesia revenue. From Statistic Indonesia (BPS) of Indonesia, Agriculture, Livestock, Hunting, and Agriculture Services contributed 10.21 % of Indonesia GDP in 2016. In this case, agriculture sector must be developed by government with monitoring inflation, and foreign currency of agriculture commodities. Agriculture company must make sure every operational activity must be done to increase their productivity and create sustainable growth. In order to support their goals, every company must create good financial condition to create good cash flows. Expansion of business is one solution to create more cash flows. In this case listed company is one way to get funding. As a listed company, investors have important role to invest their capital. In this case, investors will analyze who company have good prospect and financial condition before they invest their capital to get capital gain. Investors are very dependent with economic, politic and security of Indonesia. In this research, AALI is chosen because AALI CPO production is 5% from total of CPO production in Indonesia and AALI is one of stock in LQ-45 from August 2017 until January 2018 (IDX, 2017). PT Astra Agro Lestari, Tbk (AALI), listed company in Indonesia, must create sustainable growth to support increasing of Indonesia GDP and attract investors in IDX. Its mean AALI must create good image and financial indicator in agriculture area. Based on AALI's annual report from 2014 to 2017, average growth of AALI's stock price declined -12% but their average growth of revenue still increased with 10%. When comparing average CPO price of AALI's sales, average CPO price of AALI's sales has positive average growth with 4% from 2014 to 2017. Average sales CPO price of AALI in 2017 (Rp 8,271,-/kg) is almost close in 2014(Rp 8,282,-/kg).

---

* Corresponding author.
 E-mail address: denies@sbm-itb.ac.id

ICMEM

Figure 1 CPO Price Volatility

Table 1 Average CPO Price of AALI Sales

AALI	2013	2014	2015	2016	2017
Average CPO Price of AALI (Rp/Kg)	7,277	8,282	6,971	7,768	8,271
Growth	-0.6%	13.8%	-15.8%	11.4%	6.5%
Average Growth	3.1%				

Table 2 Revenue of Agriculture Company

PALM OIL COMPANY	2013	2014	2015	2016	2017
AALI	12,674,999	16,305,831	13,059,216	14,121,374	17,305,688
LSIP	4,133,679	4,726,539	4,189,615	3,847,869	4,738,022
SMAR	23,935,214	32,340,665	36,230,113	29,752,126	35.318.102
TBLA	3,705,288	6,337,561	5,331,404	6,513,980	8.974.708

Table 3 Growth Revenue of Agriculture Company

PALM OIL COMPANY	2014	2015	2016	2017	Average
AALI	29%	-20%	8%	23%	10%
LSIP	14%	-11%	-8%	23%	4%
SMAR	35%	12%	-18%	19%	12%
TBLA	71%	-16%	22%	38%	31%

Table 4 Closing Stock Price in Agriculture Company

PALM OIL COMPANY	2013	2014	2015	2016	2017
AALI	23,917	23,107	15,103	16,775	13,150
LSIP	1,930	1,890	1,320	1,740	1,420
SMAR	7,850	8,100	4,200	4,350	3,420
TBLA	470	755	510	990	1,225

Table 5 Growth of Stock Price in Agriculture Company

PALM OIL COMPANY	2014	2015	2016	2017	Average
AALI	-3%	-35%	11%	-22%	-12%
LSIP	-2%	-30%	32%	-18%	-5%
SMAR	3%	-48%	4%	-21%	-16%
TBLA	61%	-32%	94%	24%	37%

2. Company Profile

PT Astra Agro Lestari Tbk (AALI) entered the agriculture industry in Indonesia in 1984. Their first operational activities are cassava plantation, rubber plantation, and oil palm plantation in Riau Province. And now, AALI is the

one of the largest oil palm plantations in Indonesia with total area around of 297,011 hectares. In the operation activities. AALI was also collaborating with palm smallholders and organized farmer groups. In 1997, AALI decided to be listed company and a create initial public offering (IPO) in Indonesia Stock Exchange (IDX). Amount IPO is approximately 4 trillion rupiah. And now, their shares owned by public around 20.32% from total 1.92 billion shares. PT Astra Agro Lestari, Tbk have several business unit until the end of 2017. Their core business is from upstream industry (palm oil plantation, mills, and crusher plant) to downstream industry (PKO refinery) of palm oil business. And they have several businesses support their core business such as NPK blending and cattle in plantation.

3. Literature Review

(Kotler & Keller, 2009) PESTEL (Political, Economic, Social, Technological, Legal and Environmental) analysis is one methods to know the general environment of the agriculture industry. Every factor of analysis will give positive or negative effects to the agriculture industry and the firm. Positive impact is opportunity, but negative impact is threats.

(Hitt, M.A., Ireland, R.D., & Hoskisson, R.E., 2011) Internal organization are from tangible and intangible assets. In this case, tangible assets AALI are from financial, business structure and physical firm. And intangible assets AALI are from human and reputation. Every factor will give competitive strategy of the firm.

(Gitman & Zutter, 2012) Cash flow available to shareholder is called free cash flow (FCF). Its reflected from dividends as shareholders cashflow. Dividends cashflow must be derived from financial statement and must be discounted cashflow to value the firm.

(Stowe, Robinson, Pinto, & McLeavey, 2007) Valuation mean approximation of the company assets value based on variables that is convinced to be associated with the future investment return. Result of valuation is intrinsic value with some assumption of assets investment characteristics.

4. Methodology

From external environment, macroeconomics, PESTLE analysis, industry analysis, and five Porter's force can be gathered to understand palm oil industry where PT Astra Agro Lestari, Tbk operates. From internal environment, we can analyse internal business process of AALI such as physical, financial, technological, human resources and organization, and reputational aspect of AALI. After some analysis established, financial analysis will give more understanding about the firm and industry. In financial analysis, assessment about company's sales and financial ratio will compare performance of the company in palm oil industry. And last, SWOT analysis will be summary of the external and internal environment and will help for developing valuation forecast.

In financial analysis, assessment about company's sales will compare performance of the company in palm oil industry. When developing valuation, free cash flow forecasting must be developed and be discounted to calculate firm value. From firm value, we can use that to analysis stock price valuation. In this thesis, stock valuation will use absolute valuation model. With absolute model valuation, intrinsic value of the asset can be determined by discounted cash flow model. Absolute valuation model will show fair value of AALI stock price. Sensitivity analysis simulate our calculated intrinsic value and define certainty possibility of its value. From all calculation and analysis above, investors can take actions to buy, hold, or sell AALI stock.

$$Firm\ Value = \sum_{t=1}^{\infty} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{(WACC-g)} \frac{1}{(1+WACC)^n} \tag{1}$$

$$Equity\ Value = Firm\ Value - Debt\ Value \tag{2}$$

Note:
WACC = Weighted Average Cost of Capital
g = Terminal Growth

ICMEM

5. Findings and Argument

In external analysis, several conditions in society dimension will influenced condition of the firm

Political Segments

- In March 2018, US announce of import tax on steel by 25% and aluminum imports by 10%
- Especially in Indonesia, the largest political issue is the general election.

Economic Segments

- Indonesian total economic growth in 2017 was 5.07%
- Bank of Indonesia predict economic growth will be at 5.1%-5.5% in 2018.

Sociocultural Segments

- Indonesia is fourth largest population in the world. Indonesia population is 261.89 million people in 2017 and population increase above 1% every year.
- Especially, working people in agriculture sector are around 5.499.898 people or 4.64% from all employment people.

Technological Segments

- Total of electronic money transactions reached Rp 12.3 trillion that increase from Rp 7 trillion in 2016
- Based on Agency for Funding of Oil Palm Plantations (BPDPKS), increasing of e-money will facilitate easier export activities and exporter can see the amount of export payments in real-time

Legal Segments

- LAW no. 12 of 1992 on Plant Cultivation System
- LAW no. 18 of 2004 on Plantations
- LAW no. 5 of 1960 on Basic Agrarian Basic Rules
- LAW no. 23 of 1997 on Environmental Management
- LAW no. 29 of 2000 on Plant Variety Protection
- LAW no. 41 of 1999 on Forestry
- LAW no. 40 of 1996 on Cultivation Right, Property Rights, Right of Use of Land

Environment Segments

- With ISPO certification, palm oil company may be granted permission for export their CPO product
- The European Union imposes rules mandatory to include a Sustainable Palm Certificate (RSPO) label for palm products and derivatives that enter the Europe

Figure 2 PESTLE Analysis of AALI

In 2016, agriculture sector contributed around 13.52% from Indonesia GDP (BPS, 2016). Subsector from agriculture is plantation. Plantation sector contributed around 3.57% from Indonesia GDP (BPS, 2016). Based on Palm Oil Plantation Management Agency (BPDP) data in 2017, the largest Crude Palm Oil (CPO) producer's countries in the world is Indonesia and secondly is Malaysia because palm oil can only thrive in the tropics area.

Threat of New Entrants (Low)	1. Starting business in upstream to downstream of palm oil industry requires a lot of investment 2. The capital requirements to start in palm oil industry is high for purchase the assets such as equipment and other fixed assets, also for land cultivation rights, engineer and workforce 3. If the company want to switch to other businesses it's hard for palm oil company to sell their all fixed assets to exit the business 4. Indonesian government policy support export of CPO but land cultivation right is still hard to obtain.
Bargaining Power of Suppliers (Medium)	Palm oil industry have suppliers in raw materials for factories, civil workers, transportation service, and daily needs for employees such as rice and other basic needs. The suppliers does not have big effect on financial performance directly but affecting the company's operations
Bargaining Power of Customers (Medium)	Vegetable oil are commodity product that is traded competitively in the market commodity world and vegetable oil price involve many buyers and sellers. Commodity price is very dependent with supply and demand. So, buyers and sellers do not have the power to influence commodity market price.
Threat of Substitute Products (High)	Palm oil usually is used for base for food oil and non-food oil and compete with oil soybeans (SBO), rapeseed oil (RSO) and sunflower oil (SFO). SBO is more popular in United States. RSO and SFO is more popular in Europe.
Intensity of Rivalry among Existing Industry (Medium)	1. Indonesia's market share of CPO production in the world reached 64 percent. 2. Based on Badan Perencanaan Pembangunan Nasional (BAPPENAS) data, average growth projection of palm oil production in Indonesia from 2016-2020 is 5.39%. 3. Average growth projection of palm oil consumption in Indonesia from 2016-2020 is 3.99%.

Figure 3 Porter's Five Analysis of AALI

Internal organization are from tangible and intangible assets. In this case, tangible assets of AALI are from financial, business structure and physical firm. And intangible assets of AALI are from human and reputation.

ICMEM

Physical	Comparing with BPS data in 2016, AALI CPO production reach 8.5% from total of private company CPO production or 5% from total of CPO production in Indonesia
Technological	**a.** AALI has also established cooperation with international research institutions such as PAMOL in Cameroon, and SIRAJ in France to ensure the legitimacy of breeding plants through molecular laboratories that located in Kalimantan **b.** AALI implemented a number of information technology solutions such as Enterprises Resources Planning (ERP), Human Resources Integrated System (HRIS), mechanized harvest administration automation, and maintenance application
Human Resource	**a.** In 2017, total innovation project were 4,242 innovation titles, consisting of BPI (2 Titles), QCP (72 Titles), QCC (547 Titles), and SS (3,261 Titles) **b.** AALI also provide employee competency management programs under Astra Human Capital Management and a system of human capital management developed internally to increase their competency
Reputational	AALI achieve several awards in 2017 **a.** Astra Green Company Award 2017 (Category: Cleaner Production & Pollution Prevention) **b** Indonesia Green Awards 2017 (Category: Pelopor Pencegahan Polusi and Pengembangan Keanekaragaman Hayati from The La Tofi School of CSR) **c.** The 9th IICD - Corporate Governance Conference and Award 2017 (Category : Most Improve from IICD) **d.** Indonesia Corporate Secretary Award 2017 (Category : Top 5 GCG Issues in Agribusiness Sector and The Most Popular Company in GCG Accountability Issues from Warta Ekonomi) **e.** 9th Indonesia Most Admired CEO 2017 (Category : The 5 Most Admired CEO in Agribusiness Sector from Warta Ekonomi) **f.** Most Powerful Company 2017 (Category: Plantation from Warta Ekonomi) in 27 October 2017

Figure 3 Internal Analysis of AALI

6. SWOT Analysis

From AALI's SWOT analysis, investor can understand company strength, weakness, opportunity and threat in the palm oil business. SWOT variable are come from external and internal analysis. Each variable will influence our assumption in valuation.

Opportunity
- Indonesia economic growth was 5.07%. Bank of Indonesia predict economic growth of Indonesia around 5.1-5.5% in 2018 because of increasing commodity price.
- Growing of Indonesia Population will increase utilization of CPO products, and CPO derivatives product.
- Cost efficiency is from utilization technology.
- ISPO and RSPO certification will increase palm oil industry to be more environmental friendly in Europe.
- Palm oil is only grow in tropic area.
- In palm oil industry, threat of new entrants is low because large investment to enter palm oil business.

Threat
- FED Rate improvement plan three times in 2018
- In 2018, price war will be happened between United States and China with the commencement of rising import tax rates in steel and aluminum in United States.
- Investment uncertainty is occurred due to regional election in 2018 and presidential election in 2019.
- In palm oil business, threat of substitute product is high.

Strength
- In 2016, AALI CPO production are 5% from total of Indonesia CPO production.
- AALI has good vertical integration business model.
- AALI has good several financial indicators such as liquidity ratio, activity ratio, and solvency ratio.
- AALI has had implemented information technology system such as Enterprises Resources Planning (ERP), Human Resources Integrated System (HRIS), mechanized harvest administration automation, and maintenance application.
- AALI strongly encourages employees to innovate through "Innov-Agro" and strongly supports career development through Astra Human Capital Management

Weakness
- AALI performance is very depend on CPO price.

ICMEM

- In profitability ratio, AALI is not perform from 2013-2017. Their GPM, OPM and NPM declined. Their ROA and ROE are lower than TBLA.
- In market ratio, AALI P/E ratio declined from 2013-2017. Their PBV declined from 2016 to 2017. Their earning yield is lower than SMAR and TBLA.

From business issue exploration and SWOT analysis above, several issues had been described that influence factors AALI's stock price. Its factor are defined to get root cause. Current reality tree (CRT) help this research to define our root cause from business issues. CRT can be shown in figure below and it show stock valuation that root cause of our business issue. Undervalued or overvalued of AALI's stock price was reflected by internal and external analysis. From external and internal analysis, CPO price, risk free and terminal growth are factor that influence of financial performance of AALI. Based on analysis before, existing AALI's stock price need recalculation to get fair price that reflect AALI's performance projection at uncertainty CPO price, risk free and terminal growth in next year. With stock valuation, investors will know fair price of AALI's stock at the end of 2017.
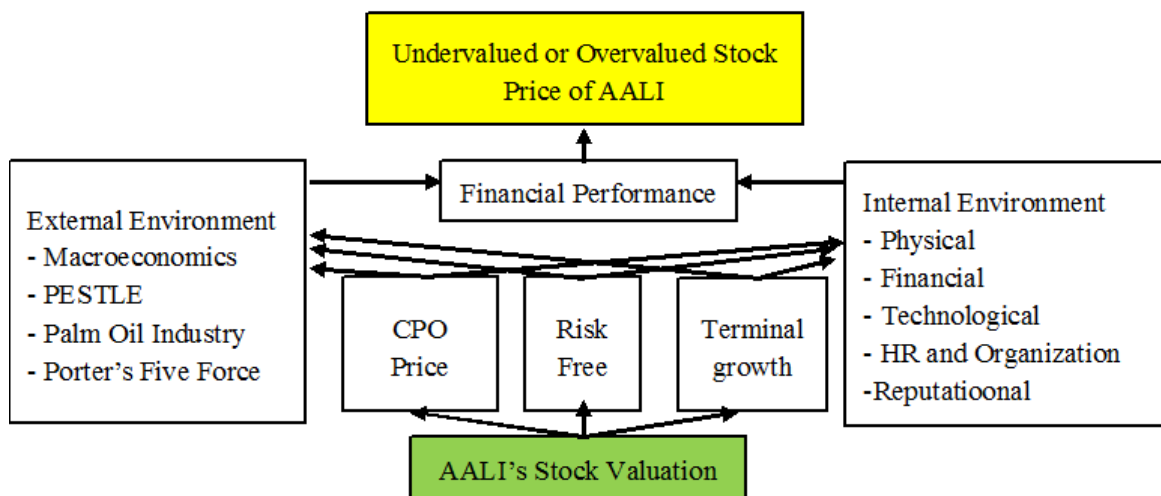
Figure 4 Current Reality Tree

Declining of AALI's stock price came from risk free, CPO price and economic growth of Indonesia. All of analysis don't show real market value of AALI's stock price. Existing AALI's stock price need recalculation of the fair price that reflect performance projection of the company at uncertainty CPO price in next year. Our DCF model use FCFF model in our calculation. With its model, shareholders can know stock price performance of AALI based on value of company assets and projection investment return. WACC is used as discounting forecast cashflow. To calculated WACC, cost of debt and cost of equity must be defined first. WACC calculation used AALI's annual report in 2017.

1. Cost of Debt (CoD)

AALI used synthetic rating to define company spread because AALI does not have credit rating before and AALI have several loan in Indonesia and foreign country. Their loan are from BCA, Mandiri, PT Bank Sumitomo Mitsui Indonesia, Mizuho Bank, and The Bank of Tokyo-Misubishi UFJ, Ltd. Because limited data information of interest rate from its bank, cost of debt use syntetic rating. Interest coverage ratio of AALI is 121.58x in 2017. So, synthetic rating of AALI is AAA with company default spread 0.54%. In the end of 31 December 2017, risk free rate of Indonesia is 6.30% on Indonesia 10-year Bond Yield website. Indonesia Moody's rating is Baa3 in the end of 2017 so Indonesia country spread is 2.53 %. After all variables is defined, AALI's cost of debt is 11.05%.

2. Cost of Equity (CoE)

Risk premium of Indonesia is 7.62% (Darmodaran, 2017). Beta stock of AALI follow adjusted beta stock in Pefindo website edition in 5 January 2018 so beta stock of AALI is 1.157. So, cost of equity of AALI is 15.11%

After defining cost of debt and cost of equity, WACC can be calculated.

Table 6 WACC Calculation of AALI in The End of 2017

ICMEM

Long Term Debt (Million Rupiah)	4,089,571.00
Common Stock Equity (Million Rupiah)	18,065,943.00
Total Debt + Equity (Million Rupiah)	22,155,514.00
Wd	18.46%
We	81.54%
Estimate Cost of Debt	11.05%
Estimate Cost of Equity	15.11%
Tax	25%
WACC	13.85%

AALI's revenue is generated from three product sales. There are crude palm oil and its derivatives, palm kernel and its derivatives, and others income. Based on AALI's annual report on 2017, main revenue of AALI come from CPO and its derivatives product sales with contribution of 83.6%. If CPO price drop down, revenue of AALI will be drop down according on table 1 and table 2. In our valuation, revenue must be forecasted. Average growth CPO and its derivatives product sales volume have positive growth so sales volume of CPO and its derivatives product will be predicted positive with growth of 6.94% yearly.

Table 7 Average Growth of Sales Volume of CPO and Its Derivatives

AALI	2008	2009	2010	2011	2012
CPO and Its Derivatives Sales Volume	970,568	1,056,240	1,111,520	1,260,000	1,420,000
Growth		8.83%	5.23%	13.36%	12.70%

AALI	2013	2014	2015	2016	2017
CPO and Its Derivatives Sales Volume	1,577,489	1,726,385	1,625,600	1,556,603	1,741,300
Growth	11.09%	9.44%	-5.84%	-4.24%	11.87%
Average Growth	6.94%	From 2008-2017			

Average growth palm kernel and its derivatives product sales volume have positive growth. Sales volume of palm kernel and its derivatives product will be predicted positive with growth of 8.21% yearly.

Table 8 Sales Volume of Palm Kernel and Its Derivatives

AALI	2008	2009	2010	2011	2012
Sales Volume of Palm Kernel and Its Derivatives	164,513	151,374	147,590	195,560	232,340
Growth		-7.99%	-2.50%	32.50%	18.81%
AALI	2013	2014	2015	2016	2017
Sales Volume of Palm Kernel and Its Derivatives	336,353	366,288	334,078	275,812	291,250
Growth	44.77%	8.90%	-8.79%	-17.44%	5.60%
Average Growth	8.21%	From 2008-2017			

For average sales CPO price, monthly distribution historical data of CPO price come from Crude Palm Oil Futures (FCPO) in Bursa Malaysia Derivatives (BMD) from 2013-2017. From its data, mean of its data was used as base CPO price in 2018F plus average growth sales CPO price in table 9.

Table 9 Average Sales CPO Price from 2008-2017

AALI	2008	2009	2010	2011	2012
Average Sales CPO Price	7,134	6,242	7,027	7,576	7,322
Growth		-13%	13%	8%	-3%

AALI	2013	2014	2015	2016	2017
Average Sales CPO Price	7,277	8,282	6,971	7,768	8,271
Growth	-1%	14%	-16%	11%	6%
Average Growth	2.20%	From 2008-2017			

For average sales derivative product price, base price is from average sales derivative product price in 2017 plus average growth from table 9. Author use this assumption because increasing of average sales derivative product price would be appropriate with increasing of CPO price.

Table 10 Average Sales CPO Derivates Product Price from 2013-2017

AALI	2013	2014	2015	2016	2017

Average Sales CPO Derivatives Product (Rp/Kg)	(AALI not yet producing)	8,563	7,313	7,830	**8,414**

Palm Kernel and their derivative product have own price and its price is different with CPO price. AALI start to sell the PKO derivative products with total 55 thousand tons in 2017 and its price was higher than palm kernel expeller price. In the next year, AALI will be predict to increase their sales volume of palm kernel derivative product.

Table 11 Palm Kernel and Palm Kernel Derivative Product Price

AALI	2008	2009	2010	2011	2012
Average Sales Palm Kernel and Palm Kernel Derivative Product Price	3,742	2,586	4,070	4,309	3,466
Growth		-31%	57%	6%	-20%

AALI	2013	2014	2015	2016	2017
Average Sales Palm Kernel and Palm Kernel Derivative Product Price	3,531	5,182	4,563	7,221	9,507
Growth		2%	47%	-12%	58%	32%
Average Growth	15.49%	From 2008-2017			

Others revenue of AALI are come from their business such as NPK sales, livestock product sales, and income from their subsidiaries. AALI want to increase their others revenue based on their CAPEX allocation in 2018. In this case, assumption forecast of others revenue will be predicted same as percentage of CPO and derivatives sales in 2017 because it others revenue to percentage of sales was the highest from 2013-2017. Its assumption of percentage of CPO and derivatives sales is 0.45%.

Table 12 Forecasting of Others Revenue

AALI	2013	2014	2015	2016	2017
CPO and Its Derivatives Sales (in Million rupiah)	11,478,596	14,397,248	11,531,883	12,125,243	14,471,256
Others (in Million rupiah)	8,837	10,367	3,019	4,572	65,455
%Others Revenue / CPO and Its Derivative sales	0.08%	0.07%	0.03%	0.04%	0.45%

After defining FCFF calculation, its FCFF must be discounted by cost of equity of 13.85%. Each discounted FCFF must be accumulated and its total is called firm value. Equity value can be determined by subtracting firm value by debt value (current outstanding debt). Then, equity value is divided by current shares outstanding and yields intrinsic value per share. And, sensitivity analysis will determine how change value of independent variables affect dependent variables. Monte Carlo simulation will help sensitivity analysis technique in determining a range of results due to variables assumption changes and how often the probability emergence of intrinsic value.

Table 13 Forecasting AALI's Revenue

AALI	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F	2027F
CPO and Its Derivatives Sales	15,840	17,311	18,920	20,677	22,598	24,698	26,992	29,500	32,241	35,236
Palm Kernel and Its Derivatives	3,460	4,324	5,404	6,753	8,439	10,546	13,179	16,470	20,582	25,720
Others	72	78	86	94	102	112	122	133	146	159
Revenue	**19,372**	**21,714**	**24,409**	**27,524**	**31,140**	**35,356**	**40,294**	**46,103**	**52,968**	**61,116**
Growth	11.94%	12.09%	12.41%	12.76%	13.14%	13.54%	13.97%	14.42%	14.89%	15.38%
Average Growth	13.45%	From 2018F-2027F								

In 2018, AALI budget at 1.8 trillion rupiah to investment in 1 new CPO refinery, development of cattle in plantation business, development in palm oil plant that have not produced and development of road, maintenance and mechanization. So, our cashflow forecast assumption for capital expenditure is 1.8 trillion rupiah in 2018 ("Bangun Pabrik CPO, Astra Agro Lestari Anggarkan Capex 2018 Rp 1,8 Trilun - Kompas.com," n.d.).

Table 13 Other Assumptions

Others Assumptions:	2018F -2027F	Note
COGS/Sales	76.05%	In the end of 2017
Operating Expense/Sales	8.58%	Average OPEX/Revenue 2013-2017
Tax rate	25.00%	Based on Indonesian Regulation
Yearly depreciation/Sales	5.80%	Average Depreciation/Sales 2013-2017
Change in NWC/Sales	1.86%	Average Change in NWC/Sales 2013-2017
Capex / Sales	2018 : Capex = Rp 1.8 trillion	Capex/Sales in the end of 2017

ICMEM

	2019-2027 : 1.64%	
WACC	13.85%	From CoE and CoD

In valuation, risk free rate of Indonesia is according 10 years Government Bond. Risk free rate of Indonesia is 6.30% in 31 December 2017. Standard deviation of risk free rate is 0.94% from monthly historical data from 2013-2017. From normality test, risk free rate of Indonesia is normal with significance above or equal 0.05. (sig-Kolgomorov-Smirnov=0.2). Terminal economic growth of Indonesia is 5.07% in the end of 2017. Standard deviation of terminal economic growth is 1.12% from quarterly economic growth year on year in 2001-2017. From normality test, terminal economic growth of Indonesia is normal with significance above or equal 0.05. (sig-Kolgomorov-Smirnov=0.179).

Table 14 General Assumptions

General Assumption	Assumption	Standard Deviation
Risk Free Rate	**6.30%**	**0.94%**
Terminal Economic Growth	**5.070%**	**1.12%**

FCFF use two stage models. The first stage is in periods 2018 to 2027. Free cashflow forecast is rise and follow revenue forecast and it is very dependent with sales volume and CPO commodity price. The second stage is the terminal stage with 5.07% according economic growth of Indonesia in 2017. FCFF must be discounted by weighted average cost of capital (13.85%). Each discounted FCFF must be accumulated and its total is called firm value. Based on equation 2.23, equity value can be determined by subtracting firm value by debt value (current outstanding debt). Then, equity value is divided by current shares outstanding so it generates intrinsic value per share. Intrinsic value per share of AALI is Rp 15.166,- . AALI's stock price is Rp 13,150 in 29 December 2017. So, potential upside of AALI's stock price is 15.33%.

Table 15 Absolute Valuation of AALI

(in billions of rupiah, except per-share data)	0	1	2	3	4	5	6	7	8	9	10
	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2026E
Sales	17,306	19,372	21,714	24,409	27,524	31,140	35,356	40,294	46,103	52,968	61,116
COGS	13,160	14,732	16,513	18,562	20,931	23,681	26,887	30,642	35,060	40,281	46,477
Gross Profit	4,145	4,640	5,201	5,847	6,593	7,459	8,469	9,652	11,043	12,688	14,639
Operating Expense	1,227	1,662	1,863	2,094	2,361	2,671	3,033	3,457	3,955	4,544	5,243
Depreciation	1,127	1,124	1,260	1,416	1,597	1,807	2,051	2,338	2,675	3,073	3,546
EBIT	1,792	1,855	2,079	2,337	2,635	2,981	3,385	3,857	4,414	5,071	5,851
Taxes @25%	448	464	520	584	659	745	846	964	1,103	1,268	1,463
NOPAT	1,344	1,391	1,559	1,753	1,976	2,236	2,539	2,893	3,310	3,803	4,388
Depreciation	1,127	1,124	1,260	1,416	1,597	1,807	2,051	2,338	2,675	3,073	3,546
Capex	284	1,800	357	401	452	511	581	662	757	870	1,004
Change in NWC	90	360	403	453	511	578	656	748	856	983	1,135
FCFF	2,097	355	2,059	2,315	2,610	2,953	3,353	3,821	4,372	5,023	5,795
Terminal Value	-	-	-	-	-	-	-	-	-	-	69,320
Total FCFF	2,097	355	2,059	2,315	2,610	2,953	3,353	3,821	4,372	5,023	75,115
PV of FCFF	2,097	312	1,588	1,568	1,553	1,543	1,539	1,541	1,548	1,562	20,523
Firm value	33,279										
Less: current outstanding debt	4,090										
Equity value	29,189										
Current shares outstanding	1,924,688,333										
Intrinsic value per share	15,166										
Adj Close Price as per 31 December 2017	13,150	Potential Upside = 15.33%									

Financial risk appears from variables assumption above. It is proved by the standard deviation on every assumption. To measure our financial risk, sensitivity analysis is used. Sensitivity analysis will determine how change value of independent variables affect dependent variables. Influenced of each variable assumption can be analysed with Tornado sensitivity analysis. Tornado sensitivity analysis will define what most important variable that effect on our intrinsic value. SensIt Tornado show that risk free rate is the most important variable of AALI's stock price. When risk free is lower than 6.3%, stock price of AALI is the most sensitive to be higher than Rp 15.166. The second important variable is CPO price and the less important variable is terminal economic growth.

ICMEM
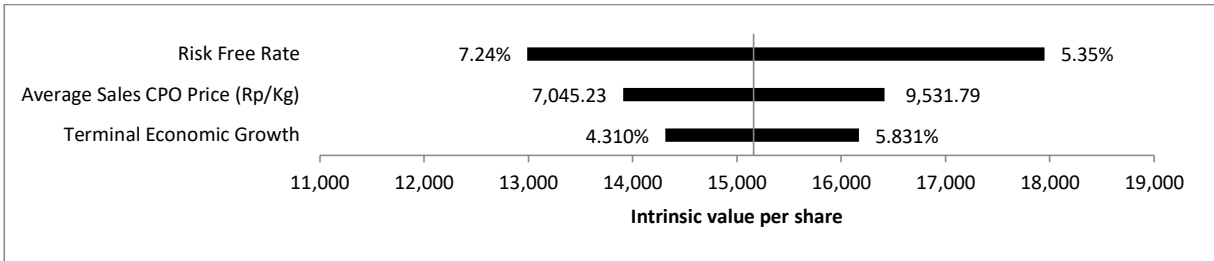
Figure 5 Sensitivity Analysis (SensIt Tornado) of AALI

We simulate calculated valuation with Monte Carlo Simulation. Monte Carlo simulation will determine a range of results due to variables assumption changes and how often the probability emergence of intrinsic value. Assumption in Monte Carlo analysis is normal distribution because our sample assumptions are proved normal by normality test with sig-Kolgomorov-Smirnov is above or equal =0.05. Each assumption has standard deviation and must be included in Monte Carlo simulation. Frequency Monte Carlo simulation are 1,000,000 times.

If target price is Rp 15,166, certainty is 50.3852% to be greater than its values according Monte Carlo simulation. Standard deviation of its price is Rp 3,293 or 21.71% from their mean intrinsic price. Our intrinsic value calculation approach with median stock price simulation and below than mean of stock price simulation. So, AALI's stock price distribution is skewed to the right. Its distribution has more probability occurrence distribution mass on the left side of the median value. When closing price insert in simulation (Rp 13,150,-), their certainty will be 78.3752% to be greater than its value. If we use + 15% of CFA threshold, we can get differential certainty. When -15% from closing price, AALI's stock price will be Rp 11,178 and their certainty will be 4.1647% to be less than its value. When +15% from closing price, AALI's stock price will be Rp 15,123 and their certainty will be 49.04% to be lower than its value. So, certainty where stock price between Rp 11,178 and Rp 15,123, is 44.88%. In the end of April 2018, AALI's stock price is Rp 12.775 per share. When it is compared bt target price, investors is still recommended to buy because potential upside of AALI's stock price will be 18.71%.
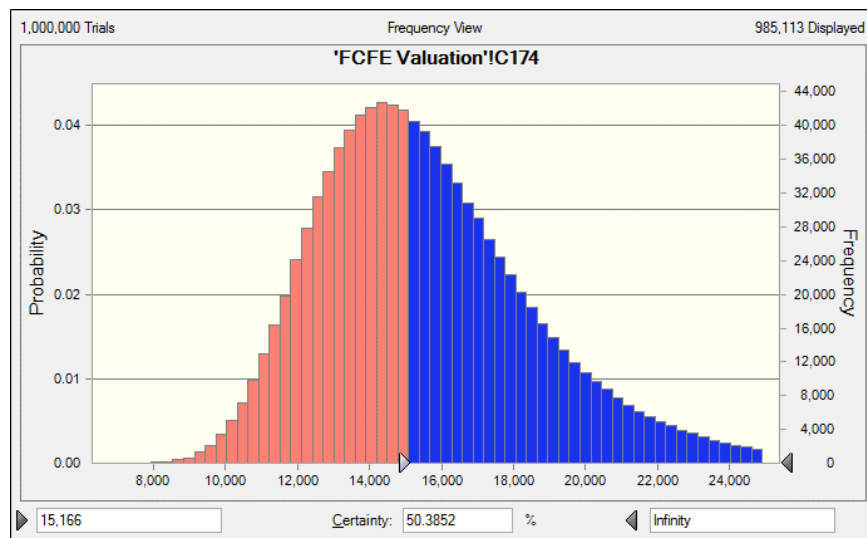
Figure 6 Monte Carlo Simulation of AALI's Intrinsic Value

Table 16 Statistic of Monte Carlo Simulation in AALI's Stock Price

Statistic of Montecarlo Simulation		CFA	Stock Price (Rp)	Certainty	Note

ICMEM

Trials	10,000,000
Base Case	15,166
Median	15,194
Mean	15,686
Standard Deviation	3293
Certainty	50.39% to be greater

Threshold	When		Certainty
$\leq$ -15%	$\leq$ 11,178	4.16%	To be lower than its value
-15% to 15%	11,178 - 15,123	44.88%	Between than its value
$\geq$15%	$\geq$15,123	49.04%	To be lower than its value

7. Conclusion

PT Astra Agro Lestari, Tbk (AALI) is palm oil company in Indonesia and they have listed in Indonesia Stock Exchange. Based on our analysis above, effect of volatility CPO price is very influenced of AALI's performance of stock price. There are several conclusions related with research above:

a) Especially for stock valuation, external and internal factors of PT Astra Agro Lestari, Tbk are CPO price, risk free, and terminal economic growth
   Increasing of CPO Price and Terminal Economic Growth will increase intrinsic value of AALI but increasing of risk free will decrease intrinsic value of AALI

b) Intrinsic value of PT Astra Agro Lestari, Tbk is Rp 15.166 per share and undervalued with potential upside of 15.33%.

For further research, volatility of currency risk must be considered in stock valuation.

References

From Books and Papers:

Brown, K.C. & Reily, F.K., 2012. *Analysis of investment and management of portfolios. 10th ed*. Canada: South Western Cengage Learning

Damodaran, A. , 2012. *Investment valuation: Tools and techniques for determining the value of any asset*. Hoboken, N.J: Wiley

Gitman, L. J., & Zutter, C. J. , 2012. *Principles of managerial finance*. Boston: Pearson Prentice Hall.

Hitt, M.A., Ireland, R.D., & Hoskisson, R.E., 2011. *Strategic Management: Competitiveness & Globalization: Concepts*. Canada: South-Western Cengage Learning.

Kotler, P., & Keller, K. L, 2009. *Marketing management*. Upper Saddle River, N.J.: Pearson Prentice Hall.

Olsson, C. , 2002. *Risk management in emerging markets : how to survive and prosper*. London: Financial Times Prentice Hall.

Porter, M. E. , 2008. The five competitive forces that shape strategy. *Harvard business review*, *86*(1), 25-40.

Sekaran, U., Bougie, R, 2010. *Research Method for Business. A Skill Building Approach*, United Kingdom: John Wiley & Sons, Ltd.

Setyo, T.W. ,2005. *INFLUENCED ANALYSIS OF INFLATION, CHANGE IN CPO PRICE, CHANGE IN PETROLEUM PRICE, CHANGE IN EXCHANGE RATE, AND CHANGE IN SOYBEAN PRICE WITH AGRICULTURE COMPANY STOCK RETURNS DURING THE PERIOD OF 2005-2009 IN INDONESIA STOCK EXCHANGE*, Bandung : Digilib ITB.

Stowe, J. D., Robinson, T. R., Pinto, J. E., & McLeavey, D. W. , 2007. *Equity asset valuation* (Vol. 4). John Wiley & Sons.

From Websites:

Ananta, A. S. , 2010. *Analisis Penilaian Harga Saham Perdana Menggunakan Metode Free Cash Flow to Equity dan P/E Multiple (Studi Kasus PT BW Plantation Tbk.)*, Viewed April 3, 2018, at: http://lib.ui.ac.id/file?file=digital%2F136206-T+28108-Analisis+penilaian-Analisis.pdf.

Astra Agro Lestari, 2018. *AALI Annual Report,* at: http://www3.astra-agro.co.id/en/annual-report/.

Badan Pusat Statistik, 2016. *Indonesian Oil Palm Statistics*, Viewed March 15, 2018, at: https://www.bps.go.id/publication/2017/11/10/5c499ba5089da29bba2a148e/statistik-kelapa-sawit-indonesia-2016.html.

Badan Pusat Statistik, 2017. *Trend of the Selected Socio-Economic Indicators of Indonesia*, Viewed March 15, 2018, at: https://www.bps.go.id/publication /2017/12/26/a16e0adf07c32e5dc6ecfe83/perkembangan-beberapa-indikator-utama-sosial-ekonomi-indonesia-edisi-november-2017.html.

Badan Pusat Statistik, 2018. *Ekonomi Indonesia*, Viewed March 15, 2018, at: https://www.bps.go.id/pressrelease.html.

Bangun Pabrik CPO, n.d. *Astra Agro Lestari Anggarkan Capex 2018 Rp 1,8 Trilun - Kompas.com*, Viewed May 17, 2018, from https://ekonomi.kompas.com/read/2018/01/25/111728526/bangun-pabrik-cpo-astra-agro-lestari-anggarkan-capex-2018-rp-18-trilun

Bank Indonesia, 2018. *Inflation Data*, Viewed March 15, 2018, at: https://www.bi.go.id/id/moneter/inflasi/data/Default.aspx.

ICMEM

BAPPENAS, 2016. *Outlook Kelapa Sawit*, Viewed April 3, 2018, at: http://perpustakaan.bappenas.go.id/lontar/file?file=digital/167005-[_Konten_]-Konten%20D1891.pdf.

BPDPKS, n.d. *Gandeng BRI untuk E-Money Pungutan Dana Sawit - Bisnis - Suara.Com,* Viewed May 22, 2018, from https://www.suara.com/bisnis/2016/05/26/230000/bpdpks-gandeng-bri-untuk-e-money-pungutan-dana-sawit

Buruh Suplayer Wilmar Mogok Kerja Menuntut Pembayaran Kekurangan Upah | Agra Indonesia. (n.d.). Viewed June 8, 2018, from https://agraindonesia.org/buruh-suplayer-wilmar-mogok-kerja-menuntut-pembayaran-kekurangan-upah/

CFA Institute, n.d. *CFA Institute : Cost of Capital* , Viewed March 15, 2018, at: https://www.cfainstitute.org/learning/products/publications/inv/Documents/corporate_finance_chapter3.pptx.

CFA Institute, n.d. *CFA Institute : Equity*, Viewed March 15, 2018, at: https://www.cfainstitute.org/learning/products/publications/inv/Documents/equity_chapter6.ppt.

CFA Institute, n.d. *CFA Institute : Investment*, Viewed March 15, 2018, at: https://www.cfainstitute.org/learning/products/publications/inv/Documents/investments_chapter10.pptx.

China says trade war with U.S. will only bring disaster to global economy | Reuters, n.d. Viewed May 17, 2018, from https://www.reuters.com/article/us-usa-trade-china/china-says-trade-war-with-u-s-will-only-bring-disaster-to-global-economy-idUSKCN1GN02V

Darmodaran, n.d. *Country Default Spreads and Risk Premiums*, Viewed March 15, 2018,at:http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html.

Dianggap Paling Menonjol, *n.d.* Ini Catatan Pembangunan Infrastruktur Selama 3 Tahun Pemerintahan Jokowi-JK : Okezone News. Viewed May 17, 2018, from https://news.okezone.com/read/2017/10/20/337/1799589/ dianggap-paling-menonjol-ini-catatan-pembangunan-infrastruktur-selama-3-tahun-pemerintahan-jokowi-jk

DITJENBUN PERTANIAN INDONESIA, 2017. *Tree Crop Estate Statistic of Indonesia*, Viewed March 29, 2018, at: http://ditjenbun.pertanian.go.id/ tinymcpuk/gambar/file/statistik/2017/Kelapa-Sawit-2015-2017.pdf.

Efek Jokowi Beri Tenaga ke Rupiah dan Bursa Saham - Bisnis Liputan6.com. (n.d.). Viewed June 9, 2018, from https://www.liputan6.com/bisnis/read/2023020/efek-jokowi-beri-tenaga-ke-rupiah-dan-bursa-saham

Ekspor Sawit RI ke India, Eropa dan AS Turun Pada April 2018. (n.d.). Viewed June 9, 2018, from https://www.cnbcindonesia.com/news/20180530200200-4-17252/ekspor-sawit-ri-ke-india-eropa-dan-as-turun-pada-april-2018

Fusion Media Ltd, 2018. *AALI Stock Price*, Viewed March 15, 2018, at: https://id.investing.com/equities/astra-agro-les-historical-data.

Fusion Media Ltd, 2018. *Palm Oil Futures*, Viewed March 15, 2018, at: https://www.investing.com/commodities/palm-oil-historical-data.

Fusion Media Ltd, 2018. *Indonesia 10-Year Bond Yield*, Viewed March 15, 2018, at: https://www.investing.com/rates-bonds/indonesia-10-year-bond-yield-historical-data.

Fusion Media Ltd, 2018. *MYR/IDR - Ringgit Malaysia Rupiah Indonesia*, Viewed March 15, 2018, at: https://id.investing.com/currencies/myr-idr-historical-data.

Indonesia Stock Exchange, 2018. *AALI, LSIP, SMAR, TBLA, Financial Statement*, Viewed April 15, 2018, at: http://www.idx.co.id/perusahaan-tercatat/laporan-keuangan-dan-tahunan/.

Ini Alasan Pemerintah dan BI Genjot Transaksi Non Tunai. *n.d.* Viewed May 22, 2018, from https://finance.detik.com/moneter/d-3361810/ini-alasan-pemerintah-dan-bi-genjot-transaksi-non-tunai

Ini Keunggulan CPO Dibanding Komoditas Minyak Nabati Lain - Bisnis Liputan6.com. (n.d.). Retrieved May 22, 2018, from https://www.liputan6.com/bisnis/read/2670847/ini-keunggulan-cpo-dibanding-komoditas-minyak-nabati-lain

KELAPA SAWIT : Inovasi Teknologi Pacu Produktivitas. (n.d.). Viewed June 8, 2018, from http://banten.bisnis.com/read/20170719/452/672684/kelapa-sawit-inovasi-teknologi-pacu-produktivitas

MANFAAT GO PUBLIC (BENEFITS OF GOING PUBLIC) – Pusat Informasi Go Public. (n.d.). Viewed May 16, 2018, from https://gopublic.idx.co.id/2016/06/22/manfaat-go-public/

PEFINDO, 2018. *PEFINDO BETA STOCK Edition : 05-January-2018*, Viewed April 17, 2018, at: http://www.pefindo.com/index.php/fileman/file/620.

Proyeksi BI, n.d. Pertumbuhan Ekonomi 2018 Berkisar 5,1-5,5 Persen | Pikiran Rakyat. Viewed May 22, 2018, from http://www.pikiran-rakyat.com/ekonomi/2017/12/28/proyeksi-bi-pertumbuhan-ekonomi-2018-berkisar-51-55-persen-416807

Studi Bersama ISPO-RSPO Sebuah Pencapaian Penting dalam Kerjasama Mewujudkan Minyak Sawit Berkelanjutan di Indonesia | Articles | RSPO - Roundtable on Sustainable Palm Oil, n.d. Viewed May 17, 2018, from https://www.rspo.org/news-and-events/news/studi-bersama-isporspo-sebuah-pencapaian-penting-dalam-kerjasama-mewujudkan-minyak-sawit-berkelanjutan-di-indonesia

ICMEM

What to Watch for in Fed's Rate Decision - The New York Times. *n.d.* Viewed May 17, 2018, from https://www.nytimes.com/2018/03/21/business/economy/federal-reserve-interest-rates.html

ICMEM

The 3rd International Conference on Management in Emerging Markets

Finding Proper Peer-to-Peer Lending Student Loan Scheme for College Students In Indonesia

Anindiya Asri Asyifa[a], Deddy Priatmodjo Koesrindartoto[b*]

[a,b]*Institut Teknologi Bandung, Jl. Ganesha no. 10 Lebak Siliwangi, Bandung 40132, Indonesia*

Abstract

The education cost is keep increasing in each year. However, the scholarship is limited so not every students can get it. Therefore, there is a need for new alternative method for financing the education cost. Lately, on March 2018, Joko Widodo has challenged the bank to provide student loan as an alternative method of financing for the students. As the development of financial technology, peer-to-peer lending method seems to be one of the scheme that can be used to offer student loan itself. Referring to that condition, this research try to find proper peer-to-peer lending student loan scheme for college student in Indonesia. Secondary data from relevent journal and observation in peer-to-peer lending student loan website was done to give the reference about student loan scheme that has been available. Survey was conducted to get the preference of college students in Indonesia towards student loan scheme. The finding is many of students have an intention to use student loan. However, they do not knowing yet about peer-to-peer lending method. The students are preferred to use student loan that has an ease administration and document requirement, low interest rate and charge, and it was provided by a good-reputation parties. At the end, one student scheme has been proposed based on the preference of the students. However, there is a need to consider the lender's preference for future research.

Keywords: Student Loan; Peer-To-Peer Lending; Scheme; Financial Technology

1. Introduction

Education is the most important thing for supporting a human life. Through the education, people shape their mind and their characters. It helps us to influence our perspective of looking at life. In other words, education helps us to improve our own life. Besides of that, it helps the community to succeed both socially and economically by enabling it to develop common culture and value.

Education was started since someone borned until they died. Formal education was strated from kindergarten, elementary school, junior high school, senior high school, last university or collage. There is a belief in our society that as someone attend higher formal education, he/she may secure jobs with good benefits and enter high-level careers with greater salaries.

Nowadays, the education fee (especially tution fee) is getting higher from year to year. The data from *Badan Pusat Statistik* have shown that the inflation rate of education in Indonesia goes up to 10 percent. This rate is higher than the inflation rate in 2016 which is 3.02 percent. The escalation of education fee have made some worries that education fee will be unaffordable.

Student loans are viewed as one method that can be used to fund a higher education in both industrialized and developing country (Rani, 2011). In Indonesia, the most common method of financing the higher education is scholarship or hidden grant. Unfortunately, not everyone can get this scholarship. Usually, the grantee propose some strict requirement.

Referring that condition, the education loans will be enabled students from low-income families to meet direct and indirect cost for education such as tuition fees, book, and living expenses (Rani, 2011). The basic consideration in

---

ICMEM

deciding the student loan programs are choice of administering and funding agency, who is eligible to get the loan, security or guarantee required). By student loan, the students can study for now while the burden of the education cost will be guaranteed by the lender of student loan. Student loans must be paid based on the agreement between students or lenders.

Nowadays, as the development of technology, people's activities have shifted into a modern things. The application from the technology development has been applied into almost all of human activities, for example in financial technology. Peer-to-peer lending platforms is one of the example of the financial technology product. The existance of peer to peer lending platforms can generate a lower cost of lending and bring lower interest rate for the borrowers. Nonetheless, peer to peer lending brings several risks for lenders and borrowers. Previously, the lending and investment activities could be done through the bank as the intermediaries but now those activities could be done through peer to peer lending platforms.

Peer-to-peer lending was seen as a new method for student loan. By using peer-to-peer lending scheme, the students can ask for the student loan from the individual lender. The investors and students can get several advantage. For the investors, this method can be seen as one of the investment choice besides of bonds and stocks. For the students, this method can help them to continue their education so the students can improve their own life and their society. Moreover, the loan that has been paid by the students (who have finished their study) can be given as a new loan to the new students.

Seeing those phenomenon, this study will propose a proper peer-to-peer student loan scheme for college students in Indonesia. Here are some significant and beneficial achievements that the study is expected to give an idea of student loan scheme that can be applied for college student in Indonesia. The result of this study can be consideration for some parties that would like to apply student loan in Indonesia. Future research is needed to find out the lender's perspective and preference of this scheme so the scheme can be a win-win solution for the students and the lenders.

2. Literature Review

2.1 Student Loan

Post-secondary education and training was believed to give enormously benefit for the societies (Shireman, 2017). From the economic aspect, "higher education provides the specialized training that makes the nation's workforce productive and efficient, increasing national wealth and well-being" (Shireman, 2017). However, higher education cost keep increasing. Therefore, not everyone can study at higher education institution. There is a need to solve this problem. Student loan was viewed as an important method to financing higher education. The reason because student loan is "a means for transferring wealth from a future period of relative prosperity to the present" (Akers and Chingos, 2016).

Student loan can be concluded as human capital investment. "Human capital investment is indeed more risky than any other form of investments" (Rani, 2011). There are some uncertainties bear with this investment. Rani (2011) reviewed the uncertainties such as lack of understanding about enrolling student capacities for higher education discipline of their choice, the risk of employability and the uncertainty of future value of the investment.

Each country has their own student loan scheme that different between one and another. The differences were organizational structure, sources of initial funding, student coverage, loans allocation procedures and collection method (Shen and Ziderman, 2009). To determine the right student loan scheme, there are some parameters that should be considered. Shireman (2017) summarized eight parameters. The parameters were "borrowers ability to pay", "payment determination", "interest", "end of payment", subsidy, eligibility, process of documented income, and "program treated in the income tax system".

2.2 Peer-to-Peer Lending

"Peer-to-peer can be seen as the interaction between two or more parties without the need of central intermediary" (Milne and Parboteeah, 2016). As the development of financial technology, peer-to-peer scheme was adopted in a financial sector to create peer-to-peer lending. Peer-to-peer lending is a lending scheme where people can directly lend

some money from other people. Previously, bank hold the main function as financial intermediaries to lend money. Nowadays, its function seems can be replaced by the peer-to-peer lending.

"Online peer-to-peer lending refers to the practice of lending money directly to unrelated individuals through online platforms, without the intervention of traditional financial intermediaries, such as banks" (Ge, Feng, Gu, and Zhang, 2017). Based on Chen, Lai, and Lin (2014), there are some unique characters that owned by online peer-to-peer lending. First, "the goods exchanged on online peer-to-peer lending platforms are neither tangible products nor services, but rather the rights to claim principle and interest in the future". Second, "lenders make lending decisions mainly based on the risks and benefits of a lending transaction". Thirs, "the escrow systems that are used by traditional e-commerce for product and service exchange are not readily applied to online peer-to-peer lending settings."

Milne and Parboteeah (2016) divided the advantage of peer-to-peer lending into four groups. First, peer-to-peer lending offers better rates of return than the bank deposit. Besides of that, peer-to-peer lending also has low cost. Second, peer-to-peer lending give an oppportunity for people that they are unable to access bank lending. Third, there is a perception thst peer-to-peer lending is more responsible and it has greater social value comparing to conventional banking. Fourth, there is a transparency, flexibility, rapid and more convenient service for the customers due to the used of innovations.

2.3 Previous Studies

Table 22 Summary of Previous Studies

AUTHOR/YEAR	OBJECTIVES	RESULTS
Jianguo Wei and Rong Wang/2009	Predicting problem and challenges confronting the reform of the student loans system in China.	The providers of China's student loan are commercial bank, China Development bank, and rural credit cooperative. The loan size is about ¥6,000 (CNY) per school year per borrower and it was fail to meet the needs of some students. The interest was subsidized by the government. China faced a problem regarding the loan repayment period due to unemployment, low income, and major health difficulties.
P. Geetha Rani/2011	Building up hypothethical scenarios on hidden grant vs full loan and elucidating implications for the current student loan program of India.	Some developing countries faced student loan problem regarding low repayment ratio. It was important to know the threshold level of subsidy in which a loan can be converted into grant. However, there was an argumentation to give poor students in India a grant/scholarship because cost of administration was higher than actual disbursement.
Susan M. Dynarski/2015	Providing an economist perspective regarding student loan in USA.	The students have debt that is relatively below the lifetime benefits of a college education. However, there is a mismatch in the timing of arrival of the benefits of college and its cost. One of the solution is an income based repayment plan with payments that adjust with the borrower earnings. There is an administrative barriers to adopting this plan. Moreover, the recessions add negative affect to this repayment plan.
Nicholas Barr, Bruce Chapman, Lorraine Dearden, and Susan Dynarski/2018	Examining repayment burdens under income contingent loan repayment system.	The current design of the student loan of United States has significant problem. Main problem is a conventional loan that adopt fixed monthly repayment. The duration of loan and monthly repayment are not related with the change of income. Therefore, the borrower's ability really depends on the sufficient income. Income contingent loan can be used as one of repayment method. However, USA is not using current income in ICL system. So, the payment is not based on current financial ability
Alstair Milne and Paul Parboteeah/2016	Providing an overview of peer-to-peer lending, comparing peer-to-peer lending website, and assessing the business model and the economics of P2P unsecured personal lending.	Peer-to-peer lending allows direct investment in consumer and small business loans. It allows diversification over a large number of borrowers. Interest rate is determined by competition between lenders. Peer-to-peer lending has developed in US and UK rapidly. However, peer-to-peer lending is not competitive with conventional banking because the core function of bank such as provision of liquidity service could not be replaced. The risks regarding peer-to-peer lending are fraud, cryptographic security, and operational risk.
Francis Atuahene/2008	Security and National Insurance Trust (SSNIT) Student Loans Scheme and Student Loan Trust Fund (SLTF) policy	SLTF easing the financial pressures on students. Macroeconomic instabilities such as high unemployment rate, inflation, and the current interest rate, the repayment will be a huge problem.

ICMEM

Christian Larrain and Salvador Zurita/2007	Describing the outstanding characteristics of this system, explain its conceptual basis and the public policy criteria taken into consideration in its design.	The new system for financing higher education signifies a progress to the previous situation because it provides adequate coverage, targeted on the students who needs, avoiding discrimination, uses the expertise of the bank to collect the loan and the repayment do not excess 10% of graduate income.
Somkiat Tangkitvach and Areeya Manasboonphemool/2009	Evaluating the main characteristics of the higher education sector in Thailand.	Repayment ratio ranging from 36-67%. The low level of repayment ratios happened due to long grace period, low interest rate, and the long repaymenet period allowed. Recovery ratio is ranging from 22 to 51%, showing that the fisccal burden of SLF is very high.
Hue Shen and Adrian Ziderman/2008	Examining the size of repayment and recovery ratios across scheme.	Repayment ratio measures how much of a loan that the borrower is required to pay. Recovery ratio mesured the total outlays of the loan scheme will be recovered through loans repayment. Thirteen scheme has repayment ratio less than 50%. It means the student loan scheme gives more grant. Czech Republic has the highest repayment ratio, that is 108.37. While Nigeria has the lowest repayment ratio.

3. Methodology

Secondary data from relevant journal and observation in peer-to-peer lending student loan website was done to give the reference about student loan scheme that has been available. Survey was conducted to get the perception and preference of college students in Indonesia towards student loan scheme. This study will compare the available student loan scheme and the preference of the students to create peer-to-peer lending student loan scheme for college students in Indonesia. Last, business model canvas will be made as an illustration so this idea can easily understood.

4. Analysis

Seeing from provider of student loan, student loan can be divided into three types:
- Student loan by the government
- Student loan by the bank
- Student loan by financial technology (fintech) company

4.1 Student Loan by The Government

Student loan by the government have some unique characteristics: (i) lower interest rate comparing with student loan that is provided by other parties, (ii) long repayment period, and (iii) income-contingent in the form of tax system. Most of student loan that is managed by the government or government agency has low interest rate comparing with bank or financial technology company. For example, Thailand only charge 1% interest rate while the actual cost of borrowing is 3% (Chapman et al., 2010). Australia charge free-interest rate for its student loan. However, the student loan will be subjected to indexation. Indexation is a technique to connect prices and asset values to inflation. The indexation is done by linking adjustments made to the value of good, services or other metric, to a predetermined index.

The student loan that was served by the government usually required long repayment period. Comparing to the sample countries, USA has the shortest repayment period while UK has the longest one. The repayment period of USA is ten years whereas UK allowed the repayment period up to thirty years. Any remaining amount will be forgiven after thirty years.

Another unique characteristics from this type of student loan is the repayment system. The repayment usually start after the students graduate. The repayment system can be divided into two types. First is mortgage-type loan and the second ones is income-contingent. Australia and United Kingdom have used income-contingent as their repayment system. By using income-contingent, some percentage of the borrower's income will be allocated to pay student loan. However, the government apply an income threshold means the borrowers only allow to make repayment if their income was above the threshold. In case of income that was below threshold, the government still allow the repayment by contacting student loan servicer.

ICMEM

Actually, USA also apply income-contingent as one of the repayment system. However, there is several differences between the income-contingent repayment as applied in UK, Australia, and USA. Australia and UK use current income for the repayment. The repayment will adjust automatically to current earnings. The government of UK and Autralia peg the repayment burden on 8% - 9% to protect the borrowers against heavy burden. In USA, the government uses previous income rather than current income to determine the amount of repayment (Dynarski, 2016). The previous income is not show the actual ability to pay student loan.

In Australia and UK, student's debt is recorded and linked to the borrower's unique social security/tax file number. When a borrower starts work, the employer keeps loan repayments based on the borrower's current income. The outstanding debt will be recorded and reconciled by a government agency, which can be the tax authorities or a separate loans administration, such as the UK Student Loans Company. This type of student loan required the repayment after the students has been graduated and have an income. During study period, there is no requirement for repaying the student loan.

The government of Indonesia has not been provided student loan that centrally managed by certain department. To be able to serve this, the government must find the funds that will be delivered to the students.

4.2 Student Loan by The Banks

In some country, student loan is provided by the commercial banks. India, Indonesia, Singapore, and China are the example of the countries who have commercial bank as the providers of student loan. Each of bank has certain requirements and characteristics. The ICBC bank in China offer a larger amount of student loan comparing with the government. When the government offers ¥6,000 per school year, the ICBC bank offers ¥500,000.

In India, the bank requires some collateral amount. The collateral is required for loan amount above Rs. 7.50 lacs. This scheme is different with the banks in Singapore. The banks in Singapore does not require any collateral. However, some banks require the borrower's income as the student loan requirement. Those banks will charge low interest rate if the bank has been coorporated with the university.

Recently, some banks in Indonesia also offer the student loan. Most of the banks require the borrower's income. The banks charge the interest that ranged between 5% - 6.5% per annum. The repayment period is pegged between 5 – 10 years.

There are some repayment system that was used by the banks. First, deferment which means the repayment will be started after the students graduate. Second, interest-only payment which requires the amount of interest for the monthly installment during study period. Third, full monthly payment that include principal and interest.

4.3 Student Loan by Financial Technology Company

As the development of technology, the student loan start to be offered by financial technology or fintech companies. There are two operational forms that were applied by fintech company. First is balance sheet lending company and the second one is peer-to-peer lending company. There are some differences between balance sheet lending and peer-to-peer lending.

- Origination of money
  In balance sheet lending, the money or fund comes from internal company (money markets and investment funds) while the money of peer-to-peer lending usually comes from the investors.
- Funding process
  In balance sheet lending, once a loan application is approved, the funds readily available to disburse. However, in peer-to-peer lending, a loan may be disbursed directly or may need to undergo a funding period as it is presented to investors.
- How quick to get the money
  Since a loan may need to undergo a funding period as it is presented to investors, the borrowers usually get money longer in peer-to-peer lending scheme.

ICMEM

- Risk

  In balance sheet lending scheme, the lenders carry all risk for losses. However, in peer-to-peer lending scheme, the one who bear with the risk is the investors.

The table below will illustrate the companies that offer student loan.

Table 1. The Companies That Offer Student Laon

	Balance Sheet Lending	Peer-to-Peer Lending
USA	LendKey, Ascent (Loans that power bright futures.), CommonBond, DISCOVER, Connext (Private Student Loans Powered by ReliaMax®), credible, MPOWER Financing	lendingtree
Indonesia	DANACITA, cicil	DANAdidik, KOINWORKS
United Kingdom	FUTURE·FINANCE	
Australia	STUDY LOANS	
Across Countries	Prodigy Finance	ZOMIA

To reduce the risk of student loan, most of company require the guarantor. If the borrowers were default, the guarantor must be paid the loan that was owned by the borrowers. However, some of company does not require the guarantor such as Prodigy Finance. Prodigy Finance only gives the loan to postgraduate students who already have an

ICMEM

income. Therefore, the company does not need guarantor. A unique way of risk mitigation is shown by Cicil. To get the student loan from Cicil, the students must provide a down payment.

Comparing to student loan that was offered by the government, this type of student loan has higher loan amount. Some of financial technology companies claimed that they can provided all cost of attendance. However, the company who use peer-to-peer lending scheme such as Zomia and Dana Didik apply the limitation in the loan amount. This is done to protect the investor so they will not lose their money greatly. Actually, this type of student loan usually become the second alternative for the students. Most of students will try to get the student loan from the government at first before they were applied to financial technology companies.

There is a unique characteristics of student loan that was offered by financial technology company in USA. Those companies offer two types of interest: fixed interest rate and variable interest rate. As mentioned above, fixed rate offers the same rate during the period of the loan. Fixed rate offers same payment's amount during the period of the loan. However, when the interest rate is low, the payment is not reducing. This can cause the borrowers pay higher than the actual amount.

In USA, the companies state the interest rate in APR (Annual Percentage Rate). APR reflects not only interest rate but also other charges. The APR that was charged by financial technology companies in USA is ranging from 2% until 15%. However, most of company charge minimum 3% APR and maximum 13% APR. Study Loans, Cicil, and Dana Cita have the same interest rate, there is 12% - 18% per annum. Although Zomia and Dana Didik both use peer-to-peer lending scheme as their operational method, Zomia charges 5% interest rate per annum for the borrowers while Dana Didik does not charge interest rate at all. Dana Didik only charge origination fee that is 5% of loan amount.

Almost same with student loan by the government, this type of student loan has two repayment options, there are mortgage-type loan and income-contingent. However, only two companies who apply income-contingent method: Zomia and Dana Didik. The fintancial technology (fintech) company in USA mostly offer four types of repayment method: deferment, interest-only payment, minumum monthly payment, and full monthly payment.

- Deferment

  When the borrowers choose deferment method, they should not repay their student loan during study period. The repayment will start after they graduate.

- Interest-only payment

  During study period, the borrowers pay only the interest for every month. After they graduate, they pay the principal.

- Minimum monthly payment

- When choosing minimum monthly payment, the borrowers need to pay the minimum amount of monthly payment. Usually the minimum monthly payment as big as $25.

- Full monthly payment

- Full monthly payment consist of interest and principal that must be paid in each month.

In case of tenor or repayment period, most of financial company (fintech company) in USA offer 5, 10, or 15 years. Future Finance in UK has shorter repayment period. The company pegged the repayment period at 5 years. Financial technology (fintech) companies in Indonesia and Australia require the repayment period less than 5 years. There is a big difference in Zomia and Dana Didik.

Most of company disburse the student loan directly to the university, except of Zomia. By disbursing the money directly to university, the companies prevent the money from being used for other purpose than for education. Besides of that, this method is effective because the money was transfered directly to the university. There is no need for students to transfer the money to the university anymore. However, when the student loan was used to pay the living cost such as dormitory/residence or the other education cost, the money may be can not be transferred to the university because only the students who will know where to spend it and how to spend it.

For evaluating the borrowers or the students, the companies will screen the document at first. In USA, the companies will consider the students credit score. Study Loans in Australia also use credit check. The unique method was shown

ICMEM

by Dana Didik in Indonesia. Dana Didik has several method to evaluate the borrowers: interview, university reference, psychometric, and digital footprint. Psychometric is a test that was conducted to know personality of someone. It was important because in peer-to-peer lending, the most important thing is an honesty and willingness from the borrowers to pay their loan. By doing psychometric test, the company or lender will know the personality of borrowers. Digital footprint is a record left when someone do the things online. To track someone's digital footprint, the company can see the digital footprint through their social media.

Besides of those evaluation tools, each of company has certain other consideration. Ascent consider the borrower's school, major, or programs. Future Finance in UK has another consideration. The company has several consideration on granting the student loan. The first consideration is continuation rate. If the course that the borrowers taking have a high dropout rate in the first year, then the course will be assigned low continuation rate. The second consideration is employment rate. The employment rate is based on the number of graduates from particular course that are employed. The third consideration is predicted future affordability. Future Finance will look at the brrowers financial history, the likelihood of employement, and the future income. Another consideration is credit score, credit history, guarantor, and age.

Table 23 Comparation of Peer-to-Peer Lending Company

	Dana Didik	**Zomia**	**Lendingtree**
Education Level	Diploma and undergraduate degree	Undergraduate and graduate degree	Undergraduate and graduate degree
Security Required	Guarantor	Not required	Guarantor
Loan Amount	Rp2,000,000 until Rp10,000,000	Maximum US$500 - $6,000 per one year	Maximum cost of attendance
Interest Rate/ APR	0%	5% per annum	Varies by lenders
Repayment Option	Full monthly payment. After the borrowers have an income, the repayment method was changed into income-contingent loan	Income-contingent that is 15% of monthly income. Repayment started six months after graduation.	Full monthly payment
Tenor	3.5 years	10 – 20 years	
Grace Period	No grace period	Six months	
Loan Disbursement	The loan will be paid either to the university or sent to student account	Student's bank account	
Gain for Lenders	Maximum 15% per annum, minimum the money will be back	Maximum moeny will be back	

Zomia and Dana Didik which both apply peer-to-peer lending scheme use income-contingent as repayment method. Dana Didik requires the repayment since the first time they disbursed the loan for students. During the students in their study period or does not have any income, the students must pay the minimum monthly payment. The minimum monthly payment calculation is loan amount divided by tenor. When the students already have an income, they must allocate 10% - 30% their monthly income to pay student loan. While Dana Didik requires the repayment since in the students in their study period, Zomia requires the repayment after the student graduate from their school. The students must allocate their 15% of monthly income for repaying the student loan. In terms of repaymen period, Zomia has longer repayment period, that is 7 – 20 years. Dana Didik peg the repayment period on maximum 3.5 years. Dana Didik require faster repayment so that they can transfer those money to the next student.

Comparing to student loan by the government, this type of student loan takes more percentage of the student/the borrower's income to repay the student loan. UK and Australia only take 8% - 9% the borrower's monthly income while Zomia and Dana Didik take more than 9% the borrower's monthly income. Baum and Schwartz (2006) suggest that the students should not devote more than 8% of their gross income for paying student loan.

ICMEM

Although those two companies use peer-to-peer lending scheme as their operational method, they have different method for returning the money to the lenders. Although the lenders receive the repayment up to the amount they lend, the lenders would not receive the interest. This happened because the purpose of Zomia is to help the students funding the education. By lending the money, the lenders have give an opportunity for the students to study for a better future. Besides of that, Zomia can not ensure that the lenders will get fully amount of the loan because after all student loan is unsecured loan.

Different from Zomia, Dana Didik argues that the company can give maximum profit until 15% per year to the lenders. The minimum return that the company can give is the amount of money that the company lend will be back. Actually, in Dana Didik, the investors or lenders can choose between donate their money or lend/invest their money. If the lenders choose to donate their money, the repayment will be given to Yayasan Dana Abadi and next the money will be loaned back to the next student. If the lenders choose to invest their money, the repayment will be given to the lenders itself.

4.4 Proposed Student Loan Scheme

Based on the survey, most of the sample stated that they does not know about peer-to-peer lending and never hear about it. They also does not know the current provider of student loan in Indonesia, either financial technology company or bank. The biggest consideration for them to use student loan by financial technology company are ease of administration and document, low interest and charge, and reputation of peer-to-peer lending company.

Based on the preference of the students, the proposed student loan scheme is shown as the table below.

Table 24 Proposed Student Loan Scheme

		Proposed Scheme
Requirements	**Level**	College students
	Guarantor/ Cosignor	Requiring parents as guarantor
	Document Needed	• Citizens ID • Recommendation letter from university • Transcript • Reference letter from university
Loan Amount		Rp10.000.000,00 or more (depends on the necessity and the ability of the students)
Repayment Method	**Interest Rate**	0%
	Repayment Option	1. **Minimum Installment** Monthly payment $= \frac{Loan\ Amount}{Tenor}$ *For students who have not graduated yet or for the graduated ones who have not earned* 2. **Profit Sharing** *10%-30% x Monthly Income* *For those who already has an income*
	Tenor	Depends on the loan amount. If the loan amount is Rp10,000,000, it should be paid within 3.5 years. However, if the loan amount was bigger than that, maximum the repayment period is 10 years.
	Early Repayment	No charge
	Repayment Gateway	Transfer from the bank
Evaluation		• Document screening • Interview • Recommendation letter from university
Fee		5% of the loan
Late Charge		Applied
Loan Disbursement		Directly to university for tuition fee or other activity in university, but for living expense, books, stationery, or other fee it can be given to students

ICMEM

4.5 Business Model Canvas

PARTNER NETWORK	KEY ACTIVITIES	OFFERS	CUSTOMER RELATIONSHIP	CUSTOMER SEGMENT
• Banks • Universities • Government	• Managing the website • Risk management • Connecting the borrowers and the lenders • Evaluating the borrowers	• Investment product for investors • Loan for students • Opportunity to contribute for a better future of the students in Indonesia	• Monitoring the borrowers/students through university • Report to the lenders • Meeting with the students in each region to give a softskill training (entrepreneurship)	• Lenders • Students • The parent's of the students
	KEY RESOURCES Peer-to-peer lending website		**DISTRIBUTION CHANNEL** • Universities • Peer-to-peer lending website	
COST STRUCTURE • Administration cost • Development of website • Transaction cost with the bank • Cost for human capital and cost of training			**REVENUE STREAM** Loan service for the students	

Figure 5 Busines Model Canvas

5. Conclusion and Recommendation for Future Research

Seeing from the provider of student loan, there are three types of student loan: student loan by the government, student loan by the banks, and student loan by financial technology company. Peer-to-peer lending can be the alternative method for financing education cost. The scheme for peer-to-peer lending student loan can be as the scheme that proposed above since it highly consider the student's preference. By using peer-to-peer lending scheme, the repayment amount can be loaned back to the next students. The benefits will not stop on one people only. For future research, there is a need to consider the lender preference on peer-to-peer lending scheme for students. Therefore, the scheme can be win-win solution both of the lenders and the borrowers.

References

Atuahene, F. (2008). The Challenge of Financing Higehr Education And The Role Of STudent Loans Scheme: An Analysis Of The Student Loan Trust Fund (SLTF) In Ghana. *Higher Education*, 407 - 421.

Australian Government . (t.thn.). *Study Assist*. Diambil kembali dari Study Assist: https://www.studyassist.gov.au/

ICMEM

Bakker, E. (2015, June 23). *PEER-TO-PEER LENDING: How digital lending marketplaces are disrupting the predominant banking model*. Diambil kembali dari Business Insider: https://www.businessinsider.com/peer-to-peer-lending-how-digital-lending-marketplaces-are-disrupting-the-predominant-banking-model-2015-5/?IR=T

Barr, N., Chapman, B., Dearden, L., & Dynarski, S. (2018). Reflections on the US College Loans System: Lessons from Australia and England. *IZA Institute*.

Chapmana, B., Lounkaewa, K., Polsiri, P., Sarachitti, R., & Sitthipongpanich, T. (2010). Thailand's Student Loans Fund: Interest rate subsidies. *Economics of Education Review*, 685-694.

Chen, D., Lai, F., & Lin, Z. (2014). A trust model for online peer-to-peer lending: a lender's perspective. *Information Technology Management*, 239-254.

Cicil. (t.thn.). *Cicil*. Diambil kembali dari Cicil: https://www.cicil.co.id/

Dana Cita. (t.thn.). *Dana Cita*. Diambil kembali dari Dana Cita: https://www.danacita.com/

Dana Didik. (t.thn.). *Dana Didik*. Diambil kembali dari Dana Didik: https://danadidik.com/

Davis, K., Maddock, R., & Foo, M. (2017). Catching up with Indonesia's fintech industry. *Law and Financial Markets Review*.

DBS. (t.thn.). *DBS*. Diambil kembali dari DBS: https://www.dbs.com.sg/personal/loans/education-loans/tuition-fee-loan

Dynarski, S. (2015). An Economist's Perspective on Student Loans. *Center for Economic Studies & Ifo Institute*.

Federal Student Aid. (t.thn.). *Federal Student Aid*. Diambil kembali dari Federal Student Aid: https://studentaid.ed.gov/sa/

Future Finance. (t.thn.). *Future Finance*. Diambil kembali dari Future Finance: https://www.futurefinance.com/uk/

Ge, R., Feng, J., Gu, B., & Zhang, P. (2017). Predicting and Deterring Default with Social Media Information in Peer-to-Peer Lending. *Journal of Management Information Systems*, 401-424.

H, I., & Chiu, Y. (2016). Fintech and Disruptive Business Models In Financial Products, Intermediation and Markets - Policy Implications for Financial Regulators. *Journal Of Technology Law & Policy*.

Ibrahim, N., & Verliyantina. (2012). The Model of Crowdfunding to Support Small and Micro Businesses in Indonesia Through a Web-based platform. *Procedia Economic and Finance*, 390-397.

ICBC. (t.thn.). Diambil kembali dari ICBC: https://www.icbc.com.cn/ICBC/Personal%20Banking/Happy%20Loan%20Personal%20Loan/Personal%20Student%20Loan/

Japan Student Service Association. (2018). *Japan Student Service Association*. Japan Student Service Association.

Kayagohu, N. (2013). A Generic Approach For Dynamic Business Model Evaluation.

Kobayashi, M., & Armstrong, S. (2017). Financing higher education in Japan and the need for reform. *Autralia - Japan Research Center*.

Koinworks. (t.thn.). *Koinworks*. Diambil kembali dari Koinworks: https://koinworks.com/

Livingston, L. S., Anders, S. A., & Tokuyama, H. (2015). Viability Of A Peer-to-peer Loan Market For Students And The Underbanked. *Global Journal of Business Research*, 53-66.

Lu, A. J., & Chen, D. (2014). Government-Leading Student Loan Schemes: A Comparative Study of Hong Kong and Mainland China. *Journal of Education and Learning*, 1-12.

Maybank. (t.thn.). *Maybank*. Diambil kembali dari Maybank: http://info.maybank2u.com.sg/personal/loans/personal-credit/mb-education-loans.aspx

Mhamed, A. A., Kas, R., & Cunska, Z. (2012). Student Debt Amoung University of Latvia Graduates: Repayment Prospect Under Inome-Contingent Student Loan Scheme. *Baltic Journal of Economics*, 73-88.

Milne, A., & Parboteeah, P. (2016). The Business Models and Economics of Peer-to-peer Lending. *European Credit Research Institute*.

OCBC. (t.thn.). *Frank by OCBC*. Diambil kembali dari OCBC: http://www.frankbyocbc.com/products/investments/study-loan/

POSB. (t.thn.). *POSB*. Diambil kembali dari POSB: https://www.posb.com.sg/personal/loans/education-loans/posb-further-study-assist

Prodigy Finance. (t.thn.). *Prodigy Finance*. Diambil kembali dari Prodigy Finance.

Purnomo, H. (2018, April 19). *Bank Mandiri Punya Student Loan, Cicilan Mulai Rp 400 Ribuan*. Diambil kembali dari CNBC Indonesia: https://www.cnbcindonesia.com/news/20180419095038-4-11582/bank-mandiri-punya-student-loan-cicilan-mulai-rp-400-ribuan

Rani, P. G. (2011). An International Perspective On Methods And Practices Of Student Loans: Its Implications For India. *Economics, Management, and Financial Markets*, 102-125.

RHB. (t.thn.). *RHB*. Diambil kembali dari RHB: https://www.rhbgroup.com/singapore/products-and-services/personal/loans/education-loan

Rossiana, G. (2018, March 21). *BRI Luncurkan Student Loan, Begini Syaratnya*. Diambil kembali dari CNBC Indonesia: https://www.cnbcindonesia.com/news/20180321180836-4-8068/bri-luncurkan-student-loan-begini-syaratnya

Rossiana, G. (2018, April 10). *Kini Debitur BTN Bisa Nikmati Fasilitas Student Loan*. Diambil kembali dari CNBC Indonesia: https://www.cnbcindonesia.com/news/20180410160116-4-10439/kini-debitur-btn-bisa-nikmati-fasilitas-student-loan

ICMEM

Setiawan, S. R. (2018, March 16). *Jokowi Minta Perbankan Sediakan "Student Loan", Ini Komentar BI*. Diambil kembali dari Kompas.Com: https://ekonomi.kompas.com/read/2018/03/16/203800026/jokowi-minta-perbankan-sediakan-student-loan-ini-komentar-bi

Shen, H., & Ziderman, A. (2009). Student loans repayment and recovery: international comparisons. *High Education*, 315-333.

Shireman, R. (2017). Learn Now, Pay Later: A History of Income-Contingent Student Loans in the United States. *The Annals Of The American Academy*.

Student Finance England. (2018). *Student loans - a guide to terms and condition.* Student Finance England.

Study Loans. (t.thn.). *Study Loans*. Diambil kembali dari Study Loans: https://studyloans.com.au/

Susilawati, R. (2018, March 29). *BNI Gandeng ITS, Terbitkan Kredit Pendidikan*. Diambil kembali dari Beritajatim.com: http://beritajatim.com/ekonomi/324711/bni_gandeng_its,_terbitkan_kredit_pendidikan.html

Tagkitvach, S., & Manasboonphempool, A. (2010). Evaluating the Student Loan Fund of Thailand. *Economics of Education Review*, 710-721.

Wei, J., & Wang, R. (2009). Student Loans Reform in China: Problems and Challenges. *Higher Education in Europe*.

Zomia. (t.thn.). *Zomia*. Diambil kembali dari Zomia: https://zomia.org/

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants of Capital Structure: Evidence from Indonesia's Listed Firms

Feby Naomi Margareth Pasaribu[a*], Athanasios Andrikopoulos[b]

[a] School of Business and Management, Institut Teknologi Bandung, Jalan Ganesha no.10, Coblong, Kota Bandung 40132, Indonesia
[b]University of Hull, Cottingham Road, Hull HU6 7RX, United Kingdom

Abstract

Defining ideal composition of capital structure is critical to companies in order to maximize firm's value. This study aims to analyze the determinants of capital structure of Indonesia's publicly listed firms registered in LQ-45 index. During the period of 2013-2017, the influence of determinants towards capital structure is being investigated using multiple regression model. The sample used in this study is selected through purposive sampling and thus obtained 32 companies. According to literature, this study analyzed nine dependent variables which are profitability, firm size, effective tax rate, asset tangibility, risk, growth opportunities, liquidity, non-debt tax shield, and short-term debt to total asset in relation with independent variable of capital structure measured by Debt to Equity Ratio (DER). This study suggests that profitability, asset tangibility, liquidity, and short term debt to total asset have significant influence to capital structure. Profitability and liquidity indicate negative significant influence towards capital structure which support pecking order theory. Asset tangibility has negative significant influence towards capital structure in accordance with literature. On the other hand, positive significant relationship between short term debt to total asset and leverage is aligned with tradeoff theory. While, firm size, effective tax rate, risk, growth opportunities, and non-debt tax shield do not have statistically significant influence towards capital structure.

Keywords: Determinants; Capital Structure; Public Listed; Indonesia

1. Introduction

Capital structure is how the proportion of equity and debt maintained by the firm to finance its operations (Gitman & Zutter, 2015). Capital structure becomes one of the most crucial thing in financial management, since it can give an impact into the firm's value and performance. It is because the main objective of a firm is to maximize the wealth of the owners or the shareholders, so that the decision of capital structure will be very important. According to Gitman & Zutter (2015) it is mostly believed that the optimal capital structure is when the cost of capital is minimized and thereby maximizes the value of the firm. It is quite debatable until now because financial managers do not have a specific formula for taking the decision on optimal capital structure.

Previous research and studies about the capital structure theory has been widely applied to various industries in several countries including Indonesia, but many of them eliminating the financial sector especially banking industry, it is because of the capital structure of banking industry has a different characteristics with other sectors. Banks and other depository institutions are specialized business that the capital structures are affected by various terms, such as government regulations that specified for banking sector and the nature of the debts are different from those of non-financial industries. The example of the specified regulation for bank is stated in the regulation of Bank Indonesia No. 15/ 12/ PBI/ 2013 that they should has a minimum Capital Adequacy Ratio (CAR) of 8%. In Indonesia, *Otoritas Jasa Keuangan* (OJK) and Bank Indonesia (BI) are the regulator of banking sector in Indonesia.

In the modern economics bank has the important role in providing financial services. Bank as a financial institution serve as an intermediary institution. That is why banking sector is very important for the economies of a country including Indonesia. Indonesia is still a bank-based country, where the economy of the country is still highly depending

---

* Corresponding author. Tel.: +44 7950 639106.
E-mail address: feby.naomi@sbm-itb.ac.id

ICMEM

on the financial sector (Saputra, Achsani, & Anggraeni, 2015). The function as intermediary will work well when the bank is in healthy condition. When banks are unhealthy there is likely to be a distortion in the functioning of banking industry, resulting economic conditions. According to Lindgren, Garcia, & Saal (1996), there are many countries which the economies were damaged as a result of the unhealthy banking system. In order to maintain the condition of bank, management should perform efficiently, one of the way is by defining the proper capital structure. Therefore this study aims to define factors affecting the capital structure decision of banking industry in Indonesia.

2. Literature Review

2. 1. Modigliani and miller theory

Modigliani and Miller (1958) stated a theory about capital structure. The basic theorem states that in an efficient market in the absence of taxes, bankruptcy costs, agency costs, and information asymmetry the value of a firm is unaffected by the changes in the capital structure, so based on this theory there is no optimal capital structure. But, because in the real world there is no perfect market this theory often called the "Capital Structure Irrelevance Proposition". This irrelevance theory assumed value of a firm is neither define on its dividend policy nor the decision to raise capital by selling debt or issuing stock, value of a company only depend on its cash flow.

2. 2. Trade off theory

The trade-off theory initiated by Myers (1984) claims where the firm (bank) exchanges the benefits of debt to debt costs (bankruptcy costs) to reach the optimal capital structure (Myers, 1984). This means that there is an optimal debt ratio in which the marginal profit from debt equals the marginal cost of debt. The debt-related trade-off theory entails balancing the cost of debt to debt gains. Modigliani and Miller (1963) introduced the tax benefits of debt and the theory implies 100% use of debt in the capital structure. Taxes play an important role in determining the level of leverage by lowering tax liabilities and increasing the after-tax cash flow. The capital structure trade-off theory says that banks must choose the proportion of debt and equity used by balancing the benefits and costs of debt since the bank also needs to maintain the Capital Adequacy Ratio (CAR). When a bank tries to raise excessive debt to finance its operations, then it could cause a default that led to bankruptcy because the Capital Adequacy Ratio (CAR) will decrease when too much debt used without balancing it with the equity capital and the regulator will declare that the bank is unhealthy.

2. 3. Pecking order theory

According to this theory, the costs of financing increase with asymmetric information between internal managers and outside holders. The fund used by the bank to finance its operational comes from three sources such as retained earnings, debt (third-party funds), or equity (shares). This theory argues that managers of the bank would prefer to use retained earnings as the primary source of financing as it has the lowest cost, but when the bank need excess cash they will choose to use debt such as from the third-party fund, and the last option is to issue new equity (Myers & Majluf, 1984). Debt is always involved risk. The risk of the bank is the uncertainty of the profit earned, with the characteristics of banks that different with non-bank companies in which banks prefer to obtain operational funds through third parties (savings and deposits). However, it poses a risk that if customers take the funds at the same time (rush) then the bank will lack its own capital.

2. 4. Agency cost theory

Jensen and Meckling (1976) presented a theory of agency cost which assumes the optimal capital structure can be realized by minimizing the costs that arise from agency problems or conflicts between the parties involved in the company. The problems of the agency generally occur due to a conflict of interest between the managers as agents and external shareholders and the holders of debt as principal for having different objectives. Shareholders are more likely to increase bank risk after obtaining financial support from depositors and bondholders (Galai & Masulis, 1976). Meanwhile, bank managers will try to avoid risks that could pose a threat to their position in the company.

ICMEM

2. 5. Determinants of capital structure

Debt to Assets Ratio (DAR)

Debt to asset ratio (DAR) is a ratio that assess the proportion of total assets being financed by the debt (Muhammad, 2014). Debt is one of the leverage indicator, the higher the ratio the more amount of other people's money being used. When the leverage is high, the financial risk of the bank will also be higher because there is a possibility that the bank cannot give back the money to customers who save the money in the bank especially when the customers take their funds at the same time. In the other side, leverage is also necessary because the bank needs to grow the business and the bank needs money to give the credit loans to society. Al-Mutairi and Naser (2015) used debt to assets ratio as the variable of bank's capital structure while they wanted to find out the determinants of capital structure from the bank in Gulf Cooperation Council (GCC) stock markets.

2. 6.   Profitability

This study use Net Interest Margin (NIM) as the proxy of profitability. NIM is one of the bank's performance indicator that defines whether the bank's investment decisions successful or not compare to its debt situations. Negative value of the ratio determine that the firm did not make a proper decision, because interest expenses were higher than the return provided by the investments. NIM could affect the bank's capital positively, high revenue allows bank to raise more capital through retained earnings and give positive signal to the market (Rime, 2001). The study of Fauziah and Iskandar (2015) about the determinant of capital structure in Indonesian Banking Sector, found that the profitability has negative significant impact to the debt ratio which is defined by Return on Equity (ROE) and Net Interest Margin (NIM).

2. 7.   Risk

In performing its function as an intermediary institution, one of the risks faced by the bank is credit risk. Credit risk or called default risk is a risk due to failure or inability of customers to return the loan amount received from the bank and its interest in accordance with the specified time period. This risk may arise due to the performance of one or more bad debtors. Poor debtors' performance can result incompetence or unwillingness of the debtor to fulfill part or all of the contents of the credit agreement previously agreed upon. From the internal side of the bank, credit risk can occur due to the ability of credit management that is less careful in choosing the prospective borrowers. Non Performing Loan (NPL) is an indicator that can be used to assess credit risk. Previous study that used NPL as the proxy of risk is the study of Haryanto (2015), he found that risk affect capital structure of banks in a positive direction. Siringoringo (2012) showed that credit risk affect significantly negative to the capital structure of the bank.

2. 8.   Liquidity

Liquidity indicate the bank's ability to meet its short-term obligations. The higher the liquidity ratio shows the better the bank's ability in paying off its short-term liabilities (such as giving back customers' money and paying saving interest). According to Haryanto (2015) Loan to Deposits Ratio (LDR) is one of the indicator to assess bank's liquidity, where LDR is the ratio that measures the ability of banks to meet short-term liabilities. This ratio can be calculated by dividing total credit loans to total third party funds. High LDR reflects the bank distribute high number of credits as well. If the LDR is too high, it means that the bank does not have sufficient liquidity to cover its obligations to customers. Conversely, if LDR values is too low it means that the bank has adequate liquidity but may have lower revenues, as it is known that bank generate income through credit channeled. Therefore, bank must be able to transform the third party fund to loan otherwise the funds will become costly (Anggono, 2017). Ozkan (2001) and Sari, Fadah, & Sukarno (2013), found out that the liquidity has a negative correlation to leverage ratio. On the other hand, Ridloah (2010) showed that liquidity has a positive effect on the capital structure.

2. 9.   Capital Adequacy

Capital Adequacy Ratio (CAR) is a ratio that indicates the ability of banks to provide funds used to overcome the possibility of risk of loss. This ratio is important because by keeping the CAR at a safe limit (at least 8%), it also protects customers and maintains the stability of the financial system as a whole. The minimum capital adequacy ratio

ICMEM

for bank is 8% that set by the Bank Indonesia and OJK as the regulator. The greater the CAR value reflects an improved banking capability in the face of possible risk of loss. Raharjo (2014) used CAR as the proxy of capital ratio in the study about the determinant of capital ratio that used banking sector in Indonesia as the subject of the study.

2. 10. Size

Size of the bank shows the financial ability and condition of the bank within a specified period (Fauziah & Iskandar, 2015). Large banks are more reputable, more experienced, have more diversified investment and less prone to bankruptcy. They also have less volatile earnings, can raise debt at lower costs, and better access to capital markets (Bitar, Hassan, & Hippler, 2017). Therefore large banks are tend to use more debt than the smaller firms. Thus, trade-off theory predicts a positive correlation between bank size and leverage (Sheikh & Qureshi, 2017). On the other hand, pecking order theory predicts a negative relationship between leverage and bank size, because larger banks have more access to equity funding which they have ability to share issuance, thus larger banks will use less debt hence have lower leverage (Deloof & Overfelt, 2008). Al-Fayoumi and Abuzayed (2009) found that bank size has a positive correlation with the leverage level. While, Chakraborty (2013) concluded that size has a negative relationship with the leverage level.

2. 11. Growth Opportunity

Growth opportunity is a chance that the bank will develop in the future, bank with high growth opportunity means that the bank has a chance to grow higher, and the bank will tend to continue expanding the business, thus they will need more money to meet their investment and disburse credit loans. According to the trade-off theory, there is a negative correlation between growth and debt. It is related to the costs of financial distress. The higher the growth opportunity, the greater the financial distress costs. On the other side, pecking order theory stated that growth is positively related with debt, the bank with high growth opportunity will buy shares that have the fewest problems and least asymmetric information such as short term debt (savings and deposits). Cassar & Holmes (2003) and Amidu (2007) revealed that there is a significant positive relationship between growth opportunity and leverage.

2. 12. Tangibility

Trade-off theory predicts that banks with tangible or fixed assets tend to borrow more than banks with risky intangible assets. The reason is because fixed assets can be used as collateral and hold more value in liquidation process (Sheikh & Qureshi, 2017). The bank with a higher tangibility is subject to lower costs of financial distress, because tangible assets endure from a smaller loss of value in a case of default. Moreover, tangible assets are more valuable for outsiders, which bring in lower information asymmetry, less agency costs of debts, and higher debt capacity. Thus, trade-off theory suggests there is a positive correlation between fixed-to-total assets ratio and leverage. Dang (2013) in Baltaci & Ayaydin (2014) concluded that pecking order theory suggests that banks with less tangible assets face higher information costs, therefore prefers debt than external equity. Namely, tangible are having negative relationship with leverage (Dang, 2013). Chankraborty (2013) found a negative correlation between tangibility and leverage.

2. 13. Efficiency

Efficiency is a comparison between the results obtained with the elements of management used or the comparison between output and input (Fitrianto & Mawardi, 2006). Thus, efficiency can be said as a mathematical concept, as a comparison between expenditure (operating expenditure) with income (operating income). According to Fitrianto & Mawardi (2006) the efficiency of bank is measured by profit and cost which is the right combination of production factors that can be minimized at the lowest, efficiency is also defined as the comparison of results and costs of business. BOPO (Operating Expense to Operating Income) ratio indicates comparison between operational costs to bank operating income. In other words, the ratio of BOPO measures the level of efficiency and ability of bank in carrying out its operational activities, which is meant by operational costs are all expenses directly related to the business activities of the bank, and which are included in the bank's operating income are all revenues which are the direct result of the business activities of the bank that have actually been received. The higher the operational efficiency, means the more efficient the bank's assets in generating profits and vice versa. Gocmen & Sahin (2014) found that

ICMEM

the efficiency of bank has negatively significant effect to the short-term leverage, and positively significant to the long-term leverage.

2. 14. *Previous Studies*

Some investigations seek to know the determinants of capital structure in different industries, such as consumer goods, mining, trade, finance, property and others. Some of them also try to do research in various countries. They use different variables and produce multiple results. But here are some preliminary studies about the determinants of capital structure of the banking sector, since this study also use banking sector as its object.

Al-Mutairi & Naser (2015) examined the determinants of capital structure of commercial banks listed in GCC stock market from 2001 to 2010, Debt to Assets ratio used as the proxy of capital structure. They found that ROA, liquidity, size has positive and significant impact to the capital structure. While, age found to be significantly negative to debt to assets ratio. Growth, tangibility, and risk is not significant toward the capital structure.

Haryanto (2015) used Debt to Equity ratio to define the determinants of capital structure of 24 banks listed in Indonesia Stock Exchange during 2008 to 2013. The result showed that Size and NPL is positively significant to the capital structure while age is negatively significant with the capital structure. Growth, ROA, LDR are insignificant toward the capital structure.

Sheikh & Qureshi (2017) examined the determinants of capital structure for Islamic and conventional commercial banks in Pakistan from 2004-2014. Using Debt to Assets Ratio (DAR) as the proxy of capital structure, they found out that ROA and tangibility have a negatively significant relationship to the capital structure. While, size found to have a positive and significant impact to the capital structure. Earnings volatility and growth are insignificant to DAR.

3. Research Methodology

This research uses secondary data of commercial banks categorized as BUBA 3 and BUBA 4, BUBA 3 and BUBA 4 are bank which have a minimum core capital of 5 trillion rupiah. These bank is selected because it will have a systemic effect to the smaller size banks and will give huge impact to the economic condition (Anggono, 2017). The quarterly financial report which published in *Otoritas Jasa Keuangan* (OJK) site will be used in order to collect the necessary data. In order to provide meaningful, reliable, and most updated results, the author use the data for ten years period over the period from 2008 until 2017.

Table 1. Data of BUBA 3 and BUBA 4 as of December 2017

No.	Bank	BUBA	Tier 1 (In Million)	No.	Bank	BUBA	Tier 1 (In Million)
1.	BBRI	BUBA 4	154,668,699	11	NISP	BUBA 3	21,219,397
2.	BBNI	BUBA 4	89,765,390	12	BDMN	BUBA 3	28,219,060
3.	BMRI	BUBA 4	145,616,420	13	BTPN	BUBA 3	13,561,110
4	BBCA	BUBA 4	122,730,121	14	BNII	BUBA 3	16,766,581
5	CIMB	BUBA 4	34,285,916	15	PNBN	BUBA 3	29,045,449
6	BBTN	BUBA 3	18,726,949	16	BDBS	BUBA 3	7,831,526
7	BNLI	BUBA 3	16,072,407	17	BMZH	BUBA 3	7,869,682
8	MEGA	BUBA 3	12,072,553	18	BSMT	BUBA 3	7,872,802
9	BBKP	BUBA 3	5,037,584	19	BUOB	BUBA 3	10,945,777
10	BJBR	BUBA 3	8,458,884				

ICMEM

The figure below shows the objectives and the conceptual framework of this study. The research try to determine the relationships of profitability, risk, liquidity, capital adequacy, size, growth, tangibility, and efficiency to the capital structure which represented by Debt to Asset Ratio (Leverage Level).
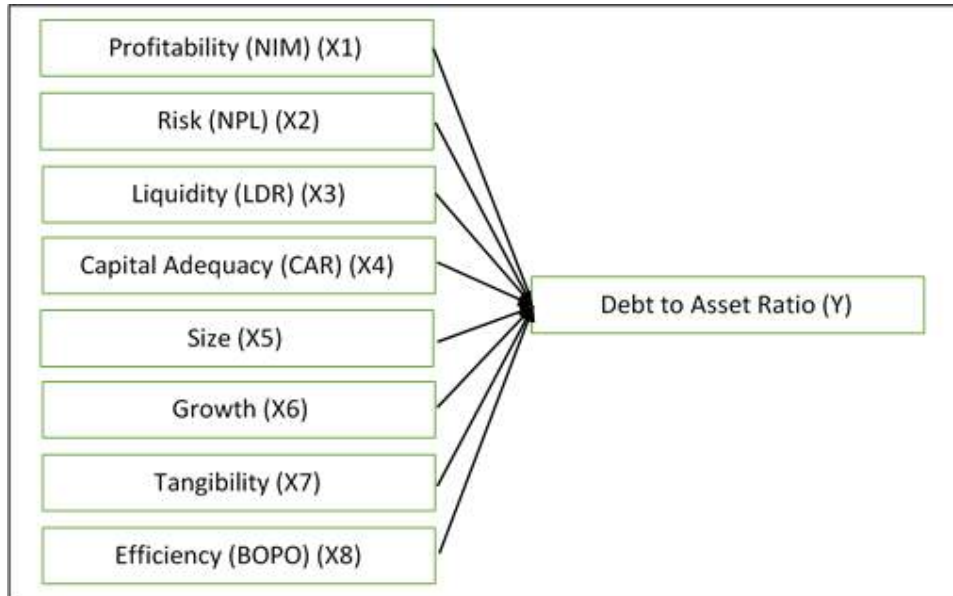
Figure 1. Conceptual framework

Here are the explanations about the variables being used in the research that covers the dependent and independent variables that the author use for analysing the determinants of capital structure in banking industries.

Table 2. Variable Concept and Operationalization

	Variables	Indicator	Measurement	Unit
Dependent	Capital Structure (Leverage Level)	Debt to Assets Ratio (DAR)	Total Liabilities/Total Assets	Ratio
Independent	Profitability	Net Interest Margin (NIM)	Net Interest Income/Average Earnings Asset	Ratio
	Risk	Non Performing Loan (NPL)	Non-performing loans/Total credits	Ratio
	Liquidity	Loan to Deposit Ratio (LDR)	Credits/Third-party fund	Ratio
	Capital Adequacy	Capital Adequacy Ratio (CAR)	Tier 1+Tier 2 Capital/Risk Weighted Assets	Ratio
	Size	Natural logarithm of total assets	Ln(Total Assets)	Ratio
	Growth	Assets Growth	(Current quarter Total Assets -Previous quarter Total Assets)/ Previous quarter Total Assets	Ratio
	Tangibility	Tangible Assets	Fixed Assets/Total Assets	Ratio
	Efficiency	*Beban Operasional/ Pendapatan Operasional (BOPO)*	Operating Expense/ Operating Income	

This research use panel data regression analysis using EViews 9 as a tool in order to find the objective of the study. Since this data is considering the time series and cross-section data, in result there are 760 observations by 19 commercial banks in 10 years from 2008-2017 with quarterly data.

Since there are some previous studies about this topic, the regression model will also adapted from the previous study such as Baltaci & Ayaydin, (2014); Haryanto, (2015); and Sheikh & Qureshi, (2017).The regression model with the variables described below:

$$DAR_{I,t} = \alpha_{I,t} + \beta_1 NIM_{I,t} + \beta_2 NPL_{I,t} + \beta_3 LDR_{I,t} + \beta_4 CAR_{I,t} + \beta_5 SIZE_{I,t}$$
$$+ \beta_6 GROWTH_{I,t} + \beta_7 TANG_{I,t} + \beta_8 BOPO + \varepsilon_{I,t}$$

Where:
$DAR_{I,t}$ = Debt to asset ratio for bank I in year t
$NIM_{I,t}$ = Net interest margin for bank I in year t
$NPL_{I,t}$ = Non performing loan for bank I in year t
$LDR_{I,t}$ = Loan to deposit ratio for bank I in year t
$CAR_{I,t}$ = Capital adequacy ratio for bank I in year t
$SIZE_{I,t}$ = Size of bank for bank I in year t
$GROWTH_{I,t}$ = Growth opportunity of bank for bank I in year t
$TANG_{I,t}$ = Tangibility ratio for bank I in year t
$BOPO_{I,t}$ = Operating expense to operating income for bank I in year t
$\alpha_{I,t}$ = Coefficient intercept
$\varepsilon_{I,t}$ = The error term for firm I in year t

4. Findings and Argument

The regression result revealed that there are 6 out of 8 independent variables which are having significant impact to the capital structure of the banks. Those are LDR, CAR, Size, Growth, Tangibility, and BOPO. It means that those 6 variables are the major factors being considered in choosing the capital structure of the banks. While NIM and NPL is insignificant to the leverage level. NIM, NPL, LDR, CAR, Size, and Tangibility found to be negatively related to the capital structure. The remaining variables; Growth and BOPO are positively correlated to the capital structure of the bank. The R-squared value for this research is 0.6932 which means that this model could reflect 69.32% of the capital structure while the remaining 30.68% might be influenced by other variables outside the system. The probability of f-statistics showed that it is lower than the significant value of 0.05, it means that all the independent variables used in the research are simultaneously have significant relationship with the capital structure of banking sector in Indonesia.

Table 3. Random Effect Model Regression Result

Dependent Variable : Debt to Assets Ratio			
	Coefficient	t-stat	Prob.
C	1.208389	26.44819	0.0000
NIM	-0.037301	-0.407261	0.6839
NPL	-0.016980	-0.294368	0.7686
LDR***	-0.016103	-2.931046	0.0035
CAR***	-0.466662	-21.51037	0.0000
SIZE***	-0.014576	-7.196316	0.0000
GROWTH***	0.024594	2.743346	0.0062

ICMEM

TANG***	-0.583136	-9.361223	0.0000
BOPO***	0.066595	5.522266	0.0000
R^2	0.693281		
Adj. R^2	0.690014		
Prob. F Stat	0.000000		

Based on the regression result, the regression model for this study is:

DAR = 1.20838868413 - 0.0161032478291*LDR - 0.466662266204*CAR - 0.014575648857*SIZE + 0.0245940673069*GROWTH - 0.583135775439*TANGIBLE + 0.0665949034425*BOPO + ε

Profitability of the bank that represented by NIM (Net Interest Margin) is not significantly correlated with capital structure. Decreased or increased in profitability has no impact on the capital structure because the characteristics of bank capital structure is different from capital structure in other industries, where the leverage level of the bank is usually higher because the debt in the form of third-party funds is the dominant source of funds. That is why no matter how much the profitability of the bank, the bank will always try to increase their third-party funds and re-channeled the money through credit because the profitability of bank is still dominated by interest income derived from interest on credit loans (Sari, Fadah, & Sukarno, 2013).

Non-Performing Loan (NPL) as the proxy of credit risk of the bank has insignificant impact to the capital structure. It means that risk is not a significant consideration for the bank in choosing their capital structure. Because if the bank is declared healthy by the regulator by being able to meet the minimum capital adequacy, then the bank will continue to be able to collect funds from the community and other financial institutions.

Liquidity that represented by LDR (Loan to Deposit Ratio) has negatively significant impact to the capital structure of bank. The higher the LDR ratio means, the lower the liquidity of the bank because the bank lends all their funds and reduce their available cash. The negative correlation between LDR and debt ratio indicates that the higher the LDR or, the lower the liquidity will result in the lower the debt ratio of the bank. On the other words, liquidity has positive effect to the leverage level of bank. Trade-off theory stated that banks with higher liquidity face lower bankruptcy costs and are more capable of raising debt.

Capital adequacy in this research is represented by CAR (Capital Adequacy Ratio), reflecting from the result of the regression, CAR has a significant and negative relationship with the capital structure. This can be happened because when the bank has enough capital to finance their business activities, they will use their internal funds first rather than using the external funds. This result is consistent with the pecking order theory which stated that bank's follow a hierarchy of financing sources with retained earnings at the first, followed by debt and external equity as the last choice of financing.

Bank size found to be significantly negative to the bank's capital structure. It means that larger bank will use lower level of debt and smaller bank will use higher level of debt. According to Al-Mutairi & Naser (2015) the smaller bank regarding total assets will use more external funds because, in fact, small banks have lower variance of earnings and the debt capital suppliers seem willing to lend to smaller banks because they are considered to have a lower risk level. Pecking order seems to be the most suitable theory to explain the relationship between bank size and capital structure due to the prediction that large banks suffer less information asymmetric problem, thus they will choose to use more internal equity comparing to debt.

Growth opportunity has a positive and significant impact toward the capital structure of bank. It reflects that bank with high growth opportunity will tend to increase their leverage level because the internal funds is limited and when it is insufficient to finance their investment, the bank require external fund through debt financing (Al-Mutairi & Naser, 2015). The result of this study also confirms the concept that banks which have growing opportunity also having reasonable opportunity to gain capital easily due to the high reputation or low perceived risk through high level of diversification. This findings is also supported by the pecking order theory which stated that banks will issue debt before external equity when the internal resources of growing banks are insufficient to finance the projects (Gocmen & Sahin, 2014).

Tangibility found to be negatively significant to the capital structure of the bank. Tangibility in this study measured by the ratio of fixed assets to total assets. This negative relationship shows that if bank has more fixed assets that can be used as collateral will tend to issue equity than debt, due to lower information asymmetry, therefore lower cost of

ICMEM

equity. This study result is consistent with pecking order theory which recognizes the negative relationship between tangible assets and leverage level.

Efficiency which represented by BOPO (Operational Expense over Operational Income) revealed to has a positive and significant relationship with the capital structure. According to the result of this research, BOPO has a positive and significant impact to the debt ratio, which means the higher the BOPO ratio (the less efficient the bank) will result in the higher the leverage level of the bank. On the other words, efficiency has a negative correlation with the bank's leverage level. The possible explanation for this result is when bank is working efficiently in managing their cost to get more profit, they can use the income as capital, and therefore, the bank will use less debt (Fitrianto & Mawardi, 2006).

6. Conclusions

This research aims to examine the determinants of capital structure in Indonesian banking sector over the period of 2008 until 2017. The sample used in the study consists of the commercial banks in Indonesia categorized as BUBA 3 and BUBA 4 (Bank Unit Business Activities) which are having the biggest tier 1 capital. The methodology used in the research is the author uses panel data regression with statistical software of EViews 9.0 version. Random Effect Model (REM) is selected as the method to analyze the data. The result found out that capital adequacy, size, tangibility, and efficiency are having negatively significant relationship to the capital structure. While liquidity and growth found to be positive and significantly correlated to the capital structure of the bank. Overall, pecking order theory becomes the most suitable prediction in explaining the capital structure decision made by the banks in Indonesia. Management of bank should consider and maintain the debt ratio. Since it is one of the indicator of the bank's condition. Management could pay more attention especially on the independent variables that has significant impact to the capital structure which are LDR, CAR, Size, Growth, Tangibility, and BOPO. They should maintain those factors efficiently in order to get the optimal capital structure that will give benefit to the bank. Further research could use other variables such as macroeconomics factors, since it might affect the capital structure of the bank.

References

Al-Fayoumi, N., & Abuzayed, B. (2009). Ownership structure and corporate financing. *Applied Financial Economics, Vol. 19 No. 24*, 1975-1986.

Al-Mutairi, A., & Naser, K. (2015). Determinants of Capital Structure of Banking Sector in GCC: An Empirical Investigation. *Asian Economic and FInancial Review*, 959-972.

Amidu, M. (2007). Determinants of capital structure of banks in Ghana: an empirical approach. *Baltic Journal of Management, Vol. 2 No. 1*, 67-79.

Anggono, H. (2017). The determinant factors of asset and liability management and the bank performance: empirical study on foreign exchange commercial banks in Indonesia from 2008 to 2013. *International Journal Business and Globalisation Vol. 19, No. 4*, 512-527.

Baltaci, N., & Ayaydin, H. (2014). Firm, Country and Macroeconomic Determinants of Capital Structure: Evidence from Turkish Banking Sector. *Emerging Markets Journal, Vol. 3 No. 3*, 47-58.

Bitar, M., Hassan, M. K., & Hippler, W. J. (2017). The determinants of Islamic bank capital decisions. *Emerging Markets Review*.

Cassar, G., & Holmes, S. (2003). Capital structure and financing of SMEs: Australian evidence. *Accounting and Finance, Vol. 43 No. 2*, 123-147.

Chakraborty, I. (2013). Does Capital Structure Depend On Group Affiliation? An Analysis Of Indian Firms . *Journal of Policy Modeling 35*, 110-120.

Dang, V. (2013). Testing Capital Structure Theories Using Error Correction Models: Evidence From The UK, France And Germany. *Applied Economics 45*, 171-190.

Deloof, M., & Overfelt, W. (2008). Were modern capital structure theories valid in Belgium before world war I? *Journal of Business Finance & Accounting Vol. 35 Nos 3/4*, 491-515.

Fauziah, F., & Iskandar, R. (2015). Determinants of Capital Structure in Indonesia Banking Sector. *International Journal of Business and Management Invention*, 36.

Fitrianto, H., & Mawardi, W. (2006). Analisis Pengaruh Kualitas Aset, Likuiditas, Rentabilitas, Dan Efisiensi Terhadap Rasio Kecukupan Modal Perbankan Yang Terdaftar Di Bursa Efek Jakarta. *Jurnal Studi Manajemen & Organisasi, Vol. 3, No. 1*.

Galai, D., & Masulis, R. (1976). The Option Pricing Model and The Risk Factor of Stock. *Journal of Financial Economics 3 (1-2)*, 53-81.

ICMEM

Gitman, L. J., & Zutter, C. J. (2015). *Principles of Managerial Finance 14th Edition.* New York: Pearson Education.

Gocmen, T., & Sahin, O. (2014). The Determinants of Bank Capital Structure and the Global Financial Crisis: The Case of Turkey. *Journal of Applied Finance & Banking, vol. 4, no. 5*, 55-67.

Haryanto, S. (2015). Determinan Struktur Modal Bank. *Management Dynamics Conference*.

Jensen, C., & Meckling, H. (1976). Theory of the Firm: managerial behavior. *Journal of Financial Economics*.

Lindgren, C., Garcia, G., & Saal, M. (1996). Bank Soundness and Macroeconomics Policy. *International Monetary Fund*.

Modigliani, F., & Miller, M. (1958). The Cost of Capital, Corporate Finance and Theory of Investment. *The American Economic Review, 40*(3), 261-297.

Modigliani, F., & Miller, M. (1963). Corporate income taxes and cost of capital : A correlation. *American Economics Review*, 433-443.

Muhammad. (2014). The Impact of Capital Structure on Firm Performance: Evidence. *Journal of Industrial Distribution & Business , 5(2)*, 13-20.

Myers. (1984). The Capital Structure Puzzle. *Journal of Finance, 39(3)*, 575-592.

Myers, S., & Majluf, N. (1984). Corporate Finance and Investment Decisions when Firms have Information that Investors do not have. *Journal of Financial Economics. 13*, 187-221.

Ozkan, A. (2001). Determinants of Capital Structure and Adjustment to Long Run Target: Evidence From UK Company Panel Data. *Journal of Business Finance & Accounting*, 175-198.

Raharjo, P. G. (2014). Determinant of Capital Ratio: A Panel Data Analysis on State-Owned Banks in Indonesia. *Bulletin of Monetary, Economics and Banking, 16*(4), 370-386.

Ridloah, S. (2010). Faktor Penentu Struktur Modal: Studi Empirik pada Perusahaan Multifinansial. *Jurnal Dinamika Manajemen*.

Rime, B. (2001). Capital Requirements and Bank Behaviour: Empirical evidence for Switzerland. *Journal of Banking and Finance 25*, 789-805.

Saputra, T., Achsani, N. A., & Anggraeni, L. (2015). The Effect of Capital Structure on Firm Performance : Empirical Evidence from the Indonesian Financial Industry. *International Journal of Business and Management Invention*, 57.

Sari, N. K., Fadah, I., & Sukarno, H. (2013). Determinan Struktur Modal Bank. *Ekuitas: Jurnal Ekonomi dan Keuangan - Vol 17, No. 1*, 71-88.

Sheikh, N. A., & Qureshi, M. A. (2017). Determinants of capital structure of Islamic and conventional commercial banks Evidence from Pakistan. *International Journal of Islamic and Middle Eastern Finance and Management Vol. 10 No. 1*, 25-41.

Siringoringo, R. (2012, July). Karakteristik dan Fungsi Intermediasi Perbankan Di Indonesia. *Buletin Ekonomi Moneter dan Perbankan*.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Revaluation of Strategic Alliance in Insurance Sector (Case Study at PT Penyedia Jasa Indonesia)

Mega Putri[a*], Taufik Faturohman[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung*

Abstract

Alliancing with PT Okta Insurance* that provides life insurance and micro insurance products, since May 2017, PT Penyedia Jasa Indonesia* has been a referral partner that provides space and market crowd to help promote insurance products. However, the strategic business unit (SBU) formed, hasn't generated profit in 2017 because the SBU was only operated for 10%. The total number of active providing assurance consultant (PAC) was 520 personnel. In order to find out whether the SBU with an initial investment of IDR 425.000.000 will be acceptable or not to continue, a re-evaluation was needed. The results of the financial projection analysis were acceptable, where the net present value (NPV) was IDR 2.564.481.280; the payback period (PBP) was 3,60 years; the internal rate of return (IRR) was 30,71%, more than the weighted-average cost of capital or WACC (13,60%); and the profitability index (PI) was 6,03. The assumption that affected the NPV and IRR results the most was the PAC growth of life insurance that applied for the growth of the total number of active PAC for the regular insurance product. Considering the fluctuations of the assumptions, it would be better for PT Penyedia Jasa Indonesia to extend the 2-year-contract.

Keywords: Re-Evaluation; Life Insurance; Micro Insurance; Sensitivity Analysis; Monte Carlo Simulation

1. Introduction

In the last five years, the average growth of gross premium was about 19,76% (using the compounded annual growth rate or CAGR). If the gross premium in 2016 is compared to the Indonesian population in the same period, which was around 258,7 million people, the insurance density in 2016 was IDR 1.398.454. Therefore, on average, each Indonesia person spent around IDR 1,40 million on insurance premium in 2016. Meanwhile, the insurance penetration, as measured by the ratio of gross premium to GDP, increased by 0,36% from 2,56% in 2015 to 2,92% in 2016.

The biggest contribution to the gross premium of the insurance industry in 2016 was the gross premium of life insurance (46,2%). Then, it followed by those agencies administering of social insurance (32,1%); the gross premium of non-life and reinsurance companies (18,4%); and the premium collected by companies administering of mandatory insurance (3,3%). PT Penyedia Jasa Indonesia saw this opportunity to expand their business in financial services.

One of the solutions for PT Okta Insurance to overcome this barrier is possibly by establishing a strategic cooperation with a company that can be an effective distribution channel, such as PT Penyedia Jasa Indonesia. Alliancing with PT Okta Insurance that provides life insurance and micro insurance products, since May 2017, PT Penyedia Jasa Indonesia has been a referral partner that provides space and market crowd to help promote the insurance products under the permission and supervision of OJK. However, the strategic business unit (SBU), formed since the alliance, hasn't generated profit in 2017 because the realization of the SBU was only in the last 2 months with a few number of employees assigned to this SBU and no marketing through this SBU.

---

* Corresponding author.
   E-mail address: mega.putri@sbm-itb.ac.id

ICMEM

Company Profile

PT Penyedia Jasa Indonesia is a company with a large network of up to 4.800 technical implementation units (TIU) via online. The number of point of sales for the Company reaches up to 58.700 units (contains TIU, agents, mobile services, etc) spread across the nation. PT Penyedia Jasa Indonesia has a total of 1 head office and 11 regional offices. The Company provides persistent, accurate, and fast products/services with competitive prices. The Company also provides excellence services as the first customers' choices. The Company is reliable to deliver what customers want or need in order to meet or exceed customers' specified standards. The Company constantly striving to provide a better service for the key stakeholders.

Nowadays, there are a lot of companies that are interested in developing a strategic alliance with PT Penyedia Jasa Indonesia because of the large network's power that they have, in Indonesia. Other than that, the trusts from their loyal customers and the Indonesian public who mostly have used the Company's products/services, make the Company to be considered as one of the effective distribution channels in Indonesia because any product/service that the Company offers can appeal more to the potential customers. For an insurance company like PT Okta Insurance, such marketing approach can significantly contribute to the overall increase in the Company's insurance premium payment because of the faster awareness creation regarding the insurance necessity and significance in developing insurance markets in Indonesia.

To date, PT Penyedia Jasa Indonesia operates based on three core businesses such as mail and parcel delivery services; financial services; logistics; and additional retail business. The partial organizational structure of the Company is as follows.
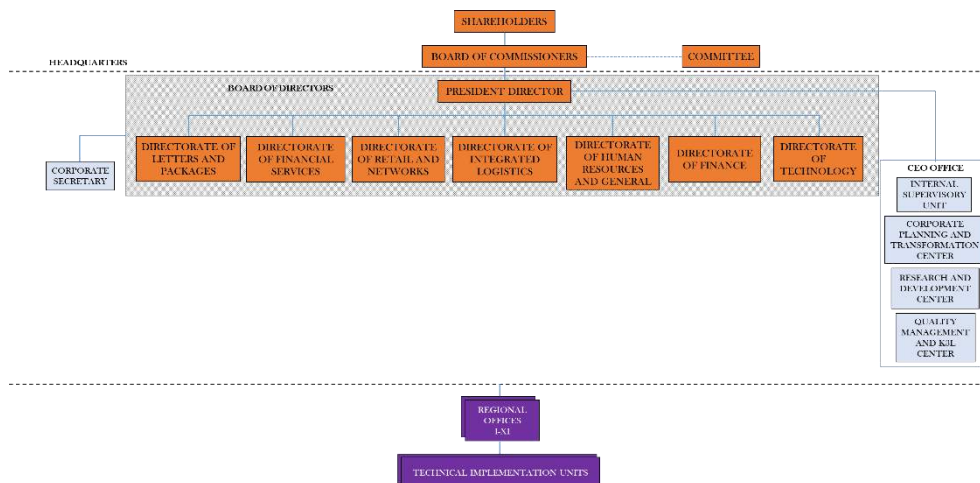
Fig. 1. The Partial Organizational Structure of PT Penyedia Jasa Indonesia

As a profit organization, PT Penyedia Jasa Indonesia owns both revenue and cost centre. For the revenue centre, its activities directly generate income for the Company. Whereas for the cost centre, its activities support the business process but indirectly contribute to the profit creation. One of the revenue centres in PT Penyedia Jasa Indonesia is its Financial Services Directorate (shown in **figure 2**) that consists of four divisions: Fund Management and Banking Partnership; Online Payment System Point (SOPP); Remittance; and Product Management. The section in the Financial Services Directorate that handles the alliance of the Company with other companies is the Alliance Development Section, Product Management Division, as the unit of analysis in this research. For now, this strategic alliance with PT Okta Insurance is in the form of a strategic business unit (SBU) and still considered as the cost centre. This means that it only contributes indirectly to the profit creation, but not directly generates income for PT Penyedia Jasa Indonesia. The structure of the unit of analysis is shown below.

ICMEM
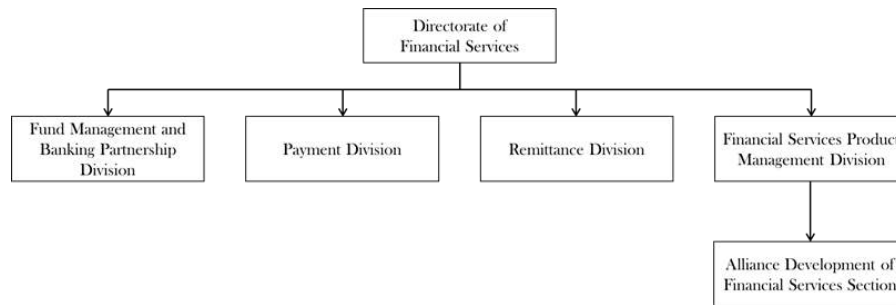
Fig. 2. Alliance Development of Financial Services Structure

Research Objectives

In general, the objective of this research was to conduct investment analysis to determine whether the strategic alliance in insurance sector between PT Penyedia Jasa Indonesia and PT Okta Insurance that has been happening since May 2017, with initial investment of IDR 425 million in 2017 by PT Penyedia Jasa Indonesia, will be acceptable or not to continue in the next years. In specific, the objectives of this research were as follows.
1. To re-evaluate the financial projection of the SBU formed after the strategic alliance between PT Penyedia Jasa Indonesia's and PT Okta Insurance since May 2017, using the net present value (NPV), payback period (PBP), internal rate of return (IRR), and profitability index (PI) method.
2. To assess the risk of the fluctuations of the assumptions that affect the re-evaluation of this SBU with sensitivity analysis and Monte Carlo simulation using Crystal Ball software, in order to decide whether to extend the 2-year-contract or not.
   There were several research questions to simplify the objectives of this research as follows.
1. What are the results of the re-evaluation of the SBU's financial projection?
2. What factor affects the re-evaluation results the most? Considering the fluctuations of the factors, what will happen to the SBU?

Research Limitations

Limitations of this research were as follows.
1. The research focused on the re-evaluation of financial aspects. Problems with other aspects were mentioned, but not explained in detail.
2. The data of revenue in 2017 and projected revenue in 2018 of this SBU were obtained from PT Penyedia Jasa Indonesia and then adjusted using the growth of national life insurance and micro insurance industries.
3. Risk management aspect was discussed, but only related to the impact of the assumptions to the re-evaluation.
4. The assumptions were obtained from secondary data and interview.

2. Methods

Conceptual Framework

The methodology in conducting this research was the combined method where the types of data used were qualitative and quantitative data. Both the qualitative and quantitative data were obtained from the interviews with the assistant manager of PT Penyedia Jasa Indonesia involved in this project and the manager of marketing division of PT

ICMEM

Okta Insurance. Both the qualitative data and quantitative were also obtained from secondary data through online research.

The problem that was happening in the strategic business unit (SBU) of the strategic alliance between PT Penyedia Jasa Indonesia and PT Okta Insurance was first identified through an interview with the assistant manager from PT Penyedia Jasa Indonesia who is involved in this project and the spreadsheet data given. After obtaining data from both the interview and spreadsheet data, business situation analysis using both PEST (Politic/Legal, Economic, Social/Environment, and Technology) analysis and industry analysis/Porter's Five Forces were conducted based on online research alongside the root cause analysis (RCA) and another interview with the manager of the marketing division of PT Okta Insurance to strengthen the analysis. Root cause analysis (RCA) is an analytic process that is designed to help identify the underlying factors that have contributed to or maybe have directly caused a problem (Staugaitis, 2002). Referring to both the primary data (from PT Penyedia Jasa Indonesia and PT Okta Insurance) and the secondary data, three assumptions were developed to make the financial projection for the year 2018-2022. After that, the financial projection was analyzed using the net present value (NPV), payback period (PBP), internal rate of return (IRR), and profitability index (PI) method.

Sensitivity analysis was conducted to find out what factor (assumption) affects the results of NPV and IRR the most. Other than that, Monte Carlo simulation was conducted to find out the certainty of the NPV and IRR results to be accepted by the Company to consider whether to extend the 2-year-contract or not. The results of both the sensitivity analysis and Monte Carlo simulation were then concluded so that the recommendation and implementation plan were able to be developed. The conceptual framework of this research is shown below.
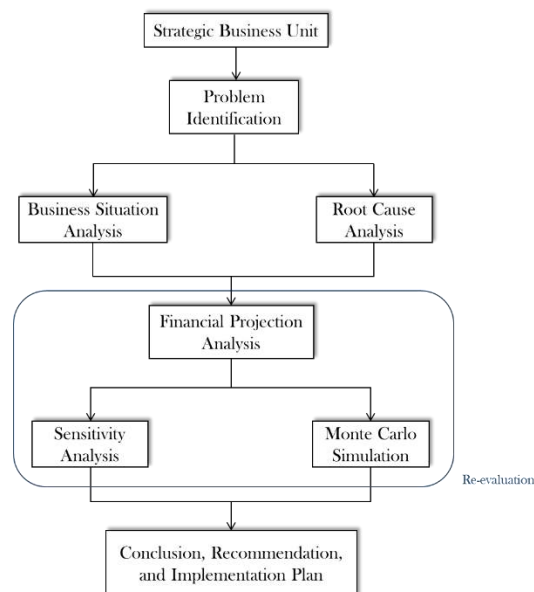
Fig. 3. Conceptual Framework

Net Present Value

Net present value or NPV is a sophisticated investment evaluation method which is calculated by subtracting the initial project investment from the present value of its cash inflows discounted at a rate (usually the weighted-average cost of capital or WACC) which equal to the company's cost of capital (Gitman and Zutter, 2012). The initial investment of this project in 2017 was IDR 425 million. The NPV formula is shown below.

$$NPV = Present\ Value\ of\ Cash\ Inflows - Initial\ Investment$$

ICMEM

$$NPV = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} - CF_0$$

Where,

NPV : Net present value
CF_t : Cash flow as long as the project life until the year t
r : Discount rate
t : Project life
CF_0 : Initial investment

Payback Period

Payback period or PBP is the amount of time required for the company to recover its initial investment in a project, as calculated from the cash inflows (Gitman and Zutter, 2012). The PBP formula is shown below.

$$PBP = \frac{Total\ Investment}{Annual\ Cash\ Inflow} \times 1\ Year$$

The basic rule of this method is to accept if PBP is less than or equals to the timeline of the project or in other words, it is better if PBP is as fast as possible.

Internal Rate of Return

Internal rate of return or IRR is the discount rate that equates the NPV of the investment opportunity with zero because the present value of cash inflows equals to the initial investment (Gitman and Zutter, 2012). The IRR formula is shown below.

$$C_0 = \sum_{i=1}^{r} \frac{C_i}{(1+IRR)^i}$$

The basic rule of this method is as follows.

- Accept the project if IRR > WACC (Weighted-Average Cost of Capital)
- Reject the project if IRR < WACC (Weighted-Average Cost of Capital)

Profitability Index

Profitability index or PI is the present value of cash inflows divided by the initial cash outflow (Gitman and Zutter, 2012). The PI formula is shown below.

$$PI = \frac{PV\ of\ Future\ Cash\ Inflow}{Initial\ Investment}$$

The basic rule of this method is as follows.

- Accept the project if PI > 1
- Reject the project if PI ≤ 1

Weighted-Average Cost of Capital

Weighted-average cost of capital or WACC is a tool to determine the future expected cost of project related with the source of fund of the project. The WACC formula is shown below.

$$WACC = (Ke\ x\ We) + Kd\ (1 - T)\ x\ Wd$$

ICMEM

Where,

Ke   : Market cost of equity
Kd   : Market cost of debt
We   : Weight capital proportion of equity market value
Wd   : Weigh capital proportion of debt market value net from the cash flow
T   : Corporative normative tax rate

  Referring to the annual report of PT Penyedia Jasa Indonesia in 2016, the Company's capital structure is as following.

Table 1. Capital Structure of PT Penyedia Jasa Indonesia

Capital	Year 2016	Percentage
Equity	IDR 1.054.246.430.721	**57%**
Long-Term Liability	IDR 794.745.137.525	**43%**
Total	**IDR 1.848.991.570.262**	100%

Since this SBU is one of the Company's projects, the assumption of the weight capital proportion of equity market value (We) used for this SBU was 53% and the weight capital proportion of debt market value (Wd) used for this SBU was 47%.

  The cost of equity calculation is using the capital asset pricing model (CAPM) with the formula shown below.

$$Re = Rf + (Rm - Rf) \, x \, \beta$$

Re   : Required rate of the return on equity
Rf   : Risk-free rate
Rm   : Market risk premium
β : Levered beta

The risk-free rate for the Company is obtained from the yield of Indonesian government bond for 10 years which was 7,05%[1].The beta that was used for the Company was the beta of emerging markets from Damodaran for financial services (non- bank and insurance) industry, which was 0,86[2]. The equity risk premium (Rm-Rf), was also obtained from Damodaran which was 7,62%[3].

  The after-tax cost of debt formula is shown below.

$$Ki = Kd \, (1 - T)$$

Ki   : After-tax cost of debt
Kd   : Cost of debt
T   : Tax rate

The cost of debt was based on the interest rate of the Bank that a company takes a loan from, which was based on the maximum interest rates of several state-owned enterprise (SOE) banks in Indonesia that the Company usually takes a loan from, which was 10%. The tax rate used by the Company was 25% based on the applicable corporate income tax rate in Indonesia[4].

ICMEM

3. Results and Discussion

Business Situation Analysis

Based on the analysis of the politic/legal aspect in the Indonesian insurance industry, in January 2013, the Financial Services Authority of Indonesia (FSAI) or Otoritas Jasa Keuangan (OJK), had taken the role of insurance industry regulator in order to provide an adequate information for the customers. As a consequence of the low penetration of insurance market, OJK launched a micro insurance blueprint. Together with Asosiasi Asuransi Umum Indonesia (AAUI) or the Non-Life Insurance Association of Indonesia (NLIAI) and Asosiasi Asuransi Jiwa Indonesia (AAJI) or Life Insurance Association of Indonesia (LIAI), OJK has designed four basic micro insurance products for personal accident insurance, term life insurance, home fire insurance, and business interruption insurance. OJK sets the maximum premium price at IDR 50.000 per product and the benefits at IDR 50 million per customer. Other than that, since its initiation in January 2014, the BPJS Health of Badan Penyelenggara Jaminan Sosial (BPJS), the Indonesian Social Security Administering Body Health, would take on participants from the existing health insurance schemes for workers, the military, and the nationally-determined poor. (Republic of Indonesia, 2011).

Based on the analysis of the economic aspect in the Indonesian insurance industry, factors such as market structure, foreign investors, and financial development of economies might affect the demand for insurance in emerging markets like Indonesia. The industry growth is influenced by income level that affects the public awareness of insurance products. Micro insurance is proving to be one of the promising approaches to deepening the penetration of the insurance market in Indonesia.

Based on the analysis of the social/environment aspect in the Indonesian insurance industry, the reason that the penetration rates of insurance sector are still below other emerging markets might be because of the difficulty in reaching people across the vast geographic dispersion of some 17.000 islands. However, the development of micro insurance products in Indonesia might be one of the opportunity for the Company to penetrate to the remote areas by offering a lower premium.

Based on the analysis of the technology aspect in the Indonesian insurance industry, the first and fifth strategy of OJK's five-point strategic plan for 2018 are regarding the use of technology. The first strategy will involve the use of an integrated surveillance application system, analysis of qualitative, and quantitative data including the real-time and accurate analysis of risk and calculation of financial ratios. Meanwhile, the fifth strategy will involve the utilization of FinTech development in the insurance industry (InsurTech) that has facilitated the access to other financial services.

Based on the industry analysis using Porter's Five Forces, the threat of new entrants, the bargaining power of suppliers, the bargaining power of buyers, and the threat of substitutes were all assessed as moderate. On the other hand, the intensity of rivalry among competitors was assessed as high. However, since the competitor analysis wasn't conducted in this research, the market share of PT Okta Insurance wasn't able to be identified.

Root Cause Analysis

The tools used for the root cause analysis (RCA) was 5-whys. 5-whys is a simple problem solving tools that helps analysts to get to the root of the problem quickly. The result of the RCA is shown in **figure 4** below.

ICMEM

WHY 1#	- - - - -	The management team couldn't decide what to do when the 2-year-contract ends
WHY 2#	- - - - -	The SBU was not profitable in 2017
WHY 3#	- - - - -	The total revenues was only IDR 780 million in 2017
WHY 4#	- - - - -	The total premium payment was only IDR 2.6 billion in 2017
WHY 5#	- - - - -	The realization of the SBU in 2017 was only in the last 2 months with a few number of employees assigned and no marketing through this SBU

Fig. 4. Root Cause Analysis

Financial Projection Analysis

All the values for the assumptions were set around the average values of each historical data. The average values were used, considering the fact that in the industry analysis of the insurance industry in Indonesia, threat of new entrants, bargaining power of suppliers, bargaining power of buyers, and threat of substitutes were all assessed as moderate.

For rewards from regular insurance, the average number of active PAC/month in 2018 was targeted to be 609 personnel with 500 personnel in June 2018. PAC growth of life insurance was assumed to be 20% per year. It was based on the historical data of life insurance industry growth in Indonesia and the estimated growth in the next years which was 10-30%. This assumption was applied to the growth of the total number of active PAC. For rewards from micro insurance, the target average number of active PAC/month in 2018 which was 203 personnel (equals to a total of 1.421 personnel in the year 2018). PAC growth of micro insurance was assumed to be 34% per year. It was based on the historical data of micro insurance industry growth in Indonesia. This assumption was applied to the growth of the total number of active PAC. The data is shown in the following **table 2** and **table 3**.

Table 2. PAC: Regular Insurance (Personnel)

Providing Assurance Consultant	2017	2018	2019	2020	2021	2022
Total Number of Active PAC	520	7.308	8.770	10.524	12.628	5.051
Average Number of Active PAC/Month		609	731	877	1.052	1.263
Technical Implementation Unit (TIU)		*203*	*250*	*300*	*359*	*431*

Table 3. PAC: Micro Insurance (Personnel)

Providing Assurance Consultant	Total Number of Active PAC				
	2018	**2019**	**2020**	**2021**	**2022**
Premium IDR 5.000	1.421	3.264	4.374	5.861	2.618
Premium IDR 10.000	711	1.633	2.189	2.933	1.310
Premium IDR 25.000	356	818	1.096	1.468	656

Premium IDR 50.000	178	409	548	734	328

For rewards from the 2nd year, the percentage of continuous premium was assumed to be 75% of rewards from regular insurance from the previous year. It was based on the historical data on the percentage of continuous premium/first-year premium in Indonesia. This assumption was applied to the percentage of 2nd-year rewards. Based on the contract with PT Okta Insurance, this strategic business unit (SBU) gets 30% rewards from the regular insurance total premium payment of IDR 5.000.000/PAC/month (one premium payment is IDR 500.000), which equals to IDR 1.500.000. Meanwhile, this SBU only gets 10% rewards from the micro insurance total premium payment for all premiums (IDR 5.000, IDR 10.000, IDR 25.000, and IDR 50.000). The three rewards contributed to the total revenues projection is shown in **table 4** below.

Table 4. Total Revenues Projection (in Million IDR)

Revenues Stream	2017	2018	2019	2020	2021	2022
Rewards from Regular Insurance	780	10.962	13.154,4	15.785,3	18.942,3	7.576,9
Rewards from the 2nd Year	-	585	8.221,5	9.865,8	11.839	4.735,6
Rewards from Micro Insurance						
Premium IDR 5.000	-	53,3	122,4	164	219,8	98,2
Premium IDR 10.000	-	35,6	122,5	164,1	220	98,2
Premium IDR 25.000	-	44,5	153,3	205,5	275,3	123
Premium IDR 50.000	-	44,5	153,3	205,5	275,3	123
Total Rewards from Micro Insurance (IDR)	0	177,9	551,5	739,1	990,4	442,4
Total Revenues	780	11.724,9	21.927,4	26.390,2	31.771,7	13.938,8

The total of revenues projection affected the income statement projection (see **appendix A.1**) alongside the capital expenditures (CAPEX) and operational expenditures (OPEX) of the strategic business unit (SBU). The depreciation expense of the CAPEX was calculated under the straight-line method that divided the depreciable amount of the fixed asset by the depreciable life of the asset. Since the contract is for two years, the SBU's CAPEX and the depreciable life of the asset were made only for two years but are possible to be used up to 5 years. The initial investment of IDR

ICMEM

425 million was used for CAPEX in 2017. Meanwhile, the OPEX of this SBU contains the rewards for the regional or technical implementation units, operational costs, human resources costs, and marketing costs.

After the income statement was projected (see **appendix A.1**), the cash flow was able to be projected as well (see **appendix A.2**). In order to calculate the discounted cash flow in the cash flow projection, the weighted-average cost of capital (WACC) calculation is shown in the following **table 5**.

Table 5. WACC Calculation

Funding	
Equity (We)	57%
Debt (Wd)	43%
Cost of Equity	
Risk-Free Rate (Rf)	7,05%
Equity Risk Premium (Rm-Rf)	7,62%
Beta (β)	0,86
Ke	**13,60%**
After-Tax Cost of Debt	
Cost of Debt (Kd)	10,00%
Tax Rate (T)	25%
After Tax Cost of Debt (Ki)	**7,50%**
WACC [(Ke x We) + (Ki x Wd)]	**10,98%**

Using the projected cash flow, the financial projection analysis was done in order to re-evaluate the financial projection of the SBU. The results obtained from all methods, net present value (NPV), payback period (PBP), internal rate of return (IRR), and profitability index (PI) were all acceptable, as shown in **table 6** below.

Table 6. Results: Financial Projection Analysis

No.	Method	Result	Description
1	NPV (IDR)	3.171.928.184	NPV > 0, acceptable
2	PBP (years)	3,60 (~3 years 7 months 5 days)	PBP < project timeline, acceptable
3	IRR (%)	30,71	IRR > WACC (13,60%), acceptable
4	PI	7,46	PI > 1, acceptable

Sensitivity Analysis

After the financial projection analysis, the sensitivity analysis was conducted using the Crystal Ball software, to find out what factor (assumption) affects the results of NPV and IRR the most. The assumptions were based on historical data. Since the historical data of these assumptions were limited, the triangular distribution was used to analyze which assumption gives the most impact to the NPV and IRR results. The likeliest, maximum, and minimum values as the inputs are shown in **table 7** below.

Table 7. Inputs: Likeliest, Minimum, and Maximum Values

ICMEM

Assumption	Likeliest	Minimum	Maximum
PAC Growth of Life Insurance	20%	11%	26%
Percentage of Continuous Premium	75%	64%	89%
PAC Growth of Micro Insurance	34%	24%	44%

The minimum and maximum values for the PAC growth of life insurance were based on the historical data and the estimated growth in the next years. The minimum and maximum values for the percentage of continuous premium were also based on the historical data. However, the minimum and maximum values for the PAC growth of micro insurance were not based on the very limited historical data of micro insurance industry but the historical data of the overall insurance industry, where the minimum and maximum values are around ± 10% of the average value. The Tornado charts were then analyzed to determine the effects of the three assumptions on the results of NPV and IRR.

The base case condition was when the likeliest values of each assumption applied. The upside condition was when the maximum values of each assumption applied. Meanwhile, the downside condition was when the minimum value of each assumption applied.. Based on **table 8** below, when the downside condition of PAC growth of life insurance assumption happened (14,7%), both the NPV and IRR results were below the acceptable requirement. The NPV result was IDR 217.395.880, more than 0 and the IRR result was 12,54%, higher than the WACC which was 10,98%.

Table 8. Results: Sensitivity Analysis of NPV and IRR

Variable	NPV (IDR) *IRR*			Input		
	Downside	**Upside**	**Range**	**Downside**	**Upside**	**Base Case**
PAC Growth of Life Insurance= 20%	217.395.880 *12,54%*	5.174.937.508 *41,09%*	4.957.541.628 *28,56%*	14,7%	23,0%	19,2%
Percentage of Continuous Premium = 75%	1.550.134.830 *20,93%*	4.319.228.042 *37,91%*	2.769.093.211 *16,98%*	69%	83%	76%
PAC Growth of Micro Insurance 34%	2.720.775.621 *28,28%*	3.001.834.541 *29,85%*	281.058.920 *1,57%*	28,5%	39,5%	34,0%

The fluctuations of the assumptions gave different impacts to the NPV and IRR results. PAC growth of life insurance gave the most impact to the NPV and IRR results, while PAC growth of micro insurance the least impact to the NPV and IRR results. The Tornado charts were the following **figure 5** and **figure 6**.

ICMEM
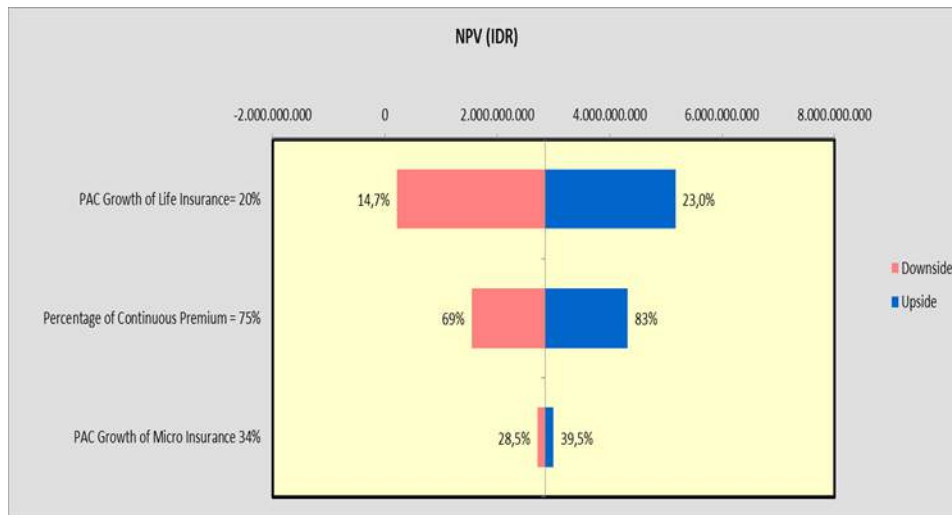
Fig. 5. Tornado Chart: Sensitivity Analysis of NPV
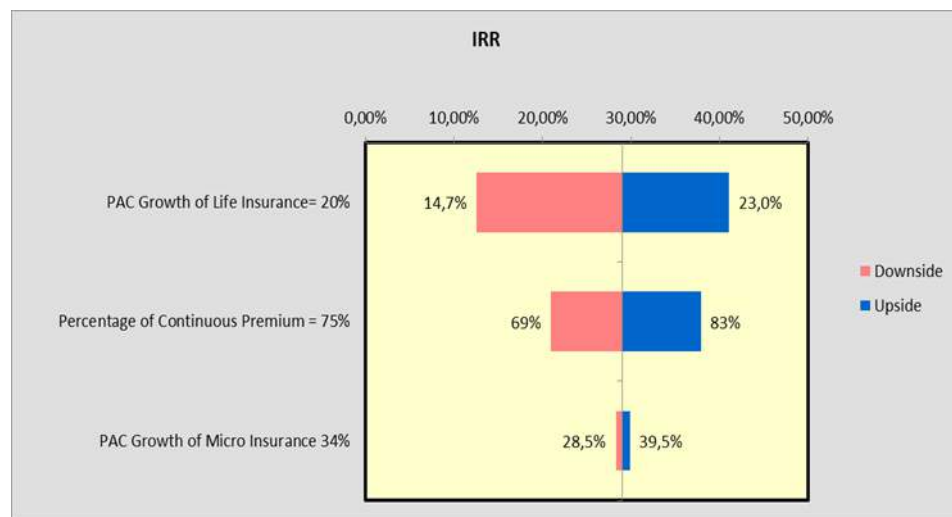
Fig. 6. Tornado Chart: Sensitivity Analysis of IRR

Monte Carlo Simulation

Alongside the sensitivity analysis discussed above, the Monte Carlo simulations were also conducted using the Crystal Ball software. After running the Monte Carlo simulations with the inputs (the likeliest, minimum, and maximum values) as same as the sensitivity analysis (shown in **table 7**) and 100,000 trials for each simulation, the result for the Monte Carlo simulation of NPV was as following.

ICMEM
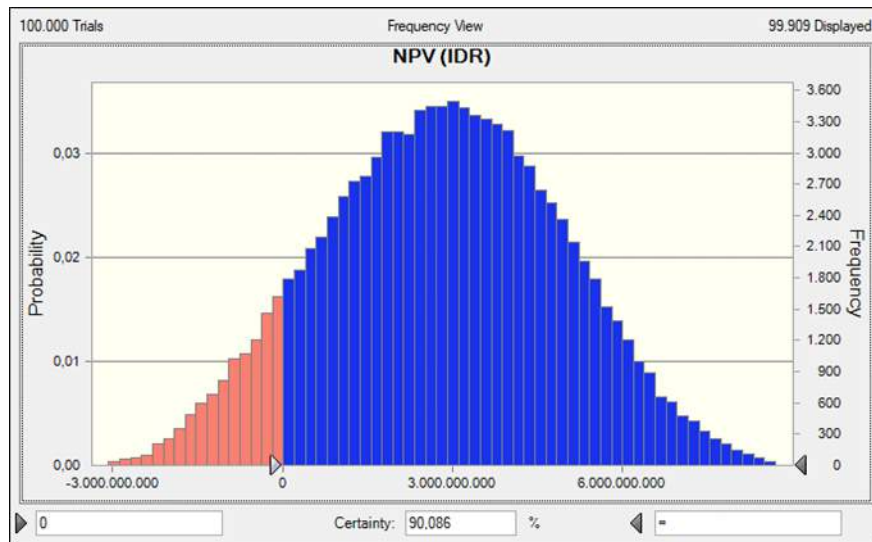
Fig. 7. Results: Monte Carlo Simulation of NPV

Based on **figure 7**, the certainty of the NPV to be more than 0 was 90,09%. This means that there was a higher a possibility for the project to be accepted to continue until 5 years. However, there was still a possibility for the NPV to be less than 0, because the minimum value of NPV was -IDR 3.636.757.107 as shown in **table 9** below.

Table 9. Results: Monte Carlo Simulation of NPV

Statistic	Forecast values
Base Case (IDR)	3.171.928.184
Mean (IDR)	2.810.891.688
Median (IDR)	2.836.530.450
Standard Deviation (IDR)	2.101.787.908
Minimum (IDR)	-3.636.757.107
Maximum (IDR)	9.745.057.732
Mean Std. Error (IDR)	6.646.437

Furthermore, the result for the Monte Carlo simulation of IRR was as following.

ICMEM
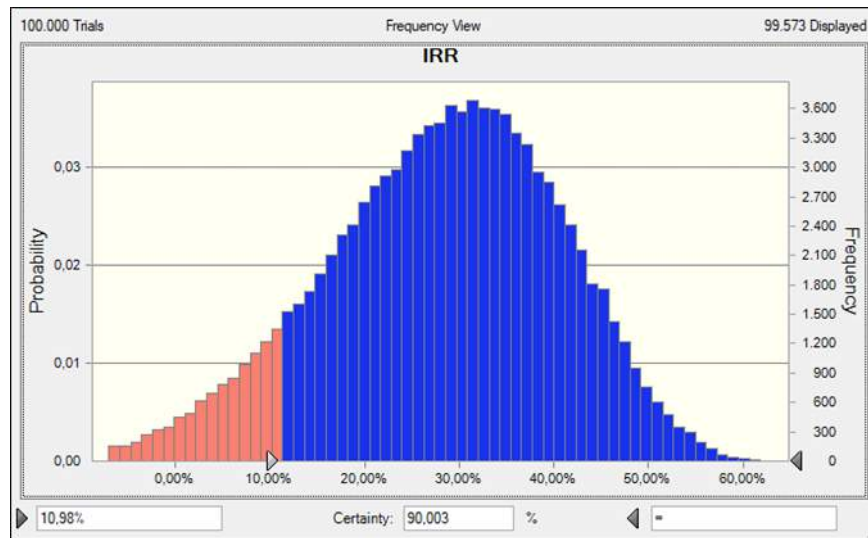
Fig. 8. Results: Monte Carlo Simulation of IRR

Based on **figure 8**, the certainty of the IRR to be more than the WACC (10,98%) was 90%. This means that there was a higher a possibility for the project to be accepted to continue until 5 years. However, based on **table 10** below, there was still a possibility for the IRR to be less than the WACC because the minimum value of IRR was -23,94%.

Table 10. Results: Monte Carlo Simulation of IRR

Statistic	Forecast values
Base Case	30,71%
Mean	27,98%
Median	28,93%
Standard Deviation	12,51%
Minimum	'-20,43%
Maximum	62,95%
Mean Std. Error	0,04%

Since there are only around 90% probabilities that the NPV and IRR results are acceptable, it would be better for the Company to mitigate the risks of the strategic business unit (SBU) for experiencing the 10% probabilities of the unacceptable results so that the SBU can continue in the next years. One of the actions to minimize the risks of not reaching the number of PAC projected is possibly by allocating more budget for the training costs so that there would be more agents from the Company who receive certification by the Life Insurance Association of Indonesia (LIAI) as insurance agents, in order to back up the shortage in the number of active PAC provided by PT Okta Insurance. There are some marketing strategies to reach the projected total revenues, such as sales campaign, sales event, and sales contest. Moreover, the Company should monitor risks in order to make sure the decisions remain valid. The Company

ICMEM

should continually reappraise the risks to ensure the risks have not change by probably conducting a re-evaluation every year.

4. Conclusions and Recommendation

Conclusions

1. The results of the re-evaluation of the SBU's financial projection were all acceptable. The results were as follows.
   a. The net present value (NPV) obtained was IDR 3.171.928.184, more than 0.
   b. The payback period (PBP) obtained was 3,60 years or around 3 years, 7 months, and 5 days, less than the project timeline which was 5 years.
   c. The internal rate of return (IRR) obtained was 30,71%, higher than the weighted-average cost of capital or WACC (10,98%).
   d. The profitability index (PI) obtained was 7,46, higher than 1.
2. The factor that affected the NPV and IRR results the most was the assumption of the providing assurance consultant (PAC) growth of life insurance. This assumption was applied to the growth of the total number of active PAC for the regular insurance product. Considering the fluctuations of the factors, it would be better for PT Penyedia Jasa Indonesia to extend the 2-year-contract to 5 years.

Recommendation

PT Penyedia Jasa Indonesia should extend the 2-year-contract of the strategic alliance with PT Okta Insurance until May 2022, in order to gain profit from the SBU. Since the assets of this SBU can actually still be useful after 2 years, the Company should negotiate to not invest more for CAPEX when the contract extension between both parties is being discussed.

Acknowledgements

ICMEM

Appendix E. Financial Projection

A.1. Income Statement Projection

Income Statement Projection (in IDR)

No	Account	2017	2018	2019	2020	2021	2022
	Revenues						
1	Rewards from Regular Insurance	780.000.000	10.962.000.000	13.154.400.000	15.785.280.000	18.942.336.000	7.576.934.400
2	Rewards from the 2nd Year	-	585.000.000	8.221.500.000	9.865.800.000	11.838.960.000	4.735.584.000
3	Rewards from Micro Insurance	0	177.837.500	551.572.714	739.107.437	990.403.966	442.380.438
	Total Revenues	780.000.000	11.724.837.500	21.927.472.714	26.390.187.437	31.771.699.966	12.754.898.838
	OPEX						
1	Product Rewards for Regional	155.782.333	2.309.400.000	4.275.180.000	5.130.216.000	6.156.259.200	2.462.503.680
2	Operational Costs	41.340.000	3.730.400.000	3.916.920.000	4.112.766.000	4.318.404.300	1.511.441.505
3	Human Resources Costs	388.783.333	10.371.400.000	10.702.500.000	10.939.000.000	11.089.500.000	4.601.666.667
4	Marketing Costs	-	1.283.750.000	1.347.937.500	1.415.334.375	1.486.101.094	1.560.406.148
	Total OPEX	585.905.666	17.694.950.000	20.242.537.500	21.597.316.375	23.050.264.594	10.136.018.000
	CAPEX						
1	Head Office Investment	425.000.000	85.500.000	-	-	-	-
2	Regional Investment	-	373.250.000	-	-	-	-
	Total CAPEX	425.000.000	458.750.000	0	0	0	0
	Gross Income	-230.905.666	-6.428.862.500	1.684.935.214	4.792.871.062	8.721.435.372	2.618.880.838
	Depreciation Expense						
1	Head Office	141.666.667	255.250.000	113.583.333	-	-	-
2	Regional Office	-	186.625.000	186.625.000	-	-	-
	Total Depreciation Expense	141.666.667	441.875.000	300.208.333	0	0	0
	EBIT	-372.572.333	-6.870.737.500	1.384.726.881	4.792.871.062	8.721.435.372	2.618.880.838
	Interest Expense (10%)	0	0	0	0	0	0
	EBT	-372.572.333	-6.870.737.500	1.384.726.881	4.792.871.062	8.721.435.372	2.618.880.838
	Tax (25%)	0	0	346.181.720	1.198.217.766	2.180.358.843	654.720.209
	NAT	-372.572.333	-6.326.837.500	1.038.545.161	3.594.653.297	6.541.076.529	1.964.160.628

A.2. Cash Flow Projection

Cash Flow Projection (in IDR)

Year	Gross Income	EBIT	NAT	Depreciation	FCF	Cumulative FCF	Discounted CF	Cumulative Disc. CF
2017	-230.905.666	-372.572.333	-372.572.333	141.666.667	-230.905.666	-230.905.666	-230.905.666	-230.905.666
2018	-6.428.862.500	-6.870.737.500	-6.870.737.500	441.875.000	-6.428.862.500	-6.659.768.166	-5.792.873.152	-6.023.778.818
2019	1.684.935.214	1.384.726.881	1.038.545.161	300.208.333	1.338.753.494	-5.321.014.672	1.086.977.064	-4.936.801.754
2020	4.792.871.062	4.792.871.062	3.594.653.297	0	3.594.653.297	-1.726.361.376	2.629.884.369	-2.306.917.385
2021	8.721.435.372	8.721.435.372	6.541.076.529	0	6.541.076.529	4.814.715.153	4.312.099.332	2.005.181.946
2022	2.618.880.838	2.618.880.838	1.964.160.628	0	1.964.160.628	6.778.875.782	1.166.746.238	3.171.928.184

ICMEM

References

Damodaran, Aswath. (2011). Applied Corporate Finance, 3rd edition. New Jersey: John Wiley & Sons, Inc. pp. 223-233.

Gitman, Lawrence J., & Zutter, Chad J. (2012). Principles of Managerial Finance, 13th edition. Boston: Pearson Prentice Hall.

Hitt, Michael A., Ireland, Duane, & Hoskisson, Robert E. (2011). Strategic Management: Competitiveness and Globalization (Concepts), 9th ed. Mason: South-Western Cengage Learning. pp. 52-56, 59, 234, 331-332.

Išoraitė, Margarita. (2009). Importance of Strategic Alliances in Company's Activity. Academia Scientiarum Lithuaniae: Intelektinė Ekonomika. 1(5). pp. 39-46.

Kerzner, Harold. (2009). Project Management: A Systems Approach to Planning, Scheduling, and Controlling. New Jersey: John Wiley & Sons, Inc. pp. 128-129.

Kotler, Phillip, Keller, Kevin L., Ang, Swee Hoon, Leong, Slew Meong, & Tan, Chin Tiong. (2012). Marketing Management: An Asian Perspective, 6th ed. Pearson Education South Asia. pp. 62-63, 96-104.

Olsson, Carl. (2002). Risk Management in Emerging Markets: How to Survive and Prosper. Great Britain: Pearson Education Ltd. pp. 5.

Pisani, Elizabeth, Kok., Maarten Olivier, & Nugroho, Kharisma. (2016). Indonesia's Road to Universal Health Coverage: A Political Journey. Oxford Journals: Health Policy and Planning. 32(2). pp. 267-276. Available from: https://www.ncbi.nlm.nih.gov [15 April 2018]

Staugaitis, Steven D. (2002). Root Cause Analysis. Centers for Medicare and Medicaid Services: Human Services Research Institute. pp. 4. [30 June 2018]

Sula, M. S. (2004). Asuransi Syariah (Life and General): Konsep dan Sistem Operasional. Jakarta: Gema Insani. pp. 294.

Online Sources:

2011. 'Undang-Undang No. 24 Tahun 2011 tentang Badan Penyelenggara Jaminan Sosial'. Republic of Indonesia. Available from: https://bpjs-kesehatan.go.id/bpjs/dmdocuments/20e67493084e6d2e600888b1dd9f94f4.pdf [15 April 2018]

2016. 'Insurance in Indonesia: Opportunities in a Dynamic Market'. KPMG Siddharta Advisory. Available from: https://assets.kpmg.com/content/dam/kpmg/id/pdf/id-ksa-insurance-in-indonesia.pdf [13 April 2018]

2016. 'Statistik Perasuransian Indonesia 2016'. Otoritas Jasa Keuangan (Indonesia Financial Services Authority). Available from: https://www.ojk.go.id/id/kanal/iknb/data-dan-statistik/asuransi/Pages/Statistik-Perasuransian-Indonesia---2016---Revised-Version.aspx [11 April 2018]

2017. 'Annual Report 2016'. PT Penyedia Jasa Indonesia.

2018. 'Asia Insurance Market Report 2018'. Willis Towers Watson. Available from: https://www.willistowerswatson.com/-/media/WTW/PDF/Insights/2018/02/asia-insurance-market-report-2018.pdf [19 April 2018]

ICMEM

The 3rd International Conference on Management in Emerging Markets

Defining Proper Alternative Crowdfunding Design for Startups in Indonesia: Lesson Learnt from America and Middle East Countries

Nisa Khaira Lusfi[a] and Deddy Priatmodjo Koesrindartoto[b*]

*a,b*School of Business and Management, Institute Technology Bandung, Bandung City, West Java, Indonesia

Abstract

In this new age, startup is quite promising business in most of every country, where recently the amount of young businessmen is starting to take a part out in this area. Indonesia is in the top five of the countries with the most startups outstanding in worldwide. However, generally the early-stage firms struggle with the financial development overcoming, even where the late-stage firms are using trade credit as a substitute formal financing. So that, this paper aims to find the proper and suitable alternative financing crowdfunding platform for startup in Indonesia. This research paper used online survey that addressed to 101 startup's owners to find the preferences in order to find their business through crowdfunding. Furthermore, the comparative analysis approach is used to find the proper alternative financing crowdfunding design for startup in Indonesia by comparing the leading crowdfunding schemes in America and Middle East's existing platforms and also the current situation of alternative financing activities in Indonesia including the Venture Capital and Crowdfunding situations. This research suggests that Reward-based crowdfunding is currently proper for startup in Indonesia with several adjustments needed and should be considered for the developer of local crowdfunding platforms.

Keywords: Crowdfunding; Indonesia; Startup

1. Introduction

Startup is a company that in the seek-early funding stage or has just been run. The term of startup is obtained to grow faster and categorized as Internet and information technology-based company (Paul Graham,2012). It makes startup different from another small business. In Indonesia, the Government encourages all relevant parties to support digital economic development experiments and strategies in startups. Particularly they simplify the regulations to open a business or startup because Indonesia has a program named 1000 Startup Movement to realize that Indonesia is potential becoming The Digital Energy of Asia in 2020. To actualize this movement, besides to get support from all parties, to start the startup also requires a large amount of fund. However, raising capital is one of the primary obstacles for startup (Cosh, Cumming and Hughes,2009). Usually, many creative entrepreneurs start a business without external funding support. The traditional funding, that comes from the bank, requires the amount of collateral to obtain the loan and the term of conditions that startups rarely meet these requirements. In other hands, there is venture capitalist that available for some of startups, but venture capital firms usually only do the investment in the later stage of companies due to the future uncertainty and more proper valuation process. Thus, the crowdfunding, a funding platform, starting to grow in Indonesia in 2015 to make it easier to deal with the investors and fundraisers.

Nowadays, the crowdfunding concept has been challenged rapidly in the global market which caused by rising in the awareness rate of internet users in every corner of the world. The crowdfunding platforms have emerged with innovative and different schemes as the project makers and startups come across the creative ways to finance their projects/businesses. However, some countries have emerged some different schemes of crowdfunding that used for their own citizens, such as Japan and MENA countries, due to some differences in regulations, different entrepreneur

---

* Corresponding author. Tel.:(022) 2531953.
  E-mail address: deddypri@sbm-itb.ac.id

ICMEM

behaviors and also their startups funding needed. But, some platforms have been adjusted their schemes globally such as Kickstarter, Indiegogo, and Crowdfunder, to help other countries meet their funding goals. Crowdfunding is relatively still new for Indonesian markets. Some of them are failed and not ready yet to have a competitive in local markets with other investing models for startups, even with the traditional funding and also international crowdfunding/venture capital that exist in Indonesia. Moreover, the global crowdfunding platforms have created several success stories for some Indonesian game developers. This situation makes other digital creative entrepreneurs more looked at global platforms than the local ones. In other facts, some of the crowdfunding platforms such as Akseleran.com, the first Equity Crowdfunding in Indonesia, and Wujudkan.com, the platform for the creative projects, should discontinue their services hence the market in Indonesia is still not ready for those crowdfunding type of platforms. Furthermore, Lending-based and Donation-based are quite existing in Indonesia, while the Equity-based and Reward-based are still in market fit stage.

Thus, this study provides the structural understanding in Equity-based and Reward-based crowdfunding, which this type has been failed in Indonesia previously, by examining the leading platforms in two different areas, US and Middle East countries, through the qualitative research analysis. Finally, this research will compare the analysis with the demands to the platforms from startup perspective and identify the suitable crowdfunding scheme for Indonesia.

2. Literature Review and Objective

2. 1. Startups and Funding Resources for Early-stage Company

In this new era, the startup is a quite promising business in most of every country, where recently the amount of young businessmen is taking a part out in this area. The chances are widely open for everyone regardless for their geographic location. It can be found by the increasing in small business players such as startup. Startup is a newly-established firm or in the early seek funding stage company which is in a growing phase that might have struggled on their existence. Moreover, another definition of startup also includes the technology of their products on behalf of becoming the internet-based platform.
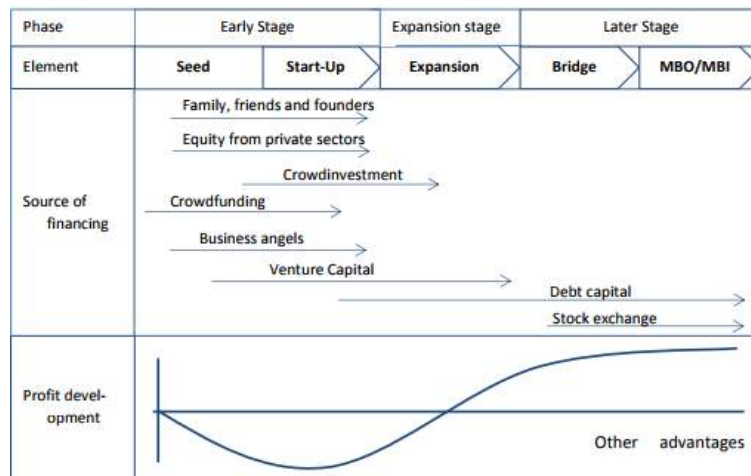
Fig. 1. Venture Financing Methods by Volkman Tokarski & Grunhagen (2010)

Furthermore, startups receive their first funding while in its investment periods which most likely when in the stage of going to bankrupt, but only the fewer startups were funded (Nanda and Rhodes-Kropf,2013). Startups also more difficulties in raising the capital which might give inopportune impact to the new technologies (Comin and Nanda,2014). Generally, early-stage firms struggle with the financial development overcoming, even where the late-stage firms are using trade credit as a substitute for formal financing (Fisman and Love,2003). Leavitt (2015) found

ICMEM

that the startups with the presence of angel investors may take a difficulty to get an access to a venture capitalist, if the next investment much larger than angel investor. Hence increasing in venture capital funding can change the type of investments investors which willing to finance towards an experimental and innovative project (Nanda and Rhodes-Kropf,2012).

2. 2.   *Introduction to Crowdfunding*

The crowdfunding comes out as the easiest ways to finance most type of projects/businesses with concerned in what ideas might be catching the crowds. The investment behavior also affected by the platform design to interest the crowd's attention (Hornuf & Schwienbacher,2015). The crowdfunding concept works as if the pre-order schemes concept. First, the business/project owner offers several types of packages or the returns on what the crowd will get if they donate funds in a certain amount of money. After that, the crowds begin to decide which projects that interest them and transfer certain of money to the selected projects to be fund. Then, after the projects ended up their campaign, the business/project owner will start to run their operational process and then give the investors the rewards in term of returns. Usually, the investors do the funding activities in early-phase of the campaign cycle, the investor involves in the first and the last days of the campaign (Hornuf & Schwienbacher,2015). Sometimes, the type of business is different as each other, some can keep running with the flexible amount of funds in accordance with the order quantity, and also there are some of the businesses need for minimum funds to sustain the business. Thus, the crowdfunding offers two kinds of campaign goals. The Flexible goals, where the number of funds are still submitted to the creator even though the target is not reached, and The Fixed Goals, which the funds are only submitted to the creator if the target is reached, in order to adjust the business or project needed. In general, some projects are run out in a small margin rate or failed in a large amount, hence the high chance of project will be success related on the readiness and its social venture, besides, the quality signals of the campaign affects the funding outcomes (Mollik,2014). Grundy and Ohmer (2016) show that the environmental and real estate sectors gained the high market shares in crowdfunding platforms even the most of crowdfunding platforms involved in different sectors and industries.

The crowdfunding schemes are set up in different respectively. There are four types of crowdfunding which defined by two categories. First, is non-financial compensation, in which there is no rewards or financial returns to the crowds that given by the project owners, these types are including Reward-based and Donation-based crowdfunding. Reward-based crowdfunding type usually using the pre-ordering mechanism. The other type, Financial Compensation, that the project owner gives the crowds/project owners returns financially, these types are including Equity-based and Loan-based crowdfunding. Belleflamme, Lambert, and Schwienbacher (2014) find that the initial capital needed relatively smaller than if we compared with the market size, most of the entrepreneurs prefer to use the pre-ordering system and prefer using the profit sharing otherwise. There are no relations directly within the intention of investors to invest in and the level of lead users characteristic (Harms,2007). This study contrasts with Sebastian Dehling (2013), which the successful campaign also defines the human part of crowdfunding as if it is the signaling process part at its core.

2. 3.   *Defining Equity-based and Reward-based Crowdfunding*

In Equity-based crowdfunding, the capital of the project raising usually above the average, while the Reward-based crowdfunding model mostly shows fewer funds per project (Crowdfunding Industry Report,2012). That is why the Equity-based crowdfunding type is riskier rather than Reward-based. However, The Equity-based crowdfunding types found more challenges on it rather than the other types of crowdfunding (Andersen and Mauritzen, 2015). Besides, in Reward-based and Equity-based crowdfunding campaigns, the financial/utility factors, as the main key to gain a successful campaign, are gaining more crowd interest than non-financial factors which is the social returns, such as in term of helping others, ideas supporting or belongings to a community projects, after all, one of the non-financial factors that drive the investment decisions is the trust between the investor and the project owner (Cholakova and Claryss,2015).

ICMEM

3. Methodology

This research framework will help the authors in this study as an outline and details methodology of each research procedure ranging from the research topic to research question and finally the result of this study including the conclusion and suggestion at the end of the study. The framework that used on this research is adopted from business model evaluation approach by Nuri Kayaoglu (2013) with some adjustment needed as the guidance for the author which provide systematic directions about what the activities should be done, when and how the research will be done. This business model evaluation against the complexity of the evaluation process especially when the business model blocks become dynamics as the crowdfunding is the financial technology with the very dynamic business blocks on it. To find the suitable and proper crowdfunding scheme in Indonesia, the author first evaluates the best practice of current crowdfunding schemes that exist in US and Middle East countries as the base comparison. After that, the author defines the startup industry overview that exist in Indonesia, followed by analyzed the current overview of venture capital activity in Indonesia and also defines the desired business state about what is demanded and startup preferences from the project developer/startup in Indonesia to fund their business through crowdfunding platform. Finally, the author compares the data and get the recommendation about the suitable crowdfunding for startup in Indonesia.
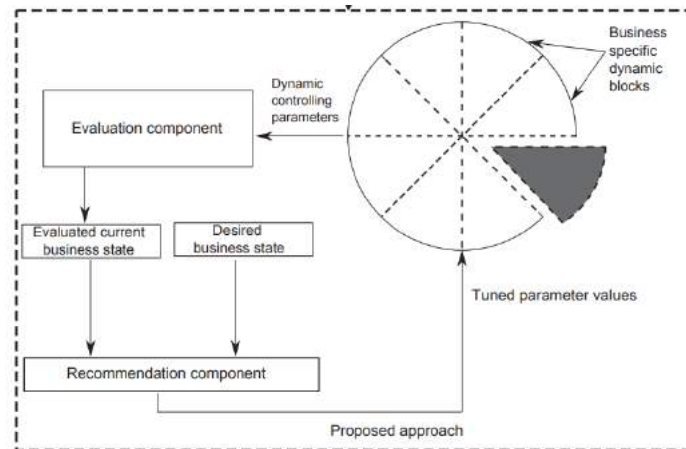
Fig. 2. Business Model Evaluation by Nuri Kayaoglu (2013)

This research using both primary and secondary data to be analyzed. The secondary data will be gathered from the related journals and historical statistic report to analyze the market situation and as the literature review. Besides, the author gathered the data from leading Equity-based and Reward-based crowdfunding platforms in US and Middle East countries to get the information about existing crowdfunding schemes being used at this time. Meanwhile, for the primary data, the author will collect data from e-mail to complete the data of schemes being used in US and Middle East countries. Then, followed by a survey using the online questionnaire that addressed to college students who are running startups in Indonesia to identify the startup demand and preferences about crowdfunding in order to finance their business. From this survey can also be seen the crowdfunding market situations in Indonesia.

The data will be analyzed using a qualitative approach. The author will use the Comparative Analysis method which is a technique of data analysis to determine the conclusions from the short of data supporting. First, to identify the best practice of crowdfunding schemes, the author will compare the different existing schemes in US and Middle East countries with several criteria. After that, in order to explore and discover new insights of alternative actions about the suitable crowdfunding schemes for Indonesian startups, the author will explore the situation in Indonesia by characterizing startups and identifying the market situation including the venture capital activities and startup demanding about crowdfunding in Indonesia. Therefore, the survey will be conducted to complete this research that comes up with semi open-ended questions and also using analysis data from literature research.The survey will define into several parts and designed to ensure the applicability of respondent familiarity with crowdfunding and

crowdfunding schemes preferences in general. At the end of the survey, there are 101 respondents from startups in several universities had been filled out the questionnaire. There will be structured questions including the demographic data and semi-structured questions that have some list of answer choices to have uncertainty about the other possible responses. This also used for the crowdfunding questions to explore new insights into the respondents' thought about the subject itself. The data will be presented using charts to show the result in percent. Finally, the author will come to the conclusion of each question. For the final thought, the survey result will compare with the existing schemes, and related to market situations in Indonesia and come to the final conclusion which the suitable crowdfunding schemes for Indonesian startups.

4. Findings and Results

In this chapter will be divided into three main issues toward Business Model Evaluation by Nuri Kayaoglu (2013). It starts from the first component that evaluated the current business state by generating the best practice reward and equity crowdfunding scheme in US and Middle East, the characterizing startup industries in Indonesia. The countries that belong to Middle East are United Arab Emirate, Israel, Turkey, and Lebanon, meanwhile, the countries in US including USA, Canada, and Brazil are considered to represent the overall countries hence most of the crowdfunding platforms that will be analyzed on this research had headquartered in those countries. Followed by the current situation of alternative financing market in Indonesia including VCs and Crowdfunding activities. Furthermore, the desired business state will be evaluated by analyzing the survey data that addressed to find the preferences of startup owner in order to fund their business. Finally, the recommendation component of the proper and suitable crowdfunding schemes for startup in Indonesia.

4. 1. Best Practice Crowdfunding Schemes

Middle East is now in the early stage of market development. On the research that conducted by the Cambridge Centre for Alternative Finance (CCAF) and Energy 4 Impact, as the first research in developing the crowdfunding and peer-to-peer lending in Middle East and Africa (MENA) found that there is something different on these regions in crowdfunding growth hence its growing slowly than others and also in situation of early-stage emergence market development countries. In Middle East, the reward and donation based crowdfunding are well developed, and the Equity Crowdfunding is quite strong established in Israel. Moreover, Abushaban (2014) find that Palestine, UAE, Lebanon, Jordan, Morocco and Egypt have a potential environment for running a successful Crowdfunding that might lead the growth of local projects on these countries. However, Indiegogo, Zoomaal and Eureeca are the platform leaders in Middle East with the technology, design, and film becoming the prospects to develop the local economy. In other sides, the two main markets in crowdfunding are come from United States and United Kingdom. In this case, the alternative finance market is rapidly growing across the USs. United States is the largest alternative finance market volume about more than $30 billion in 2016 and following by Latin US and Canada.

4. 2. Equity-based Crowdfunding

Equity-based Crowdfunding accounted for $569.5 million in 2016, down 5% from $598.1 million in 2015. It represented 1.6% of the entire USs market (The USs Alternative Finance Industry Report,2017). While in the Middle East, in the total of 67% of the total market volume is accounted for Equity-based Crowdfunding. Thus, Wefunder and StartEngine in USA, Eureeca.com in United Arab Emirates, and PipelBiz in Israel were selected as samples for this research because they have different schemes that are offered by platforms. Furthermore, the author also interested in the crowdfunding schemes from Brazil, Broota.com, as the first Equity-crowdfunding in Latin America. They successfully closed in seed funding during the short period of 8 months and funding more than $228.000 on that time (thecrowdcafe.com).

Table 25 Summary Table of Equity Crowdfunding

Criteria	Wefunder	StartEngine	Broota	Eureeca	PipelBiz

ICMEM

Base Location	New York, USA	Los Angeles, USA	São Paulo, Brazil	Dubai, UAE	Tel Aviv, Israel
Year Launched	2011	2011	2013	2013	2015
Project Funded	176 startups	89 startups	28 startups	23 startups	24 startups
Project Funded/Year*	26 startups/year	13 startups/year	6 startups/year	5 startups/year	8 startups/year

*based year 2017

Project Fees

Criteria	Wefunder	StartEngine	Broota	Eureeca.com	PipelBiz
Initial Fee	None	None	±$2000 for expert payment	$1.500 for Application Fee (Refundable)	$500
Platform Fee (Success Fee)	7% of total funding (5% cash + 2% equity)	6%-10% of total funding	5% of the total funding	7.25% of the amount raised, minus the $1,500 application fee.	7% of the amount raised
Transaction Fee	2% of the investment	2.5% of the investments (charged by funder)	5% of the investment	Depends on the payment types	Depends on the payment types

Schemes Offered

Criteria	Wefunder	StartEngine	Broota	Eureeca.com	PipelBiz
Funding Amount	At least $50.000	$10.000 - $50 Million	Maximum 30%-50% of the total valuation	At least $250.000	Maximum ±US$870.000 (NIS 3 Million)
Who can fundraising?	Nearly any for-profit U.S. based Corporation or LLC, be it a brick and mortar restaurant or a high-tech software startup	US-based operating company	Latin US startups	Middle East, Europe, and Southeast Asia based SME	Israel-based Ltd. company
Goal Change Allowed Campaign Duration	Yes Most campaign last 60-days	Yes 60-90 days	Yes 30-60 days	No Most campaign last 90-days	No Up to 45 days
Keep-it-all or All-or-nothing?	All or Nothing	All-or-nothing	All-or-Nothing	All-or-nothing	All-or-Nothing
Overfunding Possible? Companies stage to fund	Yes All-stage (but recommend at least has one publicly investors)	Yes All Stage	Yes Starting from Early stage	Yes Have been operating for at least 2 - 3 years (post-operational and post-revenue business)	Yes The early-stage and a business-based companies

ICMEM

Investors Sides

Criteria	Wefunder	StartEngine	Broota	Eureeca.com	PipelBiz
Who can invest?	All over the world (unless there is preventing to invest in that country)	Most International Country	All over the world	All over the world except US investors	Israel Citizens
Amount to Invest	US$100-US$107.000	$500 US$107.000	Minimum US$166 ($100.000 CLP)	No actual restrictions	Depends on the annual income
Voting Right	None	Depends on the funder	Depends on the funder	Depends on funder	Yes

4. 3.   *Reward-based Crowdfunding*

Kickstarter, Indiegogo, FundRazr from USs and Zoomal and CrowdFon from Middle East were selectedas the representation of the leading crowdfunding platform for this research with different schemes being used in each countries. However, there is one crowdfunding platforms that the author interested in Reward-based crowdfunding platform named FundRazr from Columbia. Not only this platform becoming the leading platform in Canada, but also as the friendly user interface, the easiest, and the fastest in generating fund for the startups in that country.

Criteria	Kickstarter	Indiegogo	FundRazr	Zoomaal	CrowdFon
Base Location	New York, USA	California, USA	British Columbia, Canada	Beirut, Lebanon	Istanbul, Turkey
Year Launched	2009	2008	2008	2012	2011
Project Funded	139.632 projects	±170.000 projects	±40.000 projects	177 projects	15 projects
Project Funded/Year*	15.515 projects/year	17.000 projects/year	4000 projects/year	30 projects/year	3 projects/year

*based year 2017

Project Fees

Criteria	Kickstarter	Indiegogo	FundRazr	Zoomaal	CrowdFon
Initial Fee	None	None	None	None	None
Platform Fee (Success Fee)	5% of total funds raised	5% of total funds raised	5% of the total funds	5% of total fund	12% of total funds
Transaction Fee	3% + $0.20 per pledge	3% + US$0.30 per pledge	2.9% + US$0.30 per pledge	$45 for cross-country transaction	Depends on the bank

Scheme Offers

Criteria	Kickstarter	Indiegogo	FundRazr	Zoomaal	CrowdFon
Funding Amount	Maximum ±US$10.000	Minimum $500	No Minimum Amount	$5.000-$80.000 in average	No Minimum Amount
Who can funding?	US, UK, Canada, Australia, New Zealand, the Netherlands, Denmark, Ireland, Norway, Sweden, Germany, France, Spain, Italy, Austria, Belgium, Switzerland, Luxembourg, Hong Kong, Singapore, Mexico, and Japan	All over the world	All over the world	All the countries in the Middle-East and North Africa (MENA) region	Funder must be residing in Turkey
Who is the backers?	All over the world	All over the world	All over the world	All over the world	All over the world
Reward prices	$25 in average	US$25-US$100 in average	Depends on the funder	$25 in average	US$0.26-US$2570 (TL1-TL10.000)
Goal Change	Yes	No	Depends on the	No	No

ICMEM

			campaign types		
Allowed Campaign Duration	1-60 days	No longer than 60 days	No restrictions	No longer than 60 days	60 days
Keep-it-all or All-or-nothing?	All-or-nothing	Both	Both	Mixing both types	All-or-nothing
Overfunding Posible?	Yes	Yes	Yes	Yes	No

After we found the schemes being used in existing countries within US and Middle East countries, we found that most of the platforms in Equity-based are set the goals to all-or-nothing rather than keep-it-all, but in Reward-based, they prefer to use both with the number of funding smaller than Equity-based. Reward-based crowdfunding intends to develop the creative projects such as music and arts including digital creative industries (game design and illustration). Besides, the project fee for Reward-based is 5% on average with no initial fee needed. However, for Equity-based there is 5% to 7% on average for the project fee and an additional up to US$2000 on average for the initial fee (expert payment). The campaign duration for Reward-based is up to 60 days on average and 30 days less than the average duration of Equity-based Crowdfunding. Furthermore, we identify several crowdfunding schemes offered in US and Middle East countries, we found that there are the best schemes that offered to their local and globally. Several factors such as the platform size, the time of operation, the success project that funding on the platform and also the number of project funded are determine the best schemes being offered on that platforms.

In Equity-based crowdfunding, Wefunder was one of the best websites for startup funding in 2016 (Space-O Technologies,2016), even Wefunder shows a significant increase in 2016 and the next year. Wefunder also has the complete regulation for both of investor and startup, so that, it can balance the investor protection while providing the effective and efficient funding for startups. In Middle East, Eureeca, as the first Equity-based Crowdfunding, has been gained more success stories for the local startups and expand their services globally in UK, Netherlands and Malaysia. Kickstarter.com, as the leading crowdfunding platforms in US, is adopted reward-based firstly established since 2009 in New York, USA. Compared with other platforms, Kickstarter.com and Indiegogo have the largest live projects within the countries in US. However, the overall platforms, with the investment minimum target is around US$1 and the platform fee is 5% flat, except for CrowdFon, the technology output sometimes defines the platforms becoming viral globally, however, the social networks and venture are also required to interest the crowds so that, the platform needs some targeted approach (Kromidha,2015).

4. 4.   *Characterizing Startup Industry in Indonesia*

The term startup is an English word absorption which means the act or process of starting a new organization or business. Startup refers to a recently operating company. These companies are mostly newly established companies and are in a phase of development and research to find the right markets. Currently, the term of startup is more widely used to describe the technology companies, websites and those things that related to the internet, hence the term of startup itself became more popular internationally during the 'bubble dot-com' phenomenon, is when many dot-com companies or their own personal sites were established simultaneously within the period 1998-2000. From this phenomenon, startup always identified with technologies companies. But in fact, a startup can actually be used for other developing companies in various fields.

One of the startup characteristics is the company has not been long established, at least less than 3 years. If the corporate corporation generally has a lot of employees and separated into several divisions or departments, startup obviously does not have that many employees. The number of employees usually is under 20 people. In fact, there is a startup that runs from 3 to 5 people only The amount of income per year is not more than $100.000/year. Usually, startups use a website or site as the identity of the company and operate through it.

Indonesia is in the emerging market economies as the largest economy in Southeast Asia. This situation makes Indonesia as the important roles in Fintech industry in Asia while Indonesia is in the top five of the countries with the most startups outstanding in worldwide (StartupRanking.com,2018). However, in Indonesia, there are three main startup industry's players which involve the creative industries, Technology-based and Food & Beverage industry. The creative industry is an industry derived from the utilization of creativity, skills and individual talents to create welfare and employment by generating and exploiting the creative power and creativity of the individual (Indonesian

ICMEM

Minister of Trade). That is Art, Performance Art, Crafts, Music, Film & Entertainment, Fashion, Design, Games, Publishing & Media, Architecture, Culture and also Advertising & Promotion. The examples of Indonesian startups in the creative industry are Creasi, Eksisenter and Kreavi.

Technology-based startup (digital startup) is a pioneering company that utilizes digital technology to create solutions to the nation's problems (Steve Blank and Paul Graham). That is also involving the financial technology-based and cloud management. In Indonesia, Amartha (Fintech-based) and Go-jek is the example of Technology-based startup. Financial Technology, Online Media and Health Technology (Medtech and Healtech) will get more attention in 2018 (DailySocial.id, February 2018). The Food & Beverage Industry is quite potential for startup players in Indonesia. This industry is expected to grow more than 10 percent in 2018. Nowadays, the number of company brings a variety of culinary services, starting from receipt platform, online ordering foods and also restaurant information. There are several startups in Food & Beverage industry such as Zomato, Foodsessive, and Mangan that currently exist in Indonesia.

4. 5.   *Current Market Overview for Indonesia Crowdfunding and Venture Capital Activities*

In this section, the authors will be examined the current situation for venture capital and crowdfunding activities in Indonesia. Also includes a brief explanation of the traditional resources activities to raise the capital for startups and entrepreneurs in Indonesia.

4. 6.   *Venture Capital Activities in Indonesia*

In Indonesia, venture capital companies consist of two categories. First, the local venture capital firm that registered in OJK. Generally, the company is affiliated with large corporations and state-owned companies. Local VCs generally invest in companies that are already operating and generating cash flows or profits and invest more with profit-sharing models or even financing models like banks and finance companies.

The other one is foreign venture capital which generally from US, Japan and China. They only have affiliates in Indonesia and some have representative offices in Indonesia and are not registered on OJK but conduct operations and investments both directly and indirectly targeting in Indonesia's startup markets such as Go-jek (Northstar Group, Sequoia Capital), tokopedia (Cyberagent Venture, Softbank Internet and Media, Sequoia Capital) and also Berrybenka (East Ventures, Transcosmos, Gree Ventures).

Based on OJK report per August 2017, since 1974 there are about 68 venture capital companies in Indonesia for both government and private ownership that still active with the amount of financing in the amount of Rp 11, 7 trillion (around US$850 million). The current private venture capital is seen to be more active and start in providing financing to pioneering businesses in startups especially those related to financial / fintech technology. Indonesia Stock Exchange has even opened the opportunity by providing convenience to the startups to do an IPO on the stock exchange. One of the startup companies that have been successful doing an IPO is PT. KIOSON Tbk which received positive response from the investors. The research that conducted by Google and A.T Kearney show that the investment value in Indonesia remains increase by 31 times from 2012 to 2016 and increase by 2 times from 2016 to 2017 (on January to August) that reached US$3 billion.

ICMEM

Fig. 3. Southeast Asia Investment Value by Google and A.T Kearney

In January to August 2017, most of the investment needed is in the seed stages, however the number of investment generating more values in late-stage business. In 2012 to August 2017, E-commerce and transportation industries are listed in the top categories investments. Then followed by Finance, classified/directory and payment types. The number of startups that get funding in Indonesia is tended to decline in 2017. Only 78 startups that announced to get investments on this year. Meanwhile, there are 90 startups that get funding in 2016 (Techinasia.com,2018). However, the nominal funding that received by startups rises, hence the large investments received by several startups such as Tokopedia, Bukalapak, Go-jek, Sales Stock, Traveloka and MatahariMall. A total of 14 startups successfully exit through either IPO or Merger & Acquisition (M&A).

4. 7.   Crowdfunding Activities in Indonesia

The percentage of Crowdfunding Players in Indonesia is only 4% of the total Fintech Players (Indonesia Fintech Landscape Report, 2018). The research that conducted by Roni Girsang (2017) stated that the lending based platforms dominating approximately up to 75% of the total available platforms in Indonesia. The local players are the important role in P2P Lending platforms such as Modalku and Amartha. The Donation-based crowdfunding platforms are also getting its popularity in social funding and charity such as Gandengtangan.com and KitaBisa.com. However, the Equity-based and Reward-based crowdfunding platforms show a slower growth compared with other countries in Asia. The crowdfunding regulation is arranging by Indonesia Financial Services Authority (OJK). This absence of regulations for Equity-based and Reward-based crowdfunding is the main obstacles that should be addressed to the crowdfunding regulator. The small crowdfunding players have difficulty getting license rather than the crowdfunding platform that has achieved series A and have funding from Venture capitalist and/or Bank as the majority player in Indonesia (Tetuko Lugas Edhita Praja, 2017). Moreover, the lack of literature that existing in Indonesia about the equity-based and reward-based crowdfunding leading the unfamiliarity of these type of crowdfunding.

4. 8.   Wujudkan.com Study Case

On February 2017, one of the crowdfunding platform stated that they are closing their services and decided to not accepting any new projects after the announcement hence the lack of successful projects that get funding on this platform. The owner stated that they run out of money to finance their operations expenses even they got funding from angel investors a few years ago.

Wujudkan.com already had tried some activities to increase their rate of successful projects, such as doing offline event named Crowdfunding School since the third year of their existing. They went around school in some cities to educate people about the use of crowdfunding concept as their alternative financing. However, it still cannot raise the rate of successful projects in Wujudkaan.com platform significantly.Wujudkan.com is a crowdfunding platform for creative industries founded in 2012. They focused on helping the artist such as filmmakers, gamers, and also illustrations in order to help their works.

ICMEM

4. 9.   Akseleran.com Study Case

Akseleran is currently a peer-to-peer lending platform where everyone can provide their business loans easily, safety, and profitability for SMEs and early-stages enterprises founded by three young professionals were working in well-known companies in 2016. Akseleran is used to be the first equity-based crowdfunding platform in Indonesia before they changed into P2P lending platforms that give an opportunity for early-stage startups in form of shares for their returns. The amount of fundraising goals that can be arranged by Akseleran is Rp 100 Million to Rp25 Billion with assumptions the enterprise commit to run their business in unlimited times. However, in earlier 2018, they already closed their services for equity-based projects hence the market was not ready for the equity-based crowdfunding concept and tend to use Peer-to-peer lending which give the faster returns.

4. 10.   Survey Result Analysis: Startup Demanding about Crowdfunding in Indonesia

In final of the survey period ended, we received 101 respondents from startup in different universities. Hence the early stage of establishing startup is upcoming in university, such as The Incubator program for students, business plan and business idea competition, and so much more that come from inside of university, so that, we decided to distribute our questionnaire within university's students. This survey was built to find the startups familiarity and demanding about crowdfunding schemes. The breakdown is showing in several parts below:

Demographic Questions

From the survey, we first collected the demographic respondent information. The result shows the respondents are mostly aged 18-22 (76), 24 respondents aged older than 22, and only 1 respondent aged under 18. The proportion of samples are female with 56.9% (57) and 43.1% (44) are male. However, most of the respondents are coming from ITB with 39.6% sampling proportion and followed by other universities such as Unpad (8.9%), Telkom (5.9%), Prasetiya Mulya (9.9%) and other universities in different geographic locations.

Startup's Profile

We targeting our respondents not only the university students but also they must be running a startup to achieve the goals of this research. Most of startups are in the creative industries which are 60.4% (61) of respondents, and most of them have been running for less than 1 year (61), 32.7% (33) have been running in range of 1-3 years, and only 6.9% (7) are in range of more than 3 years. Besides, the sample proportion of startups are mostly coming from Bandung (46.5%) and Jabodetabek (32.7%) area. From the survey showed that currently, the creative projects such as Arts, Music, Food & Beverage, is the most startup industries. It's a new jam for reward-based to start the new platforms in Indonesia. Kickstarter, Indiegogo, FundRazr and CrowdFon are allowing to make a campaign on that nominal funding. However, from the startup report in 2017, the most startup industries are in Financial Technologies and E-commerce in Seed B-stage which needed big capital and that industries are suited for Equity-crowdfunding.

The startup owners are 68.6% (69) motivated by self-willed or strongly encouraging from the inside of themselves when they established the startups, 13.7% (14) were motivated by the opportunities that come from several parts such as 1000 startups Indonesia's program, 8.8% (9) are motivated by the coursework of universities, and finally 8.8% (9) are encouraged by their family or friends. The stage of startups is 27.7% (28) is in the Pre-seed stage, as the early-stage of funding, this stage begins with the planning stage, discovering a new idea, and making the prototypes of the product. 35.6% (36) in a seed-funding stage, as the second type of stage, which the startup starting to develop the products and has some resources in small quantities. In the third stage, Series A (22.8%), where the startup launching their product to the market and has a complete team and employees in every division. In Series B (13.9%), the startup is getting more stable, the decision is not focusing on the marketing techniques, but in other different areas.

In Average, the startup monthly earnings are 75.2% (76) below US$350, which directly proportional to the average funding stage in Indonesia. Only 13.9% (14) are within the range US$350 to US$1045, and 11 startups earnings more than US$1045. Most startups have the employees less than 3 resources (79.2%), which most startups in Indonesia are in the small business stage. 30.4% (31) startup owners are not attending any the business education activities and 31 of them are taking business incubator on the inside or outside the university. Moreover, 29 owners are following the business seminars, and the rest of them are joining the entrepreneur clubs (8), have a business mentorship and just

learned from the university course. Besides, 32 owners are routinely attending the activities in once a year, while 18 owners are attending 1 to 3 times a year, and 19 owners are following the activities more than 3 times a year. The data shows that most of startup owners have already educated about the term of startups, making the financial report and knowing how to funding and get the capital for their startups.

Crowdfunding Familiarity

These questions aim to show the respondent's familiarity and experiences in all types of crowdfunding. Besides, the questions refer to the readiness of the market in Indonesia for using Crowdfunding. There are two questions in order to show whether the respondents are familiar with the crowdfunding. As many as 41 respondents were familiar with the crowdfunding terms but never used it to finance their startups. 31 respondents were heard about the crowdfunding but didn't know the difference between other alternative financing methods. 19 respondents were not familiar with crowdfunding terms, and 10 people were familiar with the crowdfunding and ever used it. However, we asked the explanation of crowdfunding in general, more than the half of respondents, 59.4% (60) answered the question correctly. But, 5% of them stated that they familiar with crowdfunding but still confusing to distinguish the differences between Crowdfunding and Venture Capital.

Startup Financing Method

On this sections, we have set several questions to know the respondent startup funding preferences as long as they are running until this research was conducted. Almost one-third of respondents (74) have financed their startups by self-funded/by their families, and 14 people have financed their startups with business partner, only 1 respondent used crowdfunding and 2 respondents used Venture Capital to finance their startups. The most reason they have chosen the financing method is it's easy to get and flexible in term of regulations (36%) and also have a low risk investment (13%).

Nowadays, in Indonesia, the most reputable crowdfunding is more focusing on social activities, such as KitaBisa.com and Gandengtangan. In past 2016, there are some peer-to-peer lending platforms that revealed in Indonesia that has gained startups to finance on that platforms. From this situation, the most obstacles for the platform developer is faced with the other type of local crowdfunding. In 2016, Akseleran stated that they closed their services because of the market is not ready yet for the other types of crowdfunding. However, on this survey result, we showed some ways that most startups were chosen the crowdfunding as their financing method in the future. This is the big revealed to start the other types of crowdfunding in Indonesia. From the data result showed that the possibilities of the number of investments startups needed in the future are mostly below US$3,485 on average. However, to covered these number of investments most of the respondents were interesting to finance in Crowdfunding (40) and Venture Capital (36).

Table 26 Startup Obstacles in Financing

The startup obstacles in Financing	Number of respondent
Non-bankable Business	30.7% (31)
Limited Platform Numbers	20.8% (21)
Collateral Needed	18.8% (19)
Rising in Interest Rate	15.8% (16)
Short-term payment due dates	7.9% (8)
Trust Issue	3.0% (3)
Lack of Knowledge	3.0% (3)

Table 3 reveals the range of obstacles that startups taken to finance their business. The obstacles reveal that 31 startups are not a bankable business; they are not passed the requirements to have a bank loan. Besides, 21 startups were stated there is limited number of platforms for the Crowdfunding sites.

Crowdfunding Schemes

On this section, we reveal the respondent's preferences to choose the crowdfunding schemes in order to finance their business. We first showed respondent four crowdfunding schemes (Table 4) which contained Equity-based and Reward-based crowdfunding schemes from the crowdfunding platforms in USs and Middle East countries.

ICMEM

Table 27 Crowdfunding Schemes for Survey

	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Initial Fee	None	None	None	Rp7.000.000
Platform Fee (Success Fee)	5%	12%	7%	5%
Funding Amount	Maximum Rp2.000.000.000	Maximum Rp2.000.000.000	Maximum Rp1.000.000.000	Maximum Rp2.000.000.000
Company Stage	Minimal Seed Funding	All-stage	All-stage	Minimal Series A

From the Table 4, Almost half of respondents (48.5%) were interested in Scheme 1, where the maximum number of funding amount is approximately up to US$140.000 and minimum company stage at Seed Funding, as the second stage of startup financing. For the campaign days, in average 30-60 days (57.4%) is the most ideal time to finance the business in crowdfunding. Most of the result are suitable with reward-based crowdfunding schemes regarding the schemes that offers in Table 4 and the campaign days such as Indiegogo, FundRazr, Kickstarter and CrowdFon. For the Equit-based Crowdfunding, most of them are required high platform fee, only Broota that suitable with the scheme, while the campaign is over, the crowdfunding platforms are allowing to overfund the target goals (77.2%). Besides, the respondents were able to give their investors to have more rights (74.3%) such as voting rights and idea insight. Number of minimum investment for the investors are 10-20% (69.2%) of the funding target goals.

Regarding the several types of crowdfunding, we discovered three types that suitable to finance a project/business in crowdfunding. First is Equity-based where IPO and able to sell their shares to the public markets are the way the investors get their money back. 44.6% (45) respondents were interested on this schemes, while where they are doing IPO, 38 respondents are willing to let more than 50% of their shares to the public market. 35.6% (37) were reveal the debt crowdfunding is the best way to finance their startups with pay back the initial and interest to the investor. However, only 19.8% (20) were interested in giving the investors in term of rewards (products) to pay back the money to the investors, with the consequences if the products failed, the startups should give the investors back of their money.

Factors in Choosing the Crowdfunding Platform Preferences

There are still many challenges that must be faced by the local crowdfunding owner platforms in order to become a viable alternative financing for creative industry players and other startups in Indonesia. The first problem that happened in Indonesia is the local platforms such as Wujudkan.com, have to face the global crowdfunding platforms such Kickstarter and Indiegogo, while these platforms have been gained a success story for Indonesia gamers. It's also supported by the survey result in Table 11 for the most factors that affected in choosing the crowdfunding platform is the platforms reputable and familiarity (63). From that factors, the startups might be more interested in global platforms.

Table 28 Factors in Choosing a Crowdfunding Platforms

Factors in choosing the crowdfunding platforms	Number of Respondents
Platform/Developer Reputation	63
Transparent	55
Rate of Return	50
Focus on certain industries	46
Focus on Geographic Location	13
Duration of Platform Administrations	7
Foreign Language Availability	3

The Table 5 show that the most factors that affecting the crowdfunding platform is the platform or the developer reputation (63), followed by transparent factors with 55 number of respondents and Rate of Return (50). On the

ICMEM

question aimed to show the most three factors that taken in crowdfunding platforms, thus, the respondent should choose in maximum number of three.

As the Business Model Evaluation by Nuri Kayaoglu (2013) showed that after we evaluate the desired and current business state, we finally came to the recommendation component of the alternative financing crowdfunding. Below is the table summary of the proper crowdfunding schemes for startup in Indonesia:

Table 29 Summary of Proper Crowdfunding Schemes for Indonesia

Criteria	Explanation
Initial Fee	None
Platform Fee	5%
Funding Amount	Maximum Rp2.000.000.000
Minimal Investment	10-20% of funding target
Keep-it-All or All-or-Nothing?	Keep-It-All
Voting right?	Yes
Overfunding Possible?	Yes
Company Stage	Minimal Seed Funding

In table 6, we can conclude that the project fees for the platform are 5% of the target goals, with no initial fee for the startups if they want to start a campaign. Before Akseleran closed their services for a while in Equity-based, several businesses that listed in that platforms have the funding amount more than US$70.000, so that after we showed on the survey result, the funding amount for the startups are approximately US$140.000 in maximum number. For the investors, minimal investment is around 10-20% of the target goals for the regulations, and have a special right such as giving ideas and voting right in the startups invested.

For the campaign, startup has a right to choose whether to have an overfunding of target goals or not with fully responsible from the startups. That is possible to implement a Keep-It-All campaign, which even startups at the end of the campaign didn't meet the target goals, startups can keep all the money that they get whatever how much it is. However, KitaBisa has set the pessimistic target goals to avoid the validity of goals. The minimum startup funding stage is in seed funding, as the second stage of startup, which the startup should in the stage of starting to develop the products and has some resources in small quantities to minimize the risk for investors, startup owners, and platforms.

5. Conclusion and Directions for Future Research

This research finds Equity-based and Reward-based crowdfunding schemes from several leading platforms in US, as the pioneers of crowdfunding, and Middle East countries which have a potential environment for running a successful crowdfunding business. From those platforms, the author finds that most of Reward-based offering type of funding for projects such as the creative industry so that it does not require the funding stage of the startup. Besides, mostly Equity-based crowdfunding required a minimum should have a prototype of products not only the idea/business plan hence it required more capital and high risk than Reward-based crowdfunding platform. From several schemes above, this research finds the best schemes that being offered to finance startups. In Equity-based crowdfunding, Wefunder is one of the best websites for startup financing in 2016, hence it shows a significant increase in 2016 and the next year. Wefunder also has the complete regulation for both of investor and startup, so that, it can balance the investor protection while providing the effective and efficient funding for startups. In Middle East, Eureeca, as the first Equity-based Crowdfunding, has been gained more success stories for the local startups and expand their services globally in UK, Netherlands and Malaysia. Compared with Equity-based, Kickstarter.com have the largest live projects within the countries in US as the first crowdfunding that used Reward-based since 2009. Most the local crowdfunding in other countries adopted Kickstarter's schemes to fund their business projects.

From the research, we find that most of startup industries in Indonesia are the creative industry at the seed funding stage. More than half of startups owner are familiar with crowdfunding but just a little of them used crowdfunding as their business funding. Besides, most of them are interested in Equity-crowdfunding and more familiar with the process of the equity. Furthermore, in order to choose the crowdfunding platforms, several factors need to consider such as developer or platform reputation including the success story of the project, the transparent in administration, and rate of return. We find several considerations for the platform developers about the proper crowdfunding schemes for Reward-based crowdfunding startup in Indonesia. Firstly, for the project fees of the platform are 5% of the target

ICMEM

goals, with no initial fee for the startups if they want to start a campaign. The target of funding amount is approximately US$140.000 in maximum number and the minimal investment for the investor is around 10-20% of the target goals. There is a chance for the startup owner to give the investors a right that helps the company to grow better. While the campaign started, it allows the startup to choose whether they have an overfunding in targeting goals or not, with fully responsible needed for the future risk. The Keep-It-All campaign is possible to implement with some consideration to arrange the pessimistic target goals. It is important to set the minimum startup funding stage, which should in seed funding to minimize the risk that would affect all parties including platforms and investors.

For the crowdfunding platform developer in Indonesia, it is better to start the new types of crowdfunding while the startup in Indonesia is going larger and need to scale-up their operations with some capital needed while the other alternative financing requires some conditions that did not fit with the current startup situations. On this research, the author suggested that Reward-based crowdfunding is the one to consider as the proper crowdfunding schemes for startup in Indonesia hence the current conditions are mostly in creative industry, the small amount of funding in the future, and most of the startups are in the Pre-seed and seed-stage of funding. However, startups are not really knowing with the term of reward, so that it should be considered to have an introduction first before the platform launch. Every cycle of crowdfunding schemes should be observed starting from the pre-campaign, campaign, and after the campaign. This research also suggested the proper schemes to fund the startup in Indonesia such as the fees, the campaign requirements, and investors regulations by comparing the existing crowdfunding platforms in US and Middle East. However, it is also possible to Equity-based crowdfunding starts to come up in Indonesia hence startups are more familiar with the term of shares rather than the rewards. For the future research, the survey on this research only examined 101 respondents, which the owner of startups, regarding the limitation of research time and location. It's possible to have a larger sample to get the current situations for more comprehensive data. Besides, the assumption of the research only looking at the readiness of the startup side, the other parties such as investors should be combined for the better crowdfunding schemes in Indonesia.

References

Abushaban, R. M. (2014, October). Crowdfunding as a catapult for innovation in the middle east: Obstacles and possibilities. In Global Humanitarian Technology Conference (GHTC), 2014 IEEE (pp. 433-440). IEEE.

Andersen, L. M. K., & Mauritzen, L. J. (2016). Crowdfunding as a tool for startups to raise capital: why and how to use it(Master's thesis).

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. Journal of business venturing, 29(5), 585-609.

Broota. (n.d.). Retrieved from https://broota.com/

Cambridge Centre for Alternative Finance. (2017). The USs Alternative Finance Industry Report: Hitting Stride. Retrieved from https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-05-USs-alternative-finance-industry-report.pdf

Cambridge Centre for Alternative Finance. (2017). The Africa and Middle East Alternative Finance Benchmarking Report. Retrieved from https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-ccaf-africa-middle-east-alternative-finance-report.pdf

Cholakova, M., & Clarysse, B. (2015). Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments?. Entrepreneurship Theory and Practice, 39(1), 145-172.

Comin, D., & Nanda, R. (2014). Financial development and technology diffusion. Working Paper.

Cosh, A., Cumming, D., & Hughes, A. (2009). Outside Entrepreneurial Capital. The Economic Journal, 119(540), 1494-1533.

CrowdFon. (n.d.). Retrieved from https://www.crowdfon.com/

Dehling, S. (2013). Crowdfunding: a multifaceted phenomenon(Master's thesis, University of Twente).

Eureeca. (n.d). Retrieved from https://eureeca.com/CrowdInvesting/How-Crowd-Investing-Works

Financial Sector Deepening (FSD) Africa (2017). Crowdfunding in East Africa: Regulation and Policy for Market Development. Research Report.

Fisman, R., & Love, I. (2003). Trade credit, financial intermediary development, and industry growth. The Journal of finance, 58(1), 353-374.

Fintech Singapore. (May 2018). Indonesia Fintech Landscape Report(Rep.). Singapore: Fintechnews.org. Retrieved from https://www.slideshare.net/secret/7rVGSVu0MMX19k.

FundRazr. (n.d). Retrieved from https://www.indiegogo.com/pages/faq

ICMEM

Girsang, R. (2017). The players in crowdfunding industry in Indonesia.

Graham, P. (2012). Startup= growth. self published online article, Article source: http://www. paulgraham. com/growth. html, accessed October.

Grundy, D., & Ohmer, C. (2016). German crowd-investing platforms: Literature review and survey. Cogent Business & Management, 3(1), 1138849.

Harms, M. (2007). What drives motivation to participate financially in a crowdfunding community?.

Hornuf, L., & Schwienbacher, A. (2015). Funding dynamics in crowdinvesting.

Indiegogo. (n.d). Retrieved from https://www.indiegogo.com/

Kayaoglu, N. (2013). A Generic Approach for Dynamic Business Model Evaluation.

Kickstarter. (n.d.). Retrieved from https://www.kickstarter.com/

Kromidha, E. (2015, November). A comparative analysis of online crowdfunding platforms in USA, Europe and Asia. In eChallenges e-2015 Conference, 2015 (pp. 1-6). IEEE.

Leavitt, J.M. (2005) 'Burned Angels: The Coming Wave of Minority Shareholder Oppression Claims in Venture Capital Start-up Companies', North Carolina Journal of Law & Technology 6(2): 223-288.

Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. Journal of business venturing, 29(1), 1-16.

Nanda, R., Rhodes-Kropf, M.,(2012). Financing risk and innovation. Unpublished working paper. Harvard University, Cambridge, MA.

Nanda, R., & Rhodes-Kropf, M. (2013). Investment cycles and startup innovation. Journal of Financial Economics, 110(2), 403-418

PipelBiz. (n.d.). Retrieved from http://pipelbiz.com/

Praja, T. L. E. (2017). Analisis Perbandingan Model Bisnis Platform Crowdfunding Di Indonesia Dengan Menggunakan Platform Design Toolkit (Doctoral dissertation, Institut Teknologi Sepuluh Nopember).

Pratama, A. H. (2018, January 25). Laporan Kondisi Pendanaan Startup Tanah Air di Tahun 2017. Retrieved from https://id.techinasia.com/laporan-pendanaan-startup-indonesia-2017?ref=related pos

Pratama,A.H. (2018, February 16). Pelajaran yang Bisa Dipetik dari tutupnya Situs Crowdfunding Wujudkan. https://id.techinasia.com/pelajaran-dari-tutupnya-situs-crowdfunding-wujudkan

StartEngine. (n.d.). Retrieved from https://help.startengine.com/hc/en-us

Startup Ranking. (2018). StartupRanking.com. Retrieved from https://www.startupranking.com/countries

Techsauce Team. "Indonesia's Key to Accessible Funding: Crowdfunding Platform Akseleran." Techsauce.co, 27 Apr 2018, Retrieved from techsauce.co/en/corporate-innovation/indonesias-key-to-accessible-funding-crowdfunding-platform-akseleran/

Wefunder. (n.d.). Retrieved from https://help.wefunder.com/

Zoomal. (n.d.). Retrieved from https://www.zoomaal.com/help/how

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Influence of Bank Spesific and Macroeconomic Variable on Non-Performing Loan (Case Study: 19 Commercial Banks in Indonesia 2008-2017)

Lazuardi Yusril Ihza[a*], Achmad Herlanto Anggono[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10 Bandung 40132, Indonesia*

Abstract

Financial sector stability is considered as one of the factors that form the economic condition in a country and the commercial bank is considered as a very dominant industry in financial institution. The banking industry comes with various risks, one of the risks that banks need to bear is credit risk. credit risk is considered as the major risk for the banks and one of main indicator of credit risk is NPL. A slow handling of NPL may cause an economic slowdown and bank's failures, This study examine the determinants of non-performing loan of 19 commercial banking categorized as BUBA 3 and BUBA 4 from period 2008Q1 to 2017Q4. Panel Data Regression analysis is conducted in this study. This stuidy uses Fixed Effect Model as regression method. The findings result show that LLPTL, OEOI, NIM, and GDP are significantly affect non-performing loan ratio with positive relationship. While size lead to decrease in non performing loan ratio. LDR shows unsignificant to non-performing loan ratio.

Keywords: Credit Risk; Bank; Non-Performing Loan; Commercial Banking; Panel Data Analysis

1. Introduction

Financial sector stability is considered as one of the factors that form the economic condition in a country (Ekanayake & Azeez, 2015). As explained by (Richard, 2011), financial institution is very important as they mobilize customer deposits to be given to the productive investments, which provide some cash to other economy sectors that require additional cash flow, resulting the production increasement and investment growth. In addition, also mentioned by (Richard, 2011), the commercial bank is considered as a very dominant industry in financial institution. The function of the bank is not only for a macro-control, but also for accelerating the economic (Cai & Huang, 2014). This makes most of the developing countries to liberalize their economy (Masood, Bellalah, Mansour, & Teulon, 2010) by deregulating the rules of banking system to increase the competition within a bank, resulting in increased risk (Li, 2003).

One of the risks that is faced by the bank is a credit risk, and even (Mushtaq, Ismail, & Hanif, 2015) stated that credit risk is considered as the major risk for the banks. The credit risk can be determined using Non-performing Loan (NPL) as the main indicator (Makri, Tsagkanos, & Bellas, 2014). Non -performing loan (NPL) in banking is considered as an undesirable things, and even (Laryea, Ntow-Gyamfi, & Alu, 2016) in their study stated NPL as a "financial pollution". (Beck, Jakubik, & Piloiu, 2015) stated that NPL is one of the factors that affect the economy of a country. A slow handling of NPL may cause an economic slowdown because bank will tend not to give any lends (Skarica, 2014). The success of a banking industry is to minimizing the NPL, which by then may be able to increase the economy of the country.

Some of the previous research showed that there is a significant relationship between NPL and financial crisis. (Cai & Huang, 2014) stated that the loan defaults and banking mortgage are two things that resulting a poor quality of loans, thus responsible for the financial crisis. (Adeola & Ikpesu, 2017) stated that financial crisis and NPL are very related with the example of 70 banks in Indonesia that experienced a bank's failures due to the drastically increase in NPL.

---

* Corresponding author.

E-mail address: yusril.ihza@sbm-itb.ac.id

ICMEM

In the banking industry, NPL is considered as a very important factor to be taken as a concern. According to (Waemustafa & Sukri, 2015), NPL is one of the thing that is able to make a bank collapse. It is believed as a cause in reducing the bank's profit margin (Zaib, 2014). This issue can be avoided by maintaining this ratio carefully. Lack of supervision regarding to NPL will cause an unfavorable effect to other banking indicators, such as performance and liquidity.

According to the data from world bank on 2008-2016, the NPL trend in Indonesia is constantly increase starting from 2013 to 2016. This brings concern as this is a sign of an increase in bad loans that result to the disruption in bank performance in term of its profit (Makri, Tsagkanos, & Bellas, 2014) (Beck, Jakubik, & Piloiu, 2015), and also may disrupt the liquidity issue (Benazic & Radin, 2015). This also indicates as unfavorable since the increasement of NPL can be considered as one of the factors that may cause a bank failure (Waemustafa & Sukri, 2015) (Makri, Tsagkanos, & Bellas, 2014) (Skarica, 2014), which in further may results a financial crisis (Makri, Tsagkanos, & Bellas, 2014). Therefore, banks should pay attention to this issue and take some actions to rectify their NPL.

This study aims to examine the variables that are affecting the increase and decrease of NPL. The author will figure out whether a bank specific variable such as bank size, operation efficiency, capital adequacy ratio, net interest margin, loan to deposit ratio, and loan loss provision to total asset. with an addition of other macroeconomic factors such growth domestic product. This will help the decision maker to be more concern of those influential factors. Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. This research continued research from Anindita & Anggono (2016) with different period of year starting from 2008 - 2017 and adding variables loan loss provision and gross domestic product

2.   Literature Review
2. 1.   Credit Risk (Non-performing Loan)
The banking industry comes with various risks, one of which is credit risk. Credit risk is a condition in which the borrower is unable to meet its financial obligations (Mushtaq, Ismail, & Hanif, 2015) in paying interest or principal. Credit risk is also defined as the magnitude of the bank's likelihood of defaulting loan (Abedalfattah & Faris, 2013). Credit risk is very important to be concerned in the banking industry, even (Mushtaq, Ismail, & Hanif, 2015) mentioned in his research that credit risk is the major risk of banking.

According to (Makri, Tsagkanos, & Bellas, 2014), one of the main indicators to maintain the credit risk is non-performing loan (NPL). The NPLs are loans that have poor quality when the borrower is unable to pay principal or interest up to 120 days which is classified as "substandard", up to 180 days categorized as "doubtful", and above 180 days categorized as "loss". In accordance to Bank Indonesia Regulation Number 15/2 / PBI / 2013 it is mentioned that no bank is allowed to have a Gross NPL above 5 percent, if there is a violation, special supervision will be given by the Financial Services Authority (FSA). The study of (Li, 2003) explains that the increase in NPL starts from the deregulation of bank regulation so that each bank increases its risk in order to remain competitive.

The increase in NPL indicates that many loans that banks provide have a poor quality. It can disrupt the liquidity, because banks are required to return the money saved by customers and their interests. Moreover, bad loan will reduce profitability because those bad loans should have been profitable but because the borrower cannot afford to pay principal or interest then it leads to loss for banks instead. (Benazic & Radin, 2015)

This study applies the ration of non-performing loan as follows:

$$NPL = \frac{Non - Performing\ Loan}{Total\ Credits}$$

2. 2.   Size (LNTotal Assets)
Previous researches conducted by (Anindita & Anggono, 2016) (Ekanayake & Azeez, 2015) (Zaib, 2014) showed that there is a negative relationship between bank size with non-performing loans. This happens because larger banks tend to have good resources in terms of human resources and capital that they can manage credit better than small banks. (Zaib, 2014). Also, larger banks have larger capital so that the bank has many options to diversify, which cannot be done by smaller banks. Therefore, larger banks could have smaller NPLs than smaller banks. (Waemustafa & Sukri, 2015) (Ekanayake & Azeez, 2015) (Zaib, 2014).

In this study, the size of bank will be measured as follows:

ICMEM

$$Size = \ln(Total\ Assets)$$

2. 3.   Profitability (Net Interest Margin)

Profitability is widely studied as the determinant of credit risk, but the proxies used as profitability may vary. (Messai & Jouini, 2013) in their researches used of return on assets (ROA) as one of the determinants of NPLs, which lead to a conclusion that profitability has a negative relationship with NPLs, because the banks that are able to generate big profits means they own loans with small risks. On the other hand, (Makri, Tsagkanos, & Bellas, 2014) (Vatansever & Hepsen, 2015) used return on equity (ROE) as a proxy of the profitability of their research. The two studies have different results so it is still ambiguous to draw conclusions.

The research conducted by (Anindita & Anggono, 2016) uses net interest margin in their research. The results of these studies indicate that there is a significant and positive relationship between net interest margin and NPL. This implies that the higher the net interest margin, the higher the NPL. Net interest margin sees the profitability of lending and investing activities, therefore it is more suitable to be used in this research since the main business of banks is lending. A proper net interest margin indicates that the bank has better capability in terms of maintaining the earning assets, so that it can gain more profit. High net interest margin can come from high interest return generated by the bank which means it will constraint the borrower. Net interest margin from the bank is generated from the following formula:

$$Net\ Interest\ Margin = \frac{Investment\ Returns - Interest\ Expense}{Average\ Earning\ Assets}$$

2. 4.   Loan Loss Provision

Loan loss provision is a fund that is set aside by the bank on purpose, as a backup to cope with losses from bad quality credit. Because the funds that is set aside do not generate interest, then the high loan loss provision could disrupt profitability (Maggi & Guida, 2011). Loan loss provision is one of the tools used to overcome credit risk (Credit Risk Management and Interest Income of Banks in Nigeria, 2017). With the loan loss provision, bank can prepare funds to anticipate future losses. Loan loss provision can also be used as an indicator to assess how well banks behave in controlling the risks that they bear. (Maggi & Guida, 2011)

Several studies have shown a relationship between loan loss provision and NPL. (Abedalfattah & Faris, 2013) in their research indicates that there is a positive relationship between loan loss provision to total loan and NPL. While other research from (Messai & Jouini, 2013) states that loan loss reserves to total loans shows a positive relationship to NPLs. The high loan loss provision can be an indication that the bank has poor credit quality. In this study the ratio used to calculate loan loss provision is presented as follows:

$$Loan\ Loss\ Provision\ to\ Total\ Loan\ (LLPTL) = \frac{Loan\ Loss\ Provision}{Total\ Loan}$$

ICMEM

2. 5. Liquidity (Loan to Deposit Ratio)

Basically, the business in banking is to distribute money from customers who keep their money and channel it to institutions or individuals who are in need. Loan to deposit ratio is one of the indicators to know the ability of banks to fulfil their obligations (Anindita & Anggono, 2016). It will be a problem for a bank, if the customer who keeps the money in the bank can not take his/her money back because the bank does not have cash. Poor liquidity in banks can lead to failure (Waemustafa & Sukri, 2015). The high loan to deposit ratio indicates that the bank provides too much loans so that the bank has a high risk, while the bank with low loan to deposit ratio indicates that there is still a lot of unproductive cash that will lead to the low profitability of the bank.

(Cai & Huang, 2014) mentioned that the more liquid a bank, the more flexible the bank will be. This happens because the bank has some remaining cash available so that the bank can do anything with the money, including providing additional loans or diversifying. This can reduce the credit risk of the bank (Waemustafa & Sukri, 2015).

Loan to Deposit ratio is used in several studies as an indicator of liquidity. (Anindita & Anggono, 2016) in their research found that there is a negative relationship of loan to deposit ratio to NPL. While (Abedalfattah & Faris, 2013) in their research explained that there is a positive relationship between liquidity and NPL, but the results are not significant. Liquidity in this study will be calculated using the loan to deposit ratio with the following formula:

$$Loan\ to\ Deposit\ Ratio(LDR) = \frac{Total\ Credits}{Total\ Third\ Party\ Funds}$$

2. 6. Inefficiency (OEOI)

Operational Expense to Operational Income (OEOI) is the ratio calculated from operational expense divided by operational income. Operational expense of the banks is the costs required to perform operational activities such as interest expense, foreign exchange cost, depreciation cost, and labour cost. Operational income is an income generated from bank operations such as foreign exchange income, commission fees, and interest income derived from lending activities. (Anindita & Anggono, 2016).

OEOI can be used to see how efficiently banks do their business. The high OEOI indicates that the bank is inefficient. It implies that the bank has low operational income and high operational expense. Low operational income can occur because banks provide poor quality of loans that have an impact on increasing NPL. (Messai & Jouini, 2013)

Several studies have investigated the relationship of inefficiency with NPLs. (Anindita & Anggono, 2016) in their research proves that there is a positive significant relationship between OEOI and NPL in 19 commercial banks in Indonesia. (Ekanayake & Azeez, 2015) also mentions that there is a positive significant relationship between inefficiency and NPL. However, these results differ with research of (Vatansever & Hepsen, 2015) which states that inefficiency and NPL have a negative relationship with NPL.

In this study, inefficiency will be calculated using *beban operasional pendapatan operasional* (BOPO) with the following formula:

$$Inefficiency(OEOI) = \frac{Operating\ Expense}{Operating\ Income}$$

ICMEM

2. 7. Capital Adequacy

Capital adequacy ratio (CAR) is the ratio that describes the amount of capital to risk weighted assets of operational, market, and also credit. Capital adequacy ratio helps to absorb losses resulting from the risks (Mushtaq, Ismail, & Hanif, 2015). This happens because the existing capital can help absorb losses generated from bad loans, therefore CAR becomes one of the tools of the bank to minimize the risk. Moreover, CAR is also referred to the core of risk asset management and also useful to increase the trust of depositors.

Several previous studies have explained the relationship between CAR and NPL. (Cai & Huang, 2014) states that low CAR leads to an indication that the bank is giving credit in the wrong way. This happens because with the increase of the risk from credit, it will increase risk weighted assets of credit. As the credit risk increases, NPL will increase. High CAR can also reduce profitability because it indicates capital is not used maximally so that profitability of the bank will go down.

Different results are shown by studies of (Vatansever & Hepsen, 2015) dan (Anindita & Anggono, 2016) which prove that CAR and NPL have a positive significant relationship. The result indicates that much of the capital is used to cover bad loans, so that high capital adequacy indicates high NPL.

Capital adequacy ratio in this research will be calculated using following formula:

$$Capital\ Adequacy\ Ratio = \frac{Tier\ 1 + Tier\ 2\ Capital}{Risk\ Weighted\ Assets}$$

2. 8. Gross Domestic Product

Gross domestic product (GDP) is an indicator to calculate the monetary value generated within the territory of a country. Gross domestic product can be calculated using three approaches, namely, expenditure, production, and income. Some researchers use gross domestic product as an indicator to see the economic condition of a country.

Several previous studies have examined the relationship between gross domestic product and NPL. Research from (Abedalfattah & Faris, 2013), (Adeola & amp; Ikpesu, 2017), (Makri, Tsagkanos, & Bellas, 2014), (Vatansever & Hepsen, 2015), and (Zaib, 2014) concludes that gross domestic product has a negative relationship with NPLs. This happens because with the increase of gross domestic product, hence the ability of society to pay financial obligation will be increased. As the community's capability increases, the quality of the loan will increase so that the NPL will decline.

Those results differ from the study conducted by (Messai & Jouini, 2013) which shows that gross domestic product has a positive relationship with NPL. It could happen because with increasing gross domestic product, it will stimulate loan growth. With the increase in the loan amount, the loan quality will decrease so that it will increase the NPL.

2. 9. Previous Study

The results of previous research have been summarized in the following table:

Table 30. Previous Study

Title & Author	Variables	Research Description	Result
Analysis the Determinant of Credit Risk in Jordanian Banking : An Empirical Study **(Abedalfattah & Faris, 2013)**	Dependent : Credit risk (NPL) Independent : Management Efficiency, Leverage, Loan Loss Provision to Total Loans, Size, LDR, GDP	This research examine about determinants of credit risk(NPL) in 14 commercial banks of Stock Amman Exchange over the 2006-2010 period with panel data method	Management Efficiency = (negative)(significant) Leverage=(positive)(not significant) Loan Loss provisions to total loan= (positive)(Significant) Size=(negative)(not significant) GDP=(Negative)(Significant) LD=(positive)(not significant)
Determinants of Non Performing Loans: The Case of Eurozone **(Makri, Tsagkanos,**	Dependent: NPL Independent : Public debt, Unemployment rate, GDP, CAR, NPL_{t-1}, ROE	This research examine about determinants of credit risk(NPL) in Eurozone banking system 2000-	NPL_{t-1}=(positive)(significant) ROE=(negative)(significant) CAR=(Negative)(Significant) Public debt=(positive)(significant) Unemployment rate= (positive)(significant)

ICMEM

& Bellas, 2014)		2008 period with GMM method	GDP=(negative)(significant)
Determinant of Non Performing Loans in Licensed Commercial Banking : Evidence from Sri Lanka **(Ekanayake & Azeez, 2015)**	Dependent: NPL Independent: Inefficiency, loan to asset, credit growth, size, GDP, Inflation, prime lending rate	This research examine about determinants of credit risk(NPL) in 9 Sri Lanka commercial banking 1999-2012 period with GMM method	Inefficiency : (Positive)(significant) Loan to asset: (Positive)(significant) Credit growth: (negative)(significant) Size: (negative)(significant) GDP: (negative)(significant) Inflation: (negative)(significant) Prime Lending rate : (Positive)(significant)
Determining Impact on Non Performing Loan Ratio in Turkey **(Vatansever & Hepsen, 2015)**	Dependent : NPL Independent : debt ratio, loan to asset ratio, confidence index-real sector, consumer price index, Euro/ Turkish Lira rate, money supply change, interest rate, GDP, Eurozone's GDP, volatility of S&P 500, industrial price index, Istanbul Stock Exchange, Inefficiency, Unemployment Rate, ROE, and CAR	This research examine about determinants of credit risk(NPL) in Turkey period January 2007 to March 2013 with Panel data method (OLS)	debt ratio : (not significant) loan to asset ratio : (not significant) confidence index-real sector: (not significant) consumer price index: (not significant) Euro/ Turkish Lira rate: (not significant) money supply change: (not significant) interest rate: (not significant) GDP: (not significant) Eurozone's GDP: (not significant) volatility of S&P 500: (not significant) industrial price index: (significant)(negative) Istanbul Stock Exchange: (significant)(negative) Inefficiency: (significant)(negative) Unemployment Rate: (significant)(positive) ROE: (significant)(positive) CAR: (significant)(positive)
Macroeconomic and Bank-Specific Variable of Non-Performing Loans in the Banking Sector in Pakistan **(Zaib, 2014)**	Dependent: NPL Independent : GDP, bank size, risk profile, managements of banks	This research examine about determinants of credit risk(NPL) in 8 banks Pakistan period 2003 to March 2011 with Fixed Effect Model	GDP : (significant)(Negative) bank size : (significant)(Negative) risk profile : (significant)(Negative)
Macroeconomic Determinants of Non-Perming Loans in Nigeria: an Empirical Analysis **(Adeola & Ikpesu, 2017)**	Dependent: NPL Independent : GDP, Exchange Rate, Lending Interest Rate, Inflation Rate, Unemployment Rate, money supply to GDP	This research examine about determinants of credit risk(NPL) in Nigeria period 2005 to 2014 with OLS	GDP: (Positive)(significant) Exchange Rate: (Positive)(significant) Lending Interest Rate: (Positive)(significant) inflation Rate: (Positive)(significant) Unemployment Rate: (Positive)(significant) money supply to GDP: (Positive)(significant)
Micro and Macro Determinants of Non-Performing Loans (Messai & Jouini, 2013)	Dependent: NPL Independent : GDP, Unemployment Rate, real interest rate, ROA, Change in Loans, LLR/TL.	This research examine about determinants of credit risk(NPL) in 85 banks 3 countries (Italy, Greece and Spain) period 2004 to 2008 with Fixed Effect Model	GDP : (Significant)(Negative) Unemployment Rate : (Significant)(Positive) real interest rate : (Significant)(Positive) ROA : (Significant)(Negative) Change in Loans : (Significant)(Positive) LLR/TL : (Significant)(Positive)
The Influence of Bank Specific Variable on NPL and the Implications of NPL, Exchange Rate, and Inflation Rate to Bank Profitability Performance (Case Study: 19 Foreign	Dependent : NPL Independent : Size, CAR, LDR, NIM, Inefficiency, Dependent : ROA Independent: NPL, Exchange Rate, Inflation	This research examine about determinants of credit risk(NPL) in 19 banks in Indonesia period 2008 to March 20014 with Fixed Effect Model	Dependent : NPL Independent : Size (Significant)(Negative), CAR (not significant, LDR (Significant)(Negative), NIM(Significant)(Positive), Inefficiency(Significant)(Positive) Dependent : ROA Independent : NPL (Significant)(Negative), Exchange Rate(Significant)(Positive), Inflation

ICMEM

Exchange Commercial Banks in Indonesia 2008-2014)	Rate		Rate(Significant)(Positive)
(Anindita & Anggono, 2016)			

3.   Methodology

This study uses bank data categorized as bank unti business activity (BUBA) 3 and BUBA 4 from 2008-2017. there are 19 banks that are categorized as BUBA 3 and BUBA 4. These 19 banks have been able to represent other banks that are categorized as BUBA 1 and BUBA 2 because the 19 banks are included in banks that have systemic impact.

The following is an explanation of the variables used in this study:

Table 31. Variable Concept

	Variables	**Indicator**	**Measurement**	**Level**
Dependent	Credit Risk	Non Performing Loan (NPL)	Non-performing loans (*kredit kurang lancar*), doubtful credit (*kredit yang diragukan*), and bad debts(*kredit macet*)/Total credits	Ratio
Independent	Profitability	Net Interest Margin (NIM)	Net Interest Income/Average Earnings Asset	Ratio
	Loan Loss Provision	Loan Loss Provision	Loan Loss Provision / Total Loan	Ratio
	Liquidity	Loan to Deposit Ratio (LDR)	Credits/Third-party fund	Ratio
	Capital Adequacy	Capital Adequacy Ratio (CAR)	Tier 1+Tier 2 Capital/Risk Weighted Assets	Ratio
	Size	Natural Logarithm of Total Assets	Ln(Total Assets)	Ratio
	Inefficiency	*Beban Operasional terhadap Pendapatan Operasional* (BOPO)	*Beban Operasional/ Pendapatan Operasional*	Ratio
	Gross Domestic Product	Gross Domestic Product (GDP)	Ln(GDP)	Ratio

balanced panel data used in this study. after passing Chow Test and Hausman test, this research uses Fixed Effect Model method with weight least square model to eliminate the assumption of Autocrellation and Heteroskedascity.

The following is a regression model in this study:

$$NPL_{i,t} = \alpha + \beta Size_{i,t} + \beta CAR_{i,t} + \beta NIM_{i,t} + \beta LLPTL_{i,t} + \beta OEOI_{i,t} + \beta LDR_{i,t} + \beta ln(GDP)_t + \varepsilon_{i,t}$$

where:

NPL$_{i,t}$ is non peforming loan for firm i in period t
Size$_{i,t}$ is bank Size for firm i in period t
NIM$_{i,t}$ is net interest margin for firm i in period t
LLPTL$_{i,t}$ is loan loss provision / total loan for firm i in period t
OEOI$_{i,t}$ Operation Expenses to Operational Income for firm i in period t
LDR$_{i,t}$ is loan to deposit ratio for firm i in period t
GDP$_{i,t}$ is gross domestic product in period t
α is coefficient intercept
ε$_{i,t}$ is random error term for firm i in period t

4. Findings and Arguments

From the regression result, it shows that size has a positive yet insignificant relationship with NPL. The result of this study corresponds with previous studies conducted by (Abedalfattah & Faris, 2013). Net interest margin has an insignificant relationship with NPL. The result is consistent with a study conducted by Kupčinska & Paškevičius (2017) which implies that there was no relationship between net interest margin and NPLs in the Scandinavian Countries. loan loss provision in this research has a coefficient of 0.706467408137 which means for every increase of 1 unit loan loss provision to total loan it will increase the NPL by 0.706467408137. The result of this study is consistent with the result of the study of (Messai & Jouini, 2013) (Ekanayake & Azeez, 2015). This happens because the bank will choose to provide a larger reserve of money as a tool to overcome the risk. High Loan Loss provision indicates that the bank has a high NPL. The liquidity calculated using the Loan to Deposit Ratio which shows insignificant results. two studies mention that the loan to deposit ratio has no relationship to the NPL (Abedalfattah & Faris, 2013) (Vatansever & Hepsen, 2015). The operation efficiency in this study was calculated using OEOI. Regression result presents that OEOI has a coefficient of 0.035816864861 which has positive significant effect with NPL. This corresponds with previous research conducted by Ekanayake & Azeez (2015) and Anindita & Anggono (2016) However, the result is contrary to the study of Vatansever & Hepsen (2015). OEOI can get a positive result because an inefficient bank indicates that the bank is performing a wrong way of lending, which reducing operational income and resulting in an increase of NPL. Capital adequacy ratio (CAR) shows a coefficient of 0.0170412013864 and has a positive significant relationship to the NPL. This can happen because CAR acts as one of the tools to mitigate credit risk, so that when the CAR increases it indicates that the NPL increases as well. Gross Domestic Product shows a positive relationship with NPL. This is because the rise of GDP will stimulate people to apply for loans so that the credit will increase. According to Messai & Jouini, (2013), an increase of loans will increase the NPL.

Table 32. Regression Result

Dependent Variable: NPL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.02075	0.00271	-7.66680	0.00000
LLPTL***	0.70647	0.03128	22.58858	0.00000
OEOI***	0.03582	0.00336	10.64696	0.00000

ICMEM

CAR***	0.01704	0.00482	3.53244	0.00040
GDPG**	0.01508	0.00700	2.15402	0.03160
R-squared		0.850626		
Adjusted R-squared		0.846167		
S.E. of regression		0.00655		
F-statistic		190.7693		
Prob(F-statistic)		0.00000		

5. Conclusions

This research aims to examine the variables that affect credit risk from banks that categorized in BUBA 3 and BUBA 4. The period used in the study is between the first quarter of 2008 until final quarter of 2017. The dependent variable of this research is credit risk explained by Non-Performing Loan. The independent variables used in this research is profitability represented by Net Interest Margin, Loan Loss Provision to Total Loan, liquidity represented by Loan to Deposit Ratio, capital adequacy calculated from CAR, size calculated from natural logarithm of total asset, inefficiency which is calculated using OEOI, and the natural logarithm of Gross Domestic Product.

Based on the results of Chow Test and Hausman Test the researcher concluded Fixed Effect Model is the most suitable method used in this research. The result of regression shows that 4 of 7 independent variables have significant impact to Non-Performing Loan and size, NIM, and LDR are considered insignificant to Non-Performing Loan. Independent variable as a whole has influenced the dependent variable.

Gross of domestic product, loan loss provision, capital adequacy ratio, and OEOI have positive relationship with Non-Performing Loans. While the size, NIM, and LDR are considered insignificant with NPL.

References

Abedalfattah, Z.-A., & Faris, N.-S. (2013). Analysis the Determinant of Credit Risk in Jordanian Banking : An Empirical Study. *Management Research and Practice*, 21-30.

Adeola, O., & Ikpesu, F. (2017). Macroeconomic Determinants of Non-Perming Loans in Nigeria: an Empirical Analysis. *The Journal of Developing Areas*, 31-43.

Anindita, V., & Anggono, A. H. (2016). The Influence of Bank Specific Variable on NPL and the Implications of NPL, Exchange Rate, and Inflation Rate to Bank Profitability Performance (Case Study: 19 Foreign Exchange Commercial Banks in Indonesia 2008-2014). *The 1st International Conference on Management in Emerging Markets (ICMEM 2016)*, 25-37.

Cai, M., & Huang, Z. (2014). Analysis of non performing loan and capital adequacy ratio among Chinese banks in the postreform period in China. *Journal of Advanced Studies in Finance*, 133-144.

Ekanayake, E., & Azeez, A. (2015). Determinant of Non Performing Loans in Licensed Commercial Banking : Evidence from Sri Lanka. *Asian Economic and Financial Review*, 868-882.

Makri, V., Tsagkanos, A., & Bellas, A. (2014). Determinants of Non Performing Loans: The Case of Eurozone. *Panoeconomicus*, 193-206.

Messai, A. S., & Jouini, F. (2013). Micro and Macro Determinants of Non-Performing Loans. *International Journal of Economics and Financial Issues, 3*(4), 852-860.

Mushtaq, M., Ismail, A., & Hanif, R. (2015). Credit Risk, Capital Adequacy and Bank's Performance: An Empirical Evidence from Pakistan. *International Journal of Financial Management*, 27-32.

Vatansever, M., & Hepsen, A. (2015). Determining Impact of Non-Performing Loan Ratio in Turkey. *Jounal of Applied Finance & Banking*, 1-11.

Zaib, A. (2014). Macroeconomic and Bank-Specific Variable of Non-Performing Loans in the Banking Sector in Pakistan. *International Journal of Information, Business and Management*, 53-81.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Risk Management of Domestic Remittance Business
(Case Study: Karawang Post Office)

Aulia Nazala Ramadhani[a*], Erman Sumirat[b]

*a,b*Institut Teknologi Bandung, Jalan Ganesha No. 10, Bandung 40132, Indonesia

Abstract

PT. Post Indonesia provide money transfer service business. This business is referred as remittance. Some problem and uncertainty from internal and external can occur in this business. So that, the research was done to know, analyze, and mitigate the possible risks of domestic remittance business. Karawang post office is used as a sample to assess the risk. To identify the risk was used some methods such as: SWOT analysis, reference from other research, observation, interview, and brainstorming. The analysis used to measure the risk is Analytical Hierarchy Process (AHP) with expert choice software. The result of analysis shows that there are 6 type of risk that probably happened and operational risk is the highest risk with the eigenvalue of 0.299.

Keyword: Analytical Hierarchy Process (AHP); Domestic Remittance; Risk Management

1. Introduction

According to Singgih (2010), Indonesia is the largest archipelago country in the world that consists of about 18,108 of large and small islands and its people are spread from Sabang to Merauke. Therefore the migration of the population can occur from a densely populated island to sparsely populated island or from rural to urban areas. It will affect the transfer of funds from these areas because many people who work in urban areas will send funds to rural areas. It encourages PT. Pos Indonesia to provide money transfer services, especially for those who have not or do not have a bank account. According to data from global Findex Worldbank 2017 is known that the percentage of bankable society in Indonesia amounted to 49% of the total population while the 51% are still unbankable people. This is good news for PT. Pos Indonesia as the non-bank remittance provider.

Money transfer business is often referred to as remittance. The global remittance condition estimated by the World Bank will grow by 3.4% in 2018. While low and middle-income countries growth is estimated at 3.5%. In Indonesia area itself, remittance conditions indicate an increasingly fierce competition. This is evidenced by the number of fund transfer providers offering money transfer services to the public. Based on data from Bank Indonesia (BI) on February 22nd, 2018 is known that there are 120 non-bank institutions that have registered to obtain the business license from BI. Increasing business competition in the field of remittance is also indicated by the increasing volume and nominal transaction data on domestic and foreign money transfer by non-bank institutions. The data is as follows:

Table1. Fund Transfer Volume and Nominal Transaction in 2016 and 2017

Data	2016	2017
Fund Transfer Volume to Overseas (thousand)	372.01	1,401.87
Fund Transfer Nominal to Overseas (million)	8,558,121.74	31,711,923.90
Fund Transfer Volume from Overseas (thousand)	13,316.95	45,337.12
Fund Transfer Nominal from Overseas (million)	54,563,447.13	191,931,926.20
Fund Transfer Volume in Domestic Area (thousand)	12,401.86	52,083.91
Fund Transfer Nominal in Domestic Area (million)	22,614,181.96	87,611,229.27

---

* Corresponding author.

ICMEM

Based on the table is known that the volume and nominal transactions of remittance business conducted by non-bank institutions in Indonesia have increased from 2016 to 2017. This trend becomes an opportunity and challenge for PT Pos Indonesia to provide maximum services in order to sustain and compete with other similar businesses. Based on an interview with headquarter office was known that remittance business often experiencing some problems and uncertainties from both the internal and external environment of the business. The internal problems that often faced in the field are operational mistakes, system errors, and the incidence of fraud. As well as, the external issues are faced such as vulnerability of money laundering and terrorism financing, an uncertainty of the development of technology and communication, and competition. If all of them happen, it will be troubling the company. Based on an interview was known that the Karawang post office has the highest amount of fraud case compared other post office in all over Indonesia in 2017 with the comparison of 2:1. In addition, that office has not conducted yet the risk management of domestic remittance business. So that, the company requires a good risk management for the business to monitor the business activities in order to maintain security and customer trust. It is in accordance with a statement from Carl Olsson in Risk Management in Emerging market (2002:26) that says the benefit of risk management are protecting themselves from the adverse consequences of an event. Based on the background, so the objective of this research is to identify, analyze, and treat the risk that probably happened in domestic remittance business through a case study at Karawang post office.

Some previous researches of risk management topic with Analytical Hierarchy Process (AHP) have been done by Andrianto (2017) and Mustafa and Al Bahar (1991), but both of them have a different issue to analyze. Andrianto (2017) studies risk management in the healthcare provider as well as Mustafa and Al Bahar (1991), discusses risk management in a project while this research will discuss the risk management of domestic remittance business.

2.   Literature Review

2. 1.   Risk Management

Based on Australian/New Zealand Standard (2009) risk is the effect of uncertainty on objectives. While according to Risk Management in Emerging Market book by Carl Olsson (2002: 5) definition of risk is the uncertainty of future outcomes. This is a short and simple statement that suggests that risk is something that happens in the future but cannot be predicted exactly today because there is uncertainty. In doing risk management in the business world, the company needs to ensure that they have a robust risk management framework (Carl Olsson, 2002: 27).

A successful business can survive and grow by taking risks and continually adapt and respond to the changing environment in which they operate. To do that is necessary to have a coherent strategy, an effective risk management framework, and a robust but flexible implementation (Olsson, 2002: 99). According to Australian/New Zealand Standard (2009), the process of risk management consists of some steps, such as 1) communication and consultation, 2) establishing the context, 3) risk identification, 4) risk analysis, 5) risk evaluation, 6) risk treatment, 7) risk monitoring and review. Risk management can be applied to an entire organization, at its many areas and levels such as strategic, organization-wide, project, product, and process.

2. 2.   Analytical Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is a structured technique for organizing and analysis the decision that was developed by Thomas L. Saaty in the 1970s. According to Saaty (2008), AHP is a theory of measurement through pairwise comparisons and relies on the judgment of experts to derive priority scales. AHP can be used in strategic risk management, financial risk management, disaster risk management, clinical risk management, and others (Andrianto, 2017). The goal of the decision by AHP is based on the problem and the kind of knowledge sought. After setting the goal, the next step is constructing the structured hierarchy. In this step, the hierarchy is structured from the top until the low level. The top level presents the overall goal of the decision problem. The intermediate level presents the elements affecting the decision. And the lowest level presents the decision options. After creating the structure hierarchy then the next step is constructing the pairwise comparison. In this step, each element in each level should be compared. The result of this step is to know the priority of each element in each level. After forming the comparison

ICMEM

matrices, the next process is deriving relative weights for the various elements. The relative weights of the elements of each level with respect to an element in the adjacent upper level are computed as the components of the normalized eigenvector associated with the largest eigenvalue of their comparison matrix (Mustafa and Al Bahar, 1991). The use of the AHP to model and analyze real-world problems can be made much easier using a microcomputer implementation of the method such as Expert Choice. It makes structuring and modifying the hierarchy simple and quick. It eliminates tedious calculations. The AHP method is considered as a good way to make an appropriate decision in a short time and in an easy way, using Expert Choice software (Maja and Predrag, 2015). The Expert Choice software is a multi-objective decision support tool based on the Analytic Hierarchy Process (AHP), a mathematical theory first developed at the Wharton School of the University of Pennsylvania by one of Expert Choice's founders, Thomas Saaty (Barford, 2014).

2. 3.   Risk Management in Remittance Business

Remittance is a fund transfer services. Based on Ogbalu (2016) remittance can be done in the international area or domestic area. Some risks can occur in this business such as 1) Financial risk: the risk that a party cannot provide the contracted funds necessary to settle the account. Credit-risk-related losses typically arise from company failure or bankruptcy. 2) Operational risk: the risk that an employee or computer system unintentionally impedes the intended transaction, including losses due to clerical errors or to hardware and software failures 3) Fraud risk: the risk that someone will intentionally alter a payment transaction in order to misdirect or misappropriate funds, including embezzlement initiated either by a financial institution's employee or by an interloper who gained unauthorized access to a system. 4) Legal or regulatory risk: regulatory risk represents the risk of non-compliance with applicable legal and regulatory requirements. 5) Reputational risk: reputational risk will only manifest itself after the damage to the firm's name has already been done.

The mitigations that can be done through financial risk are: pre-funding of account, proper Know Your Customer (KYC), liability tilts, fix deposit account requirement. Then, the mitigation of operational risks such as a robust monitoring and early warning program, enhance your transaction authorization process, ensure that all value chain personnel are well trained and knowledgeable (Ogbalu, 2016)

3.   Methodology

The research was conducted through a semi-quantitative method to analyze business risk management of domestic remittance service. Data for risk identification was obtained from primary and secondary data. Primary data was obtained from observation and interview. While the secondary data was obtained from the company's document, annual report, and reference. To collect the data, the first step to do conducted the initial data collection. It was conducted in Post Headquarter Office especially in remittance division and SPI (*Sistem Pengendalian Internal).* After that, the next step was field study. The field study was conducted through direct observation in Karawang Post Office. Then the next step was conducted business environment analysis. In this research, the business environment analysis would be analyzed through external and internal analysis. This step was conducted to know the business situation of remittance in Karawang Post Office. The external analysis would discuss PEST analysis and competitor analysis. While internal analysis would discuss 7S McKinsey. After analyzing the external and internal situation then the next step constructed SWOT analysis to understand strength, weakness, opportunity, and threat of business.

After knowing the SWOT analysis then the next step processed the data. The steps to do in data process were: 1) risk identification, 2) risk analysis or risk measurement, 3) risk evaluation, and 4) risk treatment or mitigation. In risk identification the risk profile would be constructed through several techniques such as 1) SWOT analysis. In this research, the SWOT analysis that would be used is just from the weakness and threat. This technique was used relate to the research from Gorzen (2013) that shows SWOT analysis technique is the tools that placed 6th position of popular technique to construct a risk profile in MSMEs at Poland country. In addition, according to Martins (2010) is known that SWOT analysis placed the 12th position of the most popular tools used to construct risk profile construction companies in Rio De Janeiro state.; 2) Reference from other research. The research used as reference comes from Ogbalu (2016) regarding inherent risk in global remittance and Mohamud and Salad (2013) regarding internal audit

ICMEM

and operational risk management for some selected remittance companies in Mogadishu-Somalia; 3) Interview and brainstorming that relate to the research from Gorzen (2013) and Martins (2010).

The next step to do was risk analysis. A risk analysis would be conducted through the Analytical Hierarchy Process with expert choice software. AHP is used as a tool in risk analysis because no data is needed to solve business problems in this study and hence expert judgments will help in determining the likelihood and impact of the risk. In addition, with the use of AHP can know the priority of all categories and subcategories of risks. After analyzing the risks then the next step was risk evaluation. It compared the level of risk found during the risk analysis process and considering action to treat. Then the last step of risk management was risk treatment. It involved selecting and implementing one or more treatment options.

4. Findings and Argument

4. 1. Risk Identification

Based on identifying the risk from some technique that has been explained in methodology, the risk profile is as follow:

Table2. Risk Identification (1)

Risk Category	Risk Factor	Risk Description
Compliance (C)	Frequent transaction (C1)	Customers send money in the same day for the different location to the same or different beneficiary
	Fund transfer from high-risk areas (C2)	Money paid to the customer for remittance transfer from high-risk potential areas
	Suspicious transaction (C3)	Customer transfer money with the large amount, frequency, and refuse to tell the source of fund
Environmental (E)	Lifestyle changes (E1)	Change of lifestyle from traditional to the easy, fast, and practical things
	Natural disaster (E2)	Floods and tornadoes that endanger business activities
	Robbery (E3)	Robbery at the Karawang Post office and or its branches
	Financial technology development (E4)	Development of financial technology in the financial service provider
	Arising from the blockchain technology (E5)	Development of blockchain future technology
Operational (O)	Not comply with Standard Operating Procedures (O1)	The counter staff did not identify and verify the customer identity
	Wrong payment (O2)	The counter staff did not give money to the real recipient or beneficiary
	Transaction authorization (O3)	The transaction of more than 5 million are not approved by the supervisor or head office
	Notification of prima remittance (O4)	Courier late in delivering notification of prima remittance to the recipient's customers
	Insufficient inventory (O5)	Insufficient of receipt form and or payment and shipping form
	Fraud action by head or staff (O6)	Fraud on daily/monthly/yearly report and or doing fictitious transaction by staff or head
	Lack of supervision (O7)	Lack of supervision or control by head/manager
	IT infrastructure (O8)	Server, network, and or application error
	Security system hacking (O9)	The security system is hacked by an irresponsible party

Table3. Risk Identification (2)

	Fund allocation (F1)	Less or excessive of fund allocation in the Karawang office or its branch
Financial (F)	Money lost (F2)	The money from branches and or from the Karawang office loss
	Failure of the financial report (F3)	Error typing and late sending the financial report from branches to Karawang Post office or Karawang Post office to headquarters
	Advance payment and cash are insufficient to meet the payment (F4)	Advance payment and cash are insufficient to the customer payment
	Mismatch of money and number of transaction (F5)	Mismatch of the money and number of daily/monthly/yearly transaction
Business (B)	Market share is constant and tends to decrease (B1)	Market share is constant and tends to decrease because of inability to use resources and to absorb the market

ICMEM

	Decreasing of number transaction (B2)	Decreasing of number transaction because of the environment/technology development
	Competition (B3)	Competition is getting more competitive
Reputational (R)	Service quality (R1)	Decreasing of service quality of remittance transaction
	Customer's complaint (R2)	A customer complaint about the service and professionalism staff

4. 2.   Risk Analysis/Measurement

   Judgment results obtained from interviews conducted with 9 employees of Karawang Post office. AHP will indicate the risk level based on likelihood and impact as a basis for determining the level of risk that is divided into five levels: very high, high, medium, low, very low. Before conduct assessment using AHP, it is necessary to determine the hierarchy based on the risk identification and level of risk that will be analyzed.
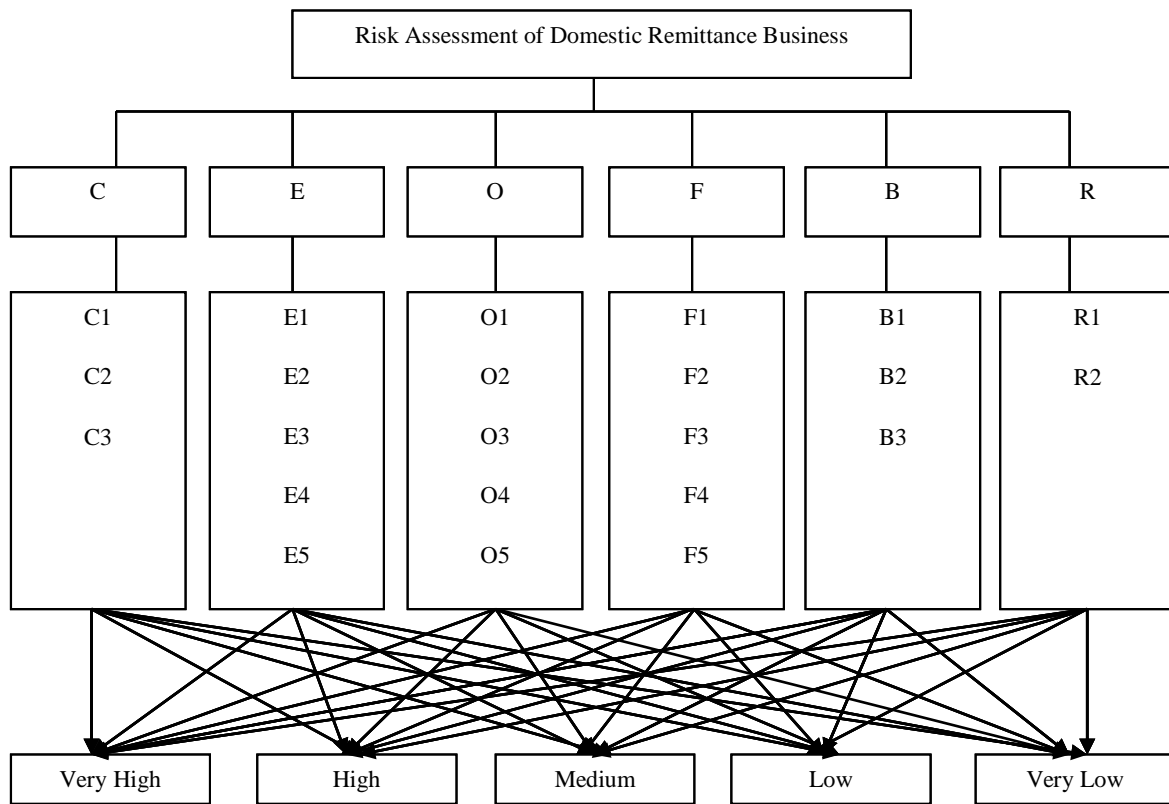
Figure1. Hierarchy Structure

   Each matrix of the pairwise comparison made must be calculated in advance the value of CR before the results of the weighting used for the next step. Consistency Ratio (CR) value shows the consistency of the results of judgment, if the CR value is greater than 0.1, then a judgment is inconsistent then the judgment must be repeated (Coyle, 2004). The following table is consistency ratio result of this research and the result of likelihood and impact level of the risk.

Table4. Consistency Ratio Result

Name	Overall	Goal	C	E	O	F	B	R
Combined	0.010	0.007	0.001	0.007	0.020	0.004	0.000	0.000
Head of Karawang Post Office	0.080	0.080	0.060	0.060	0.080	0.030	0.060	0.000
Financial Manager	0.070	0.060	0.030	0.090	0.080	0.090	0.050	0.000
Prostans Manager	0.060	0.060	0.090	0.070	0.090	0.009	0.040	0.000
Unit Service Outside Manager	0.070	0.070	0.030	0.070	0.060	0.070	0.040	0.000

Service Manager	0.070	0.070	0.030	0.040	0.080	0.010	0.030	0.000
Head of Cikampek branch office	0.060	0.060	0.000	0.040	0.090	0.060	0.030	0.000
Office counter (1)	0.060	0.080	0.000	0.070	0.080	0.080	0.000	0.000
Office counter (2)	0.070	0.050	0.000	0.070	0.012	0.050	0.040	0.000
Office counter (3)	0.060	0.060	0.000	0.080	0.080	0.030	0.030	0.000

Table5. The Result of Remittance Business in Karawang Post Office

Risks Category		Risk Factor		Likelihood Level		Impact Level	
C	0.066	C1	0.013	L	0.006	L	0.006
		C2	0.021	L	0.013	M	0.010
		C3	0.032	L	0.016	M	0.015
E	0.173	E1	0.051	M	0.018	M	0.024
		E2	0.025	L	0.009	H	0.006
		E3	0.019	M	0.007	M	0.010
		E4	0.057	M	0.021	H	0.028
		E5	0.020	M	0.010	M	0.007
O	0.299	O1	0.054	M	0.019	VH	0.019
		O2	0.035	M	0.009	M	0.014
		O3	0.029	VL	0.014	H	0.008
		O4	0.010	M	0.004	L	0.006
		O5	0.013	L	0.007	L	0.005
		O6	0.053	H	0.014	H	0.028
		O7	0.046	L	0.018	H	0.024
		O8	0.039	M	0.009	VH	0.019
		O9	0.020	L	0.010	M	0.008
F	0.158	F1	0.032	M	0.021	H	0.021
		F2	0.030	L	0.012	H	0.021
		F3	0.015	L	0.008	M	0.006
		F4	0.049	M	0.013	M	0.013
		F5	0.019	M	0.006	M	0.009
B	0.214	B1	0.064	M	0.034	H	0.023
		B2	0.047	M	0.022	M	0.026
		B3	0.103	M	0.040	VH	0.025
R	0.090	R1	0.055	VL	0.019	M	0.020
		R2	0.035	L	0.016	M	0.012

4. 3. Risk Evaluation

Risk evaluation is a process of comparing the level of risk found during the analysis process with risk criteria to determine whether the risk is acceptable or tolerable. Based on this comparison, the needs for treatment can be considered (Australian/New Zealand Standard, 2009). The classification of the risk is based on a combination of likelihood and impact level (Andrianto, 2017). Based on Kaderi (2008) the next step after analyzing the risk is mapping into impact and probability matrix. Mapping technique used is a two-dimensional mapping that is the possibility of risk and impact of risk, the higher the risk likelihood the more needs to get attention and vice versa. In this research, the likelihood dimension is divided into 5 categories such as very low, low, medium, high, very high. Same as to the likelihood, the higher the risk impact the more the company needs to get special attention as well as vice versa. There are 5 categories such as very low, low, medium, high, very high. In this research, there are 3 low risks, 17 medium risks, and 7 high risks. The figure below shows the result evaluation of those risks:

ICMEM

	High	O3	E2, O7, F2	E4, F1, B1	O6	
	Medium	R1	C2, C3, O9, F3, R2	E1, E3, E5, O2, F4, F5, B2		
	Low		C1, O5	O4		
	Very Low					
		Very Low	Low	Medium	High	Very High
				LIKELIHOOD		

Figure2. Risk Mapping

4. 4.   *Risk Treatment*

At this stage, the alternative selection is done to deal with risks, assessing options for treatment, preparing risk treatment plans and implementing them. Basically, a risk treatment is an attempt to reduce the impact and possible risks (Kaderi, 2008). There are seven methods of risk mitigation based on Australian/New Zealand Standard (2009): 1) avoiding the risk, by deciding not to start or continue the activity that gives rise to the risk, 2) Taking or increasing the risk in order to pursue an opportunity, 3) removing the risk source, 4) changing the likelihood, 5) changing the impact, 6) transferring/sharing the risk with another party or parties (including contract and risk financing), 7) retaining the risk by informed decision. Based on Kaderi (2008) there are four treatments to mitigate the risk in his research, they are risk acceptance, risk avoidance, risk reduction, and risk sharing or transfer. Risk acceptance is a company action to accept the risk by not taking meaningful actions that require substantial resources. This action is usually applied to a risk whose overall risk level is low. Risk avoidance is a company action not to engage in certain activities that involve undesirable risk. This action is usually applied to the risk that the overall degree of excess is very high. Risk reduction is a corporate action to minimize risk optimally without eliminating the opportunity to make a profit. Usually, there are two methods to reduce the risk namely impact reduction (by changing the design, procedure quality assurance or audit periodically) and likelihood reduction (by contingency or evacuation planning). Risk sharing or transfer is a corporate action to move risk from the company to third parties who can manage the risk.

The selection of risk treatment is carried out by considering to the cost and benefit principle, impact on the likelihood and the impact of risk, the possibility of arising the opportunities, and its effect on other risks (Kaderi, 2008). Treatment at each risk depended on the type of risk and confirmation of the business owner in Karawang Post Office. In this study, there are 27 risks which received different treatment that showed in the following table.

Table6. Risk Mitigation (1)

No	Level of Risk Evaluation	Risk Factor	Risk Level	Risk Treatment	Action
1	High likelihood and very high impact	Fraud action by head or staff	High	Changing the likelihood	Conducting the proactive controlling (emptying cash once a month)
2	Moderate likelihood and very high impact	Not comply with the SOP (Standard Operating Procedures)	High	Changing the impact	Employee briefing, training & rewarding
		IT infrastructure	High	Changing the likelihood	Checking the IT infrastructure of the branch office & Communicating with headquarter office for checking the networks & server and regularly updating apps
		Competition	High	Changing the impact	Creating and implementing marketing strategy plan

ICMEM

No	Level of Risk Evaluation	Risk Factor	Risk Level	Risk Treatment	Action
3	Moderate likelihood and high impact	Financial technology development	High	Transferring the risk	Communicating with the headquarter office to launch the Mpospay for the public to follow the financial tech development
		Fund allocation	High	Changing the impact	Arranging and controlling cash budgeting
		Market share is constant and tends to decrease	High	Changing the impact	Creating and implementing the marketing strategy plan
4	Moderate likelihood and moderate impact	Lifestyle changes	Moderate	Changing the impact	Creating and implementing the marketing strategy plan
		Robbery	Moderate	Transferring the risk	Insurance
		Arising of blockchain technology	Moderate	Transferring the risk	Communicating with headquarter office to adjust blockchain
		Wrong payment	Moderate	Changing the likelihood	Strict sanction
		Advance Payment and cash are not enough to meet the payment	Moderate	Changing the impact	Cash budgeting & Branch office withdraw to Karawang post office
		Mismatch of money and number of transaction	Moderate	Changing the impact	Monitoring and checking the cash in and cash out of the transaction
		Decreasing of number transaction	Moderate	Changing the impact	Creating and implementing the marketing strategy plan
5	Moderate likelihood and low impact	Notification of prima remittance	Moderate	Changing the likelihood	Implementing target system, performance assessment, and rewarding to best performance
6	Low likelihood and high impact	Natural disaster	Moderate	Transferring the risk	Insurance
		Lack of supervision	Moderate	Changing the impact	Regularly controlling through emptying cash in the branch office
		Money lost	Moderate	Transferring the risk	Police assistance when sending money
		Fund transfer from high-risk areas	Moderate	Changing the impact	Customer identification and verification

Table7. Risk Mitigation (2)

No	Level of Risk Evaluation	Risk Factor	Risk Level	Risk Treatment	Action
7	Low likelihood and moderate impact	Fund transfer from high-risk areas	Moderate	Changing the impact	Customer identification and verification
		Suspicious transaction	Moderate	Changing the impact	Customer identification and verification
		Security system hacking	Moderate	Changing the impact	Secure the network, pay attention to phissing, backup data
		Failure of the financial report	Moderate	Changing the impact	Monitoring and rechecking the report
		Customer's complaint	Moderate	Changing the impact	Upgrading the service, training the employee, customer survey
8	Low likelihood and low impact	Frequent transaction	Low	Retaining the risk	Monitor and review
		Insufficient inventory	Low	Retaining the risk	Monitor and review
9	Very low likelihood and high impact	Transaction authorization	Moderate	Changing the impact	Strict sanctions
10	Very low likelihood and moderate impact	Service quality	Low	Retaining the risk	Monitor and review

ICMEM

5. Conclusion

Indonesia is a large country and migration can happen from one island to another island. It will affect the fund transfer movement in those areas. It encourages PT Pos Indonesia to provide money transfer services. Based on the interview with headquarter office is known that remittance business is often experiencing some problems and uncertainties from both the internal and external environment of the business. In addition, the risk management of domestic remittance business has not been conducted yet at Karawang post office as a sample of this research. So the risk management is needed to protect the business and prevent the failure. The aims of the study are to identify, analyze, evaluate, and mitigate the risk of domestic remittance business.

The risk identification was obtained through SWOT analysis, other similar research, interview, and brainstorming. Based on identification is known that Karawang Post office has 27 potential risks that probably happened in the future. It consists of 6 categories namely compliance risk, environmental risk, operational risk, financial risk, business risk, and reputational risk. The analysis of risk was conducted by the analytical hierarchy process (AHP) through expert choice software. Based on analysis known that the most important risk is the operational risk with the eigenvalue of 0.299 and followed by business risk (0.214), environmental risk (0,173), financial risk (0,158), reputation risk (0.090) and compliance risk (0.066).

There are several recommendations for the company and further research:

1. For company

   Karawang post office should be aware of the events that related with the risk in domestic remittance business and report all information to be monitored and reviewed. Then for further risk management proses the company can use focus group discussion with the representative of all the branch office to get more insight and view about the actual risk in the field.

2. For further analysis

   For researchers who will analyze the risk is recommended to analyze object with greater scope (organizational level) and with another framework such as the COSO framework, Basel (for Bank), and the others. Then, for those who will analyze the risks that require historical data can use other methods such as Monte Carlo analysis.

Reference

Andrianto, Brian. (2007). Risk Management of Healthcare in Klinik Pratama Medika Antapani using Analytic Hierarchy Process. International Conference on Management in Emerging Market.

Arianty, Tinny. Personal Interview with Ramadhani, Aulia Nazala. Bandung: 26 February 2018

Bank Indonesia. (2018). Statistik Sistem Pembayaran. Available at: https://www.bi.go.id/id/statistik/sistem-pembayaran/money-remittance/contents/transaksi.aspx (Accessed: March 3rd, 2018)

Bank Indonesia. (2018). Daftar Penyelenggara Transfer Dana Yang Telah Memperoleh Izin dari Bank Indonesia Per 22 Februari 2018. Available at: https://www.bi.go.id/id/statistik/sistem-pembayaran/money-remittance/Contents/TransferDana.aspx (Accessed: March 3rd, 2018)

Barford, Michael Bruhn. (2014). Graphical and technical options in Expert Choice for Group Decision Making. Technical University of Denmark, Transport.

Coyle, G. (2004). The Analytical Hierarchy Process (AHP). Pearson Education Limited

Gorzeń-Mitka, Iwona. (2013). Risk Identification Tools – Polish MSMES Companies Practices. Problems of Management in the 21st century, 2013, Volume 7, 6-11, ISSN: 2029-6932

International Australian New Zealand Standard. (2009). Risk Management - Principles and Guidelines AS/NZS ISO 31000:2009. Sydney, Australia: Standards Australia/Standards New Zealand.

Kaderi Wiryono, S. (2008). Analisa Risiko Operasional di PT Telkom Dengan Pendekatan Metode ERM. Jurnal Manajemen Teknologi, volume 7 number 1 2008

Maja and Predrag. 2015. New Machines Selection Tools Using Analytic Hierarchy Process. The University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture

Martins, et al. (2011). Risk Identification Techniques Knowledge and Application in the Brazilian Construction. Journal of Civil Engineering and Construction Technology Vol. 2 (11), pp. 242-252, November 2011

Mike Ogbalu III. (2016). Inherent Risk in Global Remittances. West African Institute for Financial and Economic Management (WAIFEM)

ICMEM

Mohamud and Salad. (2013). Internal Auditing and Operational Risk Management for Some Selected Remittance Companies in Mogadishu-Somalia. African Journal of Business Management. Vol. 7(35), pp. 3374-3380

Mustafa and Al Bahar. (1991). Project Risk Analytic Assessment Using the Hierarchy Process. IEEE Transactions On Engineering Management, Vol. 38, No. I, February 1991

Olsson Carl. (2002). Ebook Risk Management in Emerging Market. Great Britain. Financial Time Prentice Hall

Oman. Personal Interview with Ramadhani, Aulia Nazala. Karawang: 16 April 2018

Prasojo. Personal Interview with Ramadhani, Aulia Nazala. Bandung: 09 April 2018

Saaty, T.L. (2008). Decision Making with The Analytic Hierarchy Process. Int. J. Services Science, Vol. 1, No. 1, pp 83-98

Singgih. 2010. Konsep Batas Wilayah Negara di Nusantara. Eprint.Undip.ac.id

World Bank. (2017) The Global Findex Database 2017. Available at: http://globalfindex.worldbank.org/nide (Accessed: March 2nd, 2018)

World Bank. (2017). Remittance to Recover Modestly After Two Years of Decline. Available at: http://www.worldbank.org/en/news/press-release/2017/10/03/remittances-to-recover-modestly-after-two-years-of-decline (Accessed: March 4th, 2018)

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Determinant of Return on Asset and Return on Equity Using Bank Specific and Macroeconomic Factor of 19 Commercial Banks Period 2007-2018

Theresia Rosa Imanuella[a*], Achmad Herlanto[b]

[a,b]*School of Business and Management*

Abstract

Main pillar of financial system especially in Indonesia is bank institutions. For the past 10 years banks maintain good portfolio as it has increasing trend line of total asset and liquidity. However, better quality and increasing growth of banks asset and liquidity do not follow by increase in profit which instead show decreasing trend line. Thus, the research regarding important factor of bank performance is important to help finding suitable strategy for Indonesian banking. The research determine factor affecting Indonesian bank performance proxy by bank profit (ROA) and return on net worth (ROE). Data gathered for the study is statistical data of 19 banks listed in BACB3 and BACB4 for period 2008 to 2017 quarterly. The analysis employs regression method with random effect method.
The result shows that NIM, and CAR have positive significant relation with ROA Model, while LNGDP and NPL have negative significant relation. Second model is proxy by ROE which result show that NIM, EQM, and CAR have positive significant relation with ROE Model, while LNGDP and NPL has negative significant relation. The findings of the study are profitability is strongly affected by net interest margin which show that spread based income is mainly contributing to increase in profit. Nonperforming loans is the second strongest factor affecting profitability as good asset quality show good loans portfolio to rise asset generating income thus increase profitability.

Keywords: Profitability; Return on Asset; Return on Equity; Bank Specific; Macroeconomic

1.   Introduction

Financial system holds critical role for economy driver in developing countries. In the past research it is clearly show that the level of financial development is good predictor for economic growth (Levine, Loayza, & Beck, 2000). History of Indonesian banking proven that inefficient management of financial system prompt number of cases, moreover vulnerable to crisis which occur to many countries. Based from previous explanation and crisis evidence, taking precautions by maintaining the performance of bank is important as keeping the cycle of funds stability is the main purpose. Moreover, a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (P. P. Athanasoglou, Brissimis, & Delis, 2008b).

Based on Indonesia Banking Statistic gathered from Otoritas Jasa Keuangan website, the author combined 10 years data to provide several financial ratios of commercial banks performance in Indonesia (Otoritas Jasa Keuangan, 2018). Liquidity proxy by loan to deposit ratios show increasing linear trend for the past years shown in figure 1. In Indonesia according to regulation of Bank Indonesia No. 15/7/PBI/2013 minimum loan to deposit ratio is 78% and maximum of 100%. The ratios stable in 70-90% which show that banks capable to transform loans to generate income. Figure 2 is showing the increasing trendline of total assets. It is concluded that average commercial banks in Indonesia has 6,7 billion rupiah in December 2017.

---

* Corresponding author.
  E-mail address: theresia.rosa@sbm-itb.ac.id

ICMEM
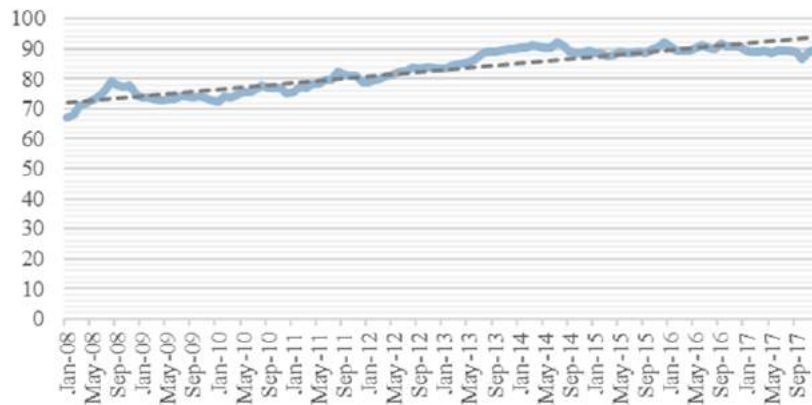
Fig. 1. Average Loan to Deposit Ratio of Commercial Bank in Indonesia 2008-2017
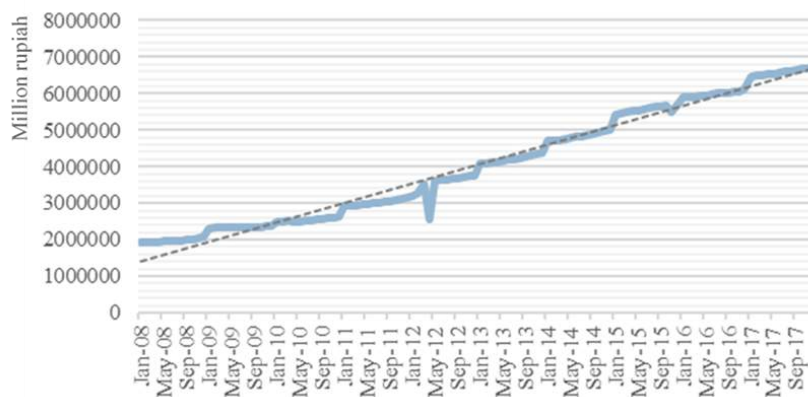
Fig. 2. Average Total Assets of Commercial Bank in Indonesia 2008-2017

Fig. 3. Average Return on Asset of Commercial Bank in Indonesia 2008-2017

However, in Indonesia commercial banks show that even tough Indonesian banking have fulfilled the requirement of good amount of liquidity and increasing total asset, profitability of banks distinctly show decreasing trendline. As shown in the figure 3, return on asset have decreasing trendline since 2008. Despite the actual condition

ICMEM

which rather different from theory, Indonesia banking still operate well as financial institutions. Thus, this phenomenon strengthens the statement that each country has different determinant of bank performance

2. Literature Review

According to Otoritas Jasa Keuangan (2016), Indonesian banks activities cover raising funds and distribute it to earn interest in the form of deposit interest and loan or credit interest. The type of income earn from interest can be called spread based. Spread based income is profit earned by banks through the collection and distribution of funds. Banks also provide services which in exchange of service banks give to the customer, banks could earn service fees which is fee-based bank earn to generate income.

In Indonesia, study has been conducted by Anggono (2017) to find the determinant factors of asset and liability management and the bank performance from 2008 to 2013. The research using two stages regression 'seemingly unrelated regression (SUR)' show that liquidity coverage, capital, net interest margin and loan to deposit ratio is showing significant positive relation to return on asset while capital and loan to deposit ratio show negative significant relation to return on net worth.

A study conducted to find the determinant of bank profitability in Nigeria banking industry (Aremu, Ekpo, & Adeniyi Mudashiru, 2013). Using econometric analysis of Cointegration and Error Correction Technique, the result show that credit risk and capital adequacy found to have significant relation which affected bank profitability both in the long run and short run respectively. Liquidity affected bank profitability in the short run. For the macroeconomics factor, Broad Money Supply growth rate found to be a have significant relation for both in the long run and in the short run.

This paper examines the correlation of bank financial ratios and macroeconomic determinant with ROA and ROE as the indicator of bank performance. The analysis conduct for 19 banks cover in BACB4 and BACB3 Indonesia systemic banks which core capital classify to IDR 5 trillion and above. The time period the research is started from 2008 to 2017 which reflecting the condition of Indonesian banks recover from recent crisis thus show the changes of bank performance up until present day. The data gathered obtained from official website of Bank Indonesia and Indonesian financial services authority.

2. 1. Dependent and Independent Variables

Table 1. Dependent and Independent Variables.

2. 2. Technique and Model Specification

Variable	Notation	Formula	Expected Result
Dependent			
Bank Performance	ROA	(Net Income / Total Asset) x 100	
	ROE	(Net Income / Shareholders Equity) x 100	
Independent			
Earning	NIM	(Net Interest Income - Net Interest Expense) / Total Earning Asset	±
Asset Quality	NPL	Non performing loans / Total loans	±
Capital	CAR	(Tier 1 Capital +Tier 2 Capital) / Risk Weighted Asset	±
Equity Multiplier	EQM	Total Asset / Total Equity	±
Gross Domestic Product	LNGDP	ln(Nominal GDP)	±

First the author identifies the problem and objective of the research which find the determinant of bank profitability. Follow with gathering correspond literature from books and journal. After that collecting the data needed from publication reports of 19 commercial banks on Otoritas Jasa Keuangan and Bank Indonesia website. Then conduct the data analysis which consist of classical assumption test, stepwise regression and regression analysis. First in data analysis, the author employs assumption test as a requirement to analyse linear regression by using Ordinary Least Square (OLS) method. To have significant result, the regression model should match with the characteristic of Best Linear Unbiased Estimate (BLUE) test (Gujarati et al., 2003). The test consists of multicollinearity,

ICMEM

autocorrelation, heteroscedasticity, and normality test. Then, follow with stepwise regression to select and determine independent variables which have strong effect on the dependent variables. This method purpose is to collect a complete and realistic subset of regressor as effective as possible. Finally, ROA and ROE Model will be asses separately with its corresponding independent variables. Using likelihood and hausman test to determine whether use fixed effect or random effect as the suitable method to asses' both model (Gujarati et al., 2003) .

Return on Asset and Return on Net Worth Model will be examined respectively through the following functions:

$ROA = \beta_0 + \beta_1 NIM_{I,t} + \beta_2 NPL_{I,t} + \beta_3 CAR_{I,t} + \beta_4 LNGDP_{I,t} + \varepsilon$

$ROE = \beta_0 + \beta_1 NIM_I,t + \beta_2 EQM_I,t + \beta_3 NPL_I,t + \beta_4 CAR_I,t + \beta_5 LNGDP_I,t + \varepsilon$

3. Findings

ROA and ROE Model has fulfilled all the classical assumption test. Then from stepwise regression result it is show that NIM, NPL, CAR and LNGDP has strong significant relation to ROA Model while EQM is eliminated from the model. For ROE Model, NIM, NPL, EQM, CAR and LNGDP show strong relation. Thus, ROA Model has 4 independent and ROE Model has 5 independent to be asses in regression analysis. From the likelihood and hausman test, both model use random effect as the approach for regression analysis.

Table 2. Stepwise Regression Result for ROA Model and ROE Model

3..1 Coefficient Determination

ROA Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	0.197482	0.040952	4.822285	0.000000
NIM	0.265227	0.010379	25.55368	0.000000
CAR	0.044806	0.003406	13.15348	0.000000
NPL	-0.141794	0.014248	-9.952092	0.000000
LNGDP	-0.005491	0.001148	-4.784225	0.000000

Selection Summary				
Added NIM				
Added CAR				
Added NPL				
Added LNGDP				

ROE Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	2.017118	0.332775	6.061497	0.000000
NIM	1.843828	0.081081	22.74066	0.000000
EQM	0.01958	0.00117	16.73447	0.000000
LNGDP	-0.059473	0.009256	-6.425036	0.000000
NPL	-0.827604	0.117998	-7.013687	0.000000
CAR	0.139968	0.029387	4.762981	0.000000

Selection Summary				
Added NIM				
Added EQM				
Added LNGDP				
Added NPL				
Added CAR				

According to the regression analysis result in table 3, R-squared for ROA Model is 0.744939 and ROE Model is 0.678774. This imply that CAR, LNGDP, NIM and NPL variables is define the banks performance proxy by banks profit by 74.49%, while the later 25,51% is define by other variables. Similar to statement above, NIM, NPL, EQM, CAR and LNGDP is define return on net worth by 67.87%.

3.2 T-test

T-test is conducted to explain the effect of each independent variables toward the dependent variables. The test is done by comparing the p-value to the significant level. Based on the table above, it shows that CAR and NIM have significant positive relation with return on asset while LNGDP and NPL have significant negative relation with return on asset. All independent variables have significant level of 0,01 in relation with ROA means all of them define banks profit significantly. For ROE Model, it is show that CAR, NIM, EQM have significant positive relation with return on asset while LNGDP and NPL have significant negative relation with return on net worth. All independent except CAR have significant level of 0,01 in relation with ROE while CAR have significant level of 0,05 relation with ROE

ICMEM

Model.

Table 3. Regression Result for ROA Model and ROE Model

ROA Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.179053	0.062141	2.881406	0.004100
CAR	0.035932	0.003379	10.635150	0.000000
LNGDP	-0.004984	0.001708	-2.918003	0.003600
NIM	0.311502	0.024592	12.666850	0.000000
NPL	-0.164128	0.025016	-6.560831	0.000000

Weighted Statistics	
R-squared	0.744939
Adjusted R-squared	0.743587
S.E. of regression	0.005542
F-statistic	551.2683
Prob(F-statistic)	0.000000

ROE Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.899564	0.502856	3.777553	0.000200
CAR	0.074751	0.032038	2.333204	0.019900
EQM	0.020255	0.002995	6.762900	0.000000
LNGDP	-0.056325	0.013839	-4.070080	0.000100
NIM	2.106674	0.275666	7.642118	0.000000
NPL	-0.897847	0.196901	-4.559899	0.000000

Weighted Statistics	
R-squared	0.678774
Adjusted R-squared	0.676644
S.E. of regression	0.045781
F-statistic	318.6518
Prob(F-statistic)	0.000000

3.3 F-test

In both model, the p-value of F-statistic is 0.0000, which means that all the independent variables are significant to the dependent variable at once, when examined with 0.05 level of significance.

3.4 Result Analysis

Higher NIM ratio indicates positive relation as it is increase the profitability by effectively using its asset to generate earnings in form of interest. This statement is supported by (Suvita Jha, 2012) which stated that NIM has been treated as an extremely important measure to the bank as a slight change in the interest margin has a huge impact on profitability by maintaining its asset. The greater value EQM alone do not directly show actual effect on increase in profit. It must be followed by increase in net profit margin and good asset turnover. For CAR, it is show positive relation toward profitability which is in line with Athanasoglou (2008). Adequate amount of capital provides secure base for bank to protect it against future loss. NPL ratio is directly related to profitability as poor asset quality means high number of doubtful asset which reduce income. Trujillo-Ponce (2013) supported the result by showing negative significant relation of asset quality and profitability. Lastly, in Indonesian banks cases GDP have negative relation with profitability. The explanation would be connected to the variable used for proxy GDP. The research uses nominal GDP which show current price changes due inflation on the calculation. Thus, negative relation may show that increase in nominal GDP relates to rise in inflation rather than increase in spending thus decrease savings which effect on lower bank profitability.

4. Conclusion and Recommendation

As any other developing countries, Indonesian banks attempt to manage its financial institutions to develop national economic growth. Based from initial chapter explanation about Indonesian banking history of crisis, taking precautions by maintaining the performance of bank wellness is important as keeping the cycle of funds stability is the main purpose. The proxy of bank performance used in the research is profitability which covered by ROA and ROE Model and analyses using regression analysis with random effect method. In the research the author found that NIM has the most significant effect on profitability. That means in cases for Indonesian banks, maintaining earning ability from the used of asset is the most significant step for increase profitability. Thus, it is also important to carefully manage liquidity of funds to make sure banks always have adequate liquid asset but not too excessive to prevent high opportunity cost. NPL has the second most significant variable effecting its relation. The relation describes as loan is

ICMEM

major source of income thus maintaining low nonperforming loans will increase profitability and become good portfolio for shareholders.

Increase the share of income generating asset by increase amount of loans will rise net interest margin thus increase profitability. However, increasing number of loans should be followed by liquidity monitoring to prevent nonperforming loans. Risk assessment to lower nonperforming loans is suggested. Better portfolio loans are preferable for investor and customer in term of increasing trust. Optimizing risk assessment will lower the doubtful asset thus increase profitability. Nominal GDP negative relation with profitability means banks should pay attention to the changes of inflation rate. The use of equity multiplier ratio in line with profitability, however the reverse is also true as it magnifies both gain and losses, thus the utilization of equity multiplier ratio should in line with net margin and asset turnover.

References

Aremu, M. A., Ekpo, I. C., & Adeniyi Mudashiru, M. (2013). Determinants of banks' profitability in a developing economy: evidence from Nigerian banking industry. *Interdisciplinary Journal of Contemporary Research in Business*, *4*(9), 155–181. Retrieved from http://journal-archieves27.webs.com/155-181.pdf

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-Specific, Industry- Specific and Macroeconomic Determinants of Bank Profitability. *Journal of International Financial Markets, Institutions and Money, Elsevier*, *18*(2), 121–136. https://doi.org/10.1016/j.intfin.2006.07.001

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008b). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Journal of International Financial Markets, Institutions and Money, 18(2), 121–136. https://doi.org/10.1016/j.intfin.2006.07.001

Bank Indonesia (2013). Peraturan Bank Indonesia No. 15/7/PBI/2013

Gujarati, D. N., New, M. M., Santiago, D., Singapore, S., Taipei, S., Mcgraw-Hill, T., & Education 'ez, H. (2003). Basic Econometrics Fourth Edition. Retrieved from https://himayatullah.weebly.com/uploads/5/3/4/0/53400977/gujarati_book.pdf

Herlanto, A. (2017). The determinant factors of asset and liability management and the bank performance : empirical study on foreign exchange commercial banks in Indonesia from 2008 to 2013. *Int. J. Business and Globalisation*, *19*(4), 14–15.

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth:causality and causes. Journal of Monetary Economic, 46(2000), 31–77.

Otoritas Jasa Keuangan (2016). Seri Literasi Keuangan Perguruan Tinggi: Perbankan, Jakarta : Otoritas Jasa Keuangan.

Otoritas Jasa Keuangan. (2018, February 19). Statistik Perbankan Indonesia. Retrieved from https://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Pages/Statistik-Perbankan-Indonesia---Desember-2017.aspx

Suvita Jha. (2012). A comparison of financial performance of commercial banks: A case study of Nepal. *African Journal of Business Management*, *6*(25), 7601–7611. https://doi.org/10.5897/AJBM11.3073

Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting and Finance*, *53*(2), 561–586. https://doi.org/10.1111/j.1467-629X.2011.00466.x

ICMEM

The 3rd International Conference on Management in Emerging Markets

Influence of Fathers Attribute to the Financial Literacy of their Children

James Christopher Santoso[a]*, Ahmad Danu Prasetyo[b]

[a,b]School of Business and Management ITB, Jl. Ganesha no. 10, Bandung 40132, Indonesia

Abstract

There are some father's attributes that might influence his child's Financial Literacy, among others Father-Child Age Gap, Father's Income Level, Father's Education Level, Father's Job Type. Financial Education Course also becomes the independent variable as another factor that might influence the Financial Literacy. This research helps proving which factor is more significantly influencing the children's Financial Literacy, between the father's attributes and financial education course. As to collect data, a questionnaire survey is conducted to 204 respondents of university students in four universities in northern Bandung area. The questionnaire contains demographic questions of the respondent's father and the question asking financial education course that has been taken by the respondent, as well as a set of questions for measuring the respondent's financial literacy level. After the data has been collected, a multiple linear regression is conducted to analyze the data. The result shows that Father's Income Level and the child's Financial Education Course are significantly influencing the child's Financial Literacy, with Financial Education Course that has the strongest significance. Thus, the most determinant factors to the Financial Literacy are Financial Education Course and Father's Income Level.

Keywords: Financial Literacy; Age Gap; Income Level; Education Level; Job Type; Financial Education; Multiple Linear Regression

1. Introduction

The first social group for a child is normally built at his/her family, where a child builds up their mindset before being influenced by other social groups. It is studied that fathers have a profound impact on their children's intellect growth at a very early age (Gadsden & Ray, 2003). According to this research, the education from the father is quite strong in building the child's literacy. In addition, a crucial review of the research on father's involvement in children's education, found out that father's participation in literacy activities, the barriers that parents face as a result of low literacy, and their perceptions of role that they can play in their children's literacy development, may affect children's preparedness for school (Gadsden & Bowman, 1999). That is why the root of children's education and literacy are lied on the father's affluence, even before the children go to school. Furthermore, although mothers' education historically has been used as a primary as the predictor of children's literacy, educational research increasingly is examining the effect of father-child interaction on children's learning (Gadsden, Books, Jackson, 1997). Besides, not only referring to literacy in general, Grohmann et al. (2014) have shown that parental socialization by father plays a major role in financial literacy. Thus, a child tends to carry money management skills that would determine one's financial decision making in every event that happens in the future of the one's lifetime, or in other words financial literacy, from the father's affluence in their childhood into their adult lives (Furnham, 1996; Kirkcaldy & Furnham, 1993; Colcagno & Monticone, 2011).

Based on the above literatures, there are some potential factors identified in the father's attributes that might influencing one's literacy, especially for the financial aspect. The first attributes is regarding the "Father-Child Age Gap". This particular factor is identified as that the age gap between father & children is strongly related to the Generation Gap in which making a difference in life experience and values of each generation (Phillips, 2011). Having

---

* Corresponding author.

ICMEM

a gap of generation leads to the different perspective & mindset, including the financial management, selected investment management, financial protection management, financial legacy management and so forth (Ćumurović & Hyll, 2016). Thus, it is an interesting part to find out the result from the survey. The next attributes to be taken into consideration are the Father's Income Level, Father's Education Level, and Father's Job Type as referred and highlighted by Kiyosaki & Lechter (2001) which categorize fathers into two different characteristics so called "Rich Dad" and "Poor Dad" and both characteristics influences their children's financial literacy differently.

Father's Income Level refers to the size of the income either directly or indirectly derived from the business /work/investment of the father. Thus, the higher of the father's income will affect their children education including but not limited to the financial literacy as there will be a flexibility for their children to access quality educations besides the children might learn directly from their fathers from the beginning on how to properly manage their financial. The so called "Rich Dad" as referred by Kiyosaki & Lechter (2001) are Fathers who have   high income level. Hence, this view will be tested through a series of survey which the author will perform later on.

Father's Education Level is associated with the degree of the education attended by the father being their background before/during their career. In theory, the higher of the father's education level the wider of insight from the father which in turn will be adopted by their children in higher education including improving their financial literacy (Lantara & Kartini, 2015, Gadsden & Ray, 2003). However higher education level does not necessarily mean that the father is categorized as "Rich Dad". Therefore, it also becomes an interesting part to test the above view.

Lastly about the Fathers' Job Type which refers to what kind of job engaged by the father. Generally the job type is classified into 2 main parts, i.e. Left Cash Flow Quadrant (Employee & Self-employed) and Right Cash Flow Quadrant (Business Owner & Investor) in which the job type in the left side requires the role and presence of the fathers at all time to do their job, whereas the job type in the right side does not necessarily require the role and presence of the fathers to do their job. Normally the job type of the right side will have more opportunity to get a "fast lane" to achieve wealth and independent income sources compare to the left side job as referred by Kiyosaki & Lechter (2001). No matter the job type of a father will become an inspiration to their children in performing their career and opening their mindset of a job type which suitable for them. Therefore, the author conducts this research to proof if this view is really applied to the society in general.

Meanwhile, one's financial literacy is also inseparable with the child's own financial education, as it is being measured by the components of education about finance, among others: the understanding of Compound interest I, Compound interest II, Inflation, and Money Illusion, Volatility, Risk diversification, Stock market, Balanced fund, and Bond prices (Boersch-Supan, 2009). But the previous study found differently, that financial education course is not significantly influencing one's financial literacy, as there was virtually no difference in financial literacy score between those who had taken the course and those who had not (Mandell & Klein, 2009). Thus, not only the father's attributes but financial education course of the child also becomes the independent variable of this research, so that it could be proved which of the variables is the most significantly influencing towards one's financial literacy.

An interesting thing about financial literacy is that financial literacy is positively and significantly associated with the total net worth, hence having higher financial literacy level is having a higher level of net worth (Behrman, et al., 2012). It is caused by the likelihood to make a proper financial decision if one is financially literate (Colcagno & Monticone, 2011; Beal & Dealpachtra, 2003), and it is irreplaceably needed, not even by financial advice (Colcagno & Montecone, 2011).

When it comes to the financial literacy level in Indonesia, the number is 32%, which is still below the world average of 37% (Klapper, et al., 2014). This indicates that most Indonesian is likely to make a poor financial decision. If only Indonesian become more financially literate, Indonesian society would have become wealthier than today.

While this research is proving the significance of father's attributes and financial education course influence to financial literacy, it helps to find out which factor is determining the financial literacy level the most. It is contributing benefit of reference from the perspective of father's attributes and financial education course, for everyone or every institution that makes a plan to increase the financial literacy level of society, to aim accurately which factor to be developed. Especially the financial literacy level of university students, needs to be developed because this generation is the one who will be on their productive age during Indonesian bonus demographic, which is predicted to happen in 2045 (CNBC Indonesia, 2018). By becoming financially literate, this generation would be able to cumulate net worth

ICMEM

better, hence makes Indonesia society become wealthier (Behrman, et al., 2012). It also explains why the samples of this research are university students.

5. Literature Review

Financial Literacy

Otoritas Jasa Keuangan (OJK) (2013) defines that financial literacy is series of processes or activities for increase knowledge, skill, and faith (confidence) consumers and society so they are able to manage personal finance in a better way. Unfortunately, Indonesian still have a financial literacy level 32%, which is below the financial literacy average within the countries around the world, which is 37% (Klapper, et al., 2014). However, financial literacy or money management skills is carried from the childhood, which is strongly affected by father's affluence (Gradsden & Bowman, 1999; Furnham, 1996; Kirkcaldy & Furnham, 1993; Colcagno & Monticone, 2011).

Father's Income Level

Mandell (2008) found that there tended to be a positive correlation between financial literacy according to household income level. Students from lower income level households scored lower on the financial literacy exam than students in higher income level households, while a student from higher income household possessed the higher level of financial literacy (Moten Jr., 2011; Mandell, 2018).

Father's Education Level

Parental education is strongly influencing the child's mental, which is even stronger than the effect of other associated variables, such as family income and social class (Sonego, et al., 2012). When it comes to the financial literacy, it is found that head of family's education has no significant relationship (Febriana, 2016).

Father's Job Type

Kiyosaki & Lecther (1999) classifies job type into four based on how a person earns income, which is defined as Cash Flow Quadrant: employee (E), self-employed (S), businessman (B), investor (I). Cash Flow Quadrant represents a couple of differed methods, based on where the income is earned. For instance, "E" people earn money from having a job and work for another person or a corporate. "S" people earn money from working for themselves. "B" people own company which generates money, while "I" people earn money from their investments — in other words, money generates more money.

Financial Education Course

A comparison of those who had and did not take a financial education course does not demonstrate a meaningful positive impact for those taking the course. Mandell & Klein (2009) conducted a research that finds evident in several different measures. After several years, those who took the course were no financially literate than those who did not take the course. The average personal financial literacy score, among the respondents on the questions, was 69.3%. It is found that there was virtually no difference between those who had taken the course and those who had not. Students who had taken the course averaged a score of 68.7% and those who had not averaged a score of 69.9% (Mandell & Klein, 2009).

6. Methodology

To collect data for this research, the author is using the quantitative method. The kind of survey that will be conducted is in a form of a questionnaire. The respondents are taken from 4 universities, which are Institut Teknologi Bandung, Universitas Parahyangan, Universitas Padjadjaran, and Universitas Kristen Maranatha. The samples of the survey selected using random sampling, that involves 100 university students domiciled in northern Bandung, Indonesia as the samples of the survey, out of 64,327 population (SRV2 PDDIKTI, 2016/2017). The number of sample size taken is based on Slovin's formula with the Precision (e) of ±10%.

ICMEM

The questionnaire includes a test of financial literacy which adopted 9 questions from 2009 SAVE survey, which are related to basic numeracy and more advanced concepts of financial knowledge (Boersch-Supan et al., 2009), with some changes are conducted as the currency in the original questions are in US Dollar, while the respondent is being taken in Bandung, Indonesia, so they are being converted into Indonesian Rupiah. The questions related to financial literacy included knowledge about the compound interest I, Compound interest II, Inflation, Money Illusion, Volatility, Risk diversification, Stock market, Balanced fund, and Bond prices. The questionnaire also includes the questions about the demographic factor of the respondent's father, i.e.: Father-child Age Gap, Father's Income Level, Father's Education Level, and the Father's Job Type. There is also one control variable which is being excluded from the father's attributes but included into one of the independent variable, which is The Child's Financial Education Course.

Table 1.   Operational Variable

Variable	Data Type	Group	Occupancy
Financial literacy	Numerical	-	-
Father's Income level	Categorical	A	Not earning
		B	< Rp 4,500,000
		C	Rp 4,500,000 – Rp 49,999,999
		D	Rp 50,000,000 – Rp 249,999,999
		E	≥ Rp 250,000,000
Father's Education Level	Categorical	A	Not educated
		B	SD/SMP/SMA/equivalent
		C	D1/D2/D3/S1/equivalent
		D	S2/S3/equivalent
Father's Job Type	Categorical	A	Not working
		B	Employee
		C	Self-Employed
		D	Businessman
		E	Investor
The Child's Financial Education Course	Categorical	A	Never
		B	Less than 20 hours
		C	20 – 40 hours
		D	40 – 60 hours
		E	More than 60 hours

To analyze the data, this research uses multiple linear regression method in SPSS software. Thus, the collected data is tested using normality test, multicollinearity test, and heteroscedasticity test. By using the Multiple Linear Regression method, after the variables are implied into the equation, then the equation becomes:

$$Finlit = \alpha + \beta\ Agegap + \gamma\ Income + \theta\ Education + \eta1\ Employee + \eta2\ Selfemployed + \eta3\ Businessman + \eta4\ Investor + \Omega\ Class + e$$

7. Findings

Normality Test

Before running multiple linear regression, normality test is needed to make sure that the data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed.

ICMEM

Table 2.   Normality Test

One-Sample Kolmogorov-Smirnov Test

		Standardized Residual
N		100
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.97700842
Most Extreme Differences	Absolute	.100
	Positive	.054
	Negative	-.100
Test Statistic		.100
Asymp. Sig. (2-tailed)		.000[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Table 2 displays that the Kolmogornov Smirnov's Z score is 0.100, greater than 0.05. Moreover, it has been stated below the table by SPSS software that the data distribution is normal. Therefore, it is concluded that the data distribution is normal.

Multicollinearity Test

Before running multiple linear regression, multicollinearity test is needed to make sure that every independent variable is independent towards other independent variables.

Table 3.   Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	5.854	1.968			
	Agegap	-.042	.049	-.079	.951	1.051
	Income	.635	.269	.225	.907	1.103
	Education	-.256	.269	-.095	.831	1.204
	Class	1.015	.240	.389	.977	1.024
	Employee	-.474	.867	-.098	.258	3.880
	Selfemployed	1.003	1.055	.114	.576	1.737
	Businessman	-.251	.854	-.052	.267	3.739
	Investor	.574	2.389	.024	.834	1.198

a. Dependent Variable: Finlit

On Table 3, it is displayed that the VIF of each independent variable is less than 10. Therefore, it is concluded that there is no multicollinearity in every independent variable.

Heteroscedasticity Test

Before running multiple linear regression, multicollinearity test is needed to describe the case where the variance of errors or the model is not the same for all observations, while often one of the basic assumptions in modeling is that the variances are homogeneous and that the errors of the model are identically distributed.

ICMEM

```
------ ANOVA TABLE --------
              SS        df        MS        F        Sig
Model      30.117     8.000     3.765    1.983      .001
Residual  172.760    91.000     1.898  -999.000  -999.000

------ Breusch-Pagan and Koenker test statistics and sig-values --------
              LM        Sig
BP         15.058     .058
Koenker    14.845     .062

Null hypothesis: heteroskedasticity not present (homoskedasticity)

if sig-value less than 0.05, reject the null hypothesis

Note: Breusch-Pagan test is a large sample test and assumes the residuals to be normally distributed

------ END MATRIX -----
```

Fig. 1.   Breusch Pagan's Test

On Figure 1, it is displayed that the Breusch Pagan's p-value is 0.058. Therefore, it is concluded that there is no heteroscedasticity in the data.

Multiple Linear Regression

To analyze the relationship between the independent variable, which consists of Father-child Age Gap, Father's Income Level, Father's Education Level, Father's Job Type, and the child's Financial Education Course simultaneously towards dependent variable which is the child' Financial Literacy, this research uses multi correlation analysis (R Square).

Table 4. R Square

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.496[a]	.246	.180	2.17159

a. Predictors: (Constant), Investor, Education, Class, Selfemployed, Agegap, Income, Businessman, Employee

Table 4 shows that the coefficient of determination (R Square) is 0.246 for the examined regression line could significantly account for 24.6% of the total variable in the financial literacy. Meanwhile, 84% of the variations of financial literacy could be presented by other variables that could be examined in other research.

Table 5. Multiple Linear Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.854	1.968		2.975	.004***
	Agegap	-.042	.049	-.079	-.850	.397
	Income	.635	.269	.225	2.357	.021**
	Education	-.256	.269	-.095	-.949	.345
	Class	1.015	.240	.389	4.229	.000***
	Employee	-.474	.867	-.098	-.547	.585
	Selfemployed	1.003	1.055	.114	.951	.344
	Businessman	-.251	.854	-.052	-.294	.769
	Investor	.574	2.389	.024	.240	.811

a. Dependent Variable: Finlit

ICMEM

Table 5 examines which of five variables will influence the most in financial literacy among the respondents and respondents' fathers. It is concluded that there are two independent variables that are significantly influencing financial literacy:

1. "Class" (the child's Financial Education Course) has the strongest predictor to financial literacy among all the variables, while Financial Education Course is the most significant variable that influences Financial Literacy, with the p-value of 0.000, which is less than 0.05. Thus, H_0 is rejected. It means that financial education course significantly influences financial literacy. An increase of one point in financial education course will cause an increase of 0.945 points in financial literacy.

   On the previous study, Mandell & Klein (2009) found that financial education course does not have any impact on the financial literacy, as both financially educated students and non-financially educated students scored similar score on the financial literacy test. On the other hand, based on the research, financial education course is the most significant variable that is related to the financial literacy. Financial literacy is being measured by the understanding of Compound interest I, Compound interest II, Inflation, and Money Illusion, Volatility, Risk diversification, Stock market, Balanced fund, and Bond prices (Boersch-Supan et al., 2009). From author's experience of attending financial education course, these subjects are the basic financial knowledge that is being taught in most financial education course. That is why, the longer one attends a financial education course, the more financially literate he/she is. No matter how much the father-child age gap is, father's education level is, father's job type is, if the child is financially educated, they tend to be more financially literate.

2. "Income" (Father's Income Level) has the second strongest predictor to financial literacy among all the variables, with the p-value of 0.021, which is less than 0.05. Thus, H_0 is rejected. It means that father-child age gap significantly influences financial literacy. An increase of one point in father's income level will cause an increase of 0.474 points in financial literacy.

   According to the previous research conducted by Mandell (2008), there tended to be a positive correlation between financial literacy according to income level. On that research, a student from higher income level households scored higher on the financial literacy exam than students in higher income level households, thus a student from higher income household possessed the higher level of financial literacy (Mandell, 2008). It is quite relevant to the research result, that father's income level and financial literacy are positively correlated. It could be implied that the higher father's income level of the father, the more financially literate the child is. From author's point of view, income does not only come from salary, but it could be passive income and also capital gain income. The higher income level of the father, the more he is able to cumulate net worth, meaning that he is financially literate (Behrman, et al, 2012). Thus, the father could become an example or model for his child in their financial literacy. Besides, author also sees that the higher income level of the father, the more capable the father to finance the fee for a financial education class, the more the child has an opportunity to attend financial education class.

8. Conclusion

This research is proving the significance of father's attributes and financial education course influence to financial literacy, it helps to find out which factor is determining the financial literacy level the most. The research itself is conducted using the quantitative method, and the kind of survey being used is a questionnaire. The sampling method for the questionnaire is random sampling, while the sample sizing is determined by using Slovin's formula with the Precision (e) of ±10%, thus from 64,327 number of population, 100 samples are taken. By conducting a questionnaire survey that measures the respondents' financial literacy based on 2009 SAVE survey method and questioning the respondents' father's attributes: age gap with the child, income level, education level, job type, with an additional control variable of financial education course. Overall, the research shows that the significant factors are financial

ICMEM

education course and father's income level, while father-child age gap, father's education level and father's job type are not significantly influencing financial literacy.

Based on the research, here are some recommendations provided by the author:

- Since financial education course and father's income level are the significant variables with positive correlation, author recommends making financial education course a mandatory course for every major, and to every father to become a good example or role model of a financially literate person to the children. Thus, the children become surrounded by environment that brings positive influence on their financial literacy, both in educational institutions and family. Therefore, Indonesian society in the future, especially during bonus demographic era, to become a well financially literate society, so that they could make a proper financial decision, avoid financial mistakes, and become a wealthier society.

- For the future research, the author suggests conducting this research in a wider scope of a region and more diverse respondent. As the coefficient of determination (R Square) of this research regression is only 24.6%, the future research is encouraged to study more various of father's attributes that might influence the child's financial literacy. Future researches can also conduct the study on mother's attributes, as the parents' influence towards the child could also come from the mother's influence.

References

Beal, Diana J. & Delpachitra, Sarath B. (2003). Financial Literacy Among Australian University Students. *Economic Papers*, 22 (1): 65-78.

Behrman, J. R., Mitchell, O. S., Soo, C. K., Bravo, D. (2012). How Financial Literacy Affects Household Wealth Accumulation. *American Economic Review: Papers & Proceedings,* 102 (3): 300-304.

Boersch-Supan, Axel; Coppola, Michaela; Essig, Lothar; Eymann, Angelika, and Schunk, Daniel, 2009, The German SAVE study. Design and Results, *Mannheim Research Institute for the Economics of Aging (MEA) University Mannheim*.

Calcagno, R.& Monticone, C. (2011). Financial Literacy and the Demand for Financial Advice.

CNBC Indonesia. (2018). Bonus Demografi Indonesia dengan 321 Juta Jiwa Penduduk, Retrieved on June 21, 2018 from: https://www.cnbcindonesia.com/news/20180214131808-4-4366/bonus-demografi-indonesia-dengan-321-juta-jiwa-penduduk

Ćumurović, A. & Hyll, W., 2016, Financial Literacy and Self-employment, *Twenty-Second Society of Labor Economists Conference 2017*.

Gradsden, V. L., & Ray, A., (2003). Father's Role in Children's Academic Achievement and Early Literacy, *Eric Digest*.

Febriana, R. N. (2016). The Relationship Between Demographic Factors Towards Financial Literacy and Financial Inclusion Among Financially Educated Student in Institut Teknologi Bandung, *Advanced Science Letters*, 23 (8), 7204-7206.

Furnham, A. (1996). Attitudinal correlates and demographic predictors of monetary beliefs and behaviours. *Journal of Organizational Behavior,* 17 (4), 375-388.

Gradsden, V. L., & Bowman, P. (1999). African American males and the struggle toward responsible fatherhood. *A continuing challenge in times like these: African American males in schools and society*, New York: Teachers College Press.

Israel, G.D. (2013). Determining Sample Size. *Institute of Food and Agricultural Sciences (IFAS), University of Florida, PEOD-6*: 1-5.

Kirkcaldy, B., & Furnham, A. (1993). Predictors of beliefs about money. *Psychological Reports,* 73 (3), 1079-1082.

Kiyosaki, R. T. & Lechter S. L. (2001). Rich Dad's Rich Kid Smart Kid.

Kiyosaki, R. T. & Lechter S. L. (1999). The Cash Flow Quadrant.

Klapper L., Lusardi A., Oudheusden P. V. (2014). Financial Literacy Around the World: Insights from the Standard & Poor's Rating Services Global Financial Literacy Survey.

Mandell, L. (2008). The financial literacy for young American adults: Results of the 2008 National Jump$tart Coalition survey of high school seniors and college students.

Mandell, L., Klein L. S. (2009). The Impact of Financial Literacy Education on Subsequent Financial Behavior, *Journal of Financial Counseling and Planning, 20*.

Moten Jr., J. M. (2011). Examining the Disparity in Financial Literacy Between High School Seniors of Different Ethnicities and Income Level.

ICMEM

Organization of Economic Co-operation and Development, International Network of Financial Education. (2011). Measuring Financial Literacy: Core Questionnaire in Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy.

Otoritas Jasa Keuangan. (2013). Indonesian National Strategy for Financial Literacy.

Phillips, S., 2011, X and Y: The Impact of the Gap, *Faculty in Communication and Leadership Studies School of Professional Studies.*

Sonego, M., et al., F. (2012). The influence of parental education on child mental health in Spain. *Springer Science+Business Media B.V.*

SRV2 PDDIKTI: Pangkalan Data Pendidikan Tinggi. (2016/2017). Pencarian Data Perguruan Tinggi, Retrieved on May 16, 2018 from: https://forlap.ristekdikti.go.id

ICMEM

The 3rd International Conference on Management in Emerging Markets

Maqasid Shariah Index, Banking Risk and Performance Cases in Indonesian Islamic Banks

Sutrisno[a]*, Agus Widarjono[b]

[a,b]*Universitas Islam Indonesia*

Abstract

In the operation, Islamic banking is assessed not only based on the banking risk management but also based on the maqasid sharia. The purpose of this study is to examine the influence of maqasid sharia and banking risk on the performance of Islamic banks. The performance of Islamic banks is measured by return on assets (ROA), maqasid sharia proxied by maqasid sharia index (MI), musharaka financing (MUS) and mudharaba financing (MUD), while banking risk is measured by capital adequacy ratio (CAR), financing to deposit ratio (FDR), non performing financing (NPF), and operating expense to operating income ratio (OEI). The population in this study are all Islamic commercial banks operating in Indonesia as many as 13 banks. Because the population is a little realistic, all populations are taken as samples. The results showed that the MI did not significantly affect the performance of Islamic banks, while MUS has a significant and positive impact on ROA and MUD have a significant but negative impact on ROA. NPF and OEI have a significant and negative effect on the performance. But CAR and FDR have no significant effect on the performance of islamic banks.

Keywords: Maqasid Sharia Index; Musharaka; Mudharaba; Non Performing Financing; Financing To Deposit Ratio

1. Background

It has been almost three decades that the Islamic banks in Indonesia operate and it is still an interesting issue to conduct research on them. Beside being expected to make profit, the Islamic bank management is also required to operate based on the shariah goal or maqasid sharia (Antonio et al, 2012). Muhammad and Razak (2008) have measured the Islamic bank performance in the framework of maqasid sharia which includes the aspect of education and research, and the aspect of justice and maslahah. Hartono and Sobari (2017) also measure the performance of Islamic bank by using maqasid sharia index (MSI). The implementation of Islamic bank performance measurement in Indonesia based on maqasid sharia is still low. It has even an inverse relationship with the performance based on CAMELS and the performance of maqasid sharia (Sutrisno and Widarjono, 2017).

Even though the performance evaluation based on maqasid sharia has not been officially implemented by Financial Services Authority, it is an obligatory for the Islamic bank manager to implement it in order to keep the Islamic bank operation in line with the shariah goal. Islamic bank must not only be profit oriented, but also have social mission to increase the people's living standard. Maqasid sharia performance is the point which differentiate Islamic bank from the conventional bank (Ahmad and Ismail, 2017).

Qasim et al (2017) suggest that to measure the performance of Islamic bank, we can use financial ratio analysis (FRA) Data Envelopment Analysis (DEA) and Maasid Index (MI). Maqasid sharia is used to assess whether the Islamic bank has operated based on the shariah goal or not. The implementation of maqasid sharia is expected to increase the bank performance because the customers will trust more on the Islamic bank that implement maqasid

---

* Corresponding author.
 E-mail address: sutrisno@uii.ac.id

ICMEM

sharia well. Harotono and Sobari (2017), Ahmad and Ismail (2017) and Soleh (2016) find that the implementation of maqasid sharia in the Islamic bank is still low.

Based on maqasid sharia, the financing type that is suggested to be applied in Islamic bank is the profit sharing financing. Profit sharing financing consists of two types of financing which are mudaraba and musharaka financing. Mudaraba financing is a financing which funds is from the bank while the customers only provide project and management. The bank is not included in the management. Musharaka financing is a financing in which the bank includes funds to the customers' company and the bank can be included in the management. This type of finance has higher risk. Rahman and Rochmanika (2012) find that profit sharing financing has positive effect on the performance of Islamic bank. Sutrinso (2016) finds that musharaka financing has effect on the performance of Islamic bank while the mudaraba financing does not have effect on the performance of Islamic bank.

Bank is an institution which has high risk, either from the side of capital risk, financing risk, liquidity risk, or the side of operation risk. Therefore, a bank has to be able to manage and control all of the risks.

Banking capital has a strategical position because capital becomes the main support of a bank in case of bankruptcy. Because of the importance of the capital, the government determine the capital adequacy ratio (CAR) which is 8% at the minimum. The higher the capital of a bank, the more people will put their trust on the bank which will increase the profitability. Akhtar et al (2011), Srairi (2009), and Nisar et al (2015) find the positive significant effect between CAR and the bank performance. In contrast, Harjanti et al (2016) and Idris et al (2011) find that CAR does not have effect on the performance of a bank.

Liquidity risk which is measured by financing to deposit ratio (FDR) shows the amount of the financing given by the bank. The higher the FRD, the higher the financing given by the bank and it can increase the profitability. This is because the profit of Islamic bank depends on the amount of the financing given. Milhelm and Istaiteyeh (2015), and Sanwari and Zakaria (2013) find the significant effect between LDR and the bank performance. Then, Mahmud et al (2016) and Harjanti et al (2016) find insignificant effect between LDR and the bank performance.

The financing risk occurs if the process of giving finance in not accompanied by prudential principle. The financing risk measured by non-performing financing (NPF) will be the cost and reduce the profit of the bank. Therefore, the higher the NPF, the bank performance will be more reduced. The result of research by Abdillah et al (2016) and Nisar et al (2015) shows NPL has negative significant effect on the performance of a bank. Meanwhile, the finding of Milhelm and Istaiteyeh (2015 and Mahmud et al (2016) shows the insignificant effect.

Banking is also faced by the risk of operation that is showed by the ratio between the operating cost to operating income (OEI). The more efficient the bank is, the operation risk will be lower. Therefore, the more efficient the bank is, the profitability will be higher because the profit is gained by reducing the income with the bank operating cost. The result of research by Mahmud et al (2016) and Nisar et al (2016), Harjanti et al (2016) and Nisar et al (2015) shows the significant effect between OEI and the bank profitability. On the other hand, Milhelm and Istaiteyeh (2015) and Idris et al (2011) find the insignificant effect.

2. Theoretical Review and Hipothesis

2. 1. *Maqasid sharia index and islamic bank performance*

Antonio et al (2012) states that Islamic bank, besides being expected to make profit, but also consider the shariah goal or maqasid sharia because Islamic bank operates based on the shariah principles. According to Ahmad and Ismail (2017), the implementation of maqasid sharia can reduce inequity and the practice of usury. Mohammed and Razak (2008) classify maqasid sharia: (1) Tahdhib al-Fard (individual education); (2) Iqamah Al-adl (upholding justice), and (3) Jaib al-Maslahah (increasing welfare). Therefore, Islamic banking is required to uphold those three pillars of maqasid sharia. Sharia bank must consider education and training for the employees so that they are more professional, able to uphold justice both for the employees themselves and for the customers, and able to consider the welfare of the bank owner (profit orientation). If maqasid sharia is well implemented, it will lead to quality and fair human resources that have the potential to produce high profitability.

ICMEM

H₁ : Maqasid sharia index positively affect on Islamic bank performance

2. 2.   Profit sharing financing and performance

The main difference between Islamic bank and conventional bank is on the concept of the operation. In the operation, conventional bank uses interest rate both on the financing product and the credit. Islamic bank is not allowed to use interest rate and replaces it with the profit sharing concept and profit margin. Profit sharing financing consists of two types of financing which are mudhabarah financing and musharaka financing. According to Shanmugram and Zahari (2009), mudaraba financing is financing which funds are from the bank while the customers only provide project and management. The bank is not included in the management. Musharaka financing is a financing in which the bank includes funds to the customers' company and the bank can be included in the management. This type of finance has higher risk because the bank income depends on the customers' income. However, the profit expected is also higher.

The higher the financing, either mudaraba or musharaka, if it is well managed, it will increase the bank income which will result in the increase of Islamic bank performance. Sutrisno (2015) states that mudaraba financing has significant effect on the bank performance which is measured by ROE.Musharaka financing also has significant effect on the bank performance. Rahman and Rochmanika (2009) also find that profit sharing financing has positive effect on Islamic bank performance.

H₂ : Mudaraba financing positively affect on Islamic bank performance

H₃ : Musharaka financing positively affect on Islamic bank performance

2. 3.   Capital risk and performance

Capital is an important element in a company, especially a bank, because capital serves as the backup to cover loss experienced by a bank. In banking, the main source of funds is from the people so that security of the funds is the main priority so that the bank must provide sufficient capital to anticipate loss. The function of capital is to protect the deposit that does not get insurance, in case of insolvable problem and liquidation, and to absorb loss to keep the people's trust that the bank can continue to operate. Bank capital is measured by using capital adequacy ratio (CAR) and determined by the government as 8% at the minimum. The higher the value of CAR is, the better the bank is. Nisar et al (2015) find positive effect between CAR and the bank performance. Milelm and Istaiteyeh (2015) and Sanwari and Zakaria (2013) also find the positive effect between the capital and the bank performance.

H₄ : Capital risk (CAR) financing positively affect on Islamic bank performance

2. 4.   Liquidity risk and performance

Liquidity is the capability of a bank in fulfilling its commitment and obligation to the customers. The obligation is to provide sufficient funds when the customers take their funds anytime. The commitment is to provide funds to the promised financing. Islamic bank liquidity risk is measured by using financing to deposit ratio (FDR) which is the amount of the financing given compared to the third-party funds. The higher the FDR is, the higher the financing given to the customer is and it will increase the Islamic bank income and at the end it will result in the increase of profitability. Youssef and Samir (2015) and Sanwari and Zakaria (2013) find the risk of liquidity (FDR) has positive significant effect on the bank performance. Nisar et al (2015), Gul et al (2011), and Almazari (2014) also find that LDR has positive effect on the bank performance.

H₅ : Liquidity risk (FDR) positively affect on Islamic bank performance

2. 5.   Financing risk and performance

The financing given to the customers is a double-edged sword. In can increase the profit. However, on the other hand, it can create problem that the financing is not returned, if it is not well managed. Financing risk may occur when some of the customers do not pay their debt either of the financing credit and the profit share. The financing risk is measured by using non-performing financing (NPF). Bank management have to be able to keep the NPF to be not

ICMEM

more than 5% as it is determined by the Bank of Indonesia because the higher the NPF is, the less the profitability level is. Youssef and Samir (2015) and Abdillah et al (2016) find that NPL has negative significant effect on the bank performance. Sanwari and Zakaria (2013) and Akhtar et al (2011) also find that NPL has negative significant effect on the bank performance.

H_6 : Fiancing risk (NPF) positively affect on Islamic bank performance

2. 6. Operating risk and performance

The bank management is expected to operate efficiently. It means that the cost of operation should be reduced so that the spread between the income and the finance is bigger. Operation risk occurs when the bank management cannot perform efficiency which will make the operation cost higher. The operation risk is measured by using operation cost to operation income ratio (OEI). The higher the OEI is, the smaller the spread is. It will reduce the profit of the bank. In contrast, the smaller the ratio of OEI, the more efficient the operational cost spent by the bank which will increase the profitability. Srairi (2009) and Abdillah et al (2006) find negative effect of OEI on the bank performance. Youssef and Samir (2015), Harjanti et al (2016), and Mahmud et al (2016) also find the negative correlation between the OEI and the bank performance.

H_7 : Operating risk (OEI) positively affect on Islamic bank performance

3. Research Method

3.1. Population and Sample

The population of the research is Islamic banks that operate in Indonesia. There are 13 of them. The sample are 10 Islamic commercial banks taken by using purposive sampling. The data gathered from the annual financial reports of the Islamic bank within the observation period of 5 years (2012-2016).

3.2. Variables and measurement

There are two variables in this research which are the Islamic bank performance (ROA) as the dependent variable and 7 independent variables that consist of maqasid sharia index, mudaraba financing, musharaka financing, capital adequacy ratio (CAR), liquidity risk or financing to deposit ratio (FDR), financing risk or non-performing financing (NPF and operation risk or operating expense to operating income (OEI). Then, the variable measurement except the maqasid sharia.

Tabel 1: Variables and Measurement

No	Variable	Notation	Measurement
1	Return on assets	ROA	EBIT/Total assets
2	Mudharaba Financing	MUD	Mudharaba financing/Total Financing
3	Musharaka Financing	MUSY	Musharaka financing/Total financing
4	Capital Adequacy ratio	CAR	Equity/Weigthted asset by risk
5	Financing to deposit ratio	FDR	Total financing/third party fund
6	Non performing financing	NPF	Bad debt financing/Total financing
7	Operating expense to income ratio	OEI	Operating expenses/Operating income

Next, to calculate the value of maqasid sharia index (MI) is based on the maqasid sharia framework by Mahammed and Razak (2008) in which MI has three dimensions: individual education, justice/equality, and maslahah. Here is the calculation of MI variable:

Tabel 2: Measurement of MI Variable

MI Dimension	weight	Element	Measurement	Weight
Educating individual	30	Education grant	Education grant/total income	24
		Research cost	Research expense/total expense	27
		Training	Training expense/total expense	26
		Publicity	Publicity expense/total expense	23
Justice	41	Fair eturn	Profit/total income	30
		Affordable price	Bad debt/Total financing	32
		Interest free product	Interest free income/total income	38
Welfare	29	Profit ratios	Net profit/total asset	33

ICMEM

| | | Individual income | Zakah/net income | 30 |
| | | Iinvestment ratio in rial sector | Investment deposit/total deposit | 37 |

Source: Mohammed and Razak (2008)

Data Analysis Instrument

The data analysis instrument used to test the hypothesis is the multiple regression with the regression equation below:

$$ROA = \alpha + \beta_1 MI + \beta_2 MUD + \beta_3 MUR + \beta_4 CAR + \beta_5 FDR + \beta_6 NPF + \beta_7 OEI$$

Where:

ROA   : return on assets
MI   : maqasid sharia index
MUD   : mudaraba financing
MUS   : musharaka financing
CAR   : capital adequacy ratio
FDR   : financing to deposit ratio
NPF   : non performin financing
OEI   : operating expense to operating income ratio

4. Result and Discusion

4. 1. Descriptive Statistic

Based on the result of data tabulation processed on SPSS, it is obtained the description of each variable:

Table 3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	65	-.20	.04	.0060	.03214
MI	65	.27	39.94	18.5387	5.23948
MUD	65	.00	29.58	23.1516	9.13157
MUS	65	.00	30.64	25.7083	7.38318
CAR	65	10.60	124.43	25.3091	19.91994
FDR	65	68.93	289.20	99.4880	32.66421
NPF	65	.00	43.99	4.4511	6.93438
OEI	65	34.73	192.60	91.3627	22.99308
Valid N (listwise)	65				

-20% and maximum value of 4% with the average of 0.6%. It means that the level of Islamic bank profit is still very low. There are even some banks that experience loss. The minimum value of maqasid sharia index (MI) is 0.27, the maximum is 39.94 and the average is 18.34.from the side of financing, the minimum value of mudaraba and musharaka financing is 0 which means that there is an Islamic bank that does not give this financing because this financing has high risk. The maximum value of mudaraba financing is 29.58% and the average value is 23.25%. The maximum value of musharaka financing is 30.64% and the average value is 25.71%.

Capital adequacy risk (CAR) has not been able to be managed efficiently because the average value is still too high which is 25.30% while the minimum requirement is only 8%. Moreover, there is an Islamic bank which has CAR value of 124.43%. The liquidity risk (FDR) is already good because the average value is 99.49%. However, there is an Islamic bank which has too high FRD value of 289.20% so that it needs control. Then, the financing risk (NPF) is in good condition because the average value is 4.45% which still below the maximum requirement value. However,

there is an Islamic bank having a very high NPF value which is 43.99% at the maximum. Next, the efficiency risk (OEI) is still too high because the average is above 90% and the maximum value is 192.60%

4. 2.   *Hypothesis testing result*

The hypothesis is tested by using multiple linear regression and SPSS program. The result is shown below:

Table 4: Hypothesis test result

Model	Standardized Coefficients		
	Beta	t	Sig.
1 (Constant)		4.847	.000
MI	.026	.516	.608
MUD	-.200	-2.581	.012
MUS	.188	1.957	.055
CAR	-.030	-.418	.677
FDR	-.032	-.422	.674
NPF	-.442	-6.549	.000
OEI	-.577	-7.994	.000

4. 3.   *Maqasid sharia index and Islamic bank performance*

The hypothesis testing shows the significance level of maqasid sharia value of 0.608 which is higher that the required significance level (0.05) so that MI does not have effect on the company's performance. This result confirms that the implementation of maqasid sharia in Indonesian banking is still low. Hartono and Sobari (2017) also find that the maqasid sharia index of Islamic commercial banks and business units is not high yet. This finding is also supported by Sutrisno and Widarjoro (2017) who also find that the implementation of maqasid sharia in Islamic banking in Indonesia is still low. This also happens in some countries such as Bangladesh (Hurarya, 2015) and Jordania (Antonio et al, 2012). Antonio et al (2012) compare Indonesia and Jordanian. The implementation of maqasid in the Islamic banking is very important because it can avoid the practice of usury and inequality (Ahmad and Ismail, 2017). Mohamad et al (2015) also stated the importance of equality, transparency, and maqasifshariah in shariah finance. It is also important to consider the practice of some banks that does not uphold the value of MI in their products and operations.

4. 4.   *Financing and Islamic bank performance*

The hypothesis testing against the mudaraba financing results in the lower significance level compared to the required value and the result is also negative. Therefore, MUD has negative significant effect on the banking performance. This result is in contrast with the hypothesis that it should be positive. This is probably because mudaraba financing is a risky financing in which the income is earned based on the profit gained by the customers. If it is not well analyzed and managed, this type of financing will reduce the profitability of the Islamic bank. Basically, this financing should be dominant in Islamic banking. In fact, there are some banks that do not provide mudaraba financing. Sutrisno (2015) finds that mudaraba financing has significant effect on the Islamic bank performance. However, his finding is different from the finding of Rahman and Rochmanika (2009) that the profit sharing financing has positive effect on the performance of shariah bank.

In contrast, musharaka financing has positive significant effect on the performance of shariah banking. This result shows that this type of financing gives positive contribution which increases the amount of musharaka financing and the Islamic banks' profitability. This is probably because this profit sharing financing allows the bank to participate in the customer's company management so that the profit is more controllable. This type of financing also interests Islamic banks more. It is seen from its higher portion compared to mudaraba financing. This finding is in accordance

with the finding of Rahman and Rochmanika (2009) but in contrast with Sutrisno (2015) who finds that musharaka financing does not have effect on Islamic bank performance.

4. 5.   Capital risk and Islamic bank performance

Capital risk (CAR) results in the significance level of 0.677, higher than the required value so that it does not have effect on the Islamic bank performance. This result shows that the value of CAR does not have effect on the Islamic bank performance. Bank capital is also the most important aspect in banking because the function of the bank capital is to backup the bank's loss. It means that when the bank experiences loss, the loss has to be able to be covered by the bank. The bank capital is so important that the government sets the minimum limit of capital which is measured by capital adequacy ratio (CAR) of 8%. If we see the CAR of Islamic bank, the average CAR is far from the minimum requirement which is 25.3%. Thus, the Islamic bank capital is very safe but it tends to be less productive because actually, the excess can be used to provide financing. This is the cause of the fact that the CAR of Islamic bank does not have effect on the bank performance. This result is supported by Harjanti et al (2016) and Idris et al (2011) who find that CAR does not have effect on the Islamic bank performance.

4. 6.   Liquidity risk and Islamic bank performance

Liquidity risk (FDR) has significance value of 0.674 which is higher than the required value so that it does not have effect on the bank performance. FDR shows the financing provided by the Islamic bank. The higher the financing is, the profitability is also high. However, in fact, FDR does not have effect on the bank performance. This is probably because of the movement of ROA data. When LDR increases, the ROA of some banks decreases. If we see the average of FDR, it is actually good, which is 99.45%, which should be able to support the increase of ROA. However, there are some banks that have very high FDR which is 289% while the lowest is 69%. This may be the cause that FDR does not have effect on the Islamic bank performance. Harjanti et al (2016) also find the insignificant effect of FDR on ROA in Islamic banking. Milhem and Istaiteyeh (2015) in Jordanian also find the insignificant effect of FDR on ROA. This result is also in accordance with Mahmud et al (2016 and Sutrisno (2015) who conduct research on conventional bank. They find that LDR does not have effect on the bank performance.

4. 7.   Financing risk and Islamic bank performance

Financing risk (NPF) has negative value and lower significance than the requirement. Then, it can be concluded that NPF has negative significant effect on the performance of Islamic banking. Non-performing financing (NPF) shows that there are some problems in the financing and it will be treated as the cost. Therefore, the higher NPF will reduce the bank's profitability. Islamic banks have higher risk compared to conventional banks so that it need to be managed carefully. Based on the statistical data, there is a bank that has a very high NPF value (44.99%) and the average is 4.45% which is still below the maximum requirement. The management of Islamic bank should be able to control the financing risk (NPF) because NPF significantly affects the bank performance. To make NPF controllable, in providing financing, the bank should implement the banking prudential principles. This result is in accordance with the finding of Akhtar et al (2011) in Pakistan and Srairi (2009) in Arabian countries. Idris et al (2011), Abdillah et al (2016) and Youssef and Samir (2015) also find the same result.

4. 8.   Operation risk and Islamic bank performance

Operation risk (OEI) has negative value and lower significance level than the requirement. It means OEI has negative significant effect on the performance of Islamic bank. The higher operating expense to operating income ratio (OEI) shows the higher operational cost, so the efficiency of the bank is low. The higher value of OEI will result in the lower profit which will lead to the decrease of profitability. The control or management of the operation risk is very important because it connects directly to profit. The management of Islamic bank should be able to control this ratio. The bank can analyze the unnecessary costs to increase the efficiency of the bank. This result is in accordance with Mahmud et al (2016) who find the negative and significant effect of operation risk on the bank performance in Islamic banking in Bangladesh. Harjanti et al (2016) and Abdillah et al (2016) also find the same result in Indonesia.

ICMEM

5. Closing

Based on the hypothesis testing by using multiple regression explained previously, we find that maqasid sharia index has insignificant effect on the bank performance. The capital risk (CAR) and liquidity risk (FDR) do not have effect on the bank performance.Musharaka financing has positive and significant effect while mudaraba financing has negative and significant effect on the bank performance, which is in line with the hypothesis proposed. Financing risk (NPL) and operation risk (OEI) has negative significant effect on the bank performance.

The result of this research is expected to help the Islamic bank managers in managing the bank. It is especially related to the variables that have effect on the bank performance. Islamic bank managers should control the liquidity and operation risks so that the bank performance can be increased.

Referensi

Abdillah, R,. Hosen, N.M and Muhari, S.M,. 2016. The Determinants Factor of Islamic Bank's Profitability And Liquidity In Indonesia. *Knowledge Horizons – Economics*. Vol 8(2). 140–147

Ahmad, Z and Ismail A.G,. 2017. Full reserve system and the Maqasid Shariah. *Journal of Emerging Economies & Islamic Research*. Vol. 5(2). 58 – 66

Akhtar, M.F., Khizer A., and Shama S., (2011), Factors Influencing the Profitability of Islamic Bank of Pakistan, *International Research Journal of Finance and Economics*, 66, 125-132

Almazari, A.A. 2014. Impact of Internal Factors on Bank Profitability: Comparative Study between Saudi Arabia and Jordan. *Journal of Applied Finance & Banking,* vol. 4, no. 1

Antonio, M.S., Yulizar D.S, and Muhammad, T, 2012, An Analysis of Islamic Banking Performance: Maqashid Index Implementation in Indonesia and Jordania, *Journal of Islamic Finance*, Vol 1 (1), 2289-2109

Gul, S., Faiza I, and Khalid Z., (2011), Factors Affecting Bank Profitability in Pakistan, *The Romanian Economic Journal*, 14(39), 61-87

Harjanti, Ririh Sri. Mahmudah, Nurul dan Rahmadiane, Ghea Dwi,. 2016. Analisa Rasio Keuangan Pengaruhnya Terhadap Kinerja Bank Perkreditan Rakyat di Wilayah Kabupaten Tegal. Politeknik Negeri Jakarta. 502-508

Haron, S, (1996), The Effect of Management Policy on The Performance of Islamic Banks, *Asia Pasific Journal of Management*, 13(2), 63-76

Hartono, S and Sobari A,. 2017. Sharia Maqashid Index as a Measuring Performance of Islamic Banking: A More Holistic Approach. *Corporate Ownership & Control* . Vol. 14 (2). 193-202

Hurayra, M.A,. 2015. Achievement of Maqasid-al-Shari`ah in Islamic Banking: An Evaluation of Islami Bank Bangladesh Limited. *Global Journal of Computer Science and Technology: A Hardware & Computation*. Vol 15 (1).

Idris, A.R., Fadli F.A., Hassan A., Noor A.A.T., Nor J.S., Rajmi M., and Kamaruzaman J,. (2011), Determinant of Islamic Banking Institutions' Profitability in Malaysia, *World Applied Journal*, 12 (special issue).

Kuppusamy, M., Ali S.S and Ananda S, (2010) Measurement of Islamic Banks Performance Using a Shari[ah Conformity and Profitablity Model, *Review of Islamic Economics*, Vol. 13, No. 2, pp. 35–48.

Mahmud, K,. Mallik, A,. Imtiaz, M.F, and Tabassum, N,. 2016. The Bank-Specific Factors Affecting the Profitability of Commercial Banks in Bangladesh: A Panel Data Analysis, *International Journal of Managerial Studies and Research* (IJMSR). Vol 4(7). 67-74

Milhem, M.M and Istaiteyeh, R.M.S,. 2015. Financial Performance Of Islamic And Conventional Banks: Evidence From Jordan. Global Journal Of Business Research. Vol 9(3). 27-43

Mohammed, M.O and Razak, D.A,. 2008, The Performance Measures of Islamic Banking Based on the Maqasid Framework, *Working Paper*, IIUM International Accounting Conference (INTAC IV).

Qasim Y,. Mohamad Y and Ibrahim N,. 2017. Measuring the Performance of Jordanian Islamic Banks. *Journal of Public Administration and Governance*. Vol. 7 (1). 22-48

ICMEM

Rahman, A.F and Rochmanika, R,. (2012), Pengaruh Pembiayaan Jual Beli, Pembiayaan Bagi Hasil, dan Ratio Non Performance Financing terhadap Profitabilitas Bank Umum Syariah di Indonesia (The Effect of Profit Margin and profit Sharing Financing, and Non Performing Financing on Profitability of Islamic Bank in Indonesia). *ejournal.uin-malang.ac.id/index.php/.../1768/pdf*

Sanwari, S.R and Zakaria, R.H,. 2013. The Performance Of Islamic Banks And Macroeconomic Conditions. ISRA International Journal of Islamic Finance. Vol. 5(2)

Shanmugam B and Zahari Z.R,. 2009. *A Primer on Islamic Finance*. The Research Foundation of CFA Institute

Soleh, I. 2016. The Impact of Maqashid Syariah and Core Competency on Performance of Islamic Bank. *International Journal of Economics, Commerce and Management*. Vol. 4(10) 872-881

Srairi, S.A,. 2009. Faccotrs Influencing the Profitability of Conventional and Islamic Banks in GCC Countries, *Review of Islamic Economics,* 11(1), 5-30

Sutrisno. 2015. The effects of financing and risks on the performance of Islamic Bank: Empirical evidence from Indonesian Islamic Bank. *Business and Management Research Journal*. Vol. 6(3): 29-36

Sutrisno and Widarjono, A,. 2017. Islamic Bank Performance: Between Maqasid Sharia and CAMELS Model. *International Journal of Economics, Business and Management Research*. Vol. 1(04). 562-565

Youssef, Amr dan Samir, Osama,. 2015. A comparative study on the financial performance between Islamic and conventional banks: Egypt case. *The Business and Management Review*, Vol 6(4). 161-176

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Determinant of Indonesian Investors Towards Real Estate Investment Trust

Ahmeidy Yusya[a*], Yunieta Anny Nainggolan[b]

[a,b]*School of Business and Management, Bandung Institute of Technology, Jl. Ganesha No.10, Bandung 40132, Indonesia*

Abstract

REIT is a product which was created for the investors to have some real estate assets and from the profit of the asset, the investor would get revenue. REITs introduced to public in 1960 when public law 86-779 which called the Cigar Excise Tax Extension is signed by President Dwight D. Eisenhower in United States which give opportunity to invest in real estate which produce income for the investors. In Indonesia PT. Ciptadana Asset Management become the pioneer to launch REITs in 2012. After 6 years, REITs product remain unchanged, PT. Ciptadana is the only one who have REITs in their product line up. While being a popular investment product in U.S, REITs are not well known among Indonesian investors. Knowing Indonesian investor preferences in investment and product, also their investment literacy, the expected finding of this research is understanding the variables that may affect the buying decision of REITs in Indoensia.

Keywords: REITs; Investment Literacy; Investment Behaviour; Investment Preferences

1. Introduction

Background

As an archipelago state, the Indonesian people are separated to 14,572 island, the location difference among the people, make the information not distributed equally. Not only information, the distribution of "product" is also unequal, and financial product and knowledge are also not an exception. The value difference between different gender and different race like Javanese, Sumatrans, and from other country like Arab, African, etc. make the decision making and financial management differ from one to another. The diversity of place and race make the understanding of financial knowledge and financial perception cannot be equated. Financial knowledge and self-financial literacy are c orrelated directly as those who gets zero financial education have poor financial decision making and have lack of interest in financial product (Hilgert, 2003).

As the low level percentage in financial literacy index, in August 2016, a new National Financial Inclusion strategy established by the Indonesian Government reacting to the situation, improvement in financial literacy has been done in the last couple of years to expand the access to insurance, the scheme of credit guarantees and community empowerment which existing are strengthen, payment system and financial infrastructure improved, and spread the savings culture (The World Bank, 2014). The book also mentions that the government, along with The Bank Group is working aside to make financial access broaden, digitize the payment (social transfer included), supervisory and regulatory environment to be strengthen, and financial capability and awareness of the population to increase.

While access to information of product and services has improved lately, novel opportunity for people to invest in capital market have been opened. In Indonesia itself, capital market has growth recently. 14.7% growth recorded in July 2017 of the number of Single Investors Identification (SID) to 1,025,414 compared to 2016. These investors spread across Indonesia with the majority of them domicile in java island with 77.15% including 30.35% in DKI

---

* Corresponding author.

ICMEM

Jakarta(KSEI,2017). Even though the number is increasing, foreign investors still be the majority. They have 53% of overall shares ownership in Indonesia. Thus, for bonds ownership, Indonesian investors takes 92%.

Bonds, Stocks, Government Securities(SBN) and Mutual Fund is well known as a product to invest in Indonesia, while REITs are not as famous as other product. This condition is interesting, while REITs have been popular in developed country, people in Indonesia is not familiar with the existence of this product. Since 2012, Indonesia have REITs product which launched by PT. Ciptadana Asset Management which the asset that they have is Paragon Mall in Solo city, Central Indonesia. From "Panduan Penerbitan Dana Investasi Real Estat Berbentuk Kontrak Investasi Kolektif Di Indonesia" by Indonesia Stock Exchange, REIT is a product which was created for the investors to have some real estate assets and from the profit of the asset, the investor would get revenue. REITs introduced to public in 1960 when public law 86-779 which called the Cigar Excise Tax Extension is signed by President Dwight D. Eisenhower in United States which give opportunity to invest in real estate which produce income for the investors. In Indonesia PT. Ciptadana Asset Management become the pioneer to launch REITs in 2012. After 6 years, REITs product remain unchanged, PT. Ciptadana is the only one who have REITs in their product line up. The product currently has 6% rate of return, the minimum amount to invest in this product is IDR 10 Million, and the dividend is paid every 3 months.

Problem Identification

In Indonesia, it has been 6 years since REITs is introduced back in 2012 by PT Ciptadana Asset Management, with all the advantages of the product and the opportunity in the market, this product could be a popular choice to invest, but current condition shows that it still remain unpopular. This problem lead to objective as follows:
1. To know the awareness level of REITs among Indonesian Investors
2. To know the factors that make investors interested to buy REITs.

2. Literature Review

Investment Behaviour

Psychologically, a person's attitude towards a financial product and all the factors that will drives them to take an investment decision. Barber and Odean (2014) conclude that men mostly gain lower return by trade more compared to women (Both single). This condition drives by the natural overconfidence behaviour showed by men which also appear towards their financial decision.

Small vs large investors also behave differently in financial decision. Most of the time, small investors literally take their analysts buy and sell recommendation without calculating the cost and benefit of the decision, while the information provided by the analysts to the investors tend to positively bias (Malmendier & Shanthikumar, 2007). Portfolio strategies information that small trader is lack of, and their over trust to the broker also lead to poor and immature decisions

REITs

REITs is introduced to public in 1960 by the United States Congress which aims to provide investment in large scale and bring the opportunity to own real estate to individual investors in the market with more liquid access (Kallberg, 2014). The Real Estate asset that can issue a REITs mostly should be done (already operates). Malls, resorts, self-storage facilities, mortgages and or loans, apartment, and warehouses are the types of real estate that includes in REITs. REITs mostly specializing in a specific type of real estate, for example Residential REITs, Industrial REITs, Retail REITs, healthcare REITs, and Office REITs (U.S Securities and Exchange Commission, 2011a). 90 Percent of REITs taxable income should be distributed as dividend to the shareholders and will deduct their corporate taxable

ICMEM

income, but, this condition make most of the company pay out all their taxable income (100%) as dividend to get zero corporate tax.

A REIT is a corporation or trust that uses the pooled capital of many investors to purchase and manage property and receive its income (equity REIT) or, less commonly, mortgage loans (mortgage REIT)

In the perspective of investor, there are many advantages of REITs that make it being one of the most popular investment product in the market nowadays which explained as follows (National Association of Real Estate Investment Trusts, 2011):

- Liquidity

The ease of purchase and sell of this product as other shares which publicly traded in the stock market.

- Shareholder Value

Same as public company shares, the investors of REITs can get value from both form, value appreciation of the shares and dividends.

- Active Management

Like other publicly traded shares, REITs are a corporate who managed professionally and actively. The shareholders of REITs elected in turn the board of directors and they are also accountable to the shareholders.

- Disclosure Obligation

The REITs that publicly traded required by the government to make audited financial statement which should be reported quarterly and yearly.

- No Shareholders Liability

As an equity investment, there are no personal liability from the shareholders for the debts of the REITs.

- Low Leverage

REIT prefer use debt in moderate levels in their capital structures, which ratios are below 55%.

In Indonesia REITs is divided to 3 types:

1. Equity REIT

Equity REIT is the first and most common type that countries in the world has already issued, including Indonesia. In REITs, most of the fund implanted directly to the property asset and some of it used to invest in the stock which company have been listed in the stock exchange market. The Equity REIT have their return mostly form management of the property.

2. Mortgage REIT

Mortgage REIT invest its fund to the property mortgages. This kind of REIT lend its fund to property and real estate owner, or buying mortgages or mortgage-backed securities. The investors return from this REIT type come from the net interest margin, so the movement of interest have sensitive effect to the return.

3. Hybrid REIT

The hybrid REIT type invested the fund to the property asset and also mortgages.

Hypotheses Development

Financial and investment literacy, also financial inclusion has been an interesting topic to research. Many paper also have been created about this topic, even there are a standard to measure this that been discovered by several researchers. Even though, several research has found that there is positive relationship between investment literacy and investment inclusion. The poor financial decision are increased as the financial literacy level are decreased (Agarawal, 2016). Other research found that financial literacy is positively affected by the level of financial inclusion (Grohman, Klühs, & Menkhoff, 2017). Those research are basically studied outside Indonesia, so the research want to prove the result of both study in Indonesia which have different people and characteristic. REITs as new product also tested as part of financial inclusion to understand its relation with investment literacy as mentioned in previous study. So the hypotheses used in this research:

Hypotheses 1: Investment Literacy has positive impact towards Buying Decision of Real Estate Investment Trust.

Investment Preference

ICMEM

Gupta (1993) held a survey to understand the investor preferences towards mutual fund and other financial assets for household investors. Lu Zeng (1999) found that fund specific information is the base for investors to choose a mutual fund. The selection and scheme preferences upon mutual fund, and the understanding of financial behaviour among investor can help the mutual fund to assess the perception changes and expectation of the investor (Saha & Dey, 2011). The understanding of investor preference can be valuable for the investment company to understand the overall market of the product they offer.

3. Methodology

3.1 Data and Research Period

This research uses primary data which is questionnaire to collect the data. The questionnaire is spreads among online stock forums and manually to individual investors from April to June 2018. The population of Indonesian investor in 2017 is 1,025,414 people. Refer to Yamane formula with 95% confidence (Singh & Masuku, 2014):

$$n = \frac{N}{(1 + Ne^2)}$$

Where:
n = Total sample
N = Total Population
e = Error rate

and for this research:

$$n = \frac{1,025,414}{(1 + (1,025,414)(0.05^2))}$$

$$n = 399.84 \approx 400$$

As the sample required for research is minimum 400, thus there are 416 data collected from the respondent.

3.2 Research Methodology

The methodology that used to know investor's investment literacy index, preferences to choose an investment product and their decision to either buy REITs or not by using data collected from the questionnaire as follows:

LOGISTICS REGRESSION (Volpe, Kotel, & Chen, 2002)

BD=X1(GENDER)+X2(AGE1)+X3(EDUCATION)+X4(INCOME)+X5(INVEST)+X6(INVLIT)+X7(PURPOSE)+ X8(PREFERENCE)+X9(PREFERENCE)+X10(PREFERENCE)+X11(PRODPREFERENCE)+X12(PRODPREFE RENCE)+X13(PRODPREFERENCE)+X14(REITsAWARE)   (1)
Where:
BD= buying decision
GENDER: 1 if participant is men, 0 otherwise
AGE = 1 if participant is 17-25 years old, 2 if participant is 25-35 years old, 3 if participant is more than 35 years old
EDUCATION1=1 if participant is SMA, 2 if participant is D3 and S1, 3 if participant is S2 and S3
INCOME1= 1 if participant earns Rp 5.000.000-Rp 10.000.000, 2 if participant earns Rp 10.000.000-Rp 20.000.000, 3 if participant earns more than Rp 20.000.000

INVEST= 1 if participant already done investment <1 Year, 2 if participant already done investment 1-2 Year, 3 if participant already done investment >2 Year

INVLIT=1 if participants have high investment literacy, 0 otherwise

PUPROSE= 1 if participant choose buying assets for their purpose, 2 if participant choose to prepare for pension, 3 if participant choose to prepare education fund for their children, 4 if they choose to have tax benefit

PREFERENCE1=1 if participant have 1st rank of preference, 0 otherwise

PREFERENCE2= 1 if participant have 2nd rank of preference, 0 otherwise

PREFERENCE3= 1 if participant have 3rd rank of preference, 0 otherwise

PRODPREFERENCE1=1 if participant have 1st rank of product preference, 0 otherwise

PRODPREFERENCE2= 1 if participant have 2nd rank of product preference, 0 otherwise

PRODPREFERENCE3= 1 if participant have 3rd rank of product preference, 0 otherwise

REITsAWARE= 1 if participant awareness about REITs, 0 otherwise

4. Data Analysis

Table 4.33 - Multicollinearity Test

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	GENDER	,471	2,123
	AGE	,734	1,363
	EDUCATION	,435	2,300
	INCOME	,925	1,081
	INVLIT	,882	1,134
	INVEST	,586	1,706
	PURPOSE	,788	1,269
	CAPITAL GAIN	,699	1,431
	SAFETY	,614	1,628
	LIQUIDITY	,574	1,742
	STOCK	,596	1,679
	DPLK	,604	1,657
	FIX INCOME	,385	2,600
	REITsAWARE	,585	1,710

a. Dependent Variable: Buying Decision

Variance Inflation Factor (VIF) number are the tools to test collinearity issues which have been assessed by Wong (2013). Collinearity issue can be avoided when the value of VIF is 5 or lower while VIF can be measured by "1/Tolerance".

From The first table we can see that the VIF value are all under 5 so we can conclude that multicollinearity issue is not found in the first model. The second table also shows the value below the indicator so there is also no multicollinearity issue found in the second model. While the third model also shows the same result with the first two, the fourth model showing higher number of VIF from 3 variables which is valued more than 2, even though it is still in the territory of no multicollinearity issue.

Logistic Regression Result

Table 4.2 - R Square

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	213,978[a]	,505	,718

ICMEM

Table 4.3

Classification Table[a]

		Observed	Predicted		
			BD		Percentage Correct
			Otherwise	Interested to buy REITs	
Step 1	BD	Otherwise	97	27	78,2
		Interested to buy REITs	19	273	93,5
		Overall Percentage			88,9

a. The cut value is ,500

Table 4.4 - Logistic Regression

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Gender	-1,800	,529	11,575	1	,001**	,165
	Age	3,518	1,076	10,685	1	,001**	33,706
	Education	-,585	,707	,685	1	,408	,557
	Income	-19,368	5753,062	,000	1	,997	,000
	Investtime	-4,852	1,008	23,193	1	,000***	,008
	InvLit	3,794	,932	16,580	1	,000***	44,422
	Purpose	-1,371	,492	7,778	1	,005**	,254
	Capital Gain	1,279	,422	9,192	1	,002**	3,592
	Liquidity	-,776	,466	2,773	1	,096	,460
	Safety	-,391	,452	,750	1	,387	,676
	Stock	1,365	,552	6,122	1	,013	3,915
	DPLK	2,386	,478	24,939	1	,000***	10,872
	Fix Income	-1,950	,682	8,187	1	,004**	,142
	REITsAWARE	2,225	,683	10,611	1	,001**	9,256
	Constant	18,087	5753,062	,000	1	,997	71632186,668

a. Variable(s) entered on step 1: Gender, Age, Education, Income, Invest, Invlit, Purpose, Preferance1, Preferance2, Preferance3, Prodpreferance1, Prodpreferance2, Prodpreferance3, and REITsAWARE

b. *** ($<\alpha=0.001$), ** ($<\alpha=0.005$), * ($<\alpha=0.01$)

c. Number of Observation: 416

Odd ratio Analysis:

Odd ratio for Gender is -1.800. Coefficient B have negative sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 1.800 higher than in category 1. Odd ratio for Age is 3.518. Coefficient B have positive sign, means that probability ratio of buying decision of category 0 is 3.518 lower than category 1. Odd ratio for Education is -0.585. Coefficient B have negative sign, means that probability ratio of buying decision of category 0 is 0.585 higher than category 1. Odd ratio for Income is -19.368. Coefficient B have negative sign, means that probability ratio of buying decision of category 0 is 19.368 higher than category 1. Odd ratio for InvestTime is -4.852. Coefficient B have negative sign, means that probability ratio of buying decision of category 0 is 4.852 higher than category 1. Odd ratio for InvLit is 3.794. Coefficient B have positive sign, means that every1 unit increase in investment literacy variable so variable Buying Decision will increase 3.794, and every1 unit decrease in investment literacy variable so variable Buying Decision will decrease 3.794. Odd ratio for Purpose is –1.371. Coefficient B have negative sign, means that probability ratio of buying decision category 0 is 1.371 higher than category 1. Odd ratio for Preference1 is 1.279. Coefficient B have positive sign, means that probability ratio of Buying

ICMEM

Decision which include as category 0 in the variable gender is 1.279 lower than in category 1. Odd ratio for Preference2 is -0.776. Coefficient B have negative sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 0.776 higher than in category 1. Odd ratio for Preference3 is -0.391. Coefficient B have negative sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 0.391 higher than in category 1. Odd ratio for ProdPreference1 is 1.365. Coefficient B have positive sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 1.365 lower than in category 1. Odd ratio for ProdPreference2 is 2.386. Coefficient B have positive sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 2.386 lower than in category 1. Odd ratio for ProdPreference3 is -1.950. Coefficient B have negative sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 1.950 higher than in category 1. Odd ratio for REITsAWARE is 2.225. Coefficient B have positive sign, means that probability ratio of Buying Decision which include as category 0 in the variable gender is 2.225 lower than in category 1

P Value Analysis

P value from variable Gender is 0.001 lower than means that Gender have significant effect towards Buying Decision. P value from variable Age is 0.001 lower than means that Age have significant effect towards Buying Decision. P value from variable Education is 0.408 higher than means that Education have no significant effect towards Buying Decision. P value from variable Income is 0.997 higher than means that Income have no significant effect towards Buying Decision. P value from Invest Time is 0.000 lower than means that Invest Time have significant effect towards Buying Decision. P value from Investment Literacy is 0.000 lower than means that Investment Literacy have significant effect towards Buying Decision. P value from Purpose is 0.005 lower than means that Purpose have significant effect towards Buying Decision. P value from Preference1 is 0.002 lower than means that Preference1 have significant effect towards Buying Decision. P value from Preference2 is 0.096 higher than means that Preference2 have no significant effect towards Buying Decision. P value from Preference3 is 0.387 higher than means that Preference3 have no significant effect towards Buying Decision. P value from Product Preference1 is 0.013 lower than means that Product Preference1 have no significant effect towards Buying Decision. P value from Product Preference2 is 0.000 lower than means that Product Preference2 have significant effect towards Buying Decision. P value from Product Preference3 is 0.004 lower than means that Product Preference3 have significant effect towards Buying Decision. P value from REITs Awareness is 0.001 lower than means that REITs Awareness have significant effect towards Buying Decision

5. Discussion

The author use 14 variable which is Gender, Age, Education, Income, Invest, Investment literacy, Purpose, Preferance1, Preferance2, Preferance3, Prodpreferance1, Prodpreferance2, Prodpreferance3, and REITs Awareness. There are several findings that we can see from the first model. Gender showing P value of 0.001 which categorized as significant with the odd ratio of -1.800 which means that category 0 have 1.800 higher probability of Buying decision than category 1. Age also showing P value of 0.001 which is also significant (under 0.05) with the odd ratio of 3.518 which means that category 1 have 3.158 higher probability of buying decision than category 0. Invest Time categorized as significant with value of 0.000 and the odd ratio of -4.852 means that category 1 have 3.852 lower probability of buying decision than category 0. Purpose, Capital Gain, Fix Income, and REITs awareness also significant. Education, Income, Liquidity, Safety, and Stock concluded as not having significant relationship with buying decision of Real Estate Investment Trust.

The hypotheses tested in the research are also correct which Investment Literacy have significant effect towards the buying decision which stated by Agarawal (2016) Grohman, Kluhs, and Menkhoffs (2017) because it has P value 0.000 categorized as very significant and have odd ratio of 3.794 which means that every 1 point (right answer) increase in investment literacy would increase probability 379.4% of REITs Buying Decision. This result also validate the

ICMEM

finding from (Grohman, Klühs, & Menkhoff, 2017) and (Agarawal, 2016) that investment literacy have a positive correlation with investment inclusion.

6. Conclusion

As a relatively new investment product in Indonesia REITs have really big opportunity in the future to be the most preferable choice among other investment product available in the market. Wider variety of product make preference of the investor may be shift in the future. The awareness of REITs among Indonesian Investors are relatively low. 290 people answer they do not aware of this product this means 69.7% of the respondent concluded as not aware of the product. Even though there are plenty know about this product, to be exact, 126 people answer know about the product and it means 30.3% are aware to the existence of the product. Increasing the product awareness can make the barrier to purchase decreasing (Xu & Zia, 2012).

The hypotheses tested in the research shows that Investment literacy is a significant factor to the buying decision of REITs (Agarawal, 2016) & (Grohman, Klühs, & Menkhoff, 2017). Statistical test proves that the higher the Investment literacy score an investor has, the higher it drives them to purchase Real Estate Investment Trusts which can be seen from the odd ratio showing positive sign in the fourth model. The Hypotheses also proven by the constant highest level of significant through model 4 regression. Cross Tabulation also support the hypotheses which resulted that 292 people willing to buy the product means that even though Indonesia categorized as low financial literacy country (The World Bank, 2014), they still willing to purchase REITs as their investment.

Other most significant factors that leads people to buy the product are invest time and product preference 2 with significant level 0.000, it indicates that people with more invest time or equal to experience and those who like Dana Pensiun Lembaga Keuangan are those who most attracted to this product. Gender, age, Purpose, preference 1, product preference 1, product preference 3, REITs awareness also significant to the buying decision of REITs. Thus from 14 variable tested in the research, education, income, preference 1(Capital Gain), preference 2(Liquidity) , and Product preference 1(Stock) are not significant to the buying decision of Real Estate Investment Trust.

The author recommend to the finance related government organization and company who has this product to create a program like make a bulletin or book to increase the awareness of the product. Increasing the product awareness can make the barrier to purchase decreasing (Xu & Zia, 2012) means that this product can enrich the choice for investor to purchase.

References

Agarawal, T. (2016). An Analysis of the Twin Pillars of the Banking in India: Financial Literacy and Financial Inclusion. Gavesana Journal of Management, 23-30.

Alliance for Financial Inclusion. (2010). Financial Inclusion measurement for regulators: survey design and implementation. Bangkok: Alliance for Financial Inclusion.

Fisher, W. j. (2007). Rasch Measurement Transaction. In Transaction of the Rasch Measurement SIG American Educational Research Ascosiation (p. 1095).

Fraenkel, J., & Wallen. (1996). How to Design and Evaluate Research. USA: Mc. Graw-Hill Inc.

Ghazali, D. (2008). Kesahan dan Kebolehpercayaan dalam kajian kuantitatif dan kulaitatif. Jurnal Institut Perguruan Islam.

Grohman, A., Klühs, T., & Menkhoff, L. (2017). Does Financial Literacy Improve Financial Inclusion. Berlin: German Institute for Economic Research.

Gupta, L. (1993). Mutual Fund and Asset Preference. Society for Capital Market Research and Development.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). Multivariate Data Analysis. harlow: Pearson Education Limited.

Hilgert, M. A. (2003). Household Financial Management: The Connection between Knowledge and Behaviour. Federal Reserve Bulletin, -.

Hirshleifer, J. (1985). Investment Decision Criteria. A Dictionary of Economic Thought and Doctrine, 365.

Kallberg, J. G. (2014). REITs: Structure and Performance. Public Public Real Estate Market and Investment, -.

Kubiszyn, T., & Borich, G. (2000). Educational Testing and Measurement: Classroom Application and Practice. New York: John Wiley & Sons, Inc.

Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. Journal of Economic Literature, -.

ICMEM

Malmendier, U., & Shanthikumar, D. (2007). Are small investors naive about incentives. Journal of Financial Economics, 487.

National Association of Real Estate Investment Trusts. (2011). The Investor's Guide to REITs. Washington DC: National Association of Real Estate Investment Trusts.

Odean, B. M. (2001). Boys Will Be Boys; Gender, Overconvidence, and Common Stock Investment. The Quarterly Journal of Economics, 261-289.

OECD. (2015). 2015 OECD/INFE TOOLKIT FOR MEASURING FINANCIAL LITERACY AND FINANCIAL INCLUSION. Paris: Organization for Economic Co-operation and Development.

Saha, S., & Dey, M. (2011). Analysis of Factors Affecting Investors' Perception of Mutual Fund Investment. The IUP Journal of Management Research, 24-44.

Singh, A. S., & Masuku, M. B. (2014). Sampling Techniques and Determination of Sample Size in Applied Statistics Research. International Journal of Economics, Commerce and Management, 15.

Skrivanek, S. (2009, - -). https://www.moresteam.com. Retrieved from moresteam: https://www.moresteam.com/whitepapers/download/dummy-variables.pdf

The World Bank. (2014). Global Financial Development Report "Financial Inclution". Washington DC: The World Bank.

U.S Securities and Exchange Commission. (2011a). REITs. -: -.

Volpe, R. P., Kotel, J. E., & Chen, H. (2002). A Survey of Investment Literacy Among Online Investors. Financial Counseling and Planning.

Xu, L., & Zia, B. (2012). Financial Literacy Around the World: An Overview of the Evidence with practical Suggestions for the Way Forward. Policy Research Working Paper, 40.

Zeng, L. (1999). Is Money Smart? A Study of Mutual Fund Investors' Fund Selection Ability. The Journal of FInance.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Do Sin Companies Purify Their Prohibited Business Through Corporate Social Responsibility?

Jane Lukman[a], Yunieta Anny Nainggolan[b*]

*a,b*School of Business and Management (SBM) ITB, Jalan Ganesha 10, Bandung 40132, Indonesia

Abstract

As investors nowadays are concerned against social issues, Corporate Social Responsibility (CSR) has been implemented as one of corporate business activities. Nevertheless, previous studies have shown divergent result regarding its benefits. By the fact that Indonesia is the first nation in the world that makes CSR mandatory and regulated in law, this debate is getting more interesting to be investigated. This study measures CSR by analysing social media utilization, specifically Facebook. In total, 9,283 Facebook posts from 25 ethical stocks listed in SRI-KEHATI Index and 6 sin stocks categorized as "Triumvirate of Sin" (alcohol, tobacco, and gaming industries) are analysed. Event study is utilized to examine abnormal stock return and multiple regression is conducted to check the connection between CSR, corporate image, and financial performance. From event study, the outcome shows that CSR publication on Facebook has positive impacts towards firm's financial performance, particularly among sin industries. While from the multiple regression, CSR has positive impacts on corporate image for both industries. However, CSR has insignificant impact towards ethical industries' financial performance, and negatively affecting sin industries'. Lastly, corporate image has positive impacts on ethical industries' financial performance, but there is no statistically significant effect taking place against sin industries.

1. Introduction

Investors have several considerations in choosing which stock they will invest. One of the criteria they analyze is the social standards won inside the public. Thus, there are two kinds of stock; sin stocks and ethical stocks. There are three principal industries which are categorized as sin stocks, known as "Triumvirate of Sin". They are alcohol, tobacco, and gaming industries (Hong & Kacpercyzk, 2009). These businesses are seen as sinful because they are additive and lead to undesirable social consequences of extreme fulfillment. In Indonesia, we have a tendency to pick ethical stocks to invest by doing positive screening. Positive screening is another idea of screening to invest only in "positive" stocks and avoid controversial stocks. Indonesia has connected this idea by constructing an index which is called SRI-KEHATI Index. SRI-KEHATI Index provides information about companies that implement sustainable financial, social, and environmental governance in their business activities.

Nowadays, investors start paying more attention in social issues. As a result, both sin and ethical companies execute Corporate Social Responsibility (CSR) activities in their business practices. Previous studies define CSR as commitment within organization to improve social prosperity by controlling social, environmental, and economic aspect thoroughly as well as improving stakeholder relationship (Ihlen, Bartlett, & May, 2011; Zhang, Morse, Kambhamptati, & Li, 2014). By implementing CSR activities, companies hope they will get good corporate image as well as trustworthiness in return.

The contribution of this research is by looking at the benefit of implementing CSR in both ethical and sin industries in Indonesia. The author focuses on analyzing Facebook usage as an instrument to publicize CSR as it is the most visited social media platform in Indonesia (APJII, 2016). Besides, the author also centers in analyzing companies in Indonesia as it is the first country on the planet that makes CSR compulsory and managed in the Law. In view of

---

* Corresponding author. Tel.: (022) 2531923; fax: (022) 2504249.
  E-mail address: yunieta@sbm-itb.ac.id

ICMEM

previous studies, the connection between corporate image and customer loyalty is positive. Good corporate image will result in expanding customer faithfulness through repurchase intention and recommendation behavior (Chaudhuri & Holbrook, 2001; Dick & Basu, 1994). However, the connection amongst CSR and financial performance is still inconclusive. There are positive, negative, and neutral impact (McWilliams & Siegel, 2000).

2. Theoretical Foundations

Corporate Social Responsibility (CSR) is commitment of the company to improve the wealth of society by running ethical business activities and sharing several resources with the community around business practices (Kotler & Lee, 2005). There are lots of advantages that will be gained by company who conducts CSR activities, such as reputation improvement, develops customer loyalty, a source of product differentiation, attracts and maintains competent worker, and enhances community support towards the firm (Booth & Matic, 2011; Fombrun, Gardberg, & Sever, 2000; Patino, Pitta, & Quinones, 2012; Yan, 2011). Elkington (1997) argues that to achieve sustainable business, company has to pay attention in both shareholders and stakeholders interest. Therefore, he introduces a CSR concept to maintain company's sustainability that is called Triple Bottom Line. Triple Bottom Line consists of 3Ps; profit, people, and planet. It is a tool to measure financial, social, and environmental performance of a company within a certain time (The Economist, 2009).

One of the advantages of conducting CSR activities is improving corporate image. Corporate image is firm's attractiveness as it differs one brand from another (Alvesson & Berg, 1992). Several studies have proved that the most crucial factors in developing customer loyalty are corporate image as well as corporate reputation. They have such strength that will stick on consumer's mind every time they hear the name of the organization (Bravo, Montaner, & Pina, 2009; Hatch, Schultz, & Williamson, 2003; Nguyen, 2006). According to Perez and Bosque (2015), CSR has a positive impact in building emotions and it is indeed a key strategic tool to boost customer satisfaction and loyalty. Therefore, the relationship between CSR, customer satisfaction, corporate image, and corporate loyalty is positive. However, diverge results are found within sin industries. The effort to improve firm's reputation among controversial industries is meaningless (Barraclough & Morrow, 2008; Hing, 2001; Yoon, Gurhan-Canli, & Schwarz, 2006). In contrast, Cai, Jo, and Pan (2012) believe that the value of controversial industries will increase if they implement CSR activities.

The relationship between CSR and financial performance is also inconclusive. Some studies prove a positive relation (Orlitzky, Schmidt, & Rynes, 2003) but there are also negative and neutral impact (McWilliams & Siegel, 2000). Cai et al. (2012) explain that this inconsistency is a result of CSR performance measurement, sample coverage, and research design inequality. Meanwhile, research conducted by Nilsson (2009) about the relationship between CSR and firm profitability also shows contradictive result. Some studies believe there is positive relationship between CSR and firm profitability. Another studies argue neutral impact exists. Waddock & Graves (1997) find CSR has negative impact towards firm profitability as it leads to additional costs that will reduce profit as well as shareholder value.

This research objective is to examine the impact of CSR implementation by sin stocks who tend to damage environment, society, and governance. Hong & Kacpercyzk (2009) categorize sin stocks in three fundamental enterprises, which is called "Triumvirate of Sin". They are alcohol, tobacco, and gaming industries. In Indonesia, there are just two wicked industries which are publicly traded; alcohol and tobacco. Sin stocks have several attributes which separate itself with ethical stocks. They have lower institutional ownership ratio, underpriced yet outperformed, high level of subjective risk which leads to higher expected return, positive monopolistic return, and higher leverage as a result of undervalued equity from limited risk sharing (Fabozzi, Ma, & Oliphant, 2008; Hong & Kacpercyzk, 2009; Merton, 1987; Statman, Fisher, & Anginer, 2008).

3. Methodology

3.1. Data Collection

This study combines primary and secondary data to achieve research objectives. Dependent variables in this research are firm's financial performance and corporate image. While for the independent variables, the author

ICMEM

measures CSR implementation and corporate image as well. Firm's financial performance is calculated from its stock return through Yahoo! Finance historical price and analyzed by conducting event study. CSR implementation and corporate image data is obtained from company's publication in their Facebook Page. CSR implementation is categorized into Environmental, Social, and Governance (ESG) referring to Viehs, Clark, and Feiner (2015), whilst corporate image is analyzed from the total likes, comments, and shares obtained per post. Last, control variables data are acquired from firm's annual report as well as Indonesia Stock Exchange (IDX) website. They are firm size *(SIZE)*, age *(AGE)*, previous financial performance *(PFP)*, type of industry *(IND)*, leverage *(LEV)*, ownership *(OWN)*, and R&D *(R&D)*. *SIZE* is the natural logarithm of total asset, *AGE* is the natural logarithm of firm's age, *PFP* is firm's ROE, *IND* is dummy variables categorized into 9 industry sectors based on IDX, *LEV* is debt ratio, *OWN* is dummy variables for SOEs or POEs, and *R&D* is R&D ratio which is calculated from R&D expenses divided by total sales. The population of this research are all of ethical stocks listed by SRI-KEHATI Index and all of sin stocks categorized as "Triumvirate of Sin" in Indonesia in year 2017. On the whole, the author analyzes 9,283 Facebook posts from 25 ethical stocks and 6 sin stocks in Indonesia.

3.2. Research Model

To achieve the purpose of the study, the author uses multiple regression to determine the relationship between Corporate Social Responsibility *(CSRImp)*, Corporate Image *(CI)*, and Financial Performance *(CAR)*. At first, Three Stage Least Squares (3SLS) is preferred as it is a system method applied to all research model equations at the same time and assess all of the parameters simultaneously (Koutsoyiannis, 2001). However, due to data limitations, the author uses multiple regression instead.

- CSR and CI
  To determine the impact of CSR towards CI, the equation model refers to Cui, Jo, and Na (2012) and Farag, Meng, and Mallin (2015) is implemented and written as follows:

$$CI_{i,t} = \alpha_0 + \alpha_1 CSRImp_{i,t} + \sum_{j=2}^{n} \alpha_j CONTROL\ VARIABLES_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

  Where control variables included are *SIZE*, *AGE*, *PFP*, and *IND* (Fombrun & Shanley, 1990; Maurya, Mishra, Anand, & Kumar, 2015; Roberts & Dowling, 2002; Tsai & Yang, 2010).
  This research model is applied to answer hypothesis 1 and 2, where the author expects there will be positive impact for companies who implement CSR in their business practices against their CI, for both ethical and sin industries. This is because CSR has the ability to build customer satisfaction and loyalty (Perez & Bosque, 2015), and it is vastly valued by public particularly in developing countries (Carroll, 2004).

- CSR and FP
  To determine the impact of CSR towards FP, the equation model which also refers to Cui et al. (2012) and Farag et al. (2015) is as follows:

$$CAR_{i,t} = \alpha_0 + \alpha_1 CSRImp_{i,t} + \sum_{j=2}^{n} \alpha_j CONTROL\ VARIABLES_{i,t-1} + \varepsilon_{i,t} \qquad (2)$$

  Where control variables included are *SIZE*, *LEV*, *OWN*, *R&D*, and *IND* (Margolis, Elfenbein, & Walsh, 2009; Mishra & Suar, 2010; Tsoutsoura, 2004; Zhang, 2016).
  This research model is applied to answer hypothesis 3 and 4, where the author argues that positive impact will happen between CSR and FP in Indonesian ethical industries. However, opposite argument is expected for sin industries in Indonesia. According to Carroll (2004), companies that conduct their businesses ethically will have a big positive impact, specifically in developing countries. However, investors still refuse investing in sin

ICMEM

industries that execute unethical business practices, as has been found by Hong and Kacpercyzk (2009).

- CI and FP
To determine the impact of CI towards FP, the equation model which also refers to Cui et al. (2012) and Farag et al. (2015) is as follows:

$$CAR_{i,t} = \alpha_0 + \alpha_1 CI_{i,t} + \sum_{j=2}^{n} \alpha_j CONTROL\ VARIABLES_{i,t-1} + \varepsilon_{i,t} \qquad (3)$$

Where control variables included are *SIZE*, *LEV*, *OWN*, *R&D*, and *IND* (Margolis et al., 2009; Mishra & Suar, 2010; Tsoutsoura, 2004; Zhang, 2016).

This research model is applied to answer hypothesis 5 and 6, where the author expects positive impact will occur between CI and FP, both in sin and ethical companies in Indonesia. By having good corporate image, customer loyalty through repurchase and recommendation behavior will also increase (Chaudhuri & Holbrook, 2001; Dick & Basu, 1994). Moreover, company will also gain support from stakeholders and shareholders that will generate continuation of financial performance.

4. Findings and Argument

4. 1. Event Study Analysis

Figure 1 shows the average abnormal return (AAR) as an impact of CSR announcement on Facebook. Both ethical and sin stocks obtain positive reaction from the market, although they differ in time. In ethical stocks, positive AAR can be seen one day after the announcement date (d+1) at 0.2431% with 10% significance level. This return is also the highest among the event window. Positive AAR is also visible five days after the announcement date (d+5) at 0.0218%, insignificantly. On the other hand, positive AAR in sin stocks has already existed exactly on the announcement date (d+0) at 0.6495%. This return stands on the second highest among the event window, after d+3 which obtains positive AAR at 0.7656%. Both d+0 and d+3 AAR are statistically significant at 5%. On the other hand, positive cumulative average abnormal return (CAAR) among ethical industries is visible one day after announcement date (d+1) and one day after (d+2) at 0.1519% and 0.1390%, insignificantly. Whereas in sin industries, positive CAAR only observed three days after announcement date (d+3) at 0.0282% insignificantly. CAAR is illustrated in Figure 2. Based on Figure 1 and Figure 2, sin stocks are proven to be more volatile compared to the ethical ones, and sin stocks' investors are more concerned about CSR implementation in business practices.
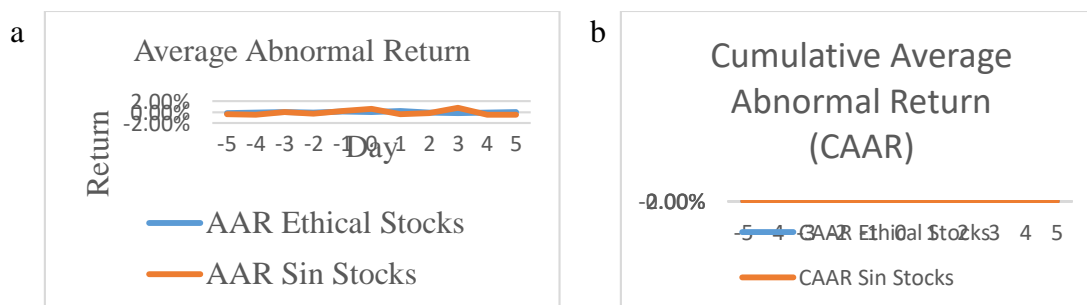
Fig. 1. (a) Average Abnormal Return (AAR) in Ethical and Sin Stocks; (b) Cumulative Average Abnormal Return (CAAR) in Ethical and Sin Stocks

Ethical industries' performance which tends to advance one day after announcement date (d+1) is align with the US (Sabbaghi & Xu, 2013) and European market (Cellier & Chollet, 2011). This proves that Indonesians reaction is similar with global ethical investors. On the other hand, sin industries' performance in the US increases one day after

ICMEM

announcement date (d+1). While for Indonesia, market reacts significantly positive right on the announcement date (d+0). This phenomenon proves that Indonesian investors are more concerned about CSR run by the controversial industries compared to US investors.

4. 2. Multiple Regression Analysis

- Regression Results in Ethical Industries
    - a. Corporate Social Responsibility (CSR) and Corporate Image

      CSR implementation in ethical industries is proven to develop corporate image significantly. Based on Table 1 at model [11] and [13], every 10% enhancement of CSR publication on Facebook will increase total engagement by 7 to 14 points. These findings show that Indonesian people are concerned against CSR executed by ethical industries. Moreover, it is in line with Etter (2013) that find CSR as an important factor affecting corporate image and reputation as well as relationship with stakeholders. Hence, the first hypothesis (H_1) of this research is accepted. For control variable used, firm's age has significant positive impacts towards corporate image, aligned with Sageder, Mitter, & Feldbauer-Durstmuller (2018) who find better stakeholders engagement and firm's reputation possessed by older companies.

Table 1. Regression Result of CSR and Corporate Image in Ethical Industries

Model		[11]	[12]	[13]
Dependent Variable		CI		
Independent Variable	CSRImp	0.662*		1.420***
		(0.065)		(0.001)
Control Variables	SIZE		0.280	0.304
			(0.371)	(0.316)
	AGE		0.446**	0.536***
			(0.046)	(0.010)
	PFP		0.068	-0.365
			(0.922)	(0.592)
	IND		Yes	Yes
Constant		97.455***	-820.432***	-625.580***
		(0.000)	(0.000)	(0.000)
Output	N	260	260	260
	P-value of F-stat	0.065*	0.000***	0.000***
	r2	0.014	0.083	0.109

This table presents the regression result of CSR implementation (CSRImp) and corporate image (CI) in ethical industries. CSRImp is the amount of CSR announcement in Facebook, while CI is total likes, shares, and comments obtained from Facebook posts. SIZE is measured by natural logarithm of total assets, AGE is natural logarithm of firm's age, PFP is previous financial performance which is defined by ROE, and IND is industry type that is categorized based on IDX industry sector. Statistically significant at *10%, **5%, and ***1%, respectively.

- b. Corporate Social Responsibility (CSR) and Financial Performance

    While CSR has significant positive impacts towards corporate image among ethical industries, Table 2 shows that its impact towards firm's financial performance is ended up being insignificant. This outcome indicates that Indonesian investors generally do not make CSR as one of consideration when investing in ethical stocks. This finding is conflicting with Orlitzky et al. (2013) that proves positive relationship between CSR and financial performance. One possible explanation for this finding is that investors have already expected ethical industries to execute CSR (Boardman & Vining, 1989). Hence, there is not enough evidence to reject the third hypothesis (H_3) of this research. For control variable used, firm's leverage is found to have negative impacts towards stock return, showing that Indonesian investors

generally abstain from investing in high leverage stocks due to greater risk of inability to fulfil debt payments (Gitman & Zutter, 2015).

Table 2. Regression Result of CSR and Financial Performance in Ethical Industries

	Model	[21]	[22]	[23]
Dependent Variable		CAR		
Independent Variable	CSRImp	0.235		0.162
		(0.573)		(0.803)
Control Variables	SIZE		0.182	0.202
			(0.650)	(0.631)
	LEV		-0.663**	-0.663**
			(0.023)	(0.023)
	OWN		Yes	Yes
	R&D		1.011	1.121
			(0.599)	(0.574)
	IND		Yes	Yes
Constant		126.914***	1396.699***	1478.347***
		(0.000)	(0.000)	(0.000)
Output	N	260	260	260
	P-value of F-stat	0.573	0.000***	0.000***
	r2	0.001	0.112	0.112

This table presents the regression result of CSR implementation (CSRImp) and financial performance (CAR) in ethical industries. CSRImp is the amount of CSR announcement in Facebook, while CAR is the cumulative abnormal return from day+0 until day+5. SIZE is measured by natural logarithm of total assets, LEV is calculated from debt ratio, OWN is type of ownership, R&D is the percentage of R&D ratio, and IND is industry type that is categorized based on IDX industry sector. Statistically significant at *10%, **5%, and ***1%, respectively.

c. Corporate Image and Financial Performance

Good corporate image possessed by ethical industries in Indonesia is found to have positive impacts towards firm's financial performance, as can be seen in Table 3. Statistically significant at 1% level, every increment of Facebook engagement will enhance stock return by 0.19 to 0.24 points. These findings denote that although Indonesian investors do not overreact towards ethical industries' CSR, they decided to purchase the stocks due to high public response. This result is in line with Mizik (2014) that finds brand value has positive impacts on firm's financial performance, both short and long term. Hence, the fifth hypothesis (H_5) of this research is accepted. For control variables used, firm's leverage also has significant negative impacts towards financial performance as stated in the previous section. This finding shows that Indonesian investors generally avoid investing in high leveraged stocks because of having greater bankruptcy risks (Gitman & Zutter, 2015).

ICMEM

Table 3. Regression Result of Corporate Image and Financial Performance in Ethical Industries

	Model	[31]	[32]	[33]
Dependent Variable		CAR		
Independent Variable	CI	0.240***		0.190***
		(0.001)		(0.010)
Control Variables	SIZE		0.182	0.144
			(0.650)	(0.721)
	LEV		-0.663**	-0.558*
			(0.023)	(0.056)
	OWN		Yes	Yes
	R&D		1.879	0.350
			(0.311)	(0.862)
	IND		Yes	Yes
Constant		156.245***	1450.113***	1263.554***
		(0.000)	(0.000)	(0.000)
Output	N	260	260	260
	P-value of F-stat	0.001***	0.000***	0.000***
	r2	0.041	0.112	0.133

This table presents the regression result of corporate image (CI) and financial performance (CAR) in ethical industries. CI is the amount of total likes, shares, and comments obtained from each Facebook post, while CAR is the cumulative abnormal return from day+0 until day+5. SIZE is measured by natural logarithm of total assets, LEV is calculated from debt ratio, OWN is type of ownership, R&D is the percentage of R&D ratio, and IND is industry type that is categorized based on IDX industry sector. Statistically significant at *10%, **5%, and ***1%, respectively.

- Regression Results in Sin Industries
  a. Corporate Social Responsibility (CSR) and Corporate Image
  Sin industries who implement CSR will gain positive impacts against their corporate image, as stated in Table 4. From model [13], sin industries will gain 7 points more in total likes, shares, and comments acquired for every 10% advancement of CSR publication in Facebook. Significant at 1% level, this finding shows that Indonesian sin industries' corporate image are refined after running CSR, and as an evidence that Indonesian people care enough about CSR in sin industries. This finding is aligned with Cai et al. (2012) who find that CSR does enhance sin industries' firm value in the US. As for Indonesia, one possible reason for positive impacts occurrence might be due to being a developing country that values business activities supporting the community, in accordance with Carroll (2004). Hence, the second hypothesis (H_2) is accepted.

Table 4. Regression Result of CSR and Corporate Image in Sin Industries

	Model	[11]	[12]	[13]
Dependent Variable		CI		
Independent Variable	CSRImp	0.122		0.687***
		(0.408)		(0.000)
Control Variables	SIZE		-0.565	-0.369
			(0.112)	(0.111)
	AGE		0.193	-0.132
			(0.546)	(0.713)
	PFP		1.089	-2.137

		(0.559)	(0.107)
IND		Yes	Yes
Constant		12.222***	13.251***	16.256***
		(0.001)	(0.003)	(0.000)
Output	N	35	35	35
	P-value of F-stat	0.408	0.433	0.001***
	r2	0.024	0.078	0.225

b. Corporate Social Responsibility (CSR) and Financial Performance

While CSR has significantly positive impact towards sin industries' corporate image, opposite result occurs on its impact against firm's financial performance. Model [23] in Table 5 shows negative value of -0.585 with 5% level of significance. This finding indicates that even though CSR improves corporate image, Indonesian investors still neglect to invest in sin industries. This phenomenon is aligned with Hong and Kacpercyzk (2009) who find that investor refusal still occur as an impact of the unethical nature of sin industries' businesses. Consequently, CSR in sin industries is considered as additional costs that will reduce firm's profitability (Waddock & Graves, 1997). Therefore, the fourth hypothesis (H_4) of this research is accepted. For the control variables used, firm's size is proved to have significant positive impacts towards firm's financial performance, aligned with previous studies that discover positive relationship between them (Barnett & Salomon, 2012; Garcia-Castro, Arino, & Canela, 2010; Prior, Surroca, & Tribo, 2008).

. Table 5. Regression Result of CSR and Financial Performance in Sin Industries

	Model	[21]	[22]	[23]
Dependent Variable		CAR		
Independent Variable	CSRImp	-0.151		-0.585**
		(0.326)		(0.016)
Control Variables	SIZE		-0.003	0.367*
			(0.992)	(0.067)
	LEV		-0.425	-0.304
			(0.173)	(0.295)
	OWN		Yes	Yes
	R&D		1.766	-1.787
			(0.346)	(0.428)
	IND		Yes	Yes
Constant		20.937***	20.846**	33.663***
		(0.000)	(0.015)	(0.001)
Output	N	35	35	35
	P-value of F-stat	0.326	0.432	0.085*
	r2	0.031	0.056	0.183

This table presents the regression result of CSR implementation (CSRImp) and financial performance (CAR) in sin industries. CSRImp is the amount of CSR announcement in Facebook, while CAR is the cumulative abnormal return from day+0 until day+5. SIZE is measured by natural logarithm of total assets, LEV is calculated from debt ratio, OWN is type of ownership, R&D is the percentage of R&D ratio, and IND is industry type that is categorized based on IDX industry sector. Statistically significant at *10%, **5%, and ***1%, respectively.

c. Corporate Image and Financial Performance

On the other hand, the relationship between corporate image and firm's financial performance in sin industries is observed to be statistically insignificant, as can be found in Table 6, specifically in model [31] and [33]. This finding shows that Indonesian investors are indifferent to sin industries' image, represented by total Facebook engagement when making a decision to invest. This discovery is not in accordance with Mizik (2014) who finds that good corporate image will upgrade firm's financial performance. One possible reason in regards to this research finding is the absence of "compensatory

ICMEM

effect" because of the unethical nature possessed by sin industries (Hong & Kacpercyzk, 2009). Hence, there is not sufficient proof to reject the sixth hypothesis (H_6) of this research.

Table 6. Regression Result of Corporate Image and Financial Performance in Sin Industries

	Model	[31]	[32]	[33]
Dependent Variable			CAR	
Independent Variable	CI	0.187		0.110
		(0.329)		(0.612)
	SIZE		-0.003	-0.027
			(0.992)	(0.928)
	LEV		-0.425	-0.376
Control Variables			(0.173)	(0.251)
	OWN		Yes	Yes
	R&D		1.766	1.348
			(0.346)	(0.504)
	IND		Yes	Yes
Constant		20.655***	20.846**	22.825**
		(0.000)	(0.015)	(0.016)
	N	35	35	35
Output	P-value of F-stat	0.329	0.432	0.548
	r2	0.030	0.056	0.065

This table presents the regression result of corporate image (CI) and financial performance (CAR) in sin industries. CI is the amount of total likes, shares, and comments obtained from each Facebook post, while CAR is the cumulative abnormal return from day+0 until day+5. SIZE is measured by natural logarithm of total assets, LEV is calculated from debt ratio, OWN is type of ownership, R&D is the percentage of R&D ratio, and IND is industry type that is categorized based on IDX industry sector. Statistically significant at *10%, **5%, and ***1%, respectively.

5. Conclusions

Since previous studies show inconclusive results regarding the benefit of executing Corporate Social Responsibility (CSR) in business practices, this study aims to determine the impact of CSR implementation towards corporate image and firm's financial performance in Indonesia. This study is getting more interesting as Indonesia is the first nation in the world that makes CSR mandatory and regulated in law. The population of this research include all of 25 stocks listed in SRI-KEHATI Index and 6 stocks included in "Triumvirate of Sin" (alcohol, tobacco, and gaming industries). Data for measuring CSR implementation and corporate image are taken from each company's Facebook page in year 2017. For measuring firm's financial performance, this research uses event study, while for determining the relationship between CSR, corporate image, and financial performance, multiple regression is conducted.

After conducting event study, this research finds that Indonesian market reacts significantly positive towards CSR implementation in both ethical and sin industries. However, ethical industries gain lower abnormal return and significance level compared to sin industries. From multiple regression results, this study discovers that CSR has positive impacts on both ethical and sin industries' corporate image. On the other hand, CSR implementation leads to unfavourable sin industries' financial performance. While for the ethical ones, CSR has insignificant impact against firm's financial performance. Last but not least, sin industries' corporate image has no significant effect on the company's financial performance. Whereas ethical industries gain opposite result; good corporate image will lead to better financial performance.

These research findings suggest that sin industries should implement CSR in their business practices, as it will positively impact corporate image as well as abnormal return. Ethical industries' should also implement CSR in their business practices, as it will lead to better reputation for the company. Furthermore, investors should pay attention to CSR announcement on the company's Facebook page to obtain maximum return. Future research can be improved by using larger sample size, longer period to be analysed, another country with different cultures and CSR literacy level, and adding another social media platform to compare. Last but not least, future research should ascertain whether

ICMEM

abnormal returns actually occur due to CSR execution and not from other corporate news informed at the same time period that might trigger investors to invest.

References

Alvesson, M. & Berg, P. O., 1992, Corporate Culture and Organizational Symbolism: An Overview, Berlin: Walter de Gruyter.

Asosiasi Penyelenggara Jasa Internet Indonesia, n. d. Survei Internet APJII 2016, retrieved on May 4, 2018 from https://apjii.or.id/content/read/39/264/Survei-Internet-APJII-2016

Barnett, M. L. & Salomon, R. M., 2012, Does It Pay to be Really Good? Addressing the Shape of the Relationship between Social and Financial Performance, Strategic Management Journal, 33 (11): 1304-1320.

Barraclough, S. & Morrow, M., 2008, A Grim Contradiction: The Practice and Consequences of Corporate Social Responsibility by British American Tobacco in Malaysia, Social Science & Medicine, 66 (8): 1786-1796.

Boardman, A. E. & Vining, A. R., 1989, Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises, Journal of Law and Economics, 32 (1): 1-33.

Booth, N. & Matic, J. A., 2011, Mapping and Leveraging Influencers in Social Media to Shape Corporate Brand Perceptions, Corporate Communications: An International Journal, 16 (3): 184-191.

Bravo, R., Montaner, T. & Pina, J. M., 2009, The Role of Bank Image for Customers versus Non-Customers, International Journal of Bank Marketing, 27 (4): 315-334.

Cai, Y., Jo, H. & Pan, C., 2012, Doing Well While Doing Bad? CSR in Controversial Industry Sectors, Journal of Business Ethics, 108 (4): 467-480.

Carroll, A. B., 2004, Managing Ethically With Global Stakeholders: A Present and Future Challenge, Academy of Management Executive, 18 (2): 114-120.

Cellier, A. & Chollet, P., 2011, The Impact of Corporate Social Responsibility Rating Announcements on European Stock Prices, Universite Paris-Est.

Chaudhuri, A. & Holbrook, M. B., 2001, The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty, Journal of Marketing, 65 (2): 81-93.

Cui, J., Jo, H. & Na, H., 2012, Does Corporate Social Responsibility Reduce Information Asymmetry?, Journal of Banking and Finance, 1-43.

Dick, A. S. & Basu, K., 1994, Customer Loyalty: Toward an Integrated Conceptual Framework, Journal of the Academy of Marketing Science, 22 (2): 99-113.

Elkington, J., 1997, Cannibals with Forks: the TBL of the 21st Century Business, Oxford: Global Reporting Initiative.

Etter, M., 2013, Reasons for Low Levels of Interactivity: (Non-) Interactive CSR Communication in Twitter, Public Relations Review, 39 (5): 606-608.

Fabozzi, F. J., Ma, K. C. & Oliphant, B. J., 2008, Sin Stock Returns, Journal of Portfolio Management, 35 (1): 82-94.

Farag, H., Meng, Q. & Mallin, C., 2015, The Social, Environmental, and Ethical Performance of Chinese Companies: Evidence from the Shanghai Stock Exchange, International Review of Financial Analysis, 42 (C): 53-63.

Fombrun, C. & Shanley, M., 1990, What's in a Name? Reputation Building and Corporate Strategy, Academy of Management Journal, 33 (2): 233-258.

Fombrun, C. J., Gardberg, N. A. & Sever, J. M., 2000, The Reputation Quotient[SM]: A Multi-Stakeholder Measure of Corporate Reputation, The Journal of Brand Management, 7 (4): 241-255.

Garcia-Castro, R., Arino, M. A. & Canela, M. A., 2010, Does Social Performance Really Lead to Financial Performance? Accounting for Endogeneity, Journal of Business Ethics, 92 (1): 107-126.

Gitman, L. J. & Zutter, C. J., 2015, Principles of Managerial Finance, New Jersey: Pearson Education.

Gothauzen, T. & Borgers, A., 2012, The Paradox of CSR by Controversial Industries: How do Institutional Holdings Respond?, Tilburg University.

Hatch, M. J., Schultz, M. & Williamson, J., 2003, Bringing the Corporation into Corporate Branding, European Journal of Marketing, 37 (7/8): 1041-1064.

Hing, N., 2001, Changing the Odds: A Study of Corporate Social Principles and Practice in Addressing Problem Gambling, Journal of Business Ethics, 33 (2): 115-144.

Hong, H. & Kacpercyzk, M., 2009, The Price of Sin: The Effects of Social Norms on Markets, Journal of Financial Economics, 93 (1): 15-36.

Ihlen, O., Bartlett, J. & May, S., 2011, The Handbook of Communication and Corporate Social Responsibility, Boston, MA: Wiley-Blackwell.

ICMEM

Kotler, P. & Lee, N., 2005, Corporate Social Responsibility – Doing the Most Good for Your Company and Your Cause, New Jersey: John Wiley and Sons, Inc.

Koutsoyiannis, A., 2001, Theory of Econometrics, New York: Palgrave.

Margolis, J. D., Elfenbein, H. A. & Walsh, J. P., 2009, Does it Pay to Be Good...And Does it Matter? A Meta-Analysis of the Relationship between Corporate Social and Financial Performance, SSRN Electronic Journal, 10.2139/ssrn.1866371.

Maurya, U., Mishra, P., Anand, S., & Kumar, N., 2015, Corporate Identity, Customer Orientation and Performance of SMEs: Exploring the Linkages, IIMB Management Review, 27 (3): 159-174.

McWilliams, A. & Siegel, D., 2000, Corporate Social Responsibility and Financial Performance: Correlation or Misspecification, Strategic Management Journal, 21: 603-609.

Merton, R. C., 1987, A Simple Model of Capital Market Equilibrium with Incomplete Information, Journal of Finance, 42 (3): 483-510.

Mishra, S. & Suar, D., 2010, Does Corporate Social Responsibility Influence Firm Performance of Indian Companies?, Journal of Business Ethics, 95 (4): 571-601.

Mizik, N., 2014, Assessing the Total Financial Performance Impact of Brand Equity with Limited Time-Series Data, Journal of Marketing Research, 51 (6): 691-706.

Nguyen, N., 2006, The Collective Impact of Service Workers and Service Scape on the Corporate Image Formation, International Journal of Hospitality Management, 25 (2): 227-244.

Nilsson, J., 2009, Segmenting Socially Responsible Mutual Fund Investors: The Influence of Financial Return and Social Responsibility, International Journal of Bank Marketing, 27 (1): 5-31.

Orlitzky, M., Schmidt, F. L. & Rynes, S. L., 2003, Corporate Social and Financial Performance: A Meta-Analysis, Organization Studies, 24 (3): 403-441.

Patino, A., Pitta, D. A. & Quinones, R., 2012, Social Media's Emerging Importance in Market Research, Journal of Consumer Marketing, 29 (3): 233-237.

Perez, A. & Bosque, I. R. D., 2015, Corporate Social Responsibility and Customer Loyalty: Exploring the Role of Identification, Satisfaction, and Type of Company, Journal of Service Marketing, 29 (1): 15-25.

Prior, D., Surroca, J. & Tribo, J. A., 2008, Are Socially Responsible Managers Really Ethical? Exploring the Relationship between Earnings Management and Corporate Social Responsibility, Corporate Governance, 16 (3): 160-177.

Roberts, P. W. & Dowling, G. R., 2002, Corporate Reputation and Sustained Superior Financial Performance, Strategic Management Journal, 23 (12): 1077-1093.

Sabbaghi, O. & Xu, M., 2013, ROE and Corporate Social Responsibility: Is There a Return on Ethics?, Journal of Accounting and Finance, 13(4): 82-95.

Sageder, M., Mitter, C. & Feldbauer-Durstmuller, B., 2018, Image and Reputation of Family Firms: A Systematic Literature Review of the State of Research, Review of Managerial Science, 12 (1): 335-377.

Statman, M., Fisher, K. L. & Anginer, D., 2008, Affect in a Behavioral Asset-Pricing Model, Financial Analysts Journal, 64 (2): 20-29.

The Economist, 2009, Triple Bottom Line, November 17, retrieved on February 23 2018 from https://www.economist.com/node/14301663

Tsai, W. & Yang, I. W., 2010, Does Image Matter to Different Job Applicants? The Influences of Corporate Image and Applicant Individual Differences on Organizational Attractiveness, International Journal of Selection and Assessment, 18 (1): 48-63.

Tsoutsoura, M., 2004, Corporate Social Responsibility and Financial Performance, UC Berkeley: Center for Responsible Business.

Viehs, M., Clark, G. & Feiner, A., 2015, From the Stockholder to the Stakeholder - How Sustainability Can Drive Financial Outperformance, SSRN Electronic Journal, 10.2139/ssrn.2508281.

Waddock, S. A. & Graves, S. B., 1997, The Corporate Social Performance–Financial Performance Link, Strategic Management Journal, 18 (4): 303-319.

Yan, J., 2011, Social Media in Branding: Fulfilling a Need, Journal of Brand Management, 18 (9): 688-696.

Yoon, Y., Gurhan-Canli, Z., & Schwarz, N., 2006, The Effect of Corporate Social Responsibility (CSR) Activities on Companies With Bad Reputations, Journal of Consumer Psychology, 16(4): 377-390.

Zhang, J., 2016, Does Corporate Social Responsibility Affect Financial Performance of Listed Manufacturing Firms in Germany?, University of Twente.

Zhang, D., Morse, S., Kambhamptati, U. & Li, B., 2014, Evolving Corporate Social Responsibility in China, Sustainability, 6 (11): 7646–7665.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Psychometric Credit Scoring in Indonesia Microfinance Industry: A Case Study in PT Amartha Mikro Fintek

Hartarti Rabecca[a], Novan Dwi Atmaja[b], Shahnaz Safitri[c]*

[a,b,c]*Data Science PT Amartha Mikro Fintek, Jl. Kemang Selatan VIII No. 18, South Jakarta 12730, Indonesia*

Abstract

Small and medium enterprises (SMEs) play a substantial role in Indonesia economic growth. To support their business, financial technology company serves an easier access for SMEs to get financial support. Using peer-to-peer concept of lending, a credit scoring model is necessary to assess the risk of lending to SMEs with no assured documents. Previous research found that the ability to repay the loan could be hint through the personality of entrepreneur, but it is debatable on how to portray this trait. Therefore, this paper aims to investigate the use of psychometric testing as additional component is credit scoring system, in contrast to the standard model of demographic. In addition, we also highlight the background influence on administration time in applying the testing. From the case study in Indonesia leading financial technology company, PT. Amartha Mikro Fintek, we found that a better predictive ability of credit risk is gained by combining psychometric test and demographic variables in credit scoring model. We also found that the implementation of psychometric testing is able in less than five minutes under a standard procedure of psychological testing. There are several background factors found to influence the psychometric testing service time coming from borrowers and company officers.

Keywords: *Credit Scoring Model; Psychometric Credit Scoring; Demographic Credit Scoring; Psychometric Testing Service Time*

1. Introduction

Central Bureau Statistics of Indonesia (Badan Pusat Statistik/BPS) note that Indonesia's Product Domestic Bruto in 2017 reach 5.07%, which is the highest percentage of Indonesia's economic growth since 2014. This fact implies that there is potential for Indonesia to achieve a better economic state. In addition, based on the economic modelling created by Deloitte Access Economic in collaboration with World Bank (2015), it is concluded that doubling broadband penetration and involving digital small and medium enterprises (SMEs) could boost Indonesia's annual economic growth by 2%. This increasing percentage could further amount to a total growth target percentage of 7% in order to transform Indonesia into middle-income country by 2025. Nevertheless, this economic growth could not be achieved if SMEs are not flourished in growing their business.

In response to this potential, various financial service communities in Indonesia have warned for this precious chance. Indonesian Financial Service Authority (Otoritas Jasa Keuangan/OJK) summarized that to date there is only 22% of Indonesians who are connected to the formal financial institutions. Thus, the inclusiveness of Indonesian financial sector needs to be improved. Furthermore, OJK added that financial sectors should work hand in hand to facilitate the climate of sound and strong financial services that is easily accessible especially for people in remote areas. We can see that OJK as a Financial Supervisory Agency encourages banking institutions and financial institutions to play an active role in providing access to small and medium entrepreneurs.

On the other hand, conventional banks often have banking system with a delicate standard of lending, which are difficult to be met by SMEs in remote areas (Septyaningsih & Putri, 2017). They often require the SMEs' entrepreneur to prove their business licenses and collaterals when applying for business loans, the documents that

---

ICMEM

SMEs are rarely equipped with. In addition, there is often no adequate record of business or previous money borrowing for the bank employee to be convinced to lend SMEs entrepreneur the money they need (Carr, 2013; Klinger, Khwaja, & LaMonte, 2013). This gap then becomes the major obstacles for SMEs in getting access of financial service, especially in terms of financial loans available and the related information. Stein et al. (2010) estimated that there are only 15% SMEs in emerging markets which can fully access the credit they need. Carr (2013) further added that the difficulty of getting financial support often result to the bankruptcy where SMEs stop their businesses, which are often caused more of such external obstacles rather than character traits or ability deficits. Therefore, this limitation of conventional banks as financial institutions raise the needs of microfinance to create more access to financial services, such as micro-banking and micro-insurance which widely become a financial technology company.

Financial technology company has different loan system compared to the conventional bank. It commonly uses peer to peer concept of funding to SMEs in need by inviting people from upper middle class to sponsor the business costumer registered as borrower. In Indonesia, one of the leading financial technology company available is PT. Amartha Mikro Fintek (Amartha) which established in 2010. A unique aspect of Amartha's business process is it currently does not have any access to the BI (central bank) checking system, a channel to obtain the history of previous borrowing behaviour of the expected costumers. In addition, Amartha's customers of SMEs usually do not have any bank accounts either. Due to these situations, Amartha comes up with developing a tool of credit scoring system, in which they utilize psychology and behavioural science to reveal the traits of the borrower related to their borrowing behaviour. Credit scoring serves as an index of estimation on the borrower's risk level by calculating their financial capacity to repay the loans. This paper aims to describe credit score system used in Amartha as their means of ensuring smooth process of lending in accordance to the agreement between the parties.

The use of credit scoring systems is actually not a new thing in the realm of financial services. It is begun in 1993, yet by 1998 90 % of United States' banks had adopted it (Asch, 2000). Several other institutions have developed their own specific credit scoring system, one of which is Entrepreneurship Financial Laboratorium Global (EFL Global). Moreover, they pioneered the use of psychometric tool in credit scoring. Studies by Klinger, Khwaja, & LaMonte (2013) and Klinger et al. (2013) about repayment behaviour across countries supported the use since they founded that personality traits are related to the business performance and credit risk (as cited in Arráiz, 2005). The use of psychometric test as an addition to the whole credit scoring system is also conducted in Amartha, with the motive of gaining better and more comprehensive information of the expected costumers instead of relying on a single measurement of economic ability. However, to date there is still limited research investigating the way psychometric test as part of credit scoring system benefits the whole systems. Thus, the first objective of the study is to test if a credit scoring system with additional psychometric test yields a more precise result in measuring SMEs owner credit risk. We present the differences found between costumers recruited through credit scoring with psychometric test and those recruited without psychometric test. Another issue is that in practice, it is known that personality assessment using psychometric test took a substantial amount of time to administer, which commonly seen as a technical obstacle. Therefore, we also aim to highlight the associated factors found to significantly influence the psychometric administration time.

2. Analytical Framework

2.1. Credit Repayment Behaviour

Carr (2013) stated that the bankruptcy of SMEs business is often due to an external obstacle such as a failure at getting financial support, rather than deficiency in character, traits or ability. From another perspective, study by Klinger, Khwaja, & del Carpio (2013) on 1,580 SMEs in Peru, Kenya, Colombia and South Africa actually found that it is individual's personality which are linked to the pattern of repayment behavior, which further lead to the possibility of SMEs' owner getting benefits on entrepreneurial business. Another study by Klinger, Khwaja, & LaMonte (2013) and Klinger et al. (2013) about behavior of returning loans is then conducted on employers in Peru and Argentina, followed by a comparison of the pattern found in other countries using the same psychometric instrument. Across countries, their result showed that the dimension of personality traits could predict the business performance and credit risk. It is concluded if someone who owns the business is found to possess certain suitable personality traits, they are

ICMEM

predicted to be able to generate profits and thus return the loan with a good cash flow (Klinger et al., 2013 in Arráiz, Bruhn, & Stucchi, 2005).

Personality is the organization of a dynamic psychophysical system within a person that will determine the characteristics of the person's behavior (McCrea & Costa, 1985). Cumulative findings from various research in industrial and organization psychology agreed that personality traits, intelligence, and honesty/integrity correlated highly with the competencies required to do the work (Judge et al, 1999 in Klinger, Khwaja, & del Carpio, 2013). Moreover, Schmidt & Hunter (1998) conducted a meta-analysis found that the method of psychological measurements assessing these three variables had a stronger impact to predict job performance than using interview, peer ratings, reference checks, biographies, and work experience. And these findings are said to be applicable to the microfinance borrowers too. Personality traits and intelligence relate to the ability to repay a loan by distinguishing entrepreneurs who are more likely to success in their business, where honesty relates to the willingness to repay a loan (Klinger, Khwaja, & del Carpio, 2013).

In terms of entrepreneurship and repayment behaviour, the Big Five Personality (McCrea & Costa, 1985) is one personality theory that is dominantly used to evaluate the personality of entrepreneurs. The five factors of personality are openness to experience, neuroticism, conscientiousness, agreeableness, and extroversion. Most research focused on the personality traits dimensions that relates to the character of successful entrepreneurs (Barrick & Mount, 1991). Zhao and Seibert (2006) summarized that entrepreneurs score lower than managers on neuroticism and agreeableness. However, they will score higher on extraversion, openness, and conscientiousness (especially in achievement motivation and dependability). They found that the predictive power of the Big Five personality traits to entrepreneurial status is moderate which yield R-squared of 0.37.

2.2. *Factors affecting psychometric test time service*

Administration of psychometric testing is different from other scale administration where it is mandatory to meet all requirements needed as in the general psychological testing. The issue is on how to ensure the quality of psychological testing result. Time is known to be the major concern. By utilizing the Ishikawa's fishbone diagram, potential factors affecting the psychometric service time are listed as follow:
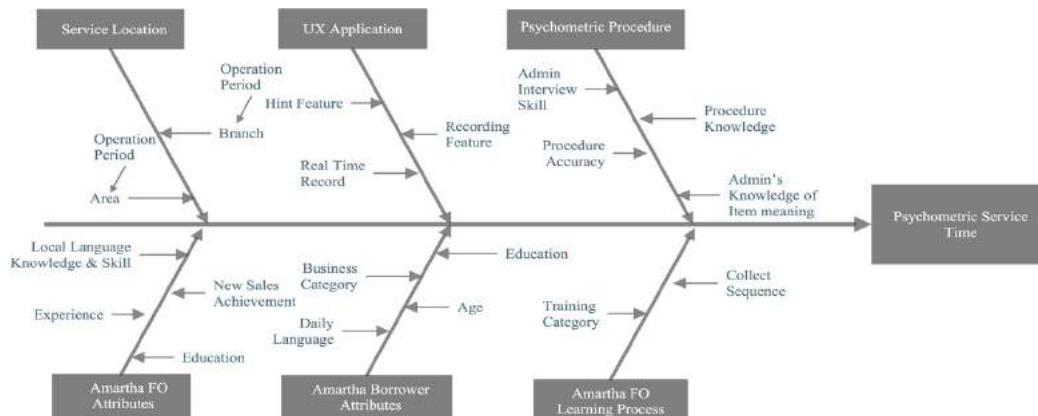
Fig. 1. Fishbone Diagram of Psychometric Service Time

ICMEM

Hereby are the potential and reasonable factors affecting psychometric test service time:

Table 1. Possible Root Cause of Psychometric Service Time

No.	Possible Root Cause	Reason
1	Operation Start Time of Branch	There is difference UK system based on operation start time of branch
2	Psychometric Procedure	There will be difference time response based on psychometric procedure administered by FO
3	Collect Sequence & Survey Count	Familiarity of psychometric question influences field officer's capabilities for administering faster
4	Borrower Education &Age	Higher level of education and younger borrower will faster the administration
5	Field Officer Experience	Field experience will help Officer to deliver psychometric question to borrower
6	Sales Achievement	Sales achievement represent their capacity of time in the field

3. Method

3.1 Hypothesis

This study aims to investigate if a credit scoring system with psychometric testing better yields a more precise result in measuring SMEs owner credit risk than credit scoring system which relies on demographics factors only. The second objective is to seek associated factors found to significantly influence the psychometric administration time. To achieve these research objectives, we formulate two hypotheses as follows:

1) Demographic credit scoring with supplementary psychometric testing give better result in measuring borrowers credit risk; thus the respected borrowers will gain a higher AUC (Area Under Curve) value in the ROC Curve.
2) Both the personal factor of borrowers and field officers significantly influence psychometric service time.

3.2 Instrument

3.2.1 Psychometric tools: Credit Repayment Behaviour Inventory (CRBI)

Based on the research reviewed on credit repayment behavior, Amartha developed a psychometric credit scoring instrument called Credit Repayment Behavior Inventory (CRBI). This instrument is designed to measure the trait of entrepreneurship in individual a an ability to repay the loans. CRBI is a set of 23 statements with an available responds of Likert scale ranging from 1 to 4. In this study, we investigate the CRBI version 3 in which it consist of several aspects under personality, namely neuroticism, cognitive ability, trust, and economic locus of control.

In Amartha's research, to this date it is found that neuroticism yields the highest correlation with the actual performance of customers' credit repayment among the five dimensions of personality. The items are initially taken from International Personality Item Pool (IPI) with several adaptations. Furthermore, cognitive ability is serves as an aspect of intelligence, which is one of predictors of entrepreneur's ability to repay the loan (Klinger, Khwaja, & del Carpio, 2013). Here cognitive ability is defined as the capacity to process the information the individual get. In terms of honesty/integrity as another personal traits to seek the willingness to repay the loan (Klinger, Khwaja, & del Carpio, 2013), CRBI measure the construct of trust as a tendency of individual to trust others and perceives others as someone who can be trusted. This is done due to the characteristic of Amartha's costumers as entrepreneurs coming from the rural society with a collectivist system, where they are usually bounded by the environment and people in their neighbourhood. In addition to these three aspects of entrepreneur characteristics, Amartha found that trust in people and in the environment imply that individual can might believe that the success of their business could be determined to some extend by their own ability or other aspects in the environment beyond themselves. This is known as economic locus of control, and thus the measurement of it is included as part of CRBI version 3. Therefore, individual who score

high on CRBI are seen as someone who is emotionally stable (low on neuroticism), has the capacity to process information, trust their social environment as well as their own determination of personal economic conditions.

CRBI as Amartha's Credit Scoring is delivered through an online application system known as "*Uji Kelayakan* (UK)". In addition of CRBI, UK System also containing questions of individual's demographics background. The CRBI and all the questions in UK application are delivered by Amartha's Field Officer since the expected costumer as borrowers often has limited reading skills. They are asked by the Field Officer all the questions in UK System in the form of interview related to their day-to-day activities. Thus, psychometrics testing reaches all the expected borrowers with diverse backgrounds, especially in rural and remote areas.

3.2.2 Quality control: Psychometric tools time service

For controlling psychometric procedure, the measure of time service is included and controlled as an additional consideration. Amartha used Statistical Quality Control (SQC) concept to investigate the administration time.

3.3 Data

Data were collected from operational data system in Amartha. To test the first hypothesis, we collected 400 samples with minimum 24 history of borrowing (instalments) in November 2017. The second hypothesis is analyzed from 14,625 data loan ID on January - Februari 2018. Those data include demography data, namely age, gender, business sales, business sector, and also psychometric data of CRBI.

Table 2. Respondent Segmentation

Category	Sub-category	N of Borrower	Proportion of Borrower
Regional	Jawa Barat	6277	42.92%
	Jawa Tengah	3410	23.32%
	JawaTimur	4938	33.76%
Age	17 - 21 yo	250	1.71%
	22 - 35 yo	4392	30.03%
	36 - 50 yo	7717	52.77%
	>50 yo	2266	15.49%
Business Sector	Agroindustry	2110	14.43%
	Home Services	2940	20.10%
	Transportation	35	0.24%
	Small Trade	7455	50.97%
	Others	2086	14.26%

Based on the data above, we calculate the psychometric service time by utilizing statistical quality control (SQC) to get information of normal time process data according to data retrieval in the field. The calculation of correlation between time and factor is determined based on data group without outlier data. Bellow is the boxplot data with the distribution of time data on each field officer:

ICMEM
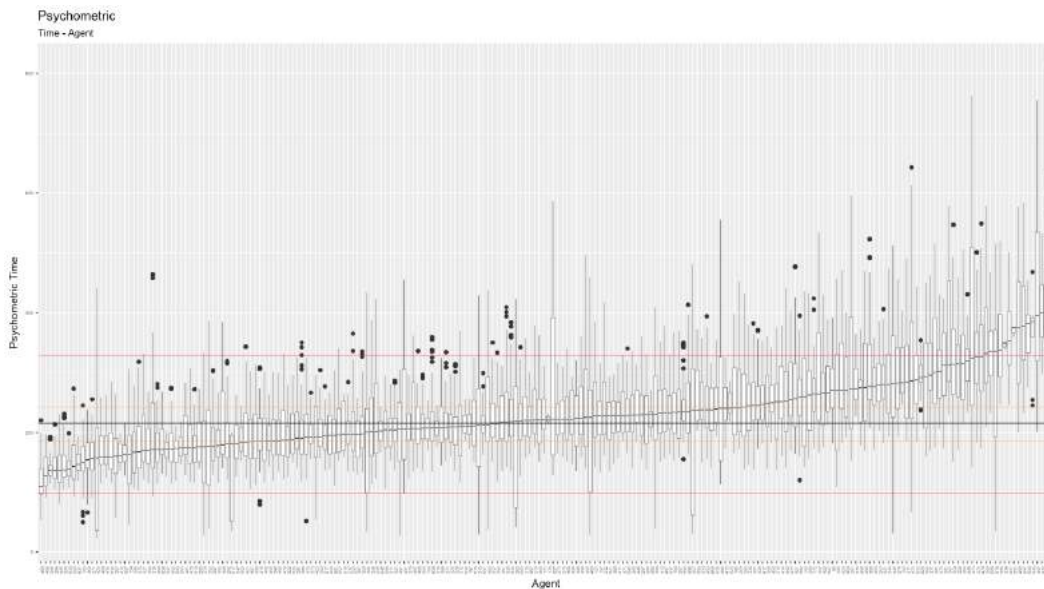
Fig. 2. Control Chart of Psychometric Service Time per Field Officer

The graph above describes the distribution data of time for each field officer. The statistic descriptive shows that the administration service is about 215 seconds or 3,58 minutes.

Table 3. Statistic Descriptive of Psychometric Service Time

Statistic Descriptive	Seconds
Median	215
Q1	184.5
Q3	241
IQR	57.5
Lower Limit	98.25
Upper Limit	328.2

Data are grouped by the distribution of psychometric time boxplot chart. Bellow is number of field officer in every class:

Table 4. Classification of Field Officer based on Control Chart

Class Category	Number of Field Officer
Out Upper	7
Out Q3 - Upper	28
In IQR	30
Out Q1 - Lower	2
In Line	141
Total	218

3.4 Methodology
3.4.1 Prediction of combination credit model

We use the ROC Curve method to show the predictive accuracy of the collaboration model (demography and CRBI) in Amartha's credit scoring system. The ROC curve is a plot that illustrates the ability of a binary classification model (0 or 1) to classify individuals as true positive or true negative. True positive is the proportion of the number of

individuals classified as class 1 by the model in which the individual is actually derived from class 1, whereas true negative is the proportion of the number of individuals classified as class 0 by the model in which the individual actually belongs to class 0. Thus, ROC curve is a curve that describes how well a model is able to discriminate data into class 0 or class 1 (Fawcett, 2006).

When the ROC represents the model's ability to classify individuals graphically, the AUC describes the model's ability to classify individuals quantitatively. The value of AUC is the amount of area under the ROC curve ranging from 0 to 1. The AUC value approaches 1, meaning our hypothetical model can discriminate the individual as a class 0 or class 1 well. ROC curve is defined as the plot of Se (c) versus 1-Sp (c) for -∞≤c≤∞, or equivalent with:

$$ROC(t) = 1 - G F -1 (1 - t),$$
$$\text{over } t \in [0, 1], \text{ where } F -1 (1 - t) = \inf \{x \in R: F(x) \geq 1 - t \} \tag{1}$$

The ROC Curve increases and varies under the transformation of the monotonic additions of the variables X and Y. Some ROC Curve conclusions measure as proposed in the literature, ie AUC or Youden index (max c {Se (c) + Sp (c) - 1 }). They are considered to be the distinguishing accuracy of a test. AUC obtained through:

$$AUC = Z 1 0 ROC(u) \, du \tag{2}$$

3.4.2 Factors of borrower & field officer

In order to prove hypothesis two, we used Spearman's Rank Correlation Coefficient or Spearman's Rho. Spearman's correlation coefficient is a statistical measure of the strength of a monotonic relationship between paired data. And its interpretation is similar to that of Pearsons, e.g. the closer is to the stronger the monotonic relationship. Correlation is an effect size and so we can verbally describe the strength of the correlation using the following guidelines for the absolute value of rsor ρ:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

$$\tag{3}$$

Based on ρ value, we decide correlation strength based on this table:

Table 5. Spearman Correlation

Coefficient	Correlation Strength
.00 - .19	Very weak
.20 - .39	Weak
.40 - .59	Moderate
.60 - .79	Strong
.80 - 1.0	Very strong

4 Result
4.1 Psychometric as supplementary credit scoring

To prove the hypothesis that psychometric test can complement the credit scoring with a better predictive result, we compared the respective AUC (Area Under Curve) score of borrower data with only demography credit scoring and with a combined demographic and psychometric credit scoring. Each group then have their own respective model.

Table 6 AUC Score

ICMEM

Credit Scoring Model	AUC Score
Demography	0.7
Collaboration with Psychometric	0.8
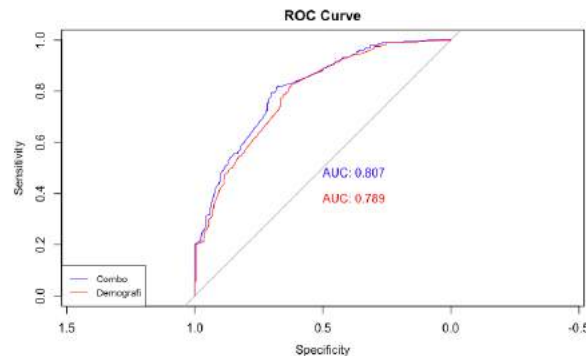
Fig. 3. ROC Curve Demography & Collaboration Model

Based on ROC Curve above, collaboration of demographic and psychometric credit system model showed a better estimation than demographic credit system model. In the other word, demography and psychometric information could give better information than only demography data. Although the result obtained is still no satisfactory, but the graph above shows there is an increase with the addition of information about borrower's character.

4.2   Psychometric time services influenced by borrower & field officer factors

As explained above, there are some factors affecting psychological time service which can be distinguished as borrower's factor and field officer's factor. In respect to the possible root causes created using Ishikawa Diagram, we found some variables that correlate to psychometric service time. This result is analyzed through Spearman's Rho Correlation test.

Table 7. Spearman's Rank Correlation of Psychometric Time & Factors of Field Officer and Borrower

No.	Cause	Spearman's Rho	Correlation Conclusion
1	Operation Period of Branch	$Pv = 0.0002306$ $rho = -0.418329$	No Correlation
2	Collect sequence	$Pv = 2.2e{-}16$ $rho = -0.8732192$	Significant at $p < 0.05$
3	Survey Count	$Pv = 4.142e{-}05$ $rho = -0.2738954$	Significant at $p < 0.05$
4	Borrower's Education	$Pv = 2.2e{-}16$ $rho = -0.07949635$	Significant at $p < 0.05$
5	Borrower's Age	$Pv = 2.296e{-}06$ $rho = 0.607324$	Significant at $p < 0.05$
6	Experience of Field Officer	$Pv = 0.3109$ $rho = 0.07219227$	No Correlation

ICMEM

4.2.1 Field officer factors
4.2.1.1 Operation period of branch

There is a different time in operation start period of the company branches, which gives effect to the readiness of borrower and field officer on CRBI administration.
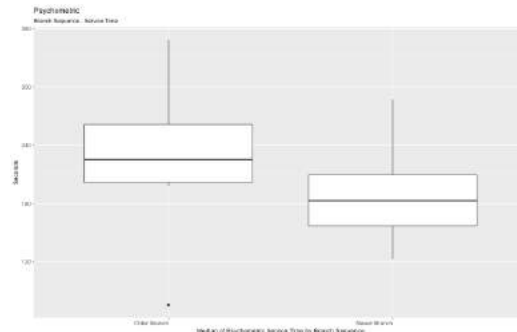
Fig. 4. Boxplot of Time Service & Branch Operation Start Time

The plot shows the difference between the median of the older branch and newer branch. The older branch shows the higher median of psychometric service time than the newer branch. On Spearman's rank test, it shows that there is small and reversed correlation but not significant.

4.2.1.2 Collect sequence data

We measured the correlation between collect sequences and psychometric time service with median value. Field officers have been taking data for approximately two months, which there are at least once collect data up to 190 times of data collection.
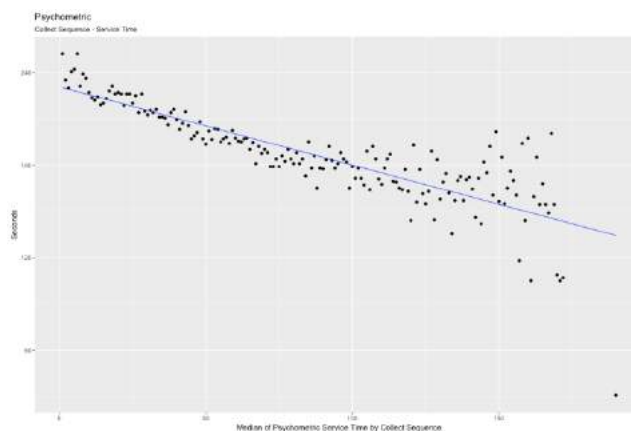
Fig. 5. The Plot of Time Service & Collect Sequence

The result showed that rho value is -0.8732192 with p= 2.2e-16, p < 0.05 which means that there is a relationship between time and collect sequence median of psychometric service time. Both variables have a reversed relationship. The more often the field officer takes data in the field, the faster the data collection process is done. On the contrary, the more rarely the field officer takes data in the field, the longer the data retrieval process done.

ICMEM

4.2.1.3 Survey count

Correlation test on survey count calculated on median data of each field officer and the number of surveys by field officer.
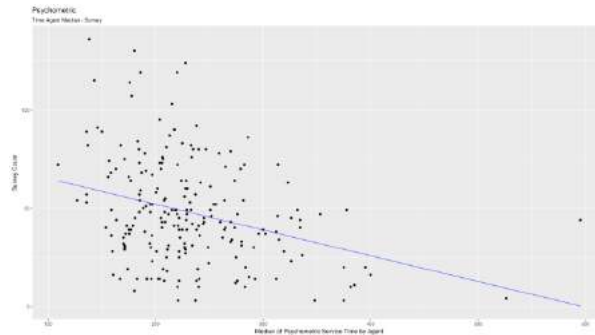
Fig. 6. The Plot of Time Service & Survey Count

From the scatter plot above, there is a linear pattern between survey count and median of psychometric service time by the field officer. With rho = -0.2738954 and p-value = 4.142e-05, p <0.05, it indicates that there is a relationship between service time and survey count in a reversed relationship. The bigger of new partner achieved, the faster administration is done and vice versa.

4.2.2 Borrower factors
4.2.2.1 Borrower age

The tests were performed on the median psychometric service time based on the age of the borrower.
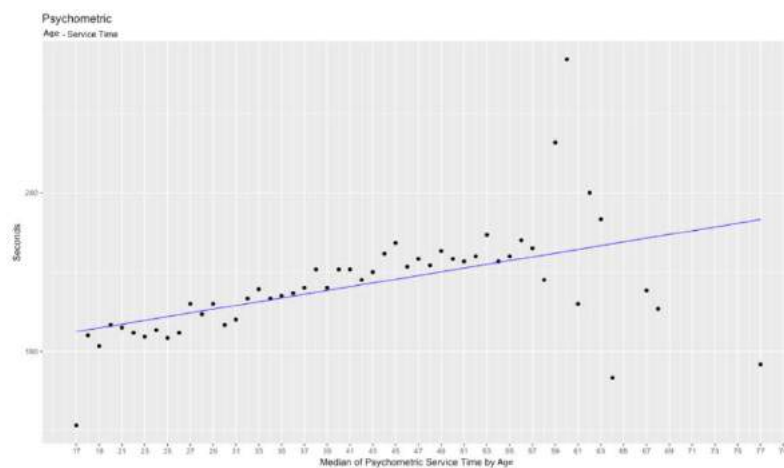
Fig. 7. The Plot of Time Service & Borrower Age

Scatter-plot above shows a linear pattern, it can be said that there is influence between the borrower's age and psychometric service time. Spearman's rho shows the same result with value of 0.607324, significant on p-value of 2.296e-06, p< 0.05.

ICMEM

4.2.2.2 *Borrower Education*

Table 8. Borrower Education Segmentation

Education	Proportion of population
No Education	1.76%
Elementary School & Equal Level	48.79%
Junior High School & Equal Level	27.44%
Senior High School & Equal Level	20.32%
College & Equal Level	1.66%

We tested median of psychometric time service and education level of borrower based on categorize above.
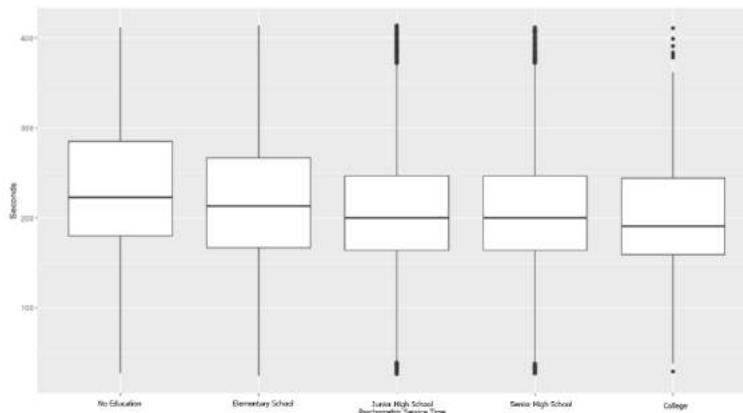
Fig. 8. The Plot of Time Service & Borrower Education

Box-plots in each category show differences in median location. Further testing shows there is a relationship between service time and partner education with rho -0.07949635 and p=2.296e-06, which means that the two variables have the reversed correlation.

4. Conclusion

This study aims to investigate if a credit scoring system of demographic and additional psychometric testing better yields a more precise result in measuring SMEs owner credit risk, compared to the credit scoring system with only demographics factors. This research shows that using combination model of demographic and psychometric data has a better predictive value in likelihood of borrower's credit risk than using single measurement on demographic. AUC Score in collaboration model shows 0.80, meanwhile demography model show 0.78. On the other word, information of borrower personality portrays a more comprehensive borrower risk. This information could improve the information risk to further trust the borrower's ability to repay the loan.

The second objective is to seek associated factors found to significantly influence the psychometric administration time. We found that various factors, namely collect sequences, survey counts of Field Officer, as well as the age and education level of borrowers, all have significant influence on psychometric testing service time. In the other hand, operation period start of branch and the experience of Field Officers show no significant relationship to the psychometric testing service time. Among those factors found to be correlated, some of them show reversed correlation. These results indicate that the more familiar field officer with the psychometric questions, the faster they

ICMEM

administer psychometric questions. Besides, the better educated and young the borrowers, the easier for field officer to administer the psychometric questions.

Psychometric Service Time also shows a stable 3 - 5 minutes time of service of 14,625 loan ID and 218 field officer in all area of Amartha. These data show that psychometric question is able to be administered in Amartha Operation under the standard of general psychometric procedure. For further operational, it is important to control field officer familiarity with psychometric question to avoid fraud. In addition, this study shows that borrower segmentation in level of education and age should be considered in order to give different treatment on psychometric testing administration. Although the result are still unsatisfactory, this study indicates that psychometric serves its expected function to give additional information of credit risk, in response to the limitations of unbanked borrower's unavailable lending history.

References

Asch, L. (2000). Credit scoring: A tool for more effcient SME lending. *SME Issues*, *1*(2), 1–4

Arráiz, I., Bruhn M, Stucchi, R (2005). Psychometrics as a Tool to Improve Screening and Access to Credit. Inter-American Development Bank.

Barrick, M., & Mount, M. (1991). The Big Five personality dimensions and job performance: A meta-analysis. Personnel Psychology, 44, 1–26..

Carr, S. C. (2013). Anti-poverty psychology. New York: Springer.

Delloite. (2015). UKM Pemicu Kemajuan Indonesia. Deloitte Access Economic Reporting.

Fawcett, T. (2006). An Introduction to ROC Analysis. USA: Elsevier.

Furnham, A. (1986). Economic Locus of Control. Human Relations, 39(1), 29-43.

Gheorghe., & Nadia, C. (2010). Application of fishbone diagram to determine the risk of an event with multiple causes, 2(1), 1-20.

Howard, P.J. & Howard, J.M. (1995). The big five quick start: An Introduction to the five-factor model of personality for human resource professionals. North California: Centre for Applied Cognitive Studies (Cent ACS).

International Personality Item Pool (IPI). Psychometric Bank Item. Retrieved from http://ipip.ori.org.

Klinger, Bailey. (2013). Enterprising psychometrics and poverty reduction. London, LD: Springer.

McCrae, Robert R., Costa, Paul T. (1987). Validation of Five-Factor Model of Personality Across Instruments and Observers. Journal of Personality and Social Psychology, Vol. 52, No. 1, 81 – 90.

Schmidt, F., & Hunter, J. (1998). The validity and utility of selection methods in personnel psychology: practical and theoretical implications of 85 years of research fndings. Psychological Bulletin, 124(2), 262–274.

Septyaningsih, L & Putri, W.D. (2017). BRI akanberi KUR kepada PKL Asal Penuhi Syarat. Retrieved from republika.co.id (Apr 17, 2017).

Zhao, H., & Seibert, S. (2006). The Big Five personality dimensions and entrepreneurial status: a meta-analytical review. Journal of Applied Psychology, 91(2), 259–271.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Effects of Foreign Investors towards Liquidity of Stock Listed In Emerging Stock Market: Evidence from Indonesia LQ45 Indexs

Andre Agasi Danuaji[a*], Ahmad Danu Prasetyo[b]

[a,b]*Jalan Ganeca 10 Bandung, Indonesia*

Abstract

The long story of stock market in Indonesia started from 1977 by the operationalization of Jakarta Stock Market until now become Indonesia Stock Market (IDX). As one of the emerging market, the existence of the capital market in Indonesia, especially stock market, is not only important to finance the growth of companies but also to provide economic stability in Indonesia (Rosul, 2002). Nowadays, emerging markets are seems becoming more integrated into the global capital market (Bekaert & Harvey , 1997) with several characteristics which differ from a developed market. Emerging stock market known to be more volatile and less liquid (Peranginangin et al., 2016) and has limited availability of high quality and large capitalization stocks (Kohers et al, 2013).
Hale (2012) told that emerging market gave many the importance in the world's economy, and it has grown dramatically in the last 25 years. In other hands, attractive prospects in these markets have renewed the interest of global investors (Bekaert & Harvey, 1997). The existence of the foreign investors believed give effects to the emerging stock market but still debatable among many researchers.
Therefore, the objective of this study is to understand the effects of foreign ownership on the liquidity of Indonesian companies stock listed in IDX. This study used stocks indexed by LQ45 among the period from March 2015 until February 2018. This study used secondary data from Indonesian Stock Exchange (IDX) and Indonesian Central Securities Depository (KSEI). While to analysis those effect, author employed the panel regression model which determined by the Hausman test to determine either using fixed effect or random effect model.
The result show that there is no evidence that show foreign ownership affect to liquidity of stocks indexed in LQ45.

Keywords: Foreign ownership, Foreign Investor; Stock liquidity; LQ45; Panel regression; Emerging stock market

1. Introduction

Indonesia's stock market was starting from 1977 by the Jakarta Stock Exchange, and Surabaya Stock Exchange in 1989 and finally they merger become one as Indonesia Stock Exchange (IDX) in 2007. The existence of the capital market in Indonesia, especially the stock market, is not only important to finance the growth of companies but also to provide economic stability in Indonesia (Rosul, 2002).

Nowadays, emerging stock markets are seems becoming more integrated into the global capital market (Bekaert & Harvey , 1997) with several characteristics which differ from a developed market. Some studies found that emerging stock market is characterized by higher volatility, price changes and higher country risks which lead to higher expected rate of return (Bekaert and Harvey, 1997); less liquid and more volatile (Peranginangin et al., 2016) and has limited availability of high quality and large capitalization stocks (Kohers et al, 2013).

Emerging stock markets were growing in terms of the number of listed companies, trading volume and market capitalization (Jorion & Goetzmann, 1999) and the importance of emerging market in the world's economy in the last 25 years are increasing (Hale, 2012). Those attractive prospects have renewed the global investor interest which lead to foreign investment in emerging market (Bekaert & Harvey , 1997).

Based on, Froot and Ramadorai (2001), it explained that foreign investors are more informed since they are experienced and has access to many broader resources. Thus, the existence of the foreign investors believed give

---

* Corresponding author.

ICMEM

effects to the emerging stock market. The effect it self-are very debatably among the researchers. Stocks with higher foreign investment exhibit a larger price impact of trades than those with lower foreign investment (Lee & Chung, 2017). Foreign investors contribute the price discovery process, while at the (Lee & Chung, 2017) same time their trading patterns lead to a significant increase in domestic liquidity commonality (Peranginangin et al., 2016). Foreign investors tend to induce stock price informational efficiency (Vinh Vo, 2017). Those studies can lead to the conclusion that foreign investors affect the stock market.

In another hand, some studies show that the foreign investors are less affecting the stock market and even no better than the domestic investors. In Japan, foreign investors do not outperform domestic investors (Kang & Stulz, 1997). In Korea, the performance of foreign money managers is poorer than that of their domestic counterparts for medium and large trades (Choe et al, 2005). Meanwhile in Indonesia, authors less likely to find the effect of foreign investors in Indonesia Stock Market (IDX).

Financial liberalization's, which marked by the existence of foreign investors, expected benefit is that the participation by large international financial institutions in small emerging markets would reduce the level of information asymmetry and enhance local market liquidity. In liquidity topic, Rhee & Wang (2009) found that foreign institutional ownership has the significant negative effect on liquidity. The different studies, by analyzing the aggressive foreign trade, show that foreign investors in the stock market lead to a significant rise in domestic liquidity commonality (Peranginangin et al, 2016). Both show the contradictive result.

The result of Rhee and Wang (2009) research which found that foreign institutional ownership has the negative effect on liquidity might be not applicable in recent data. So, the authors would like to robust this research by giving the recent analysis on recent data timeframe. Further, Peranginangin et al (2016) research use foreign trades as the foreign investors variable might be robust by this research by employing other variables.

This research give several contribution to several stakeholders: literature, government and companies. This research give several contribution to the research: first, it give new finding using other variables than Peranginangin et al (2016) research which use foreign trades as the foreign investors variable. Second, Which rechecks and/or robust Rhee and Wang (2009) research which found that foreign institutional ownership has the negative effect on liquidity by giving recent analysis on recent data timeframe (2015 – 2017). Third, this research robust the existing research Lee & Chung (2016) finding by giving the longer timeline rather than cross sectional data only. While, for the government and companies, this research might be important to help their analysis in concepting the strategies in order to improve stock liquidity (in market and companies perspective).

This study is conducted in Indonesia in a purpose of contributing evidence in emerging market. The data used in this study are secondary data taken from the Indonesian Stock Exchange (IDX) for 36 month period from 2015 – 2018. The timeframe limitation caused by the data provided by the IDX (through KSEI). Further, this study observed only 44 companies listed in IDX and indexed by LQ45 index. Those 44 companies are believed representing the Indonesian Stock market in terms of liquidity since LQ45 indexed the 45 most liquid stock in Indonesia.

2. Literature Review

2.1 Foreign Ownership

In Indonesia, starting from September 1997, the restrictions on foreign ownership were abolished except for banks that must have foreign ownership of up to 49% of the total registered shares, subsequently, under the Government Law of 7 May 1999, the maximum number of registered shares and foreign ownership in the bank is set to 99%. It gave the option at once opportunities to foreign investors to invest their fund in Indonesia stock market as the emerging stock market.

In the emerging market, most of the Foreign investors tend to invest in export-oriented, big companies (in terms of market size), transparent companies to mitigate their information disadvantages.

There are questions which lead to some debate about whether domestic investors have better information than foreign investors. As mentioned by Dvořák (2005), foreign investors may have less adequate information of local stock if compared with domestic investors. They have better financial resources, better knowledge of the global market has better technology and experienced in any kind of stock market. Further, They have reputation and credibility in the markets.

ICMEM

There still a debate in the literature on how foreign ownership affects the stock market. Huang and Cheng research (2009) explained that at least there are three main effects of foreign investors, they are:

1. Stock with foreign investors outperforms the stock which has less foreign investors.
2. Foreign ownership produce a positive long-term valuation effects
3. Using TobinsQ, it found that foreign investors highly significant and positive affects the companies' performances. It because of the ability of foreign investors to screen best or ability to influence management.

Further, studies found that foreign ownership also affecting the liquidity of the stock and or stock market. Lee & Chung (2017), Ding et al (2017) and Peranginangin et al (2016) found that foreign ownership is positively significant affecting the stock. While other studies found that foreign ownership negatively significant affecting the stock market ((Prasanna & Bansal, 2016) and (Rhee & Wang, 2009)).

2.2 Liquidity

Kumar (2015) described liquidity of stock as the ability to transact stocks in large volume with least cost, price impact and without delay. This liquidity concept was initiated by Amihud in 1986. It has multi-dimensional characteristic: Tightness, Immediacy, Depth, Breadth, and Resiliency which cannot be captured in a single measure. As a result, it leads another research in defining liquidity, identifying determinants of liquidity and designing models to quantify liquidity, implications of liquidity on dividend policy, returns, market efficiency and asset pricing.

Liquidity can affect several things: the decision of investors, the development of the capital market and also affect the companies management. The least liquidity a stock will lead investors to face the risk of higher losses which may not result in higher profit as the return (Kumar, 2015). The higher liquidity of stock may lead the higher probability of getting more returns for the investors. In less liquid markets, the investors are less willing in executing a large transaction which may lead to significant price change which resulting higher losses possibilities. Hence, the stock market development is barred as lower liquidity may lower down the capital inflows (Kumar, 2015). Further, by increasing the liquidity of the stocks, the firms can reduce their cost of capital (Kumar, 2015).

2.3 Liquidity Proxy Measure

Sarr and Lybek (2002) told that there is no universally accepted measure to determine a market's degree of liquidity because of market-specific factors and characteristics. The liquidity can be measured using several ways.

Based on Saar and Lybek (2002), liquidity can be measured using four categories of measurement: first, transaction cost measures which captured costs of financial assets trading and frictions in the markets itself; second, it is volume based measures which distinguish liquid markets by the transactions volume compared to the price variability which mainly measuring breadth and depth; third, equilibrium price – based measures that capture orderly movements towards equilibrium prices to level resiliency; and the last is a measurement of market impact that seeks to distinguish between price movements due to the level of liquidity of other factors, such as market conditions or the introduction of new information to measure both the element of resilience and the speed of price discovery.

In this study, the authors used Amihud Illiquidity as the proxy for liquidity. Amihud (2002) proposed other price impact proxies which called Illiquidity (ILLIQ). It captures the lack of liquidity by dividing daily return by daily dollar volume. Shows the price shock triggered by a unit of dollar volume. This is estimated for every share using daily data and the impact of each share is weighted by its free float rate and market capitalization. This measure has the limitation which does not incorporate days without trading, which in and of itself contains important information for illiquidity.

Based on (Lou & Shu, 2016), The Amihud measure is one of the most widely used liquidity proxies in the finance literature. During 2009-2015, over one hundred and twenty papers published in the Journal of Financial Economics, the Journal of Finance and use the Amihud measure for their empirical analyses. The Amihud measure has two advantages over many other liquidity measures. First, the Amihud measure has a simple construction that uses the absolute value of the daily return-to-volume ratio to capture price impact. Second, the measure has a strong positive relationship with the expected stock return (Chordia et al, 2009). The positive return premium of the Amihud measure is generally considered a liquidity premium that compensates for price impact.

While Amihud Turnover is another proxy which developed by Brennan, Huh, and Subrahmanyam (2013) by changing the dollar volume by volume turnover as measured below:

ICMEM

$$AMIHUD_{TO} = \frac{1}{D} \sum \left(\frac{|r^2|}{TO_{id}} \right) \tag{1}$$

TO$_{id}$ is the turnover of stock I on day d, calculated as daily share volume divided by total stocks outstanding.

2.4 Control Variables

Beside foreign ownership as dependent variables, authors includes several control variables in this study. Those are: market capitalization, market return, stock return, stock prices and trade volume.

2.4.1 Market Return

Market return is a proxy to measure the volatility of the market. It is proven by Dey (2005) research that found the relationship between volatility and the return of the market. Dey (2005) used a two-stage least regression method and concluded that liquidity is higher when the return in the market is higher. However, none of the studies benchmarked in this study use the market return as the variable. So, the author used market return since it also affecting the liquidity (Dey, 2005). The market return was calculated using simple mathematical computation among the historical data of the market value below.

$$RE_{Market} = \frac{recent\ value - old\ value}{old\ value} \tag{2}$$

2.4.2 Market Capitalizations

Market capitalization is the market value of a company's outstanding stocks. In the market perspective, market capitalization comprises the sum of individual outstanding stocks by their prices for all the companies listed in a given stock market (Kaburu, 2012). It is one of the proxies to measure firm size. Shalit & Sankar's (1977) empirical studies found that market capitalizations which show the shareholders' equity is the best proxy if it is correlated with the assets.

Market capitalization as the proxy of firm size is affecting the stock liquidity, as used in Lee & Chung (2017) research, it found that firm size is significantly negatively affecting the liquidity of the stock, the bigger the company will lower the liquidity of their stock. While other research found that it positively affecting the stock liquidity (Ding et al, 2017).

In this research, market capitalization is calculated by multiplying a company's outstanding stocks by the current market price per share.

$$MARCAPS = Number\ of\ shares\ outstanding\ x\ Price\ of\ each\ shares \tag{3}$$

2.4.3 Stock Return

Similar with market return, the stock return is a proxy for stock volatility. Duffee (1995) found that there is a positive relationship between the stock return and the volatility of the stock. As Lee & Chung (2017) research, stock return used as the control variable and it show positively significant affecting the stock market liquidity. While other research found that stock return significantly negative affecting the stock liquidity ((Ding et al, 2017; Rhee & Wang (2009)).

Benchmarking Lee & Chung (2017) and Ding et al (2017) research, the authors also use stock return as the control variable in this study. Similar with market return, stock return calculated by this measure:

$$RE_{stock} = \frac{recent\ price - last\ price}{last\ price} \tag{4}$$

2.4.4 Stock Price

When a company goes public through IPO (Initial Public Offering), each company stock will be sold to the public and they start to have stock prices. The initial prices are determined by the investment bank (pointed by the company) using complex valuation techniques. After the IPO, the stock pricing depends on the supply and demands of the market itself. As common sense, if the investors have strong evidence that the company will perform well in the future, the stock price preferable to be increased and vice versa. Based on Ding et al (2017), stock price is significantly positive

ICMEM

affect the liquidity of the stock.

2.4.5 Average Daily Trading Volume

The average daily trading volume (ADTV) is the number of individual stock traded in a day on average over a specified period of time. The trading volume is helpful for technical analysis in the stock market. It provides information about the quality of information that cannot be inferred from the price statistics (Blume et al, 1994). Based on Lee and Chung (2017), ADTV is significantly negative affecting the liquidity of the stock. In this research, ADTV obtained by averaging daily trading volume in the specified month.

3. Methodology

3.1 Conceptual Framework

Figure 6 Conceptual Framework
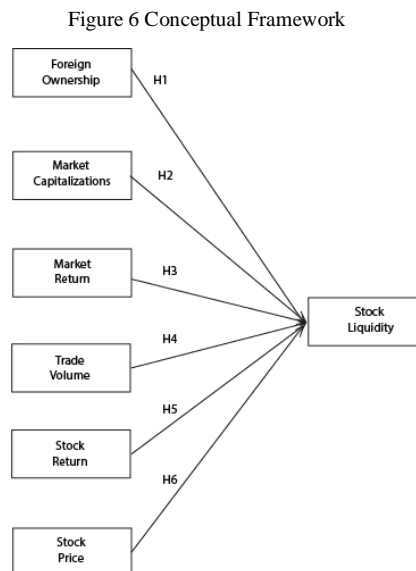
The figure above shows the objective and the conceptual framework in this study. This study mainly aimed to find the relationship between foreign ownership and stock liquidity. While the others are the minor aim which tries to capture the relation of Market Capitalizations, Market Return, Trade Volume, Stock Return, and Stock Price with Stock liquidity. From the conceptual framework, the research hypothesis listed below:

H1: The foreign ownership significantly positive affect the stock liquidity
H2: Market capitalizations significantly negatively affect the stock liquidity
H3: Market return significantly positive affect the stock liquidity
H4: Trade volume significantly negative affect the stock liquidity
H5: Stock return significantly negative affect the stock liquidity
H6: Stock price significantly positive affect the stock liquidity

3.2 Data Collections

The sample used in this research are 44 of 45 stocks which indexed LQ45. Table 3.1 is the list of samples of LQ45 stocks used as research. The data collection method used in this research is by secondary data, collecting data of daily & monthly trading stocks in IDX through Yahoo Finance and stock ownership through KSEI (Securities Depository and Settlement Institution) official website. The data gathered from those sources then processed for further analysis.

ICMEM

3.3 Research Method

This study is a quantitative research which defined as a research which determines the relationship among variables by testing the objective theories (Creswell, 2003). Panel regressions used to analyze the independent variables that influence the liquidity of the stocks. This panel regression method is common & widely used by researchers (Ismail, 2006). This method is utilized in this research because the data structure of this research is in the form of panel: a combination of time series which pointed by monthly data and cross-sectional data. Based on the research design of the present study also suggest that the most suitable method was panel regression. Actually, it is also possible to use ordinary multiple regression but the result will not be optimal and it would lead to bias since it did not consider the time series dimension (or it assumed constant).

Based on Gujarati (2004), to analyze the panel data it should use the fixed effect and random effect approach which will be tested by Hausman test for random effects. While The test performed in this research is Haussmann test, heteroscedasticity test, autocorrelation test, multicollinearity test, normality test and then regress using fix effect and random effect which tested by Hausman test after all. The result of this research will describe that all of the independent variables will affect the liquidity of stock significantly.
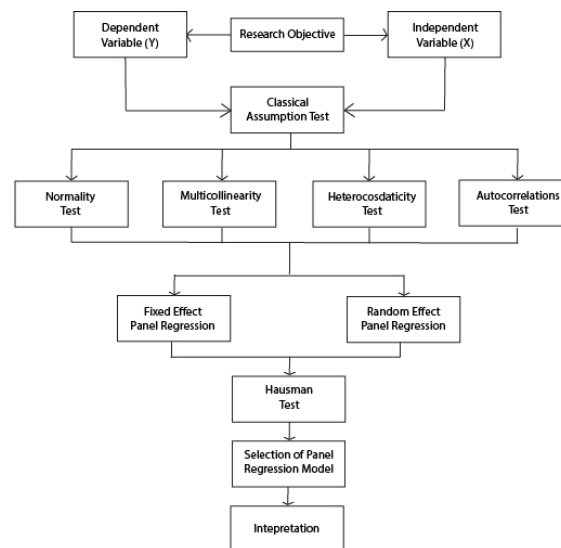
Figure 7 Research Design

3.4 Research Design

The figure above shows the research design that represents the steps that the author did in this study. The first stage is finding the research objective which followed by the determination of the dependent and independent variable by doing literature studies which followed by the hypothesis creation. Afterward, the dependent and independent variables tested in classical assumption test which consists of a normality test, heteroscedasticity test, multicollinearity test and autoregression test. After all classical assumption were passed, then the authors did random effect and fixed effect regression which then stored to be tested by Hausman test. After all, to determine which panel regression used in this study, the authors did Hausman test then do the interpretation.

In the panel regression model, there are several steps to make the panel regression can be a good model that is classical assumptions test. The classical assumption test used in this study including of normality test, multicollinearity test, heteroscedasticity test and autocorrelation test. Classical assumption test aimed to increase the reliability of the research and to get a valid interpretation of regression estimations (Gujarati, 2004).

The normality test aimed to show that the data is normal based on the available distribution (Gujarati, 2004). Normality test is important to make sure the value will not produce a misleading result. here are several types of normality tests that are available in the research methodology, they are Sharpio- Wilk, Skewness and Kurtosis,

Lilliefors, Kolmogorov Smirnov and others. Each of the available tests has different assumption and characteristics. This research employs Skewness and Kurtosis test for normality to know the normality of the data by testing the residual of the panel regression result.

Heteroscedasticity is a test which aimed to know whether there is a variance inequality of the residual among the observations in the regression model constructed. If heteroscedasticity is existed in the regression then it violates the Best Linear Unbiased Estimated (BLUE) assumptions which lead to bias panel regression estimations. In this study, the presence or absence of heteroscedasticity is tested by Breusch-Pagan analysis.

Multicollinearity test is a test to validate that all variables used in panel regressions in the study have no intercorrelations or collinearity (Gujarati, 2004). If a relation between variables exists, it means that disturbances exist in the model. The disruptions will influence the dependent variable thus affecting the conclusion of the research and the resulting biased model. The multicollinearity problem can be solved by eliminating the collinear variable(s). This study measured the existence of multicollinearity by employing the Variance Inflation Factors (VIF) test. VIF explained multicollinearity existed from the variance value from all variables.

Autocorrelation is the correlation between members of some series of observations ordered in time in time series or space data in cross-sectional data. In the regression, the classical linear regression model assumes that autocorrelation does not exist in interference (Gujarati, 2004). This study employed the xtserial Stata command, which implements the Wooldridge test for serial correlation in panel data (Drukker, 2003)

3.5 Panel Regression

This research employed a panel regression model which analyzed using STATA 13 as the tool to conclude the objective of the study. In the panel regression model, there are two variables: independent variables and dependent variable. The independent variable is a variable which positively or negatively affects the dependent variable. While the dependent variable is the primary variable which researchers were trying to measure.

In this research, the independent Variables used by the researcher are market return, foreign ownership, market capitalizations, stock price, stock return and trading volume. While the dependent Variables used is liquidity of the stock using amihud_to measurement.

In panel regression, there are two models that can be used, they are fixed effect model or random effect model. The model-making assumptions that result in a constant intercept for each individual (i) and time (t) are considered less realistic so more models are needed to capture the difference. Fixed effects model assumes that differences between individuals can be accommodated from the different intercept. Woolridge (2002) asserts that the fixed effect is a panel model with different intercepts available for all variables with cross-sectional characteristics

While the random effect is panel models caused by variations in values and interrelations between variables (Woolridge, 2002). In estimating panel data with Fixed Effects model through LSDV technique shows uncertainty model used. To solve this problem researchers can use residual variables known as Random Effects model. In this model, panel estimates will be selected where residuals may be interconnected between time and between individuals. Therefore, in this model, it is assumed that there is a difference of intercept for each individual and the intercept is a random or stochastic variable.

In this research, a Hausman test used for determining the use of random or fixed effect model in this regression. By running a Hausman test, it can determine which model preferred, whether random effects or the alternative the fixed effects (Greene, 2008). It tested whether the unique errors (u) are correlated with the regressors or not.

4. Data Collection and Analysis

Descriptive statistics are employed to describe the basic features of the data in the study. It provides summaries about the variables employed in the research.

4.1 Statistic Descriptive

Table 34 Statistic Descriptive

ICMEM

Variable	Number of Obs	Mean	Std. Dev.	Min	Max
Lnamihud_to	1211	2.583072	0.8399742	0.13	4.96
Lnfgown	1211	21.81706	0.9915007	20.02	23.83
Lnmarcap	1211	31.30642	1.043165	28.95	33.98
Rihsg	1211	0.0067217	0.0331174	-0.08	0.07
Lnadtv	1211	16.58001	1.051289	13.74096	18.99691
Rstock	1211	0.0000578	0.0842698	-0.24	0.24
Lnpstock	1211	8.071156	1.130622	5.23	10.93

Based on the table above, it shows that all variables has the same number of observation equal to 1211 which mean that the variable are strongly balance and there is no observations missing there. In order to pass the classical assumption, five of seven variable, AMIHUD_TO (liquidity); FGOWN (foreign ownership); MARCAP (market capitalizations); ADTV (average daily trading value); PSTOCK (stock price), were mathematically transformed to be natural logarithm.

4.2 Classical Assumption Test

For summary, the data used by this study are passed all the classical assumption test needed. The normality test result show that the null hypothesis (H0) cannot be rejected at least in the 66.52% level (see appendix A). It concluded that the data are normally distributed. As the multicollinearity test, the VIF result shows that all of the variable are below 10, it means that all the variable used has no multicollinearity each other (see appendix B). While overall, by knowing that the mean VIF is below 10, there is no multicollinearity exist in the regression model. The heteroscedasticity test result show that the prob > chi2 is higher than 0,05 or 5% which mean that the null hypothesis cannot be rejected (see appendix C). Thus, the data donot suffer heterocosdaticity. The last test is autocorrelation test (see appendix D) that resulting the prob > F is higher than 0,05 or 5%. It means that we cannot reject the null hypothesis, so we conclude that there is not autocorrelation among those variable

4.3 Panel Regression Result

Regression analysis is used to elaborate the relationship between independent variable towards the dependent variable. Based on Hausman test (see appendix E), this research used fixed-effect panel regression model with the output attached below:

Table 35 Panel Regression Result

R-square					
Between = 0.9134					
Overal = 0.6686					
			F(6,1165) = 66.68		
Corr(u_i, Xb			Prob > F = 0.0000		
Lnamihud_to	Coefficient	Std Error	t	P> |t|	95% Coeff.	Interval
Lnmarcap	0.4504837	0.1224802	3.68	0.000	0.2101772	0.6907901
Lnfgown	0.0561258	0.0856769	0.66	0.513	-0.1119726	0.2242242
Rihsg	-2.31882	0.4025676	-5.76	0.0000	-3.108659	-1.528981
Lnadtv	-0.5388889	0.0290146	-18.57	0.000	0.5958155	-0.4819623
Rstock	0.5389164	0.2073793	2.60	0.009	-0.7338629	-0.2041882
Lnpstock	-0.4690256	0.1349832	-3.47	0.001	-0.7338629	-0.2041882
_cons	-0.0085426	2.598284	-0.00	0.997	-5.106381	5.089296
Sigma_u	0.38668964	0.38668964	(Fraction of variance due to u_i(			

ICMEM

Sigma_e	0.41150588	0.41150588	
rho	0.4689396	0.4689396	
F test that all u_i = 0 ; F(39,1165) = 11.51 Prob > F = 0.0000			

Based on the R-square, independent variables used in this model (lnmarcap, lnfgown, rihsg, lnadtv, rstock and lnpstock) cover 66.85% of the total variables while the rest of it (33.15%) explained by the other variable which are not included in this model. Based on the p value result, all variables but lnfgown are significantly affecting the liquidity of the stock. While the lnfgown are not significant in this model so it mean that the hypothesis (H1) should be rejected which lead to the conclusion that the foreign ownership donot affecting the stock liquidity.

4.4 Result Discussions

Based on the panel regression results, The result shows that market capitalizations, market return, trade volume, stock return and stock price are significantly affect the stock liquidity. There are 2 of 6 hyphotesis are rejected in this study they are the effect of foreign ownership and the trade volume effects to stock liquidity (see appendix F).

4.4.1 Foreign Ownership

Based on the panel regression result, we know that the foreign ownership is not significant affecting the liquidity of the stock. It shows by the p value which higher than 0.05 or 5%.

This finding is contradicting with the other existing researches. The first is that studies found that foreign ownerships are significantly positive affecting the stock liquidity ((Lee & Chung, 2017) (Peranginangin, Ali, Brockman, & Zurbruegg, 2016) (Ding, Nilsson, & Suardi, 2017)). Foreign investors is the liquidity providers by increasing competition in the price discovery process (Lee & Chung, 2017) seems not relevant in this research since the sample used in this research are best 45 liquidity in the Indonesian Market. In the other hand, Peranginangin et al (2016) research reveal that foreign investors contribute in transmitting information so price discovery process happens in emerging market and also exacerbating commonality in liquidity. Further, Ding et al (2017) show that foreign participation trigger trading activity and reduce the real frictions costs on the stock market in China. However, in this research the role of foreign investors as the liquidity providers, price discover, exacerbating commonality and triggering trading activity may not effective in this market or at least in this stocks indexed by LQ45 since this study cannot give the evidence.

In the other hand, The Prasanna1 & Bansal (2014) and Rhee & Wang (2009) research that reveal that in India and Indonesia, foreign institutional trading significantly influences the market liquidity in a negative direction. Rhee & Wang (2009) reveal that foreign investors increase information asymmetry and prefer to use buy and hold strategies which may lead to decrease of stock liquidity. It also not applicable in this study research since there is no evidence about the significances.

4.4.2 Control Variables

The hypothesis that market capitalizations significantly negatively affect the stock liquidity is accepted in this study. This result negative relationship between market capitalizations and stock liquidity is consistent with the existing studies from Lee & Chung (2017). Lee & Chung (2017) found that the bigger the company will lower their liquidity of the stock since foreign investor prefer to hold firm with large capitalizations. While in the other hand, it contradict the result of Ding et al (2017) research that found that market capitalizations positively affecting the stock liquidity.

The hypothesis that market return significantly positive affect the stock liquidity is accepted. It consistent with the Dey (2005) result that show the positive relationship between market return and the liquidity of stocks.

The hypothesis that trade volume significantly negative affect the stock liquidity is rejected in this study. Thus, it means that trade volume is significantly positive affect the stock liquidity. This result is contradict with Lee & Chung (2017) research that found ADTV is significantly negative affecting the liquidity of the stock.

The hypothesis that stock return significantly negative affect the stock liquidity is accepted in this study. This negative relationship is consistent with Ding et al (2017) and Rhee & Wang (2009) research result. While in the other

ICMEM

hand, it contradict the resuld of Lee & Chung (2017) research that stock return show positively significant affecting the stock market liquidity.

The hypothesis that stock price significantly positive affect the stock liquidity is accepted in this study. This result consistent with Ding et al (2017) research that found stock price are significantly positive affect the liquidity of the stock.

5. Conclusion and Recommendations

This research aims to confirm the effect of foreign ownership in liquidity of stock indexed by Liquid45 (LQ45) Indonesia. The data used in this research are downloaded from IDX and KSEI and the timeframe started from March 2015 until February 2018. Author employed fixed – effect panel regression which determined by Hausman test before. The dependent variable is amihud turnover as the liquidity proxy. While the independent variable are foreign ownership (as the main observations) and the control variable are market capitalizations, market return, stock return, stock price and trade volume.

The regression results show that, the foreign ownership is not significant affecting the liquidity of the stock. It means, there is no evidence that foreign ownership is affecting the liquidity of the stock in Indonesia. While the control variables are significantly affecting the liquidity of the stocks listed in Indonesia. All of those variable can capture 66.85% of all factors affecting the liquidity of the stocks listed in Indonesia.

The fact that foreign ownership is not significant affecting the liquidity of the stocks listed in Indonesia show that this research can contribute to the literature by giving evidence that not all of the liquidity of stocks are affecting by foreign ownership. In this case, LQ45 as the 45 most liquid stocks are not affected by them. This result contradict with several existing finding that show foreign ownership is positively or negatively affecting the liquidity of the stocks.

Several recommendations that author thinks might help to other research:

1. The next research should use others stock which not only come from LQ45 index since that index might not represent all of the stocks listed in Indonesian Stock Market.
2. The next research may use sectoral stocks rather than indexed or all listed stocks. It might show different result in each sectors.
3. For international purpose, instead of using all stocks listed in the market (or random samples), use the most liquid stocks listed in several market to give better evidence related with the effect of foreign ownership in most liquid stocks.

References

Bekaert, G., & Harvey , C. (1997). Emerging equity market volatility. *Journal of Financial Economics*, 29 - 77.

Bekaert, G., & Harvey, C. R. (1995). Time-VaryingWorld Market Integration. *The Journal of Finance*.

Bloomberg. (2018, January 31). *Bloomberg.com*. Retrieved from The Top 20 Emerging Countries: https://www.bloomberg.com/news/photo-essays/2013-01-31/the-top-20-emerging-markets

Blume, L., Easley, D., & O'hara, M. (1994). Market Statistics and Technical Analysis: The Role of Volume. *THE JOURNAL OF FINANCE*, 153 - 181.

Choe, H., Kho, B., & Stulz, R. (2005). Do domestic investors have an edge? The trading experience of foreign investors in Korea. *Review of Financial Studies*, 795–829.

Chordia , T., Huh, S.-W., & Subrahmanyam, A. (2009). Theory-based illiquidity and asset pricing. *Review of Financial Studies, 22*, 3629-3668.

Creswell, J. (2003). *RESEARCH DESIGN Qualitative, Quantitative. and Mixed Methods Approaches* (Vol. 2). New Delhi: Sage Publications.

Dey, M. (2005). Turnover and Return in Global Stock Markets. *Emerging Market Reviews, 6*, 45 - 76.

Ding, M., Nilsson, B., & Suardi, S. (2017). Foreign Institutional Investment, Ownership, and Liquidity: Real and Informational Frictions. *The Financial Review*, 101–144.

Drukker, D. (2003). Testing for serial correlation in linear panel-data models. *The Stata Journal*, 168–177.

Duffee, G. (1995). Stock returns and volatility A firm-level analysis. *Journal of Financial Economics, 37*, 399 - 420.

ICMEM

Dvořák, T. (2005). Do Domestic Investors Have an Information Advantage? Evidence from Indonesia. *American Finance Association, 60*, 817-839.

Froot, K., & Ramadorai, T. (2001). The Information Content of International Portfolio Flows. *NBER WORKING PAPER SERIES*.

Gibley, M. (2012, July 27). *Emerging Markets: What You Should Know.* Retrieved from Charles Schwab: https://www.schwab.com/resource-center/insights/content/emerging-markets-what-you-should-know

Greene, W. (2008). *Econometric analysis* (Vol. 6). Upper Saddle River, N.J: Prentice Hall.

Grinblatt, M., & Keloharju, M. (2000). The Investment Behaviour and Performance of Various Investor Types: A study of Finland's unique data set. *Journal of Financial Economics, 55*, 43 - 67.

Gujarati, D. (2004). *Basic Econometrics.* The McGraw−Hill Companies.

Hale, D. (2012). The Importance of Emerging Markets. *CFA Institute*, 43 - 50.

Huang , R., & Shiu, C.-Y. (2009). Local Effects of Foreign Ownership in an Emerging Financial Market: Evidence from Qualified Foreign Institutional Investors in Taiwan. *Financial Management* , 567 - 602.

Ismail, A. (2006). A Panel Data Analysis of Fee Income Activities in Islamic Banks. *KAU: Islamic Economics*, 23-35.

Jorion, P., & Goetzmann, W. (1999). Global Stock Markets in the Twentieth Century. *Journal of Finance*.

Kaburu, K. (2012). ANALYSIS OF THE RELATION BETWEEN MARKET CAPITALIZATION AND STOCK MARKET INDICES AT THE NSE.

Kang, J.-K., & Stulz, R. (1997). Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan. *Journal of Financial Economics*, 3 - 28.

Kohers, G., Kohers , N., & Kohers, T. (2013). The risk and return characteristics of developed and emerging stock markets: the recent evidence. *Applied Economics Letters*, 737 - 743.

Kumar, G. (2015). Closer View at the Stock Market Liquidity: A Literature Review. *Asian Journal of Finance & Accounting*, 35 - 57.

Lee, J., & Chung, K. (2017). Foreign Ownership and Stock Market Liquidity. *International Review of Economics and Finance*.

Lou, X., & Shu, T. (2016). Price Impact or Trading Volume: Why is the Amihud (2002) Illiquidity Measure Priced?

Mody, A. (2004). What Is an Emerging Market? *IMF Working Paper*.

Peranginangin, Y., Ali, A., Brockman, P., & Zurbruegg, R. (2016). The impact of foreign trades on emerging market liquidity. *Pacific - Basin Finance*, 1 - 16.

Prasanna, K., & Bansal, B. (2016). Foreign Institutional Investments and Liquidity of Stock Markets: Evidence from India. *International Journal of Economics and Finance, 6*, 103 - 118.

REUTERS. (2015, November 18). *Indonesia won't revise law on free capital movement, floating exchange rate.* Retrieved from The Business Times: https://www.businesstimes.com.sg/banking-finance/indonesia-wont-revise-law-on-free-capital-movement-floating-exchange-rate

Rhee, S., & Wang, J. (2009). Foreign institutional ownership and stock market liquidity: Evidence from Indonesia. *Journal of Banking & Finance*, 1312 - 1324.

Rosul, M. (2002). The Capital Market in Indonesia's Economy: Development and Prospect. *AT10 Research Conference*.

Sarr, A., & Lybek, T. (2002, December). Measuring Liquidity in Financial Market. *IMF Working Paper*.

Shalit , S., & Sankar, U. (1977). The Measurement of Firm Size. *The Review of Economics and Statistics, 59*, 290-298.

Vinh Vo, X. (2017). Do foreign investors improve stock price informativeness in emerging equity markets? Evidence from Vietnam. *Research in International Business and Finance*, 986 - 991.

Woolridge, J. (2002). Econometric Analysis of Cross Section and Panel Data. *MIT Press*.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Investigating Effect of Appointing Board of Commissioner Member with Military/Police Background on Firm Value and Performance (Empirical Investigation on Indonesia Listed Coal Mining Company Year 2006 – 2016)

Gian Rifa Wahyudi[a]*, Mandra Lazuardi Kitri[b]

[a,b]*School of Business and Management ITB*

Abstract

Minister of BUMN, Rini Soemarno, stated that people with military/police background are prioritized to be commissioner in business sectors that has high conflict potential, such as coal mining sector. Their existence could be a solution for social issue such as land acquisition and thuggery. Reasons behind the strategy are related to cost efficiency, which furtherly affects firm performance and firm value; since firm value is the main objective of board of commissioner. Since there are researches state that return on equity (ROE) has positive and significant effect on firm value, and ROE could explain overall key performances of the firm based on DuPont Identity, this research aims to investigate the effect of appointing commissioner with military/police background on firm value and performance, how several key performances affect firm value before and after the appointment, and what happens after selected coal mining companies appoint the commissioner with military/police background strategy.

Firm value is measured by Tobin's Q and firm performances are measured with net profit margin (NPM), total assets turnover (TATO), and equity multiplier (EM); as those 3 ratios able to explain firm performances based on DuPont Identity. This research uses purposive sampling on Indonesia public listed coal mining companies in IDX categorized in Jakarta Stock Industrial Classification (JASICA) with several criteria resulting 4 companies that meet the criteria. Financial data gathered from Indonesia Stock Exchange (IDX) and Indonesia Capital Market Directory (ICMD) within 2006 – 2016 period. Three years before and after the appointment financial data are analyzed by using difference test and panel regression as the main analysis method.

The result of the research: 1) There is no significant difference of Tobin's Q after the appointment; 2) There are changes of effect of performances on firm value: before the appointment, no independent variable partial has significant effect on firm value; after the appointment, NPM has positive significant effect on firm value. NPM, TATO, and EM simultaneously have positive significant effect in both before and after the appointment regression model. 4) There is no significant difference on Tobin's Q after the appointment is caused by no significant difference found on NPM after the appointment, as the variable is the only independent variable that has significant effect on Tobin's Q after the commissioner appointment. Even though there is significant difference on EM, this variable has no significant effect on firm value after the appointment.

Keywords: Military; Police; Board of Commissioner; Firm Value; Firm Performance; Dupont Identity

1. Introduction

Indonesia is a country that is famous for its wealth in natural resource. Natural resource is element of the natural environment, both physical and biological, that is needed by human to fulfill their need to increase their welfare (Suryanegara, 1977). An example of industry that extracts and processes natural resources is coal mining industry. In 2016, Indonesia was the 5th largest coal producer in the world, consecutively behind China, USA, Australia, and India (British Petroleum, 2017). Considering Indonesia's competitive advantage in coal, coal industry could be categorized as a competitive and potential industry. Besides its potential, the industry has strong correlation with land acquisition

---

* Corresponding author.

   E-mail address: gian.rifa@sbm-itb.ac.id

ICMEM

and environment, which triggers conflict with society around the business' operational area (Dimas, Idris, & Fitriyah, 2014).

The Minister of *BUMN*, Rini Soemarno, in 2016 stated that military personnel which is chosen to be in board of commissioner or director is a main option to be placed in industry with high conflict-potential; it is necessary to have *TNI* and *POLRI* around the industry. Their existence could be a solution for social issue such as land acquisition and thuggery. The board of commissioners acts as an internal governance mechanism via its appointment, supervision, and remuneration of senior managers, as well as its framing of corporate strategy (Campbell, Kevin, & Mi-nguez-Vera, 2008). The effectiveness of board of commissionaire measured by the protection of shareholders' interest (Garcia-Torea, Fernandez-Feijoo, & Cuesta, 2016). Board of commissioners' members are elected by company's shareholders during *Rapat Umum Pemegang Saham* (*RUPS*) or general meeting of shareholders. In the other hand, board of director is a board which is responsible for the day-to-day business operational matter, the one who controls the business technically and directly**.**

Based on 2016 data, there is no board of director members with military/police background in Indonesia public listed coal mining company. The condition happens probably because the board of director's job description is way too technical, which needs specific knowledge and ability in coal mining/business; mining or business education background is needed. Meanwhile, there are some companies with ex-military/police personnel as their board of commissioner. As the effectiveness of board of commissionaire is measured by protecting shareholders' interest, which is an increase of shareholders' value. Thus, increasing firm value will also increase its shareholders' wealth.

Firm value is the sum of company's current profit and expected profit in the future, that are counted as a present value, with a good and precise risk and interest calculation (Sitio, 2001). In the other hand, the reasons about why commissionaire with military/police background is appointed stated by the minister are related to cost efficiency, which is also related to profitability of the firm. Research conducted by (Hermuningsih, 2013) shows that return on equity (ROE) has positive and significant effect towards firm value. Based on DuPont Identity, ROE could be broken down into 3 ratios that determine performance on a company that covers profitability, operating efficiency, and financial leverage (Isberg, 1997). Thus, which performance measures, explained by DuPont Identity, affect the firm value positively and significantly could be analyzed, following the Hermuningsih's research. Since there were no specific research analyzing a certain effect of appointing commissionaire with military/police background, this research aims to investigate the effect of appointing commissionaire with military/police background in Indonesia public listed company.

2. Literature Review

2. 1. Agency Theory and Board of Commissionaire

Agency theory is a theory explaining the link of relationship between principal and agent. In term of firm, principal (shareholders) gives authority to agent (management team) to run the firm (Rahmadewi, 2015). Management team that runs day-to-day operation of business is managed by board of directors, who are chosen by the shareholders during annual shareholders meeting. (Anthony & Govindarajan, 2006) stated that agency relationship happens when the principal delegates full authority and decision making to agent.

The board of commissioners is a role that responsible to supervise the management policy and its implementation; and also to advise the board of directors (OJK and IFC, 2014). The board of commissioners provide four important functions to the firm: (1) monitoring and controlling board of directors, (2) providing information and counsel to board of directors, (3) monitoring compliance with applicable laws and regulations, and (4) linking the corporation to external environment (Carter, D'Souza, & Simkins, 2010). Therefore, board of commissioners shall have the capability and integrity in order to perform its responsibilities and to ensure that the company activities are in compliance with the applicable laws and regulations (OJK and IFC, 2014).

2. 2. Firm Value

Value of a company is the sum of firm's current profit and expected profit in the future, that are counted as a present value, with a good and precise risk and interest calculation (Sitio, 2001). Value of a public company is determined by

ICMEM

stock market (Ciaran, 2004). There are some ways to value a business, some well-known methods are Discounted Cash Flow (DCF), Book Value (BV) method, and Tobin's Q ratio. *Tobin's Q,* which is used in this research, is an indicator to measure company performance, especially about value of a firm, which shows a firm's management team performance to manage company's assets (Sudiyatno & Puspitasari, 2010) and have been proven to measure a company performance variable in several situations of top management (Wolfe & Sauia, 2003).

Chung and Pruitt (1994) *Tobin's Q* formula as follow:

$$q = \frac{(MVS + D)}{TA}$$
$$D = (AVCL - AVCA) + AVLTD$$

where,
- q   = *Tobin's Q* result.
- D   = Total debt of a firm.
- TA   = Total Asset of the firm.
- MVS   = Market value of all outstanding shares.
                  7. = Outstanding shares x stock price.
- AVCL   = Accounting value of the firm current liabilities.
- AVCA   = Accounting value of the firm current assets.
- AVLTD   = Accounting value of the firm long term debt.

With interpretation:
- *Tobin's Q* < 1 = Company's stock price is undervalued.
- *Tobin's Q* = 1 = Company's stock price is in average condition.
- *Tobin's Q* > 1 = Company's stock price is in overvalued condition

2. 3.ROE and DuPont Identity

ROE is a measure of how the shareholders fared during the year (Hill & Jones, 1992). Practically, ROE result of 1 means that every \$1 invested as common stockholders' equity in a certain company, generates \$1 net income (Anjani, 2017). DuPont identity explains that ROE covers performance of a firm in 3 components (Isberg, 1997): 1) Profitability (measured by net profit margin); 2) Operating efficiency (measured by total asset turnover); 3) Financial leverage (measured by the equity multiplier). Because profitability has a positive direct impact to the value of the firm (Hermuningsih, 2013), DuPont identity could decompose the profitability into more specific ratios that determine firm's performance. DuPont identity measures ROE as:

ROE = Net Profit Margin (NPM) x Total Asset Turnover (TATO) x Equity Multiplier (EM)

$$\text{ROE} = \frac{Net\ Profit}{Total\ Sales} \text{ x } \frac{Total\ Sales}{Total\ Assets} \text{ x } \frac{Total\ Assets}{Total\ Equity}$$

2. 4. Effect of ROE and DuPont Ratio on Firm Value

(Hermuningsih, 2013) conducted a research about profitability, growth opportunity, capital structure, and the firm value. The sample of the research was 150 companies listed in Bursa Efek Indonesia (IDX) within 2006 – 2010. The profitability measurement used was Return on Equity (ROE) and firm value measurement was Tobin's Q; which both two variables are also used in this research. The researcher applied Structural Equation Model (SEM) to analyze the sample data. The result shows that profitability affects firm value positively and significantly.

(Rosada, 2017) conducted a research regarding the effect of profitability on firm value in Indonesia public listed automotive companies. The research analyses financial data of the companies within 2010 – 2014. There were 12 automotive companies listed in IDX in that time period as the research population. Gross profit margin (GPM), net profit margin (NPM), Return on assets (ROA), and return on equity (ROE) are profitability measurement of this research. The result is that ROE has positive and significant effect on the firm value.

ICMEM

(Munawaroh, 2014) conducted a research about the effect of profitability on firm value with corporate social responsibility (CSR) as moderating variable. ROE, NPM, and ROA are the profitability measurement on this research, while Tobin's Q is the firm value measurement. Population of this research is Indonesia public listed manufacturing companies, gathered with purposive sampling within 2009 – 2012, and resulting 11 companies. The result shows that ROE has positive and significant effect on the firm value.

(Gunawan, 2016) conducted a research to determine the influence of Net Profit Margin (NPM) and Total Assets Turnover (TATO) on the firm value, which is represented by Tobin's Q ratio. NPM is used to measure the operating efficiency of the firm; while TATO is used to measure the efficiency of producing products with the total assets owned by the firm. The sample of the research was 22 out of 36 consumer goods companies that were listed in IDX period 2009 – 2013. The result is that NPM and TATO have positive and significant effect on Tobin's Q ratio.

(Azianur & Abdurrahman, 2012) conducted a research to determine the effect of current ratio, NPM, TATO, and Equity Multiplier (EM) on stock price of palm oil companies that were listed on IDX period 2007 – 2012. Since the sampling method were using purposive sampling and no companies conducted stock split, stock price could be assumed as market value of the firm. The result of the research shows that NPM and EM effect the stock price positively and significantly, while TATO effects the stock price positively but not significantly.

3. Research Framework

This research focuses on the effect of appointing commissionaire with ex-military/police background; and the effect of profitability on firm value before and after the appointment.
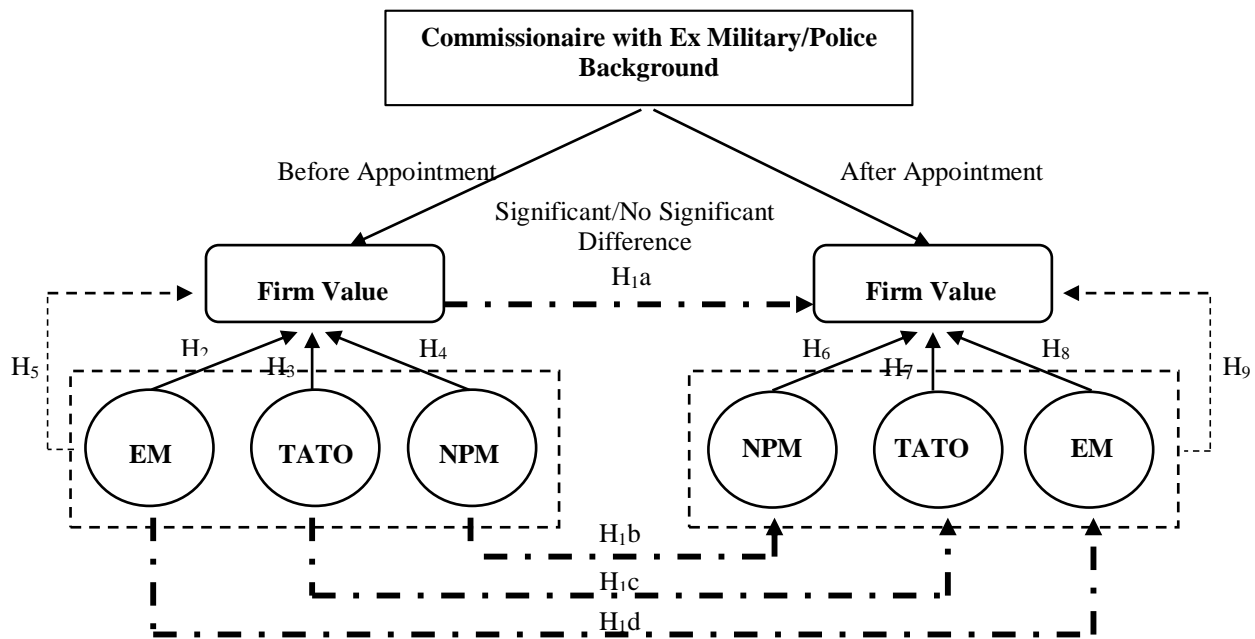
Figure 8: Conceptual Framework

Hypotheses:
From difference test:

- H_{0A}: There is no significant difference of firm's value between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
- H_{1A}: There is significant difference of firm's value between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.

ICMEM

- H_{0B}: There is no significant difference of Net Profit Margin (NPM) between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
- H_{1B}: There is significant difference of Net Profit Margin (NPM) 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
- H_{0C}: There is no significant difference of Total Assets Turnover (TATO) between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
- H_{1C}: There is significant difference of Total Assets Turnover (TATO) between 3 years before appointing ex-military/ex-police personnel as commissioner and 3 years after
- H_{0D}: There is no significant difference of Equity Multiplier (EM) between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
- H_{1D}: There is significant difference of Equity Multiplier (EM) between 3 years before and 3 years after the appointment of ex-military/ex-police personnel as commissioner.
  8.

From multiple linear regression test – before commissionaire appointment:
- H_2 = Net profit margin (NPM) has positive relationship and significant on firm value in regression model based on before commissioner appointment data.
- H_3 = Total assets turnover (TATO) has positive relationship and significant on firm value in regression model based on before commissioner appointment data.
- H_4 = Equity multiplier (EM) has positive relationship and significant on firm value in regression model based on before commissioner appointment data.
- H_5 = NPM, TATO, and EM collectively has positive relationship and significant on firm value in regression model based on before commissioner appointment data.

From multiple linear regression test – after commissionaire appointment:
- H_6 = Net profit margin (NPM) has positive relationship and significant on firm value in regression model based on after commissioner appointment data.
- H_7 = Total assets turnover (TATO) has positive relationship and significant on firm value in regression model based on after commissioner appointment data.
- H_8 = Equity multiplier (EM) has positive relationship and significant on firm value in regression model based on after commissioner appointment data.
- H_9 = NPM, TATO, and EM collectively has positive relationship and significant on firm value in regression model based on after commissioner appointment data.

4. Methodology

All coal mining companies that are included in JASICA and publicly listed at least on 2013 are set to be the population. The sampling technique to collect the sample of this research is by conducting purposive sampling method with several criteria decided by the researcher to fulfil the needs of this research. Criteria that are used to gather the data:

Table 36: Purposive Sampling Description

Stages	Criteria	Total Company
1	Categorized as coal mining company in JASICA and publicly listed in IDX at least on 2013	21
2	Still listed in IDX by 2016 and publish 2016 annual report in IDX website	16
3	Appointing ex-military/police personnel within 2009 - 2013 as commissioner based on 2016 annual report	5
4	No ex-military/police commissioner 3 years before the appointment year	5

ICMEM

5	Publishing *y-3* and *y+3* audited financial report on IDX official website or ICMD	4

There are two methods of data analysis: difference test and panel regression test. Difference test is used to determine whether there is significant difference of the firm value after appointing commissionaire. Before conducting difference test, Saphiro-Wilk normality test is conducted to determine whether the data is normally distributed or not. If the data is normally distributed, paired t-test is used; if not normally distributed, Wilcoxon Signed Rank test is used. Panel regression test is used to find the effect of profitability on firm value, before and after the commissionaire appointment. T-test is used to find the effect of independent variables on dependent variables partially, while F-test is used to find the effect of independent variables towards dependent variables collectively. Before conducting the regression test Chow, Hausman, and *Langrange Multiplier* test have to be conducted to determine the estimation model of the regression: Fixed Effect, Common Effect, or Random Effect. After that, classical assumption test has to be conducted in order to ensure the model passes the assumption test and fulfill BLUE (Best Linear Unbiased Estimator) perimeter.

5. Findings and Argument

Table 37: List of Companies from Purposive Sampling

No	Stock Code	Company Name	Appointment Year
1	DOID	Detla Dunia Makmur	2009
2	DEWA	Darma Henwa	2012
3	PTBA	Bukit Asam	2013
4	SMMT	Golden Eagle	2012

As explained above, there are 4 companies that fulfill the requirement of purposive sampling. The total sample represents 19% of the population, which meets the sampling criteria based on (Singarimbun & Effendi, 1992): the total research sample could not be less than 10% of the population. Then, the financial data of those companies to calculate Net Profit Margin (NPM), Total Asset Turnover (TATO), Equity Multiplier (EM), and Tobin's Q are gathered and analyzed. The result of normality test for difference test, for all variables, are not normally distributed, so Wilcoxon Signed Rank test is used. After conducting model estimation test, Fixed Effect technique is used for the panel regression test. The model also passes the classical assumption test and fulfill BLUE perimeter.

Table 38: Difference Test Result

Variable	Data Distribution	Type of Testing	Result of *p-value*	Mean changes after the appointment	Interpretation
Tobin's Q	Not normal	Wilcoxon Signed Rank	0,071	Decreasing	No significant difference
NPM	Not normal	Wilcoxon Signed Rank	0,347	Decreasing	No significant difference
TATO	Not normal	Wilcoxon Signed Rank	0,158	Decreasing	No significant difference
EM	Not normal	Wilcoxon Signed Rank	0,03	Increasing	There is significant difference

ICMEM

Table above shows the result of difference test analysis using Wilcoxon Signed Rank Test. Based on the analysis, the *p-value* of Tobin's Q, NPM, and TATO > 0,05; so H_{0A}, H_{0B}, H_{0C} is accepted. Thus, there is no significant difference of firm value, NPM, and TATO after appointing ex-military/police commissionaire. On the other hand, the *p-value* of EM < 0,05; so H_{1D} is accepted. Thus, there is significant difference of EM after appointing ex-military/police commissionaire.

Table 39:Fixed Effect Regression - Before Appointment Data

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.618889	3.770707	-0.164131	0.8761
TATOPRE	-0.474997	0.340293	-1.395847	0.2216
NPMPRE	-14.29764	5.807640	-2.461868	0.0571
EMPRE	6.234027	2.925713	2.130772	0.0863
R-squared	0.918532			
Adjusted R-squared	0.820770			
Prob(F-statistic)	0.013237			

Table above shows the regression, coefficient of determination (R^2), T-test, and F-test result of the regression model with before commissioner appointment data. The regression model of before commissioner appointment data:

TOBINSQPRE = -0.618889414834 - 0.474997096861*TATOPRE - 14.29764389*NPMPRE + 6.23402735384*EMPRE + [CX=F]

Based on regression result table above, the value of R^2 is 0,918532. It means that all independent variables explain 91,9% of the dependent variable, firm value represented by Tobin's Q. The rest 8,1% is explained by other variables that are not explained in this research

F-test result determines the effect of all independent variables: NPM, TATO, and EM; collectively on Tobin's Q as dependent variable. If the Prob(F-statistic) < significant level, there is significant effect of NPM, TATO, EM simultaneously on Tobin's Q. According to above table, the Prob(F-statistic) 0,013237. With 5% significant level, 0,013237 < 0,05. Thus, there is significant effect between all independent variables on the dependent variable, H_5 is accepted.

T-test result determines the effect of each independent variable partially on the dependent variable. The test is done by seeing the coefficient regression, whether the value is positive and negative; and comparing the Prob. with the significant level. Based on above table, coefficient regression of NPM and TATO is negative, means that NPM and TATO has negative effect on firm value. Meanwhile, coefficient regression of EM is positive, means that EM has positive effect on firm value. According to above table, with 5% significant level, all independent variables (NPM, TATO, EM) Prob. are > 0,05. Thus, there is no significant effect between NPM, TATO, EM partially on Tobin's Q; H_2, H_3, H_4 are rejected.

Table 40: Fixed Effect Regression - After Appointment Data

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.662247	3.766127	0.972417	0.3755
TATOPOST	0.753139	4.609905	0.163374	0.8766

				0.0023
NPMPOST	2.867159	0.503073	5.699286	
EMPOST	-0.355049	0.801181	-0.443157	0.6762
R-squared	0.952488			
Adjusted R-squared	0.895473			
Prob(F-statistic)	0.003617			

Based on the table above, the regression model of after commissioner appointment data:

$$\text{TOBINSQPOST} = 3.66224740269 + 0.753139337365 \cdot \text{TATOPOST} + 2.86715892392 \cdot \text{NPMPOST} - 0.35049073996 \cdot \text{EMPOST} + [\text{CX=F}]$$

Based on regression result table above, the value of R^2 is 0,952488. It means that all independent variables explain 95,3% of the dependent variable, firm value represented by Tobin's Q. The rest 4,7% is explained by other variables that are not explained in this research. For F-test interpretation, according to above table, the Prob(F-statistic) 0,003617. With 5% significant level, 0,003617 < 0,05. Thus, there is significant effect between all independent variables on the dependent variable, H_9 is accepted. For T-test interpretation, based on above table, coefficient regression of EM is negative, means that EM has negative effect on firm value. Meanwhile, coefficient regression of NPM and TATO is positive, means that NPM and TATO has positive effect on firm value. According to above table, with 5% significant level, TATO and EM Prob. are > 0,05. Thus, there is no significant effect between TATO and EM partially on Tobin's Q, H_7 and H_8 are rejected. Meanwhile, NPM Prob. < 0,05: 0,0023 < 0,05. It means that NPM has significant effect on Tobin's Q, and also positive effect based on coefficient regression, H_6 is accepted.

6. Conclusions

After analyzing the data, the result shows that there is no direct significant difference of firm value after appointing commissioner with military/police background. But, how the NPM, TATO, and EM affect the firm value changes. Both before and after appointment regression model shows that all independent variables simultaneously have significant effect on firm value. But, before the appointment, there is no independent variable that partially has significant effect on firm value. After the appointment, NPM has positive and significant effect on firm value, means that the more NPM, explaining profitability based on DuPont Identity, increases, firm value increases too. It proves reasons stated by Rini Soemarno regarding why commissioner with military/police background appointed in high conflict potential industry. The reasons are minimizing social issue such as land-acquisition and thuggery, which are related to cost and furtherly affects profitability. In DuPont Identity, NPM measures profitability. Besides that, there is also an increase of R^2 value before and after the appointment regression model. In before the appointment regression model, the R^2 is 91,9% and in after the appointment regression model the R^2 is 95,3%. It indicates that the ability of NPM, TATO, and EM explaining the firm value after the commissioner appointment increases.

The question: why does change of effect from NPM, TATO, and EM on firm value from before to after the commissioner appointment does not bring significant difference on firm value? After the difference test of NPM, TATO, and EM were conducted, it turns out that only EM that has significant difference after the commissioner appointment. The mean of EM increases after the appointment, indicating positive significant difference. But, based on the regression result of after appointment data, EM has no significant effect on firm value, which improvement of EM will not make firm value improve that significant too. Thus, there is no significant difference on firm value.

For the companies that has appointed commissionaire with military/police background, the companies could increase their net profit margin (NPM) in order to increase the firm value. Since in after commissioner appointment regression model, NPM has positive and significant effect on firm value. Besides that, If Indonesia public listed coal mining companies plan to increase their equity multiplier (EM), appointing commissioner with military/police

ICMEM

background might be a solution since the commissioner appointment indicates a significant difference on EM with an increase of its mean. But, EM still has no significant effect on the firm value after the appointment, which it won't increase the firm value even though the EM itself increases significantly.

For further research, this research could be improvised by conducting this kind of research in other business sector. As Rini Soemarno said that commissionaire/directors with military/police background might be useful in business sector with high conflict potential, there might be another sector that also has high conflict potential. Besides that, this research could be improved by using shorter or longer time period of analysing the financial data, since this research uses 3 year period. There might be difference findings with using shorter or longer time period. Further researcher might also use difference kind of firm valuation method, since Tobin's Q generally measures the ratio of market value and book value, further research's firm value might use market value/book value only to determine which firm value is affected, either market or book value.

References

Anjani, W. (2017). The Effect of Employee Stock Ownership Plan Towards Indonesian Public Company Profitability. Bandung: SBM ITB.

Anthony, R. N., & Govindarajan, V. (2006). Management Control System. -: McGraw-Hill Education.

Azianur, R., & Abdurrahman. (2012). Pengaruh Rasio Likuiditas, Profitabilitas, Aktivitas, dan Solvabilitas terhadap Harga Saham pada Sektor Industri Kelapa Sawit di Bursa Efek Indonesia (BEI). Jakarta: Fakultas Ekonomi Esa Unggul Jakarta.

British Petroleum. (2017, January 25). BP Statistical Review 2017. British Petroleum. Retrieved from http://www.indonesia-investments.com

Campbell, Kevin, & Mi-nguez-Vera, A. (2008). Gender Diversity in the Boardroom and Firm Financial Performance. Journal of Business Ethics, 435-451.

Carter, D. A., D'Souza, F., & Simkins, B. J. (2010). The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance. Corporate Governance: An International Review, 396 - 414.

Ciaran, W. (2004). Key Management Ratios. Jakarta: Erlangga.

Dimas, B., Idris, A., & Fitriyah, N. (2014). Analisis Konflik Lahan Pertambangan Batubara. eJournal Administrative Reform, 1292 - 1303.

Garcia-Torea, N., Fernandez-Feijoo, B., & Cuesta, d. M. (2016). Board of director's effectiveness and the stakeholder perspective of corporate governance: Do effective boards promote the interests of shareholders and stakeholders? Business Research Quaterly, 246 - 260.

Gunawan, L. (2016). Pengaruh Net Profit Margin dan Total Asset Turnover terhadap Nilai Perusahaan pada Sektor Industri Barang Konsumsi yang Terdaftar di Bursa Efek Indonesia. Jurnal Ilmiah Sekolah Tinggi Ilmu Ekonomi Widya Dharma Pontianak, 22 - 31.

Hermuningsih, S. (2013). Profitability, Growth Opportunity, Capital Structure, and Firm Value. Bulleting of Economy, Monetary, and Banking, 115 - 136.

Hill, W. C., & Jones, M. T. (1992). Stakeholder - Agency Theory. Journal of Management Studies, 131 - 153.

Isberg, S. C. (1997). Financial Analysis with The DuPont Identity: A Useful Compass. The Credit and Financial Management Review, 13 - 21.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure . Journal of Financial Economics, 305 - 360.

Midiastuty, P. P., & Machfoedz, M. (2003). Analisis Hubungan Mekanisme Corporate Governance dan Indikasi Manajemen Laba. Simposium Nasional Akuntansi V, Presented in The Symposium.

Munawaroh, A. (2014). Pengaruh Profitabilitas terhadap Nilai Perusahaan dengan Corporate Social Responsibility sebagai Variabel Moderating. Jurnal Ilmu dan Riset Akuntansi, 1 - 16.

OJK and IFC. (2014). The Indonesia Corporate Governance Manual. Jakarta: OJK and IFC.

Rahmadewi, I. (2015). Analisis Pola Manajemen Laba Disekitar Pergantian Direksi, Dewan Komisaris, dan Komite Audit. Semarang: Universitas Diponegoro.

Ramadhan, D. T., Budimanta, A., & Soelarno, S. W. (2014). RESOLUSI KONFLIK ANTARA MASYARAKAT LOKAL DENGAN PERUSAHAAN PERTAMBANGAN (STUDI KASUS: KECAMATAN NAGA JUANG, KABUPATEN MANDAILING NATAL, PROVINSI SUMATERA UTARA) . Jurnal Ilmu Lingkungan, 92 - 104.

Rosada, F. L. (2017). Pengaruh Profitabilitas terhadap Nilai Perusahaan Otomotif di Bursa Efek Indonesia. Jurnal Ilmu dan Riset Akuntansi, 256 - 274.

Ross, S. A., Jaffe, J., & Westerfield, R. W. (2010). Corporate Finance International Edition. Singapore: McGraw-Hill.

Singarimbun, M., & Effendi, S. (1992). Metode Penelitian Survei. Jakarta: LP3ES.

Sitio, A. (2001). Koperasi: Teori dan Praktek. Jakarta: Erlangga.

ICMEM

Sudiyatno, B., & Puspitasari, E. (2010). Tobin's Q dan Altman Z-Score sebagai Indikator Pengukuran Kinerja Perusahaan. Kajian Akuntansi, 9-21.

Suryanegara. (1977, - -). Definisi SDA. Retrieved from Rumah Belajar Kemendikbud: https://sumberbelajar.belajar.kemdikbud.go.id/sumberbelajar/tampil/Sumber-Daya-Alam-2-2008/konten2.html

Wolfe, J., & Sauia, A. C. (2003). The Tobin's Q as A Company Performance Indicator. Developments in Business Simulation and Experiential Learning, 30.

Solvabilitas terhadap Harga Saham pada Sektor Industri Kelapa Sawit di Bursa Efek Indonesia (BEI). Jakarta: Fakultas Ekonomi Esa Unggul Jakarta.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Capital Market Investment Guidelines for Less Literate Investor in Indonesia

Jane Auditya[a*], Mandra Lazuardi Kitri[b]

[a,b]*Institut Teknologi Bandung, Indonesia*

Abstract

Financial literacy is important to accompany todays Indonesia's development that gives investment opportunities. However, many Indonesians are still less literate and instead choose the wrong investment. Therefore, less literate investor become the concern here. Indonesia Financial Services Authority suggest people to invest in non-bank institutions especially in capital market but, there are no guidelines about what kind of investment is the most convenient for less literate investor.

This study uses AHP method, because there are several capital market investments available in Indonesia, and the decision to select the "right investment" involves numbers of investment criteria. It determines the most suitable investment, given the importance of each criteria which data are gathered from experts in the related field.

The result shows that "Easiness to get the initial information" is the most important criteria and the ranking according to its appropriateness which is Money Market Funds followed by Fixed Income Funds, Stocks, Balanced Funds, Equity Funds, Bonds, Sukuk, REIT, and ABS. It is expected for those investment professionals to focus on the urgency of less literate investors and do some development on their products and programs according to the result. Substantially, this study facilitates better investment for less literate investor.

Keywords: Analytic Hierarchy Process; Investment Guidelines; Capital Market; Financial Literacy; Less Literate Investor

1. Introduction

Financial literacy has in recent years gained the interest of various groups. The importance of enhancing financial literacy has increased because the development of new financial products and financial markets, as well as the changes in political, demographic, and financial condition which are happening right now (Al-Tamimi, Hussein, & Bin Kalli, 2009) in which these conditions have also led to people being faced with a bewildering bunch of complex financing and investment opportunities, explaining the importance of financial literacy (Worthington, 2006).

Accordingly, financial literacy helps to improve efficiency and quality of financial services (World Bank, 2008) and derive maximum utility upon financial products and services (Lusardi, 2009). Therefore, financial literacy facilitates those to make full use of existing financial products and services which called financial inclusion. Increasing financial inclusion is the road that is required to travel towards becoming a global player that helps the development of financial condition of one country (Sibi, 2017). Measurement of financial inclusion implies to evaluate the accessibility, availability, and usage of financial products and services. Financial problem has become an essential part of an economy for nations development. In this way, countries require financial inclusions to have a sustainable financial growth.

Indonesia's condition is in a good progress. It becomes better in its financial condition through the increase in extra money per individual which can be used to save and invest as seen on its increase in GDP per capita and the relationship between population growth and the decrease in poor population. Furthermore, there are the financial products and financial market development as seen on the constructive expansion in the adoption of electronic money in Indonesia.

---

* Corresponding author.

ICMEM

These factors challenge people to deal with complex financing and give people more opportunities to invest (Worthington, 2006), causing financial literacy to be concerned in Indonesia.

National survey on financial literacy held by Financial Services Authority (OJK) in 2016 shows that Indonesian financial literacy index is only 29.7 % well literate. This situation indicates that Indonesia's society is still not have sufficient knowledge on how to optimize their money productively. In addition, they also haven't understood well the various financial products and services that are being offered by legitimate financial service institutions and more interested in other investments that could potentially harm them (OJK, 2017). As well supported by Beal & Delpachitra (2010) and OECD (2016), that lack of financial literacy may cause several unfavorably symptoms such as rising debt levels with overuse credit cards, misuse personal loans for consumption, irresponsible spending behavior, trapped with the "get rich quick" fraud schemes, and making unwise high-risk investment that is not aligned with the required capital stability and their capability, all of this incompetent financial management tend to impact negatively on the future life of one people.

Conforming to OJK, there are three aspects of financial literacy which are knowledge, skills, and believe including confidence in having financial decisions and trust towards financial institution products and services. Less literate investors are those who has no in-depth knowledge about financial services and products, they may know the products but they might have no idea about the features, benefits, risk, rights and responsibilities upon their investment products and services. The less literate investor in this research study doesn't indicate that the investor has no financial knowledge at all but the financial knowledge they got is not comprehensive enough to be categorized as well literate.

There are several instruments available in Indonesia which can be financial or real asset. Financial Asset consists of currency and deposits, bonds and other debt securities, equity in own unincorporated enterprises, shares and equity, mutual funds, life insurance funds, pension funds, and others which can be financial derivates, or loans (OECD, 2013). Real Assets consist of owner-occupied dwellings, real estate, consumer durables such as vehicles, valuables such as jewelry, intellectual property and others which can be contracts, leases, and licenses that meet the treatment conditions of assets (OECD, 2013).

Both valuations of financial and real assets depend on their capability to produce cash flow. Both asset classes also show noteworthy degrees of uncertainties while foreseeing cash flow trends. There are functional differences between those two. Most financial assets are more liquid than real assets since they are highly convertible into cash. E.g., though it would take simply hours to sell stocks, the same cannot be done for real estate properties, which commonly take months to sell. Besides, cash flow is produced by financial assets encounter perpetual growth, unlike real assets apart from property, that show sluggish growth (Cole, n.d). According to the trade-off between the two, financial assets in general has more merits on giving increased cashflow and liquidity.

Whether putting cash into the market or purchasing real asset, investors are required to assess the risk and return. Equity investments are much easier to analyze because it has historical data, and although the past performance won't guarantee future results for sure, investors have more control over risk they want to be exposed to. In the other hand, the risks when buying real assets are harder to quantify, while there may be the data available, the prices in different area may differ and change unpredictably which can be costly. Moreover, investing in the financial asset may limit the loss to initial investment where real assets may loss more due to taxes, and maintenance (McFarland, 2015). Here again, financial asset can be considered as investment that has lower manageable risk. Next, for required capital real assets in general needs a lot of money where some shares can be very inexpensive and the volume can be determined according to investor preferences (McFarland, 2015).

Supported by Danella (2018), most of less literate investor have more interest to invest in real asset such as property and vehicles rather than financial asset. However, the study explained that this behavior of investing in property are affected by wealth background whereas for vehicles are due to their daily necessities. In the case of financial asset investment, their participation is affected by financial literacy level. Again, this study elaborates the unwise investment of investor with low financial literacy, financial assets are being focused while real assets are excluded. In this case, looking at less literate investor as the concern of this study, financial asset is more suitable for them.

In Indonesia, financial asset provision is done by OJK. From then and now, undoubted that financial literacy is important and OJK has made programs to increase literacy, OJK also suggest public to not only put money in banking institution such as savings account, deposit, and giro but also in non-bank financial institution and capital market (OJK, 2016). It can be said that OJK advice public to invest as well. Considering financial capacity of a bank that is limited,

such as the inadequacy credit process and the widespread geographical conditions of Indonesia, thus the role of financial institution other than banks is becoming more essential (OJK, 2015). This time, the gap appears where there are no guidelines on what investment less literate investors should choose.

OJK suggest public to invest in non-bank institution which can be insurance, pension funds, lembaga pembiayaan, pergadaian, and capital market but not all instruments are investment tools. The only investment instruments in the case of non-bank institution are only capital market, therefore this study focuses on the capital market instruments in Indonesia as well supported by data about sectoral financial literacy and inclusion. Financial literacy and inclusion in the non-bank institution is indeed lower than those literacy in depository banking institution in which might be the reason behind the less literate investor's unwise investment. As seen on the sectoral financial literacy index 2016, capital market has the lowest percentage of literacy with only 4,40% (OJK, 2017). On the other hand, sectoral financial inclusion index also shown a lousy condition of capital market inclusion with only 1,3% which means, still many Indonesia's citizen haven't accessed the capital market sector.

Therefore, this study concentrated on capital market investment instruments that are suitable for those less literate investors and search for investment criteria as the effort to improve the access through the availability of financial products and services in accordance with the characteristics of less literate investor. In the end, it may be able to diminish the negative symptoms and wrong investments that appeared to less literate investor. This research study will become the investment professionals and regulators program guidelines that can make less literate more confident in their future investment decision.

2. Literature Review

2.1 Financial Literacy and Financial Inclusion

In Indonesia, people are categorized specifically as well literate when they have the knowledge, skills, and beliefs that influence attitudes and behavior to improve the quality of decision making and financial management in order to achieve prosperity in the future or also referred as financial well-being (OJK, 2017). Financial well-being is a condition of a person where one has control over their own finances by being able to fulfil their financial needs and being able to handle forthcoming financial shocks (Bureau, 2015).

The more literate people are, the less high-risk exposure they will have. When people are considered as well literate they will be exposed to lower risk as they have confidence and broad knowledge about financial products and the ability to use and analyze it, whereas the lower the literacy level, the higher the risk that will be exposed to them as they have an incomplete understanding. In consequence, the high risk will be more likely to incur to less literate investor.

Likewise, when talking about the relationship between risk and return it can also be linked to the level of financial literacy. Markowitz Modern Portfolio Theory invented the idea of the efficient frontier line, which shows the optimal combinations of risk and return (Markowitz H. M., 1999). It shows that the higher the risk the higher the expected return. Well literate people are more likely to get a" lower risk higher return investment" as they are more likely to get exposed to low risk. There is also a possibility that the well literate gets a high-risk investment that gives a high return. Whereas, the less literate that are more likely to get exposed to higher risk will get lower return rather than the well literate.

 Financial Inclusion is a process that gives accessibility, availability, and use of formal financial system by public as members in economy (Sarma, 2008). According to OJK, elements that play a role in financial inclusion are access, availability of financial products and services, usage, and quality. Access should be provided by financial institutions so that public can reach it, availability of the products and services are required in order to public being able to utilize the products and services in accordance with the need of each. In addition, the availability of financial services and products is necessary to be adapted to the character and needs of society that can be reached both in terms of price and access. In this case, financial inclusion from those less literate investor is part that is cultivated in this study.

2.2 Investment

Investment may be defined as an act of "*the purchase of increments of wealth*" (Anderson & D, 1938). Investment decision is affected by several factors such as individual risk preferences and returns information (Jagongo &

ICMEM

Mutswenje, 2014).Return is definitely one of the most common and general consideration people take before making any investment. Regardless of this accounting information, investors also influenced by the vague risk that might happen for the unexpected gain or loss situation (Jagongo & Mutswenje, 2014). Supported by Baker, Hargrove, and Haslem (1977), investors are assumed to be rational and purely take into consideration the risk and return trade off as the factors that influence investment decisions. It will be better said that there is a positive correlation between the measure of risk and the potential for return and a complex interplay between individual preference toward risk and the outcome hoped (Witte, 2012).

2.3 Risk Preferences

Risk preference is an attitude investor have towards risk, which influences the investor's decision making (Wen, He, & Chen, 2014). Due to this sense, the assessment of risk profile in the investment planning process is vital to gain successful incomes.

Economist said that human beings behave in three type or risk preferences; risk averse, risk seeker, and risk neutral behavior. Risk-averse manner is when individuals are thinking more about protecting their principal towards an investment at least when it is about the monetary gains rather than seeking opportunities to gain return because opportunities seeking have risks and these people don't like risk. Risk-seeking behavior is when one is not avoiding any risk positively related to losses (Kahneman & Tversky, 1979; Laughhunn & Payne, 1984). Most of them are willing to take substantial risks and endure a big loss to gain. Risk neutral is the kind of individuals that simply seek to maximize the return and ignore the risk (Witte, 2012).

2.4 Investment Criteria

There are no further studies before directly list less literate investor's recommendation according their behavior upon how they choose their investment. Therefore, several studies are evaluated from relevant sources to then put it all together to gain overall conclusion about investment criteria.

Firstly, risk preferences may differ for each person, it may depend on the person demographic factors such as gender, wealth, education and age as well as other psychographic factors such as experience and lifestyle (Arora & Marwaha, 2014). Moreover, there is also research in neuroscience, genetics, and behavioral decision making that also have a significant role in building risk preferences (Klement & Miranda, 2012). In this research study, the affecting factor that alters the risk preferences is financial literacy.

Financial literacy may be defined as the ability of Investor to be confident in using the financial knowledge and have skills to manage one's financial resources. Financial knowledge allows an individual to make an effective use of their financial resources and give them the ability to process financial information (Wang, 2009) before making any investment. According to Friestad and Wright (1994), there are two components of financial knowledge which are objective and subjective knowledge. Subjective knowledge is a belief of one using their knowledge where objective knowledge is the actual knowledge individual knows. Actual financial knowledge helps investors analyze the initial information before making any moves in the financial activity (Chang, 2004).

On the other hands, those investors with a lower level of knowledge will have less ability to process financial information. They can't see the information in the broader view but by an attribute-by-attribute approach or average the overall evaluation (Fiske, 1982). Let alone, it requires much effort to evaluate an investment instrument if the initial financial information is not available (Wang, 2009). Based on Wang (2009), subjective knowledge is positively correlated with objective knowledge and risk-taking is assisted when investors have confidence in their own financial knowledge. Investors who consider themselves as less knowledgeable may find taking risk is unsatisfactory, they may not confident in their knowledge to take higher level of risks.

Investors who have no in-depth knowledge about financial instrument is also not confident in doing so as seen on the positive correlation between the two. Consequently, these people will find taking risk is distressing and will more likely to have risk-averse behavior.

2.4.1 Less Literate Investor Recommendation

This chapter contains the result from literature reviews about what is best for those less literate investor and risk averse characteristics according to several researchers. As explained on the last paragraphs about financial knowledge and risk preferences, the less knowledgeable investor better considers initial information about the investment as essential before they start investing as it will help them valuing their investment in a broader point of view as well as

ICMEM

building their confidence when making investing decision. As the subject is less literate investors, the easiness in accessing the information is also important so that it can facilitate them with uncomplicated way to earn information.

Less literate investors can reduce risk by doing diversification as it is a way to reduce risk and is suitable for the nature of the risk-averse person (Gitman & Zutter, 2012), therefore risk-averse investor is better to diversify their investment by making a portfolio. Portfolio is a combination of investment to maximize risk at a certain level of risk. There is one well-known theory about Portfolio which called the Modern Portfolio Theory that studies the effects of risk, correlation, and diversification on expected return on asset investment. The Modern Portfolio Theory can also be described as a principle underlying analysis and evaluation of portfolio choices which is based on risk and return trade-off as well as efficient diversification (Markowitz H. M., 1999).

In the case of portfolio, risk aversion occurs and will give a positive proportion of the risk-free asset allocated in the portfolio in the sense of prudence, precautionary-savings motive (Eeckhoudt & Schlesinger, 2006). Prudence shows that risk-averse investor will choose to receive one of the two uncertainties in a 50% rule assuming two assets in one portfolio. Therefore, they will still gain something and opposed to the chance of receiving neither. Risk-free asset itself doesn't mean that the asset is free of risk because all financial assets carry some degree of risk. However, the level of risk in the risk-free asset can be considered as exiguous.

Risk-averse investors will also tend to choose less volatile asset. Consequently, it is better for them to put less volatile assets in their portfolio to hinder higher risk (Dorn, 2010). As described by Zahirovic & Okicis (2016), the more risk averse the investor is, the smaller the proportion of highly risky securities in the investment. Similarly, by Jones & Stine (2005) that suggest risk-averse individuals to have lower risky allocation, include those investors with less financial education.

2.4.2 Less Literate Investor Behavior

This chapter contains the result from literature reviews about researcher's advices about what investment criteria best for those less literate investor and risk averse characteristics according to their behavior. Risk-averse investors that have no in-depth knowledge about financial instrument will try to gain information about the financial markets. According to Holden & Subrahmanyam (1996), risk aversion can cause all investor that potentially can get information, tilt their preferences from collecting long-term to short-term information. Their study stated that high variance of information less trading can lead to high liquidity preferences and thus encouraging short-term trading and trigger them to collect more information in the short-term horizon and decrease their need on information about the long term. The information from the short-term agents can be accompanied by high market liquidity, thus it is beneficial for investors if the market liquidity dominates. Short-term information is an information about the investment in less than 6 months fluctuation value (Holden & Subrahmanyam, 1996). As the subject is less literate investors, the easiness in accessing the short-term information is also important to facilitate them.

Risk-averse investors are the one that avoids risks but require a high expected return as the reward to buy riskier investment, therefore risk-averse person tends to see volatility as "risk" not an opportunity to gain something (Zuang & Li, 2011). Talking about risk and return, risk-averse investors tend to demand a large amount of risk premium compared to the risk seeker investor (Zahirovic & Okicic, 2016). The larger the risk premium coefficient is, the greater the compensation required by investors, therefore, this risk premium can be used to assess the investor risk preference. Risk-averse investor call for more risk compensation or return when they put their investment in a higher risk (Wen, He, & Chen, 2014).

Therefore, less literate investors tend to choose investment that has high return every time higher additional risk is taken or lower Coefficient of Variance reflected as the volatility of the investment compared with the expected return rate of an investment. It shows the excess returns relative to the risk it is exposed to. The other parameter can also be seen in the Sharpe ratio which identifies how much return one would gain in exchange for a certain level of risk and the greater the value of Sharpe's ratio, the better it is.

From the observation through several works of literature, the researcher figures out that less financially literate investor in which also the risk-averse investor better considers several things before choosing any investment instrument that will match their characteristics:

ICMEM

Table 1. Investment Criteria

Criteria	Sub Criteria
Availability of information before buying any investment	a. Availability of the initial information b. Easiness to get the initial information
Liquidity	a. Easiness to do short-term trading b. Availability of the short-term information c. Easiness to get the short-term information (*) where short-term information is the return or payoff information for less than 6 months fluctuation
Give high additional return every time higher additional risk is taken, simplified as "relationship between higher return and risk" hereinafter.	
In the form of portfolio	a. Have risk free asset in the portfolio b. Small proportion of high-risk asset in the portfolio

2.5 Capital Market Investment Instrument

OJK has stated that public should invest their money not only in the banking investment but also on the non-bank investment instrument. According to the definition of investment instrument, which is investments that can be traded and used for acquiring equity and loan capital and because the literacy is the least among other sectors in Indonesia, capital market investments is concentrated in this study.

As stated by the Indonesia Financial Services Authority, there are 7 Capital Market Instruments that are available in Indonesia: Stocks, Bonds, Sukuk, Mutual Funds (Money Market Funds, Fixed Income Funds, Balanced Funds, Equity Funds), Derivatives Instruments (Right, Warrant, Option), Asset-backed Security, and Real Estate Investment Trust. Not all instruments are included in this study as there are instruments that is not compatible and relevant to be used in this research study.

Bonds that are issued by the government is called *Obligasi Ritel Indonesia (ORI)* and it has a minimum purchase of 5 Million Rupiah whereas Bonds that are issued by corporate have a very high minimum purchase making this type of bonds is mostly bought by firms as it is hard for individual investor. Therefore, the types of Bonds that being considered is the Indonesian Retail Bonds (ORI) which is available for retail investors.

Warrant, Right, and Stock option are derivative instruments which are good for investor underlying asset as it can hedge risk associated with asset's price change. Besides, it is also used to speculate when there are no underlying assets by taking profit from betting where the market is headed and try to profit from the price changes of the asset, therefore it is considered as hedging or speculating instruments not investment instrument. As the objective of this instruments which is hedging risk is different from what this study is about which is investment instrument, derivative investment is ignored.

According to the descriptive analysis upon capital market investments, the available capital market investments for retail investors are chosen. They are, Stocks, Bonds (ORI), Sukuk, Money Market Funds, Fixed Income Funds, Balanced Funds, Equity Funds, Asset-backed Security, and Real Estate Investment Trust.

3. Research Method

This research study has an objective in deciding what is the right investment where the investment should be suitable for less literate investors and there is no study that list what kind of investment are good for less literate investors and the less literate one won't be able to arrange their investment in event that they don't understand and have in depth knowledge about investment. It becomes the main reason for doing this literature reviews from past studies and descriptive research regarding less literate's behavior and recommendation in investment and the feasible capital market investment in which the next step is asking the judgments from experts. The research relies mostly on the published journal, electronic sources, and the Financial Service Authority documents.

ICMEM

3.1 Descriptive Analysis

This study is using descriptive analysis method. Descriptive research can be clarified as an announcement of cases as the researcher has no control over variables. Moreover, descriptive studies might be portrayed as essentially the attempt to decide, depict, or distinguish "what is" (Bickman & Rog, 1998). Other book said that descriptive research is aiming at casting light on problems through a procedure of data collection that make the researcher portrays the circumstance more completely than without using this method (Fox & Bayat, 2007). In this study, descriptive analysis is used to describe characteristics and behaviour of sample population which is the financially less literate as well as the available capital market that is feasible to be invested by retail investor.

3.2 Analytic Hierarchy Process Model

To assess the investment criteria towards investment instrument and the suitable investment instruments, AHP method is used. AHP is a decision-making technique involving multi-criteria decision where different characters of products are taken into consideration and weighed against one another (Danner, et al., 2011). It is an approach to make a hierarchy with a tree-like structure where the comparison of criteria can be done separately from the lower level criteria in the hierarchy to the upper level or vice versa (Danner, et al., 2011).

The first phase involves the structuring of the decision problem into a hierarchical structure. At the top of the hierarchy is the main objective, the next level includes the criteria affecting the decision followed by the sub-criteria at the lower level, and the alternatives are placed at the bottom of the hierarchy. The Input of the AHP is either actual measurement or subjective opinions such as price, weight, satisfaction feeling, and preferences where the output will be ratio scales from Eigenvectors and Consistency Index from Eigenvalue (Goepel, 2010).

This study uses expert or judgment sampling, in which the researcher collects the samples by taking interviews from a panel of individuals known to be experts in the field. Related person will be recruited to participate in the AHP workshops and asked to compare pairs of criteria and score them. AHP allows decision makers to build up a numerical score, based on their preferences on a scale from 1-9 which templates is similar with Fig. 1 (Danner, et al., 2011) and Table 2 indicates the explanation about the scale of importance from 1-9 that will be used when comparing the importance of two criteria. In this study, phase one of the questionnaire was done by pairwise comparison to get the weight of investment criteria.
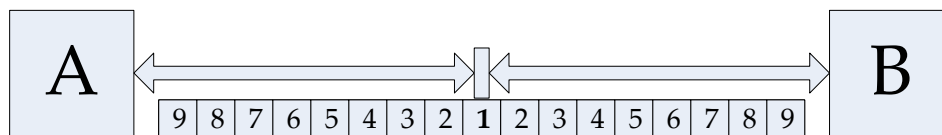
Fig. 1. Pairwise Comparison

Table 2. Saaty's Intensity of importance scale (H, M, & N, 1998)

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak importance of one over another	Experience and judgement slightly favour one activity over another
5	Essential or strong importance	Experience and judgement strongly favour one activity over another
7	Demonstrated importance	An activity is strongly favoured and its dominance demonstrated in practice
9	Absolute importance	The evidence favouring one activity over another is of the highest possible order of affirmation

ICMEM

2,4,6,8	Intermediate value between the two judgments	When compromise is needed
Reciprocals of above non-zero numbers	If activity i has one of the above non-zero numbers assigned to it when compared with above non-zero activity j, then has the reciprocal when compared with i.	

In AHP, each pairwise comparison represents an estimate of the ratio of the weights of elements. The result of the comparison will be put into a matrix and if the judgment value is on the left side of 1, then A is more important than B and actual value will be put in the upper triangular and if the judgment value is on the right side of 1, B is more important than A and reciprocal value will be put in the upper triangular matrix.

The result of the pairwise comparisons will be the relative weight of each criteria. The weights are calculated for each pairwise comparison matrix on each level of the hierarchy. Next, to gain the results of overall levels, the weight at each level are weighed again in respect to the higher-level criterion on which the comparison was made and the decision alternatives are added component wise to obtain an overall weight of each alternative over entire hierarchy (H, M, & N, 1998).

AHP model itself request ratio scaled paired comparisons just like what explained in the above paragraph, but in reality, it may be better to get coarsely ordinal responses in terms of a few adjective describers (Hicks & Jensen, 1993). According to Hicks & Jensen (1993), there are various trade-off between the two. For validity purposes, ratio response is less likely to be invariant as more detail are added to the description in the question where a coarse ordinal response may be invariant when more detail is added. Meanwhile, the reason behind new lines of detail are added is to get finer responses. Next, is the reliability that respondent will make the same assessment is more likely to appeared for coarse ordinal response rather than a ratio response. In a very long interview, respondent reliability may decrease especially when the question is repeated and the answer should be in rational number but it may appear different if coarse ordinal is chosen. After that is consistency, and ratio responses are more likely to get inconsistencies relative to coarse ordinal responses due to its transitivity. Last is determinacy that respondent assessments are optimal will increase with ratio response because crude ordinal responses have higher probability of indeterminacy.

This study uses the analytic hierarchy process approach to generate utilities from the ordinal relationships between alternatives and criteria in the second section of data processing with ordinal scale in range 1-10. The number of alternatives can be classified as relatively too many for pairwise comparison that will be distributed to experts, and may lead to unreliability and inconsistency if ratio responses is used in the data collection stage which is the phase 2 of the questionnaires, the weight of investment alternatives.

3.2.1 Consistency Index

One of the strengths of AHP is that it does allow inconsistent while at the same time, providing a measure of the inconsistency. AHP allow inconsistency but still transitive, if X is preferred to Y 2 times, and Y is preferred to Z 3 times, then X is preferred to Z 6 times. The AHP provides a measure of consistency called the consistency ratio which indicated the reliability of the model. A value less than or equal to 0,1 is acceptable. Larger values show that the model is missing specified or an error has occurred from the judge.

3.2.2 Questionnaire

Van Rooij, Lusardy, and Alessie (2011) show that less literate investor is much less likely to invest. However, as financial literacy affects financial decision making, it is good for them to rely on other professional advisers as their main source of financial advices and decision and don't make investment decision on their own. Thus, this research will pick the expert in capital market investment and financial literacy field as the subject to be questioned regarding less literate investor leading them to do right investment. The suggestion for the less literate should be the best option available so that the less literate can have a proper investment and belief in the result of this study.

Collecting data from experts are done by distributing "face to face" questionnaire to experts. Hard copy questionnaires are produced for distribution with numerical measure. The goal is to determine the weight of each

ICMEM

criterion that influence the decision of investment instrument which suits best with the behavior and recommendation of less literate investor. The questionnaire is made thoroughly to make those who do it understand well the content. The process of questionnaires is expected to be done along with face to face interview to reduce the probability of misunderstandings.

There are 2 parts in this questionnaire, the first one is about numerical 1 to 9 pairwise comparison between each criterion and the second part is about the ordinal scale between 1 to 10 of each criterion related to each capital market investment instrument that is available in Indonesia. The researcher decided to give the questionnaire to experts that fulfil one of these vocations with great experience in the related field including regulators and professionals:

- Certified Financial Planner
- Academics who mastered in investment management
- Financial Services Authority of Indonesia personnel dealing in capital market and financial literacy
- Capital Market Investment Specialist

The regulators will be those who control the financial services in Indonesia in the field of literacy and investment. The professionals will be those who work in the field of literacy or capital market investment. It can be those who deal with the capital market products and several investors in different characteristics or those who understand well about the investment.

3.2.3 Data Processing

Qualitative analysis was conducted using Expert Choice Software. The calculations are done by weighing on each criterion using pairwise comparison leading to the AHP solution synthesis. This software provides excellent facilities for eliciting expert assessments. In order to accommodate different types of criteria, pairwise comparisons in this research are made based on the numerical measure which data come from phase one of the questionnaire.

A controversial aspect of AHP technique is the possibility of rank reversal and Expert Choice address this issue by providing two modes for synthesizing final results: distributive mode and ideal mode. This research uses the distributive mode because there is dependence among the alternative in which the preference for each criterion depends on its performance when compared with other. (Hummel, Bridges, & IJzerman, 2014).

The second phase of the questionnaires didn't use Expert Choice software, because it allows individual judgments assessing investment instruments in an ordinal scale between 1-10. The weight of investment criteria will be multiplied by the score of each investment from all judgments in which the result is the overall score. The preferable alternative is the one that has the greatest value.

4. Data Analysis

First, questionnaire distribution was done and made thoroughly to make those who do it understand well the content. The questionnaires are distributed to 8 respondents, say R1 to R8 and eight is enough for this study because it already shows similarity in its judgments. The analysis will be divided into 2 steps, Expert choice analysis towards the result of the questionnaire which is the analysis of the importance of each criterion, and then investment instrument priority calculation. The analysis will be based on decision problem hierarchy attached in the Appendix.

2. 1.   Expert Choice Analysis

All pairwise comparison data gathered from the phase 1 questionnaire are put to the Expert Choice software. The judgment from 8 respondents will be combined and synthesized with the Expert Choice feature giving the aggregate showing the final weight of all criteria elements with respect to Capital Market investment instrument suitable for less literate investor, as seen on Table 3. Inconsistency ratio in the result is 0.08. As it is less than 0.1, this result from the judge is acceptable.

Table 3. Final Weight using Expert Choice

Synthesis with respect to:

ICMEM

Goal: Capital Market Investment Instrument Suitable for Less Literate Investor	
Overall Inconsistency: 0.08	
Easiness to get the initial information	0.360
Availability of the initial Information	0.121
Relationship between higher return and risk	0.118
Availability of the short-term information	0.095
Small proportion of high risk asset in the portfolio	0.089
Easiness to do short-term trading	0.074
Have risk-free asset in the portfolio	0.072
Easiness to get the short-term information	0.071

From the result, it is known that availability of information before buying is the most important criteria among all. Shown in the top two criteria which are the sub-criteria of availability of information before buying. It is important to assess the historical performance and foreseen the future performance of the investment before making further action and the easiness for the public to access the initial information is the first crucial step before looking at the other criteria as seen in the weight that is significantly higher than other investment criteria weight (36%). The second crucial criterion is the availability of initial information (12.1%) which referred to any available information that explains the investment broadly so that investor can predict the performance of their future investment, by looking at the available investment historical information, investment forecast, and company news, for example.

The third most important criteria are the relationship between higher return and risk (11.8%). This is essential as higher additional return from the investment is demanded by less literate investor every time the risk of the investment itself is taken.

Next, is the availability of the short-term information (9.5%). This criterion is also necessary because when they buy an investment product, they will seek more information about the fluctuating value of their investment in the short-term horizon and the availability of the short-term information may trigger the less literate investor to observe the condition of their investment.

Moreover, the high risky asset is avoided by less literate investors as most of them are risk averse, thus the portfolio that has a small proportion of high-risk asset is necessary for investment instrument (8.9%).

The last three investment criteria have pretty similar importance. Easiness to do short-term trading (7.4%) is demanded by less literate investor so that they can get them sold when needed. Then, precautionary motives are also unavoidable for less literate investors. Therefore, risk-free assets are good to be had by an investment portfolio (7.2%). Later, the access to get the short-term information (7.1%) which is also required by the less literate investor to simplify their way to get the information.

2. 2.   Investment Instrument Priority

Each investment instrument score (S) from the expert's questionnaire will be multiplied with each criteria weight of importance (Wc) which is the result from the previous chapter 4.1 and will be accumulated from all respondents regarding each criterion on each investment instrument. Table 4 below show the aggregation results by criteria and the rank of each capital market investment. This table elaborate which criteria affect which instrument. All criteria will be written by C1-C8 where C1 means Availability of the initial information, C2 is Easiness to get the initial information, C3 is Easiness to do short term trading, C4 is Availability of the short-term information, C5 is Easiness to get the short-term information, C6 is the Relationship between higher return and risk, C7 is having Risk free asset in its portfolio, and C8 is the Small proportion of high risk asset in the portfolio.

The higher the rank, the more it meets the investment criteria regarding the weight and preferable for less literate investor. Money Market Funds has the highest score among all which means Money Market Funds is the most suitable investment instrument for less literate investors.

Table 4. Score Aggregation by Criteria

ICMEM

									Aggregation		
Score Aggregation by Criteria Table											
Criteria	C1	C2	C3	C4	C5	C6	C7	C8			
	Accumulated Overal Score for each criteria *(Score times Wc)* from R1-R8								Sum	Average	Rank
Stocks	8.95	23.04	5.70	3	5.40	8.38	0.00	0.00	58.78	7.35	3
Bonds	7.26	16.92	3.63	6	3.69	4.84	0.00	0.00	41.18	5.15	6
Sukuk	7.14	15.84	3.63	7	3.69	4.72	0.00	0.00	39.86	4.98	7
Money Market Funds	8.47	20.88	5.40	1	4.90	3.89	4.25	6.50	60.85	7.61	1
Balanced Funds	8.47	20.88	5.33	4	4.90	5.43	2.74	3.56	57.86	7.23	4
Fixed Income Funds	8.47	20.88	5.33	2	4.90	4.96	3.60	4.54	59.23	7.40	2
Equity Funds	8.47	20.88	5.33	5	4.90	7.20	1.44	2.40	57.17	7.15	5
Asset-backed Security	4.48	9.36	3.03	9	2.20	5.66	1.87	2.58	32.61	4.08	9
Real Estate Investment Trust	4.84	9.36	2.29	8	2.49	6.02	1.87	2.49	33.26	4.16	8

5. Conclusion and Recommendation

5. 1. Conclusion

Most Indonesia's society is not well literate. They don't have enough financial knowledge where todays development should be better if accompanied by good understandings about financial products and services. Meanwhile, they tend to choose unwise investment that might potentially lead to a loss. This is what makes less literate people become the concern in this study. Indonesia Financial Services Authority has made programs to help less literate investor become more literate but there are no guidelines that specify the most crucial investment criteria that influence investment decision as well as the right investment instrument which is indeed favorable for less literate investor and this become the purpose of this study.

The present study identifies and ranks the investment criteria as well as deciding the suitable investment instrument in Indonesia in the concern of less literate investors. AHP were used for establishing and weighing investment criteria as influencers of investment decision as well as the nine investment instruments rank.

Based on the synthesis of the criteria weight in respect to the main objective which is the investment instrument suitable for less literate investors, easiness to get the initial information is the prime criteria of investment since the weight is 0.36. The sequence of criteria importance is Easiness to get the initial information, Availability of the initial information, Relationship between higher return and risk, Availability of the short-term information, Small proportion of high-risk asset in the portfolio, Easiness to do short-term trading, Have risk-free asset in the portfolio, and Easiness to get the short-term information.

This study reveals that less literate investors will be compatible to buy investments that have easiness in accessing its initial information as this help them assess and forecast the investment they are going to buy. This means, the initial information should be easy to be accessed by the public, for example, are listed in a certain internet platform or social media that are well known. Initial information is information that is provided to facilitate the investor in assessing the investment performance broadly before buying. Example of initial information is the historical performance by looking at its late price fluctuation, company news, and return information. Moreover, when there is easiness in accessing the initial information, less literate investors will be more confident and feel secure in choosing the investment products due to the information they get. Therefore, it can be concluded that investment instrument that

ICMEM

has easy access to its initial information is convenient for less literate investors.

For calculating the preferable capital market investment, the ordinal scale data in range 1-10 are used and the aggregation of score is executed to get the rank in accordance to less literate compatibility. After calculating the score for each investment instrument, the result is that Money Market Funds has the highest score which is 7.58 that means this investment instrument is the most suitable instrument for less literate investor in Indonesia followed by Fixed Income Funds (7.40), Stocks (7.35), Balance Funds (7.23), Equity Funds (7.15), Bonds (5.17), Sukuk (4.98), Real Estate Investment Trust (4.13), and Asset-backed Security (4.10).

In this manner, any program that provide investment products and programs should look at this study in attention to less literate investor as well as part of less literate investor remedies from choosing the wrong unwise investment.

5. 2.   *Recommendation*

Pursuant to the findings of this research, the ranking of investment instrument may become the consideration for both professionals and regulator in the field of investment further evaluation. By prioritizing the alternative investment with the highest score and the investment criteria with the highest weight, it is expected for professionals, such as financial planner, securities, banking, and other financial institutions to focus more on the needs of less literate investor and do improvement on their programs. The numeric weights may help them determine the importance of the criteria in ratio manner and consider it in making any investment products and program for less literate investors. Better for investment professionals and regulators to give more attention to the criteria with higher weight. But, it is necessary that investment professionals and regulators consider all criteria before making any feature of investment products and program, as the factors with lower weight should not be ignored.

Less literate investors may use the findings of the study as a guidance on choosing what is the most suitable investment instrument for them. This would facilitate better investment and keep them away from wrong investment.

In detail, the improvement can be:

- The way of socializing the investment products and program should be as easy as possible to be reached by public. For Investment Professionals, they can make investment products which information are available in a friendly user internet platform or mobile application. E.g. Make an internet platform or application that put all the information about the explanation of the type of investment, return, list of risk, news about the particular company, information about the vocabularies concerning the investment so that the less literate investor knows when the investment can be said as a success because the measurement of gain is already explained before. Furthermore, they can also be socializing their investment products in a well-known internet platform that already exist. Put the paid promotion of their investment products in Instagram which become a trend in Indonesia especially for those young adults. Thus, the information is easier to be captivated by the designate investors. It can improve the Financial Inclusion in Capital Market Investment from those who at first are less literate and increase the interest of young adults to start put their money in the capital market sector.

- Moreover, when giving the advice for less literate investor, they should offer them investment instruments aligned with the result of this study which are accessibility and availability of its initial information that is attached in investment instruments such as mutual funds, and stocks. Then when the less literate investor wants more return compensation, give stocks and equity funds. Next, when the look at the availability of short term information, it's better to give them stocks and mutual funds. Followed by high risk asset proportion consideration which gives money market funds and balanced funds a good score for less literate investors. The sixth important criteria is the easiness to do short term trading, in this case stocks and money market funds is the most compatible. When consider the risk-free asset proportion, good to give money market funds and fixed income funds. Last, to maximize the easiness to get the short-term information, stocks and mutual funds is the most suitable.

- For Regulators, in the concern of helping less literate investor, they can make policy for those who work in the field of investment management in which to get license from the Regulators, they should at attend the socialization about investment guidance regarding less literate investors and understand it really well according to the investment instruments ranking of this study and its investment criteria affecting each investment instruments so that they can give great compatible advices for their less literate clients in the future.

- Regulators are also required to socialize and give guidance for less literate investors directly by giving them seminar regularly on what investment instruments are suitable and good for them.

ICMEM

5. 3.   Research Limitation and Future Research

The study focused on capital market investment in Indonesia and less literate investors, thus limiting our study. Future research may adopt the design of this study to different kind of investor it might be specifically for the not literate investor or well literate investor. Moreover, future research may look at the suitable non-financial institutions specifically or real assets for less literate investor. Use the same method from this study, to get to know which non-financial institutions or real assets suit best with the characteristics of less literate investors towards those sectors.

This research study focusses on the investment instrument suitable for less literate investor in which the result comes from less literate and investment professionals point of view. Less literate point of view on investment was gained from literature reviews according to their behavior and investment professionals point of view was received from questionnaires and interview, whereas less literate investor point of view may be differed in each region and as time go by. Thus, in the case of giving investment that is compatible with the preferences and behavior of less literate investor in specific region, future research may also use this finding of less literate point of view and improved it by doing interview directly to less literate investor in specific region in order to get new investment criteria that are more aligned with those less literate investor in the specific region itself.

References

Al-Tamimi, H., Hussein, A., & Bin Kalli, A. A. (2009). Financial Literacy and investment decisions of UAE investors. *The Journal of Risk Finance; London Vol.10, Iss.5*, 500-516.

Anderson, & D, M. (1938). Dynamic Theory of Saving and Investment . *Southern Economic Journal Vol.5, Iss. 1*, 27.

Arora, S., & Marwaha, K. (2014). Varialbes influencing preferences for stocks (high risk investment) vis a vis fixed deposits (low risk investment). *International Journal of Law and Management*, 333-343.

Baker, H. K., Hargrove, M. B., & Haslem, J. A. (1977). An Empirical Analysis of the Risk Retrun Preferences of individual investors. *Journal of FInancial and Quantitative Analysis* , 377-389.

Beal, D. J., & Delpachitra, S. B. (2010). Financial Literacy Among Australian University Students. *A Journal of Applied Economics and Policy Vol,22 Isssue 1*, 65-78.

Bickman, L., & Rog, D. J. (1998). *Handbook of applied social research methods.* Thousand Oaks, CA: Sage Publications.

Bureau, C. F. (2015). *Measuring Financial Well-Being: A Guide To Using The CFPB Financial Well-Being Scale.*

Chang, C. (2004). The Interplay of Product Class Knowledge and Trial Experience in Attitude Formation. *Journal of Advertising*, 83-92.

Cole-Ingait, Paul. (n.d.). Financial vs. Real Asset. Small Business - Chron.com. Retrieved from http://smallbusiness.chron.com/financial-vs-real-asset-79865.html

Danella, J., Rahadi, R. A., & Helmi, I. (2018). The Impact Of Financial Literacy On Wealth Accumulation Of Households In Bandung City And Its Surrounding: A Pilot Study (working paper)

Danner, M., Hummel, M. J., Volz, F., Van Manen, J. G., Wiegard, B., Dintsios, C.-M., . . . Ijzerman, M. J. (2011). Integrating patients' views into health technology assessment: Analytic hierarchy process (AHP) as a method to elicit patient references. *International Journal of Technology Assessment in Health Care*, 369-375.

Dorn, D. (2010). Preferred risk habitat of Individual. *Journal of Financial Economics Vol.97 Iss 1*, 155-173.

Eeckhoudt, L., & Schlesinger, H. (2006). Putting Risk in its Proper Place. *American Economic Review*, 280-289.

Fiske, S. T. (1982). *Schema-triggered Affect: Applications to Social Perception.* Hillsdale: In Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition .

Fox, W., & Bayat, M. S. (2007). *A Guide to Managing Research.* Juta Publication.

Friestad, M., & Wright, P. (1994). The Persuasion Knowledge Model: How People Cope With Persuasion Attempts. *Journal of Consumer Research*, 62-74.

Gitman, L. J., & Zutter, C. J. (2012). *Principles of Managerial Finance.*

Goepel, K. D. (Director). (2010). *Analytic Hierarchy Process AHP* [Motion Picture].

H, W., M, X., & N, G. T. (1998). A comparative study of the prioritization matrix method and the analytic hierarchy process technique in quality function deployment. *Total Quality Management*, 421.

Hicks, T. E., & Jensen, R. E. (1993). Ordinal data AHP analysis: A proposed coefficient of consistency and a non parametric test. *Journal Mathematical and Computer Modelling: An International Journal Vol 17 Issue 4-5*, 135-150.

ICMEM

Holden, C. W., & Subrahmanyam, A. (1996). Risk Aversion, Liquidity, and Endogenous Short Horizonz. *The Review of Financial Studies Volume 9 Issue 2* .

Jagongo, A., & Mutswenje. (2014). A Survey of the Factors Influencing Investment Decisions: The Case of Individual Investors at the NSE. *International Journal of Humanities and Social Science* , 92-102.

Jones, S. K., & Stine, J. B. (2005). Constant mix portfolios and risk aversion. *Financial Counseling and Planning 16*, 1-8.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An analysis of decision under risk. *Econometrica 47*, 263-291.

Klement, J., & Miranda, R. E. (2012). Kicking the Habit: How Experience Determines FInancial Risk Preferences . *The Journal of Wealth Management*, 10-25.

Laughhunn, D., & Payne, J. (1984). The Impact Of Sunk Outcomes On Risky Choice Behavior. *Journal Information Systems and Operational Research*, 155-181.

Lusardi, A. (2009), "US household savings behavior: the role of financial literacy, information and financial education programs", in Foote, C., Goette, L. and Meier, S. (Eds), Policymaking Insights from Behavioral Economics, Federal Reserve Bank of Boston, Boston, MA, pp. 109-149.

Markowitz, H. M. (1999). The early history of portfolio theory 1600-1960. *Financial Analysts Journal; Charlottesvhille vol.55, Iss.4*, 5-16.

McFarland, K. (2015, 08 20). *Why Real Estate Could Be a Better Investment Than Stocks*. Retrieved from A World Report US News: https://money.usnews.com/money/blogs/the-smarter-mutual-fund-investor/2015/08/20/why-real-estate-could-be-a-better-investment-than-stocks

OECD (2013), *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, OECD Publishing Paris, https://doi.org/10.1787/9789264194830-en.

OECD. (2016). *PISA 2015 Assessment and Analytical Framework: Science, Reading, Mathematic and Financial Literacy.* Paris: OECD Publishing.

OJK. (2015). *Buku Saku OJK.* Jakarta.

OJK. (2016, October 31). *Press Release : RI President Campaigns For "Let's Save" Movement*. Retrieved from http://www.ojk.go.id/en/kanal/edukasi-dan-perlindungan-konsumen/berita-dan-kegiatan/siaran-pers/Pages/RI-President-Campaigns-For-Lets-Save-Movement.aspx

OJK. (2017). *Strategi Nasional Literasi Keuangan Indonesia.* Jakarta.

Sibi, M. S., & Ananth, A. A. (2017). Banking inclusion-A gateway to financial inclusion. *Sumedha Journal of Management, 6*(1), 4-19. Retrieved from https://search.proquest.com/docview/1968868523?accountid=31562

Sarma, M. (2008). *Index of Financial Inclusion* (p. 3). Indian Council for Research on International Economic Relations.

Van Rooij, M.J., Lusardi, A. & Alessie R.M. (2011). Financial Literacy and Stock Market Participation. Journal of Financial Economics 101(2): 449-472

Wang, A. (2009). Interplay of Investors' Financial Knowledge and Risk Taking. *The Journal of Behavioral Finance, 10*, 204-213.

Wen, F., He, Z., & Chen, X. (2014). Investors' Risk Preference Characteristics and Conditional Skewness. *Mathematical Problems in Engineering; New York*.

Witte, B.-C. (2012). Fund Managers-Why the Best Might Be the Worst: On the Evolutionary Vigor of Risk-Seeking Behavior. *Economics Vol. 6, Iss. 24*, 1-29A.

Worthington, A. C. (2006). Predicting Financial Literacy In Australia. *Financial Services Review; Atlanta Vol. 15, Iss. 1*, 59-79.

Zahirovic, S., & Okicic, J. (2016). Effects of risk aversion on securities portfolio performance in underdeveloped capital market in the case of the capital market of Bosnia and Herzegovina. *Economic Research-Ekonomska Istrazivanja*, 343-359.

Zuang, W., & Li, M. Z. (2011). Revenue optimization of risk-averse manager with atemporal utility. *Journal of Revenue and Pricing Management*, 424-437.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Determinants Analysis of Credit Using Bank Specific Variables and Macroeconomic Factors of Commercial Banks in Indonesia Period 2008-2017

Dinda Risza Riani[a]*, Achmad Herlanto Anggono[b]

*a,b*Institut Teknologi Bandung, Jl. Ganeca No. 10, Bandung 40132, Indonesia

Abstract

Banking sector plays important role in a country's economic growth as it is considered a money creation. Once banking sector performs poorly, it will lead to a crisis. As the main bank business is lending money, the profit of a bank is highly depending on the amount of credit their successfully distributed. On the other hand, Bank Indonesia stated that banks in Indonesia growth of credit has been decreasing for the past few quarters and it is indeed a big problem faced by banking sector as well as Indonesia. The purpose of this research is to find between bank specific variables: Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR) and macroeconomic factors: Foreign Exchange Rate (FXRT), Gross Domestic Product (LNGDP), and Inflation Rate (INFL) towards Bank Credit (LNCRD) in 19 commercial banks in Indonesia which are classified into BACB 3 & 4 during period of 2008-2017. The data used are secondary data from IFSA using panel data regression analysis. The results found that NPL and CAR have negative significant relationship towards LNCRD, meanwhile FXRT, LNGDP, and INFL have positive significant relationship towards LNCRD.

Keywords: Bank Specific Variables; Credit; Indonesia; Macroeconomic Factors

1. Introduction

Banking sector plays an essential role as an intermediary institution to the growth of economic system of a country. Banks are the primary source of funds for the government, industrial sectors, as well as the society to fulfil their funding needs (Saeed & Gull, 2013). Banks considered as special intermediaries because their unique capacity that allowed them to finance other firms by lending their own debts to the borrowers who are willing to use it as their external funding. Furthermore, banks are essential to the economy (Bossone, 2001).

The main bank business is lending money. According to Nuviyanti & Anggono (2014), banks conduct its business activities by collecting funds from a third party called depositors in forms of deposits, current account, and saving account and channelling into the other party called borrowers in forms of credit and other forms. The healthier the bank, the greater its contribution to the economic growth, this is also supported by Sharma (2001) which stated that the weakness of state financial system, especially in banks, is one of the main factors from Indonesia's economic vulnerability which could lead to economic crisis.

Diamond & Rajan (2000) argued that bank assets and functions are not the same as those industrial firms. Therefore, a further assessment to manage bank asset, especially credit, needs to be done to overcome the problems that can be found in increasing the amount of credit in the future.

According to research that has been conducted by EY in Indonesia Banking Industry, it found that the credit of Indonesian Banks were only slightly increasing, moreover the growth is always decreasing for the last five years (see figure 1).

---

* Corresponding author. Tel.: +6285221290005

E-mail address: dinda.risza@sbm-itb.ac.id

ICMEM
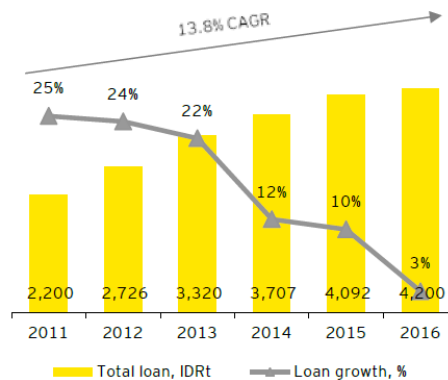
Figure 1 Indonesia Loan Growth

Based on Indonesia Loan Growth graph (see Figure 1) and, the trend of banks credit in Indonesian banking is decreasing for the past five years whereas the credit is expected to increase. Indonesia Banking Statistic reports published by the Central Bank of Indonesia shows that the performance of banking industry has weakening for the last few years as the growth of bank credit kept decreasing. In 2017, the credit growth is only between 7% until 8%, compared to the recent years, it can increase up to 10%. Weak banking system means weak economy.

As the main bank business is lending money, the bank's income will be influenced by the amount of credit they able to distribute hence the interest income they got from loan is the biggest source of bank's revenue. The proportion of interest income is greater than non-interest income stated in banks' income statement financial report.

The aim of this research is to analyse the determinants that affects the bank credit using bank specific variables and the macroeconomic factors. According to Buch et al. (2010), interplay between banks and macroeconomic is one of the importance keys in financial and economic stability. Besides the problems that have been mentioned above, this research intends to assess the bank performance after the global major crisis which happened in 2008. Thus, the data that will be analysed started from 2008 up to 2017. The bank specific variables used in this research are consisted of Non-Performing Loans and Capital Adequacy Ratio while the macroeconomic factors consisted of Foreign Exchange Rate, Inflation Rate, and Gross Domestic Product. The Credit will be measured by the natural logarithm of Credit.

2. Literature Review

As has been stated earlier, the main bank business is lending money where it collected funds from the party called depositors then lend it back to the party called borrowers, or Bank Indonesia explained the functions of banks in Indonesia is to role as financial intermediary that takes deposits from surplus units and channel it to finance the deficit units. Hereby stated the literature review of variables used:

2. 1. Non-Performing Loans

The most important bank specific variables to represent the credit risk is the level of its Non-Performing Loans (Lleshanaku, 2015). NPL shows the amount of credit which are no longer generating income. Decreasing the Non-Performing Loan in banking industry is crucial since higher NPL will lead bank to have more loss. In its correlation with credit, NPL is expected to be low because lower level of Non-Performing Loans will encourage the bank to distribute more credit. The research done by Cucinelli (2015) that argued NPL and Credit have negative relationship.

H_1: NPL has significant negative relationship towards credit.

2. 2. Capital Adequacy Ratio

Capital Adequacy Ratio (CAR) is often used to describe bank's capability in covering the losses in banking industry. As mentioned by Sari & Murni (2016), the greater the CAR, the better the bank's ability to bear the risk of loss which

ICMEM

resulted from any loans disbursed suffered by the banks The bank who has more CAR will have lesser the amount of credit they can distribute.

H_2: CAR has significant negative relationship towards credit.

2. 3.Foreign Exchange Rate

The Exchange rate is the price of one's currency in another currency, or set as the domestic price towards a foreign currency determined by the market against supply and demand of the currency through the activities of export and import activities (Demburg & McDougall, 1980). Exchange rate will affect bank's existing bank liability in foreign currency at its maturity date as exchange rate is relatively volatile. Imran & Nishat (2013) showed that exchange rate has a positive significant relationship with bank credit, yet Boako et al. (2017) said that exchange rate has a negative insignificant relationship towards bank credit.

H_3: Foreign Exchange has significant negative relationship towards credit.

2. 4.Gross Domestic Product

Leamer (2009) in his book titled *Macroeconomics Patterns and Stories* defines GDP (Gross Domestic Product) as the market value of goods and services produced within the selected geographical area (usually a country) at a specified time interval (often a year). Research done by Fofack (2005) shows that the higher level of real GDP means higher income level of people in its country, it improves the capacity of the borrower to pay its debts and lead them to borrow more. Consumers increase their spending as income rises. Thus, the relationship between GDP and credit is positively correlated (Imran & Nishat, 2013)

H_4: GDP has significant positive relationship towards credit.

2. 5.Inflation Rate

According to Mises (1912), inflation is an increase in the quantity or amount of money that is not compensated by a corresponding increase in the need for money, so there must be a fall in the objective exchange-value of money must occur. Imran & Nishat (2013) have shown the positive relationship between the bank credit and inflation rate that occurs in Pakistan.

H_5: Inflation Rate has significant positive relationship towards credit.

3. Methodology (Data and Estimation Technique)

The author collected the data needed from credible sources that later will be analysed using OLS (Ordinary Least Squared) method through Eviews 9.0. This research will investigate the determinants of bank credit using 19 largest commercial banks in Indonesia based on its core capital which are classified into BACB 3 and 4 as the samples and the macroeconomics factors .All the data used is quarterly data within the period of March 2008 until December 2017. Figure 2 is showing the proposed model of research.

ICMEM
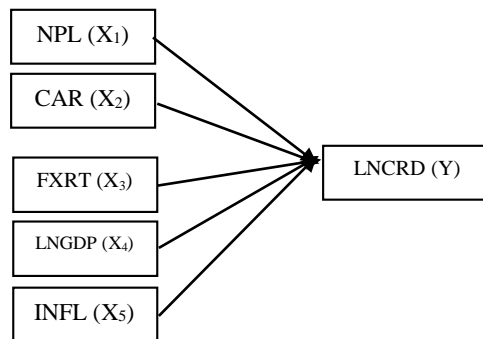
Figure 2. Proposed Research Model

The approach of this research is quantitative and the credit model will be examined through following function:

$$LNCRD_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CAR_{it} + \beta_3 FXRT_{it} + \beta_4 LNGDP_{it} + \beta_5 INFL_{it} + \varepsilon_{it}$$

- LNCRD (Y) is dependent variable which employs the natural logarithm of Credit
- NPL (X_1) is Non-Performing Loans
- CAR (X_2) is Capital Adequacy Ratio
- FXRT (X_3) is Foreign Exchange Rate
- LNGDP (X_4) is Gross Domestic Product
- INFL (X_5) is Inflation Rate

To fulfil BLUE (Best Linear Unbiased Estimate), this research will employ multicollinearity test, heteroscedasticity test, autocorrelation test, and normality test to avoid possible biases which may appear in linear regression model and to approve the valid data to perform regression analysis. Later, multi-linear regression will be performed.

4. Data Analysis

The program used to analyse the data is Eviews 9.0, using OLS (Ordinary Least Square) and the data of this research is using panel data which is a combination between time-series and cross section data.

Descriptive Statistic is highlighted in Table 1.

Table 1. Descriptive Statistic

	LNCRD	NPL	CAR	FXRT	LNGDP	INFL
Mean	18.074980	0.025102	0.205057	9.222260	27.413820	0.056515
Median	18.034960	0.022200	0.175500	9.172526	27.517820	0.045700
Maximum	20.377970	0.221600	1.178000	9.592673	27.978380	0.121400
Minimum	15.375470	0.000104	0.001981	8.930032	26.958120	0.027800
Std. Dev.	0.992408	0.022224	0.099764	0.192242	0.225310	0.023445
Skewness	0.115854	3.796219	4.066856	0.433550	-1.188414	1.024326
Kurtosis	2.467480	26.599350	29.52796	1.895365	2.862943	3.396736
Jarque-Bera	10.680110	19461.52	24379.83	62.449230	179.4897	137.8885
Probability	0.004796	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	13736.980000	19.077350	29.20306	7008.918000	20834.510000	42.951400
Sum Sq. Dev.	747.519100	0.374863	2.234044	28.050360	38.530360	0.417201
Observations	760	760	760	760	760	760

ICMEM

Below are the tests to fulfil Classical Linear Assumptions:

a. Multicollinearity Test

Table 2. Pair-wise Correlation Matrix

	LNCRD	CAR	FXRT	INFL	LNGDP	NPL
LNCRD	1.000000	-0.369366	0.406362	-0.163149	0.402367	0.005215
CAR	-0.369366	1.000000	-0.215354	0.437705	-0.501213	0.233279
FXRT	0.406362	-0.215354	1.000000	-0.360147	0.677418	-0.164004
INFL	-0.163149	0.437705	-0.360147	1.000000	-0.452855	0.284581
LNGDP	0.402367	-0.501213	0.677418	-0.452855	1.000000	-0.403842
NPL	0.005215	0.233279	-0.164004	0.284571	-0.4032842	1.000000

As shown in the table 4.2 Pair-wise Correlation Matrix, there is no variable, whether the independent or dependent variable, that exceed the value of 0.8. Therefore, there is no multicollinearity lies within the data.

b. Heteroscedasticity Test

Table 3. Heteroscedasticity Test Result

F-statistic	2.057400	Prob. F(5,754)	0.0688
Obs*R-squared	10.22930	Prob. Chi-Square(5)	0.0690
Scaled explained SS	5.648828	Prob. Chi-Square(5)	0.3419

Heteroscedasticity test is done to see whether the data is homogeny or not, in other words no heteroscedasticity is expected. This research is using White's General Heteroscedasticity. To see the result, the heteroscedasticity is done by comparing the p-value to the significant level which is 0.05 in this research. Table 3 Heteroscedasticity Test Result shows that the p-value is 0.0690, it is higher than the significant level (0.05). Thus, there is no heterocedasticity in this research.

c. Autocorrelation Test

Table 4. Autocorrelation Test Result

F-statistic	3851.425	Prob. F(2,752)	0.0545
Obs*R-squared	692.4033	Prob. Chi-Square(2)	0.0526

By using the Breusch-Godfrey Serial LM Test, the autocorrelation can be tested by comparing the p-value to the significant level. According to the Table 4. Autocorrelation Test Result, the p-value is 0.0526 which is higher than the significant level (0.05). Therefore, there is no autocorrelation.

ICMEM

d. Normality Test
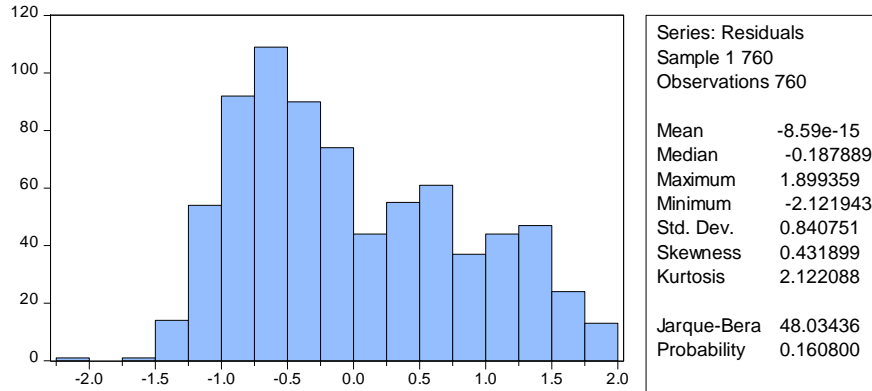
Figure 4.2 Normality Test Result

According to the normality test that generated through Eviews 9.0, the Jarque-Bera result is 48.03436 while the Chi-Square for 760 data observation is 825.24493958. By then, the Jarque-Bera result is less than the Chi-Square value. Thus, the data is normally distributed or Accept H_0.

5. Regression Analysis

Two tests that need should be done to determine the most suitable approach for this regression model. The first is likelihood test to determine whether this research should use Pooled Least Square or Fixed Effect approach.

Table 5. Likelihood Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	650.4096	-18736	0.0000
Cross-section Chi-square	2149.0622	18	0.0000

Based on Table 45 Likelihood Test Result, the p-value is 0.00 which is less than the significant level used in this research (0.05). Therefore, Fixed Effect approach is chosen.

The second test is Hausman test. This test is aimed to check the most preferable approach whether Fixed Effect or Random Effect Approach.

Table 6 Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	5	1.0000

According to Table 6 Hausman Result Test, the result shows that p-value is 1.0000, which is higher than the significant level (0.05) used in this research. Therefore, this research will use Random Effect Method in doing the regression estimation

The next step is conducted the regression analysis using Eviews 9.0 program to analyse the result of the model tested that have been explained.

ICMEM

Below are the regression result using Random Effect Method:

Table 7. Regression Estimation Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-15.19712	2.266920	-6.703864	0.0000
NPL***	-1.972196	0.534971	-3.686546	0.0002
CAR***	-1.129918	0.173783	-6.501888	0.0000
FXRT***	1.517216	0.154456	9.822969	0.0000
LNGDP***	0.706738	0.112889	6.260474	0.0000
INFL***	3.293378	0.978577	3.365478	0.0008
R-squared		0.821818		
Adjusted R-squared		0.820636		
S.E. of regression		0.208817		
F-statistic		695.5245		
Prob(F-statistic)		0.000000		

Source   : Processed data from EViews 9.0

Notes   : *** Significant at α = 1% ; ** Significant at α = 5% ; * Significant at α = 10%

The result of the regression analysis is presented in equation below:

LNCRD = -15.19712 - 1.972196NPL - 1.129918CAR + 1.517216FXRT + 0.706738LNGDP + 3.293378INFL + ε

According to the regression result that shown in Table 7. Regression Estimation Output, the value of adjusted R-squared is 0.820636. All independent variables have significant effect on the Credit or dependent variable at 1% significant level. For the directions, NPL and CAR have negative sign while FXRT, LNGDP, and INFL have positive sign. The p-value of F-statistic is 0.000000 which indicates all the independent variables have simultaneously significant influence towards the dependent variable with 0.05 significant level.

6. Regression Analysis Result

• Non-Performing Loans

The result shows that Non-Performing Loans has a negative significant relationship towards Credit with the coefficient of -1.972196 and the p-value of 0.0000 which means it is statistically significant at 1%. This indicates that when bank is able to distribute greater amount of loan, it will have lower amount of NPL as it will influence the management risk taking behaviour. Accornero et al. (2017) argued that the risk taking behaviour that the management do when they channel more credit means the bank will be more careful in doing the assessment of their borrower which pushes NPL and Credit in opposite direction. Conversely, Sergio (1996) stated that the lower amount in credit distribution will increase NPL as bank will relatively becoming more unselective while doing the credit assessment. Thus, improving the efficiency of bank lending and reducing the amount of NPL will reduce the perceived credit risk as well as encourage the credit supply.

• Capital Adequacy Ratio

The regression result for amount of credit distribute model shows that CAR has the coefficient of -1.129918 and the p-value of 0.0000. The negative sign means CAR and Credit have opposite direction. According to the regulation made by Central Bank of Indonesia, banking sector should provide Capital Adequacy Ratio to bear the risk that may

ICMEM

arise from any loss on loans distribution. The CAR is used to cover the loss in banking industry. The greater the CAR, the higher the bank capability in covering the loss that bank may face. However, the greater the CAR that the bank provides is indicating that they will have lessen amount of credit they can contribute as the cash is reserved in the bank itself in a form of CAR instead of channelling them to credit. Sari & Murni (2016) also argued that high amount of CAR will decrease the bank's profitability because they can only channel lesser amount of credit while in fact, credit is the main source income of a bank.

- **Foreign Exchange Rate**

Indonesian banking sector also provided lending is in foreign currency that make the credit is more sensitive towards the exchange rate volatility. The influence of foreign exchange rate towards credit shows a significant positive relationship. According to the regression model estimation output, the exchange rate has a coefficient of 1.517216 with 1% significant level as the p-value is 0.0000. The study done by Imran & Nishat (2013) also found the positive relationship between exchange rate and credit as the credit in domestic currency appears to pick up some valuation effect of foreign currency. The same result found by Shijaku & Kullaci (2013), they argued that the exchange rate has positive impact on credit demand since exchange rate is able to pick up some demand valuation and consumption smoothing effect, which is a desirable state of people to have stable consumption. They argued that the people who have suffering a low income state will try to reduce the uncertainty that caused by volatility of exchange rate in the future by using microfinance tool as consumption smooth that will result to high demand of a credit.

- **Gross Domestic Product**

As stated by King in Moussaa & Chedia (2016), a change in Gross Domestic Product (GDP) cause to change the volume of loans. Gross Domestic Product has a significant positive influence to the bank credit with 1% level of significant (p-value equal to 0.0000) and the coefficient of 0.706738. It means that every increase in 1 unit of GDP will contribute as much as 0.831867 to the bank credit. The positive relation means that an increase in GDP will result to an increase in Credit. The research done by Ibrahim and Baoko (2017), Imran & Nishat (2013), Shijaku & Kullaci (2013), also Moussa & Chedia (2016) found a strong positive relationship between GDP and the credit of a bank. The increase in GDP boosts up manufacturing sector and people earning in general which leads them to save more deposits, hence the liquidity of bank is increasing that later will enable them to channel more credit. Increase in GDP also able to boost the confidence of the people that they can afford to pay off loans that will increase the country's credit demand.

- **Inflation Rate**

The regression estimation output shows that Inflation Rate (INFL) has a significant positive relationship towards Credit (LNCRD) with 1% level of significant as the p-value found is 0.0008 and the coefficient of 3.293378. T5he finding of this research shows that inflation gives positive effect on credit. A possible explanation is a higher inflation rate indicates a stronger economic growth of a country as the people is able to consume more, this phenomenon will increase the demand of credit hence encourage banks, as the financial institutions, to provide more credit. The same findings also found by Omondi (2014) and Moussa & Chedia (2016). In addition, Imran & Nishat (2013) found the same result in their research. However, the difference lies in its significant level as the inflation rate affects the credit of banking sector in Pakistan insignificantly, yet the positive signs indicates that the amount of credit raises along with the inflation level.

7. Conclusions

As the main bank business is lending money, the amount of credit that the banks could channel is becoming an important factor for the banking sector. In addition, the availability of credit is also important to support the country's economic growth since it can develop the business sector and strengthen the bank existence as financial institutions who have the role as money creation. This research has found several factors that can affect the amount of bank credit. The bank specific variables or the internal factors which are Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) as well as the macroeconomic or external factors which consisted of Foreign Exchange Rate (FXRT), Gross Domestic Product (LNGDP), and Inflation Rate (INFL) can have significant relationship towards the Credit

ICMEM

(LNCRD) with 5% level of significant. The negative relationship can be found in NPL and CAR, while foreign exchange, gross domestic product, and inflation rate influence the amount of credit positively. Moreover, all of these determinants can explain 82.0636% of the credit.

8. Recommendation

All variables used are significantly influenced credit. It indicates that the banks should paid close attention to the internal factors as well as the external factors to boost their credit. Capital Adequacy Ratio is showing a negative relationship to the Credit. Provide excess CAR instead of channelling the cash to the credit can reduce the bank's income. On the other hand, bank should also notice that there is a requirement of minimum CAR set by Bank Indonesia. Thus, the bank is encouraged to add the Capital Tier 1 so that the bank will have sufficient amount of CAR to cover all possible losses while increasing the amount of credit. Another bank specific variable that defines the bank credit is Non-Performing Loans (NPL) which is mostly used as the proxy of credit risk. The result showed that NPL has a negative relationship with bank credit. The management has to press down the amount of NPL by becoming more careful while doing the assessment or credit ratings of potential debtors to avoid an increase in NPL.

The macroeconomic factors which are foreign exchange rate, gross domestic product, and inflation rate influence credit significantly positive. This indicates that the monetary policy has also a significant impact towards the bank credit. The government should stabilize the economic condition by creating policies that is able to stable the exchange rate, reduce the uncertainty of inflation, and boost the gross domestic product hence a strong economic condition is expected as it is able to create more demand either for goods or services which leads to more investment that enable to increase income as well as savings, and finally convinced the banks to issue more credit.

Furthermore, the author suggested to add more variables for further research to know the other factor that is influencing the bank credit and add more macroeconomic factors that might be able to define the credit even further. Adding more samples is also recommendable. Further research can also extended the period of time observations to obtain more accurate result.

Acknowledgments

References

Accornero. (2017). Non-Performing Loans and the Supply of Credit: Evidence from Italy. *First ESCB Workshop of FInancial Stability*.

Bossone, B. (2001). Do Banks Have Future? A Study on Banking and Finance as We Move into The Third Millennium. *Journal of Banking & Finance 25 (2001) 2239-2276*.

Buch, C. M., Eickmeier, S., & Prieto, E. (2010). Macroeconomic Factors and Micro-Level Bank Risk. *Economic Studies Series 1. No 20*.

Cucinelli, D. (2015). The Impact of Non-performing Loans on Bank Lending Behavior: Evidence from the Italian Banking Sector. *Eurasian Journal of Business and Economics, 8(16), 59-71*.

Demburg, M. (1980). *Macroeconomics*. New York: Kogakusha Company.

Diamond, D. W., & Rajan, R. G. (2000). A Theory of Bank Capital. *The Journal of Finance, Vol. LV, No. 6*.

EY. (2017). *The Indonesian Banking Industry: Unfolding The Opportunity*.

Fofack, H. (2005). Non-Performing Loans in Sub-Saharan Africa: Causal Analysis and Macroeconomic Implications. *World Bank Policy Research*.

Gerti Shijaku, I. K. (2013). Determinants of bank credit to the private sector: The case of Albanian banking sector. *Munich Personal RePEc Archive*.

Gideon Boako, I. A. (2017). Determinants of bank credit in Ghana: A bounds-testing cointegration approach. *African Review of Economics and Finance*.

ICMEM

Imran, K., & Nishat, M. (2013). Determinants of Bank Credit in Pakistan: A Supply Side Approach. *Elsevier. Economic Modeling 35, 384-390*.

Leamer, E. E. (2009). *Macroeconomic Patterns and Stories.* Berlin: Springer-Verlag.

Lleshanaku, A. (2015). From the Perspective of Macroeconomic Factors: The Past and Future Problematic Loans in Albania. *Academic Journal of Interdisciplinary Studies. ISSN 2281-3993*.

Mises, L. v. (1912). *The Theory of Money and Credit (1981 ed.).* Indianapolis: Liberty Fund.

Mohamed Aymen Ben Moussa, H. C. (2016). Determinants of Bank Lending: Case of Tunisia. *International Journal of Finance and Accounting*, 27-36.

Nuviyanti, & Anggono, H. (2014). Determinants of Capital Adequacy Ratio (CAR) in 19 Commercial Banks (Case Study: Period 2008-2013). *Journal of Business and Management. Vol. 3, No. 7, 2014: 752-764*.

Omondi, U. G. (2014). Effects of Inflation on Commercial Banks' Lending: A Case of Kenya Commercial Bank Limited.

Saeed, A., & Gull, A. (2013). Influence of Bank Specific and Macroeconomic Factors on Profitability of Commercial Banks: A Case Study of Pakistan. *Research Journal of Finance and Accounting. ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online). Vol. 4 No. 2*.

Sergio, M. (1996). Non-performing bank loans; Cyclical patterns and sector risk. *Review of Economics Condition in Italy*.

Sharma, S. D. (2001). The Indonesian Financial Crisis: From Banking Crisis to Financial Sector Reforms, 1997-2000. *JSTOR*.

Valentina Flamini, C. M. (2009). The Determinants of Commercial Bank Profitability in Sub-Saharan Africa. *International Monetary Fund Working Paper*.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Economic Feasibility Study of Clay, Dolomite, and Kaptan Factory of PT XYZ

Nadiah Pristania[a*], Ahmad Danu Prasetyo[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10, 40132, Indonesia,*

Abstract

Reflecting to the rapid growth of fertilizer consumption rate in Indonesia, PT XYZ, one of the fertilizer, agrochemical and seeds distributors private company, intended to boost their income source with the plan to develop a new factory, which will be functioned to produce several fertilizer commodities that PT XYZ currently distribute from their main producer, which are Clay, Dolomite, and Kaptan. However, the company need to assess the business's economic feasibility of this project to get to know whether the project is worth doing or not for future investment, given that the project potentially incur huge investment and the increased future lease rate and consignment rate. Throughout the paper, the author would like to analyze the economic feasibility using assessment tools as Net Present Value, Internal Rate of Return, Payback Period, and Profitability Index. Moreover, the author also conduct the risk assessment using the Sensitivity Analysis and Monte Carlo Method. The result from this research is the project is economically feasible and it is suggested to be embarked by PT XYZ with several concerns on its cash management and pricing policy.

Keywords: Economic Feasibility; Fertlizer; Net Present Value; Internal Rate of Return; Payback Period; Profitability Index

1. Introduction

Robust Indonesia agriculture growth is become one the most significant role in Indonesia economy and employing for around 35% of the labor force (Central Statistic Agency [BPS] 2014). Thus, reflecting to the likelihood of strong growing of the agriculture industry, in the late 1970s agricultural intensification program began and prompt the usage of fertilizer become one of the significant fundamental factors in the creation of farming item.

Indonesia fertilizer consumption rate has encountered a swift growth over the last decade. Growing population in Indonesia foment the shifting usage of agricultural land to non-farm use that lead to the limited agricultural land. Thus, more fertilizer is needed to support intensive cultivation on smaller pots along with improved crop varieties, water management, land preparation, weed, disease and insect control, and sustained soil health. As a consequence, both of organic and inorganic fertilizer total consumption in Indonesia continue to escalated quickly.

To avoid the possibility lack of fertilizer supply and to strengthen the agricultural production, the Government of Indonesia really pay attention on managing the fertilizer procurement and its distribution by regulating the subsidies policy. Imperatively, the subsidied fertilizer is limited, and can be purchased only by smallholder farmers with plantations under 2 ha. Therefore, it leaves plenty of room for private sector firms to obtain the larger plantation businesses.

PT XYZ is one of the fertilizer, agrochemical and seeds distributors private company with headquarters office in Padang, West Sumatra. One of the main business activity that currently PT XYZ do is granted as one of the Clay and NPK's reseller from the main producers that located near the headquarters office. Reflecting to the current market condition of fertilizer Indonesia, especially NPK, that expected to accelerated continually, PT XYZ took a chance to seize those opportunity to gain more profit by planning on developing their own Clay Factory, which is one of the material needed to produce NPK.

---

* Corresponding author.
 E-mail address: nadiah.pristania@sbm-itb.ac.id

ICMEM

Beside that, PT XYZ also already granted as one of the Dolomite and Kaptan reseller. Dolomite and Kaptan is one of the main ingredients that needed to support palm oil cultivation in Indonesia. Since the production process of Dolomite, and Kaptan, appear to be quite similar with the production process of Clay and can be produced with a same machine, PT XYZ decided to utilize the Clay factory to produce Dolomite and Kaptan as well. However, its clearly that PT XYZ will needed to invest their money in a big amount to develop the factory. Despite the fact that PT XYZ is already have a captive market for both Clay, Dolomite, and Kaptan, and the big opportunities that PT XYZ might get from the current market condition, PT XYZ still need to do the feasibility study to determine whether the factory is legally and technically feasible as well as economically justifiable to the company or not. Due to the fact that lack off research before expanding the business will only lead to the various losses, this research wants to conduct feasibility study for PT XYZ's new factory based on financial aspect.

2. Literature Review

2.1 Economic Feasibility Study
Its a process of distinguishing the financial cost and benefits related to the project development that involves the feasibility of the proposed project in generating the economic benefits (Boniface, 2014). The purpose of economic feasibility is to assesss whether the project objectives are beneficial to the company relying to the consideration of the organization limit conditions – assets and know-how. Thus, it will need the definition of objectives and the timeframe, the estimation of effort and all expected benefits (Katharina et.al., 2014). The prnciple criteria that used in the economic feasibilities that contributes in determining the economic feasibility of the proposed choices are Net Present Value (NPV), Internal Rate of Return (IRR), Benefit/Cost ratio, and Payback Period (Sullivan et al., 2006; Fosgerau and Jensen, 2003; Tanczos and Kong, 2001; Ye and Tiong, 2000).

2.2 Net Present Value (NPV)
Net present value (NPV) is one of capital budgeting techniques that used to examine the profitability of an investment or project based on the comparison of the same amount of money received today and in the future by considering other factors that may shift the value of the money such as inflation and interest rates (Katharina et al., 2014). The net present value (NPV) of a project is the total amount of its cash flow, both inflows and outflows present value discounted at a rate regarding to the project's risk.The decision of the project should be accepted or not based on its NPV should rely on the perceptions of the project have to have a positive NPV to be accepted, otherwise it should be rejected. Be that as it may, at times, two project will indicate positive NPVs, so the one with higher NPV ought to be chosen (Ehrhardt & Brigham, 2005)

2.3 Internal Rate of Return (IRR)
(Charles et. al., 2009) added that the reasoning of IRR method is calculating the discount rate at which an investment's present value expected cash flow is equals to present value of its expected cash outflows. In other words, IRR is the discount rate that makes NPV = 0. This concept is fundamental in economic investment theory, and is subsequently became one of the incredible interest to economist (Lucket, 1984). Kahsyap (2006) underlined that the decision maker ought to choose the project with highest IRR with the condition that the IRR is greater than the cost of capital at the same time otherwise known as the hurdle rate to represent an increasing on shareholders wealth not a costs.

2.4 Payback Period

Payback period is reflecting the number of years needed to recoup the capital investment. The shorter the payback period of a projects means the better project is since the investor can recover the capital within a short period of time in condition if all factors being held constant (Ehrhardt & Brigham, 2005). The reasoning behind the theory of payback period is the shorter payback period of a project means the more liquid it is. Thus, the project is less risky since the project allow the investor can regain the investment sooner.

ICMEM

2.5 Profitability Index

The profitability index is essentially another way for asserting the Net Present Value data (Greer and Kolbe, 2003) that indicates the ratio of discounted benefits over the discounted costs. The Profitability index evaluates the profitability of and investment and can be used to comparing the profitability of similar projects (Damodaran, 2001)

2.6 Weighted Average Cost of Capital (WACC)

Weighted Average Cost of Capital (WACC) represents the long run capital needed according to the expected average future cost of capital. It can be obtained by weighting the cost of each specific type of capital by its proportion in the firm's capital structure and multiplying each financing's individual cost by its proportion in the firm's capital structure and sum the weighted values. The calculation of WACC is depend on each firms, thus it differs in every company. In other words, WACC reflects the minimum return of firm should gain on its current existing assets in order to fulfill the needs of its shareholders (Fernández, 2011)

3. Research Methodology

This research is categorized as an applied research which gathers information to assess a project possible benefit, potentially, and its acceptability in the long run. The primary data collection process is within the in depth-interview and collaborative research with one of the top management of PT XYZ who serves as the Production Director that in charge in determining the project development in order to determine the strategic system of project conduction and the expected revenue after considering the current market demand. Furthermore, the author would like obtain supportive data that is gathered from various secondary sources such as journals and books. Those data are the risk-free rate, risk premium, beta of the comparable company, and other market data such as NPK and Palm oil demand data. Therefore, this research will only focus on economic aspects for the next 5 years after the project established so that the data is still considered appropriate and the assumptions are still valid.

The data analysis procedure begin after the required data has been collected and instrumented into a suitable data processing templates. The financial data collection started by determining the initial investment cost that is needed to embark the factory development and the forecasted expense in running the business. After the total initial investment cost and forecasted expense figured out, it will be structured out by the sources of capital, debt and equity, to calculate both of cost of debt and cost of equity. Afterwards, the Weighted Average Cost of Capital is required to be determined as the expected return or the discount rate. The next step is to calculate the pro forma income statement and balance sheet of the project. The assumption are developed based on several sources and factors that has been explained in the forecasted expense and furthermore will be used as a supporting data to calculate pro forma income statement and balance sheet on the next step to depict the free cash flow for the firm (FCFF). Then the author used the FCFF to calculate 4 of the principle criteria in determining the feasibility of a project, which are Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP), and Profitability Index (PI) that discounted using discount rate that is formulated using WACC.

4. Findings and Discussion

4.1 Initial Investment

The fund required to established the factory started from the business preparation until the factory is able to operate is presented in this section. The total after-tax value of the initial investment cost is amounted to Rp20,365,275,000.00. The composition of the cost can be clustered into Land Acquisition Cost, Plant, Office and Warehouse Construction Cost, Machinery and Set Up Cost, Heavy Equipment Cost, Legal and Permission Cost, Employee Hiring Cost, and Working Capital. The Financing strategy that will be used to fulfill all of the fund needed divided into 70% debt by taking loans from the bank with the loan repayment period of 10 years and 30% equity that is obtained by the private equity that owned by the PT XYZ.

4.2 Forecasted Expenses

ICMEM

The expense of this project is clustered into 3, which are cost of good sold, operating expense, and other expenses. Cost of good sold is considered as variable cost that are dependent to the production rate of each product in a whole year that consists of raw material for each products, packaging, the consumable item, labor cost, and loading cost. The second expense is operating expense that is considered as fixed expense that consists of general and administrative expense, electricity, employee salary, maintenance cost and depreciation. And the third expense is financing expenses such as interest expenses that related to bank loans administration expense.

The COGS, packaging, consumable item, G&A expenses, and electricity, are expected to rise 3,5% from the base year based on the inflation rate while labor cost expected to rise 9,44% from the base year as well as employee salary based on the average West Sumatra minimum wage increases for the pat 5 years that Cited from Statistical Yearbook of Indonesia by the Ministry of Manpower Indonesia. And the labor cost expected to increase Rp500 continually and maintenance cost expected to rise 5% from the base year both based on the management experience. And the depreciation method that used in the calculation is the straight-line method. The plant, office and warehouse construction lifetime is 20 years, while the machineries are 10 years, the heavy equipment such as wheel loader, truck, and forkliff are 8 years, and the Legal and Permission license lasted for 30 years. Therefore, the total cost of good sold and the operating expense throughout the year are summarized in table below:

Table 4. 1 Annual Cost of Good Sold

Year	Raw Materials	Packaging	Consumable Item	Labor Cost	Loading Cost
1	7,556,400,000.00	5,853,600,000.00	1,800,000,000.00	1,463,400,000.00	487,800,000.00
2	8,904,581,100.00	6,840,563,400.00	1,863,000,000.00	1,808,288,064.00	605,847,000.00
3	10,501,496,122.28	8,004,692,390.85	1,928,205,000.00	2,237,464,353.85	747,246,600.00
4	10,869,048,486.55	8,284,856,624.53	1,995,692,175.00	2,448,680,988.86	809,517,150.00
5	11,249,465,183.58	8,574,826,606.39	2,065,541,401.13	2,679,836,474.21	871,787,700.00

Year	G&A Expense	Electricity	Employees Salary	Maintenance Cost	Depreciation
1	600,000,000.00	720,000,000.00	1,200,000,000.00	810,000,000.00	1,621,666,666.67
2	621,000,000.00	745,200,000.00	1,313,280,000.00	850,500,000.00	1,621,666,666.67
3	642,735,000.00	771,282,000.00	1,437,253,632.00	893,025,000.00	1,621,666,666.67
4	665,230,725.00	798,276,870.00	1,572,930,374.86	937,676,250.00	1,621,666,666.67
5	688,513,800.38	826,216,560.45	1,721,415,002.25	984,560,062.50	1,621,666,666.67

4.3 Forecasted Revenue

The revenue stream for the new Clay, Dolomite, and Kaptan factory of PT XYZ will be obtained only through the sales of the three product that produced in the factory. The projected revenue can be determined by calculating the quantity of sales projection times the base selling price. The base selling price in the first year is Rp200,000/ton for Clay and Kaptan, and Rp325,000/ton for Dolomite. the selling price expected to rise 3,5% based on the inflation rate. The sales of clay throughout the year will remain constant while sales for dolomite and kaptan expected to rise 15% and 10% respectively until the third year and will remain constant after that since PT XYZ has reach the maximum production capacity. Furthermore, the manager expected

that there will be 1% shrinkage of the product in the time of the production process that will reduce the revenue obtained. The projected revenue stream for the next 5 years is shown in table below.

Table 4. 2 Projected Revenue

Year	Sales from Clay	Sales from Dolomite	Sales from Kaptan	Allowance	Revenue
1	1,440,000,000.00	23,127,000,000.00	3,840,000,000.00	284,070,000.00	28,122,930,000.00
2	1,490,400,000.00	27,526,911,750.00	4,371,840,000.00	333,891,517.50	33,055,260,232.50
3	1,542,564,000.00	32,763,906,710.44	4,977,339,840.00	392,838,105.50	38,890,972,444.93
4	1,596,553,740.00	33,910,643,445.30	5,151,546,734.40	406,587,439.20	40,252,156,480.51
5	1,652,433,120.90	35,097,515,965.89	5,331,850,870.10	420,817,999.57	41,660,981,957.32

4.4 Weighted Average Cost of Capital

- Cost of Debt

  PT XYZ planned to fund 70% from the total inital investment and setup cost (that amount for Rp20,365,275,000.00) by taking loans from the bank with 10.15% rate of interest. This return is based on the average of corporate prime rate of the 5 banks in Indonesia that categorized as Bank 4.0 from Bank Indonesia In 2016. Therefore, the total after tax cost of debt is 7.6125%, that obtained afte multiplying the cost of debt with (1-corporate tax rate).

- Cost of Equity

  To determine the project's cost of equity, the author will use Capital Asset Pricing Model (CAPM) for the calculation. To proceed the calculation using CAPM, the company's beta has to be determined. A beta is A company's beta is a measure of the volatility, or systematic risk, of a security compared to the market that measures the company's equity market value changes according to the overall changes in the market. But since the PT XYZ is a private company, it doesn't have any stocks that issued to the public. Therefore, the author used the average industry beta that obtained from the calculation based on the beta company from each company that is in the same industry with PT XYZ.

  The Levered Beta for PT XYZ is 0,272. The calculation of the CAPM happen on several underlying circumstances. The risk free-rate is obtained from the average 10-years Indonesia Government Bond Yield's rate that issued on March 24th 2018 and yield to maturity on March 24th 2038. The market risk premium is obtained from the data gathered from Indonesia Stock Exchange to determine the average of Jakarta Composite Index rate of return in 10 years that will be attached in the appendix. The component that needed to determine the Cost of Equity will be shown in the table below.

Table 4. 3 CAPM Component

Beta	0.272
Risk-free Rate	7.0241%
Risk Premium	16.78%
Corporate Tax	25%

$$Rf + [\beta (Rm - Rf)] = 0.070241 + [0.272(0.1678) = 11.59\%$$

ICMEM

Therefore, the WACC of the project would be 8.81% since the weight of debt would be 0,7 and the weight of equity would be 0,3.

4.5 Free Cash Flow to the Firm

Based on the assumption and data that have been depicted above, free cash flow to the firm of the company after establishing the Clay, Dolomite, and Kaptan Factory can be calculated using the 107,752,656,304.87 terminal value that based on the free cash flow to the firm after investment on year 2023 equal to Rp 9,373,959,731.87 discounted using WACC of 8,81% and terminal growth of 1,27% based on the growth rate of Fertilizers, Chemicals & Rubber Goods domestic product from Badan Pusat Statistik Indonesia in 2014. The calculation of Free Cash Flow of the Firm is presented on Table below:

Table 4. 4 Free Cash Flow to the Firm

Year	EBIT	Tax Income	Depreciation	Operating Cash Flow	Investment on Asset	Net Fixed Asset Investment
0	-	-	-	-	20,365,275,000.00	20,365,275,000.00
1	6,010,063,333.33	1,502,515,833.33	1,621,666,666.67	6,129,214,166.67	-	-
2	7,881,334,001.83	1,970,333,500.46	1,621,666,666.67	7,532,667,168.04	-	-
3	10,105,905,679.29	2,526,476,419.82	1,621,666,666.67	9,201,095,926.13	-	-
4	10,248,580,169.04	2,562,145,042.26	1,621,666,666.67	9,308,101,793.44	-	-
5	10,377,152,499.78	2,594,288,124.95	1,621,666,666.67	9,404,531,041.50	-	-

Year	Change in Current Asset	Change in Current Liabilities	Net Current Investment	FCFF	Terminal Value	Total FCFF
0	-	-	-	-20,365,275,000.00	-	-20,365,275,000.00
1	3,575,793,346.15	1,255,705,140.19	2,320,088,205.96	3,809,125,960.71	-	3,809,125,960.71
2	623,134,954.82	115,952,821.73	507,182,133.09	7,025,485,034.95	-	7,025,485,034.95
3	737,581,006.74	127,225,171.64	610,355,835.10	8,590,740,091.03	-	8,590,740,091.03
4	177,328,426.20	139,617,686.49	37,710,739.71	9,270,391,053.74	-	9,270,391,053.74
5	183,814,027.24	153,242,717.60	30,571,309.64	9,373,959,731.87	107,752,656,304.87	117,126,616,036.74

4.6 Net Present Value

The Net Present Value generated from the discounted free cash flow of the firm using the WACC of 8,81% as its discount rate. Each year's discounted cash flow will be cumulated until the final year then. The calculation of NPV is presented on table below:

Table 4. 5 Net Present Value Calculation (in IDR)

Year	Total FCFF	(P/F, 8.81%, 5)	Discounted FCFF	Accumulated Free Cash Flow to the Firm
0	-20,365,275,000.00	1.000	-20,365,275,000	-20,365,275,000.00

ICMEM

1	3,809,125,960.71	0.9190	3,500,713,134	-16,864,561,866.37
2	7,025,485,034.95	0.8446	5,933,879,085	-10,930,682,781.43
3	8,590,740,091.03	0.7762	6,668,438,480	-4,262,244,300.99
4	9,270,391,053.74	0.7134	6,613,369,882	2,351,125,580.83
5	117,126,616,036.74	0.6556	76,791,215,963	79,142,341,543.64
NPV				79,142,341,543.64

The result of the calculation above, shows that the Net Present Value of this project is Rp 79,142,341,543.64. This indicates that the project is considered feasible since it has a positive NPV.

4.7 Internal Rate of Return
The internal rate of return (IRR) calculation uses the trial and error. The calculation using 58% as a discount rate still produce a positive amount while 59% as the discount rat produce a negative amount. Therefore, IRR calculation using the interpolation method would be:

$$IRR = 8.81\% + \frac{79,142,341,543.64}{79,142,341,543.64 - (-77,225,725.41\ )} \times (59\% - 8.81\%)$$

$$IRR = 58.84\%$$

The result of the project's IRR is 58.84%. This number shows that project can be perceived as acceptable since the IRR is greater than the WACC.

4.8 Payback Period

$$Payback\ Period = 3 + \frac{4,262,244,300.99}{4,262,244,300.99 + 2,351,125,580.83} = 3.64$$

According to the cumulated FCFF calculation above, the project estimated need approximately 3 years and 7 months and 21 days to acquire its initial investment again.

4.9 Profitability Index
Profitability Index (PI) shows an index to considered the relationship of costs and benefits of a business. This Profitability index of ratio of 1.0 is the lowest acceptable value. The calculation shows that the project is still acceptable since its profitability index is 4.89. The profitability index calculation of this project are as follows:

$$Profitability\ Index = \frac{79,142,341,543.64 + 20,365,275,000.00.}{20,365,275,000.00.} = 4.89$$

5. Conclusion

Based on the several indicators of measurement as Net Present Value, Internal Rate of Return, Profitability Index, and Payback Period of Clay, Dolomite, and Kaptan Factory that has been conducted before, all of the indicators were fully adequate in fulfilling the criteria rules for an acceptable project, thus it means that the business is feasible. Since it has Net Present Value of the project which amounted Rp 79,130,762,736.39 on its terminal value, which is greater

ICMEM

than 0, IRR of 58,84% rate which is greater than the WACC, profitability index of 4,89 which exceed the lowest acceptable value, and , payback period that is still below the length of the maximum acceptable payback period that have been determined by management.

References

Charles E Maxwel, L. J. (2009). A Longitudinal Comparison of Capital Budgeting Techniques used by Major U.S. *Journal of Applied Business Research* , 41-50.

Damodaran, A. (2001). *Corporate Finance: Theory and Practice, 2nd Edition.* New York: John Wiley & Sons, Inc.

Ehrhardt, M. C., & Brigham, E. F. (2005). *Financial Management: Theory and Practices* (11th, International Student ed.). Mason: South-Western Cengage Learning.

Fernández, P. (2011). *WACC: DEFINITION, MISCONCEPTIONS AND ERRORS.* Spain: IESE Business School.

Katharina Bause, A. R. (2014). Feasibility Studies in the Product Development Process. *24th CIRP Design Conference* (pp. 473-478). Karlsruhe: Elsevier B.V.

Lucket, P. F. (1984). ARR vs IRR: A Review and an Analysis. *Journal of Business Finance & Accounting , 11* (2), 213.

Phillip Kolbe, G. E. (2003). *Investment Analysis for Real Estate Decision.* Chicago: Dearborn Publishing.

Sullivan, W., Wicks, E. and Luxhoj, J. 2006. Engineering Economy, Thirteenth Edition, Prentice Hall.

Tanczos, K. and Kong, G. 2001. A Review of Appraisal Methodologies of Feasibility Studies Done by Public Private Partnership in Road Project Development, *Periodica Polytechnica: Transportation Engineering*, 29 (1-2): 71-81, 2001, Budapest Technical University.

Ye, S. and Tiong, R. 2000. NPV-at-Risk Method in Infrastructure Project Investment Evaluation, *Journal of Construction Engineering and Management*, ASCE, 126 (3), May/June, 2000.

HUMAN CAPITAL AND ORGANIZATION

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Communication Analysis among Stakeholders in Management of Children Education by the Poor Scholarship as Human Capital to Grow Quality Characteristics of Educational Basics

Abubakar Iskandar[a*], Maria Fitriah[b], R.Akhmad Munjin[c], Ike Atikah Ratnamulyani[d]

[a,c]State Administration Study Program Djuanda University Bogor West Java Indonesia, Tol Road Ciawi No 1 Post Box 35, PIN 16720
[b,d]Communication Science Study Program Djuanda University Bogor West Java Indonesia, Tol Road Ciawi No 1 Post Box 35, PIN 16720

Abstract

The economic crisis in 1997-1998 increased poverty to 49.5 million, but in 2005 decreased to 35.10 million, then in 2006 increased 39.05 million. The worst communities were workers, dependent families, small farmers and fishermen, informal sector workers, low-level civil servants, and who affected by natural disasters. The research design was cross sectional, the research was in Pangkal Pinang City in January 2016. The data were summarized by interview, observation, documentation and Focus Group Discussion. Data analyses were Flow Model, Product Moment and Likert Scale. The result of the research shows the correlation between how to obtain the poor scholarship and the criteria of obtaining the poor scholarship that is very tight which is 0.453. The relation between the criteria of obtaining the poor scholarship and the determination of the poor scholarship is quite close which is 0.218. The relationship between the determination of the scholarship for poor students and obtaining the poor scholarship is 0.395. The correlation between how to get the poor scholarship and the poor scholarship receiver is quite close that is 0.190. The relationship between the determination of the poor scholarship and the impact of the poor scholarship is quite close that is 0.171. The relationship between using of the poor scholarship and the poor scholarship receiver is very close that is 0.297. The relation between the poor receiver and the impact of poor the scholarship is 0.270.

Keywords: Management; Education; Students; Poor; Human; Capital; Characteristics; Quality

1. Introduction

1. 1. Background

Many Government programs prior to the crisis were very successful in suppressing the poverty prevalence from 1970 to 1996 as much as 70.0 million to 22.5 million reduced successfully. Consequently, various programs issued like the Joint Business Group Program of the Ministry of Social Affairs, Smallholders Income Improvement Program and Fishermen from Ministry of Agriculture, Poor Rice, Cash Advance Assistance.

The groups that are perceived to be affected by the economic crisis are the workers, dependent families, small farmers, fishermen, informal sector workers, low-level civil servants, and who affected by natural disasters. The families cannot afford to pay their children various educational that have been prepared by the government. In relation to the incapacity of the family the government's policy launched the poor scholarship. The poor families can give their children to various types of education in their region (Maryono, 1999).

Before realization of the poor scholarship the communication to stakeholders was conducted. The communication to stakeholders was to build more clearly their involvement in revealing various problems for poor children. Education is essentially a process of transforming a biologic person into a social being (that is why education is also called socialization). So socialization is an effort to transform socio-cultural values from one generation to the next so it is

---

* Corresponding author. Tel.: 085237153266296
E-mail address: abu1958@yahoo.com

ICMEM

expected to behave like the first generation (Wignjosoebroto, 1994).Therefore Education for poor children should be managed by education management. Education management according to Satori (1980) is defined as the whole process of cooperation by utilizing all available personnel and material resources to achieve the educational goals that have been set effectively and efficiently (https://akhmadsudrajat.wordpress.com)

The whole process of cooperation by utilizing all personnel sources are to involve of all stakeholders consisting of village heads, headmasters, classroom teachers, parents and students. The village head should give appropriate information to the parents who are unable to financially to send their children to primary school, junior high school and senior high school. The principal is responsible for providing the poor scholarship to children who deserve to receive them. Parents should give information honestly that they are really poor both seen from the criteria of the Central Statistics Agency (CBS) and the National Family Planning Coordinating Agency (NFPCA)

1. 2. Research Questions

Based on the background, the research questions are:
[1] Are there any communications among the headmaster and the village heads, parents, teachers and students?
[2] Why is the poor scholarship given to poor students?
[3] How much is the cost in every school?
[4] How does the management of scholarship from the process of acceptance, storage, expenditure and retrieval?
[5] What are the impacts of the poor scholarship on poor students?

2.   Materials and Methods

The research design is cross sectional, and the research location in Pangkal Pinang City Bangka Belitung Province. The research was conducted in January 2016

2. 1. The Data Types

The data required are primary and secondary data. The primary data were obtained from students, parents, teachers, headmasters and village heads, and the secondary data were obtained from local government, education authorities, social services, and the Office of the National Family Planning Coordinating Agency.

2. 2. Data collection technique

Data collection techniques in the research were:
[1] The Observation that was direct observation in the field about the object to study.
[2] The Interviews with students with questionnaires by asking questions of both closed and open questions.
[3] The Focus Group Discussion, conducted on three different groups, they were headmaster groups, parent groups, and classroom teachers groups.
[4] The Documentation, carried out from various sources. They were from source of the National Family Planning Coordinating Agency, the Central Bureau of Statistics, the source of the Education and Culture Office, the Social Service, and others

2. 3. The Sampling Techniques

The sampling techniques in the research are two or more stepwise cluster:
a.   Because the research on city, the first population is 5 sub districts that are Taman Sari Sub district, Cabek Sub district, Rangkui Sub district, Bukit Intan Sub district, and Pangkal Balam Sub district.
b.   The first samples (5 Sub districts) were used as the second population, consisting of 11 selected schools taken randomly which they were the second sample. They were State Elementary School 51, State Elementary School 6, State Junior High School 2, Muhammadiyah Junior High School, State Madrasah Tsanawiah, State Vocational Secondary School 2, State Vocational High School 4, State Madrasah Ibtidaiyah 1, Tunas Harapan Bangsa Senior High School, State Senior High School 3, Madrasah Aliyah Darussalam.

ICMEM

c. Subsequently the second samples (11 schools) were designated as the third population, consisting of selected students. Then all the students were recorded identity in the selected school. The third sample element would be investigated as a research element schematically. The steps according to Palte (1978) are described as follows

```
                                           Population  I  = 5 Sub districts
Sample  I= 5 Sub districts
                                           Population  II  = 5 Sub districts
Sample l  II= 11 schools
                                           Population  III = 11 schools
Sample III = 132 students
```
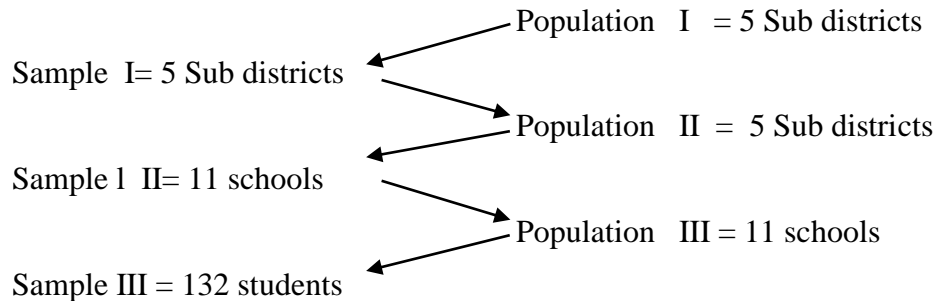
The samples in the research are 132 samples distributed in every school conducted proportionally (Proportional Stratified Random Sampling). To obtained samples from every school. Based on the theory of sampling that if all possible random samples of size n are taken without recovery from a finite population of size N having a mean and standard deviation value then the sampling distribution for the mean will be approached the normal distribution with the mean and standard deviation (Walpole, 1995).

The theorem can be close to the truth if the measurement results indicated by independent variables close to normal. The importance of the theorem is primarily to make conclusions about the estimator of a sample which, according to the proposition of the center, follows or approaches the normal function, if the sample is large enough that if n goes infinity. This theorem is in practice if n> 30, because in such circumstances the value of Table t for a certain alpha would be close to the value of the normal table (Supranto, 2000). So, the total samples are 132 people that are investigated as the unit of analysis.

The Data analysis

The Data analyses in the research are flow model analysis, correlational analysis, and stakeholder's perception analysis.

The Flow Model Design of Data Analysis Components

The design of the flow model of the components of data analyses were used descriptive-qualitative analysis by applying content analysis techniques through data reduction, display data, and conclusion / verification simultaneously (Miles and Huberman, 1992). The qualitative analysis is called flow model analysis. Data reduction is defined as the selection process, focusing on simplification, abstraction, and rough data transformation arising from the field notes, then which dimensions and indicators are coded, which are discarded, which are used, which are compiled, and which are summarized, so the final conclusion could be drawn and verified to give a possible conclusion. The presentation of data used in the form of narrative text as the core analysis in the research, which is supported by the presentations in the form of tables and drawings.

The Correlation Analysis Design

The Correlation analysis can be interpreted as a relationship, which aims to see the pattern and closeness of the relationship between two or more variables. The direction of the relationship between two variables can be distinguished into (1) Direct correlation (positive correlation) is a change in one variable followed by another variable regularly with the same direction of movement, (2) Inverse correlation (negative correlation) is a change in one variable followed by another variable regularly with the direction of the opposite movement, (3) Nil correlation is the direction of the relationship between the two irregular variables (Arif Pratisto, 2004). Based on them, the Product Moment correlation technique can be used in this study with the formula:

ICMEM

$$r_{xy} = \frac{n \sum x_i y_i - (\sum x_i)(\sum y_i)}{\sqrt{\{n\sum x_i{}^2 - (\sum x_i)^2\}\{n\sum y_i{}^2 - (\sum y_i)^2\}}}$$

Information:

r_{xy} : Correlation coefficient
n : Number of samples
x_i : Score item
y_i : Total score
$(\sum x)^2$: Squares the number of item scores
$\sum x^2$: The sum of squares scores items
$\sum y^2$: The sum of squares of the total score
$(\sum y)^2$: Squares the total number of scores

The Stakeholder Perception Analysis Design

Concerning questions about stakeholders' perceptions, Likert scale is used with intervals 1-5. Because of the scoring criteria using Likert scale (Muller, 1992) then used the formula:

$$\frac{\text{The Biggest Score} - \text{The Smallest Score}}{\text{Total score}}$$

5-1/5 =4/5= 0.8

From Likert scale scoring criteria is formulated value and scoring criteria as in Table 1

Table 1. Rating for Questionnaire

Value	Scoring Criteria	Information
4,3 – 5	Very helpful	A
3,5 – 4,2	Helpful	B
2,7 – 3,4	Neutral	C
1,9 – 2,6	Unhelpful	D
1 – 1,8	Very Unhelpful	E

Further, analyzed by Weight Mein Score analysis technique (WMS), with the formula

$$M = \frac{\sum f(x)}{n}$$

ICMEM

Information:

M = Obtaining interpretation numbers (Media / Numbers)

f = Frequency of answer

x = Weighting

∑ = total

n = Number of respondents

3. Results

3. 1. *Communication to Stakeholders in Decision Making*

Communicative is an integral part of human life since they were born, therefore communication is a process to exchange among individuals (Guharja, at.al, 1993). In relation to the poor scholarship to get the right target as the recipient of the poor scholarship is the identification of children who are not able to economically.

That is way the communications among stakeholders are needed: classroom teachers, headmasters, village heads and parents. After obtaining the data from teachers = classroom teachers about students who cannot afford, then class teachers report to the headmaster about the number of students who are not economically able. Furthermore, the headmaster went to the Village Head / Village Head to know the truth of the parents of the economically incapable students. Further communications among the stakeholders are needed to talk to give scholarship poor. The decision making becomes very important to give the poor scholarship to the right.

The Communication built is interpersonal communication within the school environment and outside. The communication structure will cause a strong anticipation of the future student needs. Communication structure is a communication network among stakeholders in maintaining the closeness and connectivity among stakeholders in order to reach agreement to the students needed to obtain scholarship planned becomes real.

Type of analysis of communication relationships used to determine the relationships of communication among stakeholders are the communication of several individuals who merge into a system. Communication relationships at the system level used two indexes as structural variables. They are system connectedness and system openness, system connectivity is the degree of members of a system related to each other which can be calculated from the amount of current interpersonal information flow, while the openness of the system is the degree to which a member the system exchanged information with the system outside. The index of communication connectedness can be calculated on both systems. Therefore members in the system become the unit of analysis (Setiawan and Muntaha, 2000).

Decision-making can be defined as the selection of certain alternative activities of two or more alternatives (Hasibuan, 1990). Correlation to the poor scholarship, decision-making is a rational, collective act in determining the rightness so as not to harm others. Therefore, it is necessary to identify the decision making of poor students to poor children whether the decision-making is collective, or based on authority. Details can be seen in the table.

Table 2

Student Assignment as Poor Student Recipient

No	Determination	Answer	
		n	%
1	Decision from the principal	34	25,8
2	Decisions from school committee meetings	20	15,2
3	Decisions from headmasters and teachers	66	50,0
4	Others (with students who can not afford)	2	1,5
5	Do not know	10	7,5
	Total	132	100

In Table 2 shows that more decision-making is taken by headmasters and teachers, when compared to other elements.

ICMEM

3. 2.   The provision of the poor scholarship to the poor students

The provision of the poor scholarship to the poor students is based on consideration of the family's economic condition by referring to the poverty criteria of the National Family Planning Coordinating Agency using the economic indicators:

    a. Eat <2 times Per day
    b. The floor of the house is mostly from the ground
    c. No different clothes
    d. Eat meat / eggs / fish <1 x / week
    e. Buy new clothes <once a year
    f. House floor space averaged <8 m2 / family member

Some of the weaknesses in determining poverty according to the National Family Planning Coordinating Agency are: (1) The amount of data and information to be collected requires a high level of understanding, but not every peson is able to master the problem, because among them have different abilities. For example, the variable performing the worship is very subjective and difficult to judge because the question is very individual or subjective, and the minimum variable consumes animal food (meat / egg / fish) when viewed in terms of unbalanced elasticity, because eggs have cheaper prices, so all families can consume them, while the meat is more expensive, so only some families who can consume it. (2) The nepotism system that promotes family often makes the person often reduce or add data according to the program to be done, for example JPS (social safety net) program, poor rice, scholarship and free medical service. (3) The variables of getting news from newspapers / radio / TV / magazines are classified into the Prosperous Family III, whereas almost all families have access to radio and TV which are not secondary needs today. Excess of criteria of the National Family Planning Coordinating Agency is able to provide a direct measure of poor families at national and lower levels (village) and at the household level. The data were collected through household data using economic and non-economic indicators (Rambe, 2005).

Based on the criteria of the National Family Planning Coordinating Agency, the school specifies a number of requirements to be fulfilled by the family and is given to the school to be studied whether or not it deserves the poor scholarship.

Table 3
Family Requirements to Get The Poor Scholarship

No	Requirements to get The Poor scholarship	Answer	
		n	%
1	Submit a candidate card for the poor scholarship receiver	18	13,6
2	Submit a copy of Hope Family Program card	7	5,3
3	Submit a copy of the Social Protection card	28	21,2
4	Make a letter of poverty from head village	2	1,5
5	Make a certificate of orphan	72	54,5
6	Poor rice recipients	4	3,0
7	Do not know	1	0,8
	Total	132	100

3. 3.   The amount Costs Launched every School

The amount of the poor government scholarship launched by the government every year the poor students as listed in the Table 4.

Table 4. The amount of The Poor Student scholarship in 2014/2015

No	Funds Received Every Student	Answer	
		n	%
1	275.000	25	18,9
2	280.000	31	23,5
3	360.000	32	24,2
4	500.000	31	23,5
5	550.000	29	22,0
6	575.000	32	24,2
	Total	132	100

ICMEM

Table 4 shows the poor scholarship was provided to every school for students were various. The students who occupy the first grade of elementary school are higher if compared with students who occupy grade 2 to grade 6 of elementary school. Similarly, students who occupy grade 1 of Junior High School or High School is higher if compared with students who occupy 2nd and 3rd grade of Junior High School and Senior High School.

3. 4.   Management of The Poor Scholarship

Management of The Poor Scholarship to students starts from the financial management stage as follows:
Goal Setting

Basically, the determinations of the objectives of the Poor Scholarship receivers are made to (a) maintain the continuity of the student study and (b) avoid the dropout of the student study.
The Poor scholarship Financial Plan

The preparation of the Poor scholarship Financial Plan various from year to year. They are 2011/2012 and 2012/2013, and 2013/2014. The amount of the poor scholarship funds in 2011/2012 as in the following table.

Table 5. The amount of The poor scholarship Year in 2011/2012

No	Funds Received Every Student	Answer	
		n	%
1	1.200.000	2	5.6
2	360.000	11	30.6
3	365.000	3	8.3
4	550.000	3	8.3
5	560.000	3	8.3
6	600.000	1	2.8
7	650.000	1	2.8
8	780.000	1	2.8
9	900.000	11	30.6
	Total	36	100.0
	Missing System	96	72,7
	Total	132	100

Table 5 shows that in 2011/2012 as many as 36 students who got the poor scholarship while 96 students did not get the poor scholarship because they had finished school. In 2012/2013 students who obtained the poor scholarship as many as 84 students while as many as 48 students did not get the poor scholarship because they had finished school. The students who got the poor scholarship are in the table.

Table 6. The amount of The Poor Scholarship in 2012/2013

No	Funds Received Every Student	Answer	
		n	%
1	1.000.000	7	8.3
2	280.000	3	3.6
3	360.000	12	14.3
4	365.000	3	3.6
5	500.000	1	1.2
6	550.000	4	4.8
7	600.000	4	4.8
8	650.000	1	1.2
9	750.000	4	4.8
10	760.000	2	2.4
11	780.000	29	34.5
12	900.000	14	16.7
	Total	84	100,0
	Missing System	48	36,4
	Total	132	100

Meanwhile, the students who received the poor scholarship in 2013/2014 were 38 students, but 94 people did not get scholarship. Because they had finished school. From the poor scholarship financial plan, the status of schools receiving the poor scholarship were elementary school, junior high school, Madrasah Tsanawiyah, Vocational High School and Madrasah Aliyah, they are in the table 7

ICMEM

Table 7. The amount of Poor scholarship of 2013/2014

No	Funds Received Every Student	Answer	
		n	%
1	275.000	1	2.6
2	280.000	1	2.6
3	360.000	12	31.6
4	500.000	1	2.6
5	550.000	11	28.9
6	575.000	12	31.6
	Total	38	100,0
	Missing System	94	71,2
	Total	132	100

9 years elementary school must be able to realize the critical mass of human resources mastering the basic knowledge and skills and the characteristics of instrumental qualities that are accompanied by faith, piety, and morals are solid, and the higher education development program must arise to a critical mass of human resources capable of mastering and developing high-level science and technology related to the dimension of reason (Hidayat Syarif, 1997)

For School Status, the number of students who received the poor scholarship based on gender of school type and school status as depicted in table 8. In the table shows that Primary School and Vocational High Schools were more likely to get the poor scholarship if compared with other types of schools. Similarly, the table also shows that more state schools earn the poor scholarship than private schools.

Table 8. Type and Status of Schools Obtaining The Poor Scholarship

Type of School	School Status							
	state				Private			
	Men		Women		Men		Women	
	n	%	n	%	n	%	n	%
Primary school	13	26	10	22,2	-	-	-	-
Madrasah Ibtidaiyah	6	12	6	13,3	-	-	-	-
Junior high school	5	10	7	15,6	3	21,4	9	39,1
Madrasah Tsanawiyah	5	10	7	15,6	-	-	-	-
Senior High School	2	4	10	22,2	9	64,3	4	17,4
vocational high School	19	38	5	11,1	-	-	-	-
Madrasah Aliyah	-	-	-	-	2	14,3	10	43,5
Total	50	100	45	100	14	100	23	100

Table 8 shows how important the education for children in the future, because education on the one hand as human capital every person to develop him. So education is human capital. Human Capital by Ashaf Sulaiman is the unity of ability and skills to enter the world of work (https://ashofsulaiman77.wordpress.com). Furthermore, according to Muhammad Fadel Human Capital is a skill or special ability that people have (www.kompasiana.com). A comprehensive human capital development approach requires the development of holistic Human Resources, resulting in Human Resources, one of which is education. Therefore, when talking about education cannot be separated from the problem of creating quality human beings.

According to Susanto (2001) which is said to be a qualified human being is person who: productive (thinking power, work), energetic (endurance, creativity), dare to risk (fighting power, competitiveness), dare to uphold the truth (filter power, self-control, brave consequence (reasoning power, rationalization), broadmindedness (power of thought, self-awareness), dare to give recognition to the rights of others, dare to express opinion (imagination power).

So, human quality is a combine charakteristics that determines the degree of excellence. The quality of human resources thus according to Hidayat Syarif (1997) can be defined as a combination of the characteristics of all the resources that exist in human, including physical characteristics, intellect, heart that determine the degree of human reliability both as individual creatures and as social creatures.

Physical quality is reflected by health and physical endurance that enable a person to live healthy, active, productive and long-lived. The quality of reason is reflected by the power of intellectual thought or intellect. The integration of the work of mind and heart strengthens the power of thought that cleans faith and worship and awakens the belief that every creation of God has benefits for life and humanity.   The combination of the work of mind and heart that also cultivate the human consciousness of identity as a creature of God that not only functions as an individual creature but also as a social creature. The awareness evokes sensitivity, solidarity, and social responsibility. The quality of lust

ICMEM

is reflected by the ability to control desire, ambition, emotion, and passion. The power of the mind-controlled desire and the heart will arise to the degree of emotional intelligence.

Based on the explanation, Hidayat Syarif (1997) formulated the quality characteristics of human resources into two categories: (1) basic quality characteristics, and (2) instrumental quality characteristics. Characteristics of basic quality are universal that must be owned by every person such as: physical health, faith and piety, achlak, honesty, discipline and others, while the characteristics of instrumental quality is relative primarily related to the dimensions of reason, for example managerial and technological low to high level.

Development of human resources thus according to Hidayat Syarif (1997) is often interpreted as limited to efforts to improve human capabilities in a production process or an institution for economic purposes. Similarly human investment through education and training is often interpreted as a limited effort to support economic growth the success indicators are also dominated by economic measures.

Our criticism is that human resource development aims to build people in totality, including their souls and bodies, as it is echoed in our national anthem " bangunlah jiwanya bangunlah badannya " (get up their souls and get up their body) and this will produce qualified human resources.

In the context of human resource development, which must be pursued is to build cubes of basic quality characteristics and pyramids of instrumental quality characteristics. For example: education in the next is to create a human resource that has a competitive and competitive appeal in the global marketplace, a curriculum of the "Community College". Rahardjo (2000) argues that the core concept of education is the enhancement of knowledge, skills, attitudes, exercises and counseling that respond to economic and business needs. If the people want to develop agribusiness, then the institution or schools have to really mix the curriculum and agribusiness syllabus, and even more specifically for example, horticulture. Thus, the manager of education with his staff must arrange the local curriculum content that is really directed.

The Poor scholarship Deposit

The poor scholarship Deposit is in Bank BNI 46 and Post Office through the students' accounts bank. They are kept by the school. At the time, to take the Poor scholarship together the classroom teachers to Bank BNI or Post Office take and distribute to every student. It is intended that students are not free to take the poor scholarship.

Table 9. Collection of The Poor scholarship

No	Place of Acquisition	Answer	
		n	%
1	Shared to the Students	4	3,0
2	Taken at the Post Office	32	24,2
3	Taken at Bank BNI for Transfer to Student Account Bank	38	28,8
4	Taken Collectively by teachers at Bank / Post Office	55	41,7
5	Others mention	1	0,8
6	Do not know	2	1,5
	Total	132	100

Liquidation of funds

The poor scholarship liquidation is variously. It is not liquidation at the same time every month. Table 9 shows that the highest month of liquidation was in October, but the lowest month of Liquidation in November. The table also shows that from January to April there are no liquidations of funds. In detail can be seen in table 10.

Data Utilization

The use of students' Poor Student Funds also varies greatly. Its use. Research shows that the use of Poor Student Funds is more for the purchase of books and other stationery, while the lowest use of Poor Student Funds is for pocket money, for private additions and for family needs. This means that Poor Student Fees are not one hundred percent for the needs of students but the money is still used for family needs.

ICMEM

Using The Poor Scholarship

Using the poor scholarship also is very various in using. The research shows that using is more to purchase books and other stationeries. Using the poor scholarship is for pocket money, for private and family purposes. This means that the poor scholarship is not one hundred percent for the students' needs but the money is still used for family needs.

Table 10. Month Liquidation of Poor Student Funds

No	Month Reception	Answer	
		N	%
1	Do not know	4	3.0
2	Received in May	29	22.0
3	Received in June	14	10.6
4	Received in July	5	3.8
5	Received in August	29	22.0
6	Received in September	3	2.3
7	Received in August October	33	25.0
8	Received in August November	1	0.8
9	The others (Received in January)	14	10.6
	Total	132	100

Thus it can be said that the poor scholarship are not effectively used by students. In detail can be seen in the following table 11

Table 11. Use of Poor Student Funds

No	Use of Funds	Answer	
		N	%
1	To Pay School Dues	4	3,0
2	To Buy Books and Stationaries	76	57,6
3	To Buy Clothing (Shoes, and Bags)	41	31,1
4	For Transportation Costs to Schools	8	6,1
5	For an Allowance to School	1	0,8
6	For Course Fee / Les Supplement	1	0,8
7	For Additional Family Needs	1	0,8
8	Others mention	-	-
	Total	132	100

Student's View of The Poor Scholarship Adequacy Level

Student's view of the adequacy of these the poor scholarship by using the likert scale (Muller, 1992) ranges from very sufficient to very inadequate. In detail can be seen likert scale below

No.	Alternatif Jawaban	f	(x)	f (x)	$M = \dfrac{\sum f(x)}{n}$
1.	Very Enough	13	5	65	**359/132**
2.	Enough	57	4	228	
3.	Neutral	-	3	0	
4.	Not Enough	4	2	8	**2,7**
5.	Very Not Enough	58 **132**	1	58 **359**	
	Total				

Based on the formula above, the number 2.7 can be interpreted as a number that shows not help students or are in category D. But on the other hand when asked about the accuracy of the acceptance of scholarship poor it can be seen also on the likert scale below

No.	Alternative Answers	f	(x)	f (x)	$M = \dfrac{\sum f(x)}{n}$

ICMEM

1.	Very precise	54	5	4	270 296	**574/132**
2.	precise Neutral	74	3	2	0	
3.	unprecise	-		1	8	
4.	Very unprecise	4			0 **574**	**4,3**
5.	**Total**	-				
		132				

Based on the formula above, the number 4.3 can be interpreted as a number that shows very precisely the students take the poor scholarship in Bank or Post Office or are in category A

3. 5.   Correlation Analysis of Some Dimensions of The Poor Scholarship

Several dimensions of poor scholarship which are considered to have an impact on the sustainability of student studies can be seen in the results of analysis of product momento correlation below

Correlations

Dimensions	Analysis	criteria receiver of Scholarship	How to Obtain the scholarship	determination scholarship	Receiver scholarship	Use of scholarship	Impact of scholarship
criteria receiver of Scholarship	Pearson Correlation	1	.453[**]	.218[*]	.039	.068	.026
	Sig. (2-tailed)		.000	.012	.654	.437	.767
	N	132	132	132	132	132	132
How to Obtain the scholarship	Pearson Correlation	.453[**]	1	.395[**]	.190[*]	-.098	.068
	Sig. (2-tailed)	.000		.000	.029	.263	.437
	N	132	132	132	132	132	132
determination scholarship	Pearson Correlation	.218[*]	.395[**]	1	-.043	.142	.171[*]
	Sig. (2-tailed)	.012	.000		.623	.104	.050
	N	132	132	132	132	132	132
Receiver scholarship	Pearson Correlation	.039	.190[*]	-.043	1	-.297[**]	-.270[**]
	Sig. (2-tailed)	.654	.029	.623		.001	.002
	N	132	132	132	132	132	132
Use of scholarship	Pearson Correlation	.068	-.098	.142	-.297[**]	1	.101
	Sig. (2-tailed)	.437	.263	.104	.001		.248
	N	132	132	132	132	132	132
Impact of scholarship	Pearson Correlation	.026	.068	.171[*]	-.270[**]	.101	1
	Sig. (2-tailed)	.767	.437	.050	.002	.248	
	N	132	132	132	132	132	132

[**]. Correlation is significant at the 0.01 level (2-tailed).

[*]. Correlation is significant at the 0.05 level (2-tailed).

From the output of product moment correlation can be interpreted that the correlation coefficient number is 0,453, it means that the relation between how to get the poor scholarship and the criterion get the poor scholarship is very close. The correlation coefficient marked positive (+), it means the relation of criteria to get the poor scholarship and obtaining the scholarship is uniform, if the criteria of obtaining the poor scholarship is fulfilled, so the way to obtain the poor scholarship is greater.

The coefficient correlation is 0.218, it means that the relationship between the criteria of obtaining the poor scholarship and the determination of scholarship poor enough closely. Coefficient of correlation marked positive (+), it means the relation of criteria to obtain the poor scholarship and the provision of uniform the poor scholarship so that if the criteria of obtaining scholarship poor it is fulfilled then the determination of the poor will be achieved.

ICMEM

The correlation coefficient number is 0.395, it means the relationship between the determination of the poor scholarship and obtaining the scholarship is very tight. The correlation coefficient is positive (+), it means the relationship between the determination of the poor scholarship and obtaining the uniform scholarship so that if the way to obtain the poor scholarship is fulfilled then the determination of the poor scholarship will be fulfilled

The correlation coefficient is 0.190, it means that the relationship between how to obtain the poor scholarship and the poor scholarship receivers quite closely. The correlation coefficient marked positive (+), it means the relationship between how to obtain scholarship with poor receivers of the poor scholarship so that if the way to obtain the poor scholarship are fulfilled then the receivers of the poor scholarship will be more.

The correlation coefficient is 0.171, it means that the relationship between the determination of the poor scholarship and the impact of the poor scholarship is quite close. The correlation coefficient is positive (+), it means the relationship between the determination of the poor scholarship and the impact of the poor scholarship so that if the method of determining the poor scholarship is filled then the impact of the poor scholarship will be felt positively.

The correlation coefficient is 0.297, it means the relationship between the use of the poor scholarship and the poor scholarship recipients is very close. The correlation coefficient is positive (+), it means the relationship between the poor scholarship recipients and the use of the poor scholarship is uniform, so if the how the receivers of the poor scholarship are fulfilled the use of the poor scholarship will be very useful.

The correlation coefficient is 0.270, it means that the relation between the poor scholarship and the impact of the poor scholarship is very close. The correlation coefficient is positive (+), it means the relationship between the poor scholarship recipients and the impact of the poor scholarship is uniform, so if the receivers of the poor scholarship are fulfilled then the impact of the poor scholarship will be greatly felt.

In addition to quantitative analysis through product moment correlation, it is also explained qualitatively the impact of the poor scholarship. The full impact of the poor scholarship can be seen in the table.

Table 12.Impact of The poor scholarship

No	Impact	Respondents answer	
		n	%
1	Increase Learning Achievement	4	3.0
2	Increase Percentage of Attendance in School	29	22.0
3	Reduce the Drop Out Rate	10	7.6
4	Continuing studies to higher school	36	27.3
5	Lighten the burden on parents	19	14.4
6	Others (Learning More Diligently)	34	25.8
	Total	132	100

From table 12 above it can be seen that the impact of the poor scholarship is even greater on the dimension of continuing studies to higher school if compared to other dimensions

4. Discussion

4.1 Comparison of Previous Research with Current Research

Previous research conducted by Iskandar et al (2012) showed that the use of the Hope Family Program is aimed at improving the quality of education, so that assistance will be more effective and directed, if the beneficiaries are mothers or adult women taking care of children on very poor households (grandmother, aunt / aunt, or elder sister). The participant card of Hope Family Program listed is the name of the mother / woman who takes care of the children, not the head of the household. Exceptions to the above provisions may be made in certain circumstances, for example, if no adult female in the family is replaced by the head of the family.

While the research conducted by the researcher shows that the use of the program aid of Poor Student Program is aimed at improving the quality of education of children whose parents are not economically capable of such assistance is more effective and directed, the beneficiaries are students and the assistance is managed by the school and kept in The Bank or Post Office and every student has Bank account's book and when it is necessary that teachers with the students go to the Bank or Post office to collect it for the interest of the student concerned and these are the differences between previous researchers with research conducted by researchers today

ICMEM

4.2 Generalization of Research Results

The research cannot be generalized because the sample is limited to the city of Pangkal Pinang Bangka Belitung Province, which is unlikely to be representative for Indonesia because Indonesia is a large country that has many large islands and tens of provinces and hundreds of districts

4.3 Alternative Explanation

One of the public policies to overcome poverty is the launching of the hope family program. The Hope Family Program is a government policy in this case the Indonesian Ministry of Social Affairs to help the Very Poor House to get out of the poverty trap, since poverty itself will significantly affect quality Human Resources.

Very Poor Households are very low income families, making it difficult to access education and health facilities and infrastructure. In addition, Very Poor Households also because of low income levels are not able to consume adequate nutrition, so the quality of human resources at the level of Very Poor Household to be low. Very Low Poor Human Resource Quality, difficult to compete in the world of work and in the public world. Hence the empowerment of Very Poor Household becomes very important (Iskandar, et.al, 2012)

4.4 The Strong and The Weak Aspects of the Research

The strong aspect of the research is the level of authenticity that is designed through scientific methods both research design, population and sample, data types, data collection techniques, and data analysis techniques. While the weak aspect of the research is still has some limitations of research, among others time, cost, variable and dimension.

4.5 Practical Application of Research Results

The practical implication of the research is after analyzed by students who cannot through the criteria of National Family Planning Coordinating Agency, it is found that the prevention of students who are not economically able to continue the study should be handled through a public policy that is the program poor scholarship, so to prevent the drop out of economically disadvantaged children

4.6 Advanced Research

It is realized that the research cannot be done holistically because of the limited time, energy and cost, it is necessary to have further research by multiplying the variables and dimensions

4.7 Research Recommendation

To measure the occurrence in Bangka Beliting Province in general and Pangkal Pinang City in particular, the recommendation given to be applied by the local government is to use the Poor Scholarship program as one of the policies in Bangka Blitung Province to address students who are unable to continue their studies.

5. Conclusion

The conclusions from the research are:

[1] Communication among stakeholders can be well established, so to obtain accurate data to be able to get the opportunity to continue the school through the poor scholarship program.
[2] The Poor Scholarship Program was launched by the government really focuses on the best target of children who cannot afford economically.
[3] The Poor Scholarship are very various from the lowest to the highest, they are Rp. 365,000 to Rp. 1,200,000.
[4] The Poor Scholarship is managed by the school management that starts from the process of receiving, storing, spending and taking.
[5] The impacts of the poor scholarship are the children can continue school and they do not drop out.

Acknowledgments

ICMEM

References

Fadel, M, (2018). *Human Capital*. www.kompasiana.com).

Guhardja, S, Puspitawatim H, Hartoyo, Hastuti, D, Martiantp, D. (1992,) Petunjuk Laboratorium Manajemen Sumberdaya Keluarga. Pusat Antar Universitas Pangan dan Gizi, Institut Pertanian Bogor

Guhardja, S, Puspitawatim H, Hartoyo, Hastuti, D, Martiantp, D. (1992,) Laboratory Instructions for Family Resource Management. Inter-University Center for Food and Nutrition, Bogor Agricultural University

Huberman, .A.M, dan Miles M.B. (1992). *Qualitative Data Analysis*, UI Publisher, Jakarta

Iskandar, A, Amri, Ch, Pratidina, G. (2012). *Policy and Implementation of Wducation of Children around the House is Very Poor in Kupang City*. *International Journal of Sciences: Basic and Applied Research*. ISSN 2307-4531(*Print* & *Online*) Volume 30 No 3 *pp* 145-162.

Maryono, E. (1999). Peta Dampak Krisis dan Kapasitas Masyarakat. Penerbit Jari IndonesiaMasyarakat Sipil untuk Transparansi dan Akuntabilitas Pembangunan. Jakarta.

Maryono, E. (1999). Map of Crisis Impact and Community Capacity. Indonesian Civil Publisher for Civil Transparency and Development Accountability. Jakarta.

Muller, (1992). Mengukur Sikap Sosial. Bumi Aksara. Jakarta

Muller, (1992). Measuring Social Attitude. Bumi Aksara. Jakarta

Melayu, H. (1990). Managemen Dasar Pengertian dan Masalah. C.V. Haji Masagung. Jalarta

Malay, H. (1990). Basic Management of Understanding and Problems. C.V. Haji Masagung. Jakarta

Palte, J.G.L. (1978). Metode Penelitian Sosial Ekonomi (terutama survai). Catatan   Kuliah Stensilan

Palte, J.G.L. (1978). Socio-Economic Research Methods (especially surveys). Lecture Notes Stensilan

Pratisto, A. (2004). Cara Mudah Mengatasi Masalah Statistik dan Rancangan Percobaan dengan SPSS 12. PT. Elek Media Komputindo, Jakarta

Pratisto, A. (2004). Easy Way to Solve Statistical Problems and Experimental Design with SPSS 12. PT. Elek Media Komputindo, Jakarta

Rahardjo, D.(2000). Pengembangan Perekonomian Masyarakat : Sebuah Alternatif Model Bagi Muhammadiyah. *Muhammadiyah University Press,* Surakarta

Rahardjo, D. (2000). Community Economic Development: An Alternative Model for Muhammadiyah. Muhammadiyah University Press, Surakarta

Rambe, A. (2005). Alokasi Pengeluaran Rumahtangga dan Tingkat Kesejahteraan (Kasus di Kecamatan Medan Kota Sumatra Utara). Tesis Sekolah Pascasarjana IPB, Bogor

Rambe, A. (2005). Household Expenditure Allocation and Welfare Level (Case in Medan subdistrict Sumatera Utara city). Thesis of Graduate School of IPB, Bogor

Wignjosoebroto, S. (1994). Misi dan Fungsi Pendidikan. Sebuah Makalah Pengantar untuk Rujukan Ceramah Berikut Diskusinya tentang Pendidikan Sains, Tehnologi, dan Humaniora di Indonesapada Era Industrialisasi dan Globalisasi yang diselenggarakan dalam acara Seminar Nasional Dalam Rangka Lustrum VIII IKIP Malang 19 Nopember 1994

Wignjosoebroto, S. (1994). Education Mission and Function. An Introduction Paper for Lecture Referrals Here's a Discussion on Science Education, Technology and Humanities in Indonesia The Era of Industrialization and Globalization held in the National Seminar in Order of Lustrum VIII IKIP Malang 19 November 1994

Syarif, H. (1997). Membangun SDM Berkualitas,Suatu Telaah Gizi Masyarakat dan Sumberdaya Keluarga IPB

Syarif, H. (1997). Building Quality Human Resources, A Community Nutrition Review and IPB Family Resources

Susanto, D. (2001). Bahan Kuliah Komunikasi Pembangunan. PPN IPB. Bogor

Susanto, D. (2001). Materials Development Communication Lecture. VAT IPB. Bogor

Setiawan, B, & Muntaha, A. (2000). Metode Penelitian Komunikasi.Pusat Penerbitan Universitas Terbuka,Jakarta.

Setiawan, B, & Muntaha, A. (2000). Communication Research Methods. Open University Publishing Center, Jakarta.

Supranto, J. (2000). Teknik Sampling untuk Survei dan Eksperimen. Rineka Cipta. Jakarta

Supranto, J. (2000). Sampling Techniques for Surveys and Experiments. Rineka Cipta. Jakarta

Satori, D. (1980). Managemen Pendidikan. https://akhmadsudrajat.wordpress.com

Satori, D. (1980). Education Management. https://akhmadsudrajat.wordpress.com

ICMEM

Sulaiman, A, (2018). Kemampuan dan Ketrampilan Untuk Memasuki Dunia Kerja https://ashofsulaiman77.wordpress.com

Sulaiman, A, (2018). Ability and Skills to Enter the World of Work https://ashofsulaiman77.wordpress.com

Walpole, R.E. (1995). Pengantar Statistik. Publisher, PT Gramedia Pustaka Utama, Jakarta

Walpole, R.E. (1995). Introduction to Statistics. Publisher, PT Gramedia Pustaka Utama, Jakarta

ICMEM

The 3rd International Conference on Management in Emerging Markets

Efforts to Manage Creative People in Startup Company in Indonesia

Hana Shabira Fauziah[a*], Donald Crestofel Lantu[b]

[a,b] *School of Business and Management - Institut Teknologi Bandung, Bandung 40132, Indonesia*

Abstract

Startup industry is now growing in Indonesia, but only a few aware that many of startup players experienced the failure while building their business. One of the reason is because of the human capital management issues includes managing creative people issues. Creative people is the main capital of startup to keep growth. When startup companies could not manage the creative people effectively, the companies will sooner or later end up filing for bankruptcy. In order to respond this problem, this research is conducted to explore efforts to manage creative people in startup in Indonesia based on the best practices in startup industry. This research begin with preliminary study to select the successful startup company. Then, using qualitative data analysis and semi-structured interview, this research explore the management of organizational context and personal context of their creative people which developed from Solomon's research result on relationship between some aspect in each context to the performance of creative people. Startup companies in Indonesia who are searching for knowledge on how to manage creative people can use these efforts to manage creative people because it is an insight from 5 successful startup that categorized as the best practices in startup industry in Indonesia.

Keywords: *Creative People; Human Capital; Managing People; Startup; Creativity*

1. Introduction

1.1 Background

Asia region has the most rapid economic growth and has big potential to become the economic leader in the world (Focus, 2017). From this outlook, it optimistically said that Asia will against another region include the United States and the European Union in the future. It is because the United States and the Europe Union have lower economic growth than Asia's, and they will be left behind if the condition remains that way. Oxford Economist predicts that by 2025, Asia has nearly 45% share in global GDP. Indonesia as a part of those prospective economic leaders, have 5.3% growth projection in 2018 and very close to overall Asia's growth projection (as 5.4%). It means that Indonesia's economy is greatly reckoned in Asia's economic growth. Therefore, Indonesia must always give effort with its purpose to support Asia's good economic growth. One of them is start-up reinforcement. The accretion of the startup is increased the production capacity, multiple economy activities which results in increasing of national income. Hence, the economic growth will happen. Startup as entrepreneurship also affects the economic development of the countries. Entrepreneurship creates jobs and therefore can lift people out of poverty thereby benefiting the economy at significantly more than the micro level (Kasseeah, 2016). Based on those linkage and study result, Indonesia government has the intention to support the establishment and growth of startups by a program which targeting at least 1000 startups company by the end of 2020 and issued the package of economic policies for startup.

On the other hand, the needed of creative people and manage them well in startup is an important things to do. The creative people will bring a lot of creativity and creativity is the core part of any startup. Otherwise, we just need better ways of doing those things over everything which is already invented. So they be more time saving, useful, and fun filled (Motwani, 2016). Creative people will produce the novel ideas in startup companies that started with a clean slate and those creative ideas were desperately needed for the startup company to survive. However, managing creative

---

* Corresponding author.

ICMEM

people is notoriously difficult. Firstly, creative people are very independent-minded. Majority are not keen on being managed because they don't like being told what to do. Secondly, creativity in intrinsically risky and unpredictable (McGuinness, n.d.).

Based on the following integrated phenomenon, this study aims to explore efforts to manage the creative people in startup companies in Indonesia based on lessons learned from several successful startup companies in Indonesia. From there, the startup companies can develop the people management strategy for creative people as well as possible. So, with the development of startup companies, we hope that Indonesia's economy will always growth and then will be one of influential parts in the occasion of Asia region as the economic leader.

1.2 Problem Identification

This study become important because startup industry is now growing in Indonesia, but only a few aware that many of startup players experienced the failure while building their business. One of the main reason is because the management of creative people in startup companies. Whereas the creative people was the main capital which will drive the growth of startup companies with its limited resources. When startup companies could not manage the creative people effectively, the companies will sooner or later end up filing for bankruptcy (Chamorro-Premuzic, 2013). Therefore, analyzing efforts to manage creative people of successful startup companies is important as references for startup industry practitioners, but there's no study to explain this at all.

1.3 Research Scope

This study will focus on the identification of key success factor of managing creative people in successful startup companies in Indonesia. The startup company itself is limited to the digital startup. Digital startup is a startup company that which utilizes digital technology to create solutions, such as through mobile apps, websites, and Internet of Thing (IoT). Besides, this research will be conduct in Bandung, Indonesia because Bandung is already popular as a start-up friendly city and was claimed as the 'Silicon-Valley' originated in Indonesia. Moreover, there are a number of digital startup companies from Bandung that categorized as successful companies.

1.4 Research Questions

The main research question is how startup companies, particularly in Bandung, Indonesia, have successfully managed their creative people. The derived questions are:
1. How are efforts to manage the organizational context of creative people in startup company in Indonesia?
2. How are efforts to manage the personal context of creative people in startup company in Indonesia?

1.5 Research Objectives

The main objective of this study is to get insight into how to manage the creative people in startup companies and how they can improve their creativeness. While the sub-objectives from this study are:
1. To explore the efforts to manage organizational context of creative people in success startup companies to encourage their well-perform as individual and as a team.
2. To explore the efforts to manage personal context of creative people in success startup companies to encourage their well-perform as individual and as a team.

2. Literature Review

Startup company: A startup is a company that just outset to growth with usually financed and operated by founders. These companies are small business companies with not bounded geography growth (Robehmed, 2013) and has goals to effectively develop also validate a measureable business by its partnership and organization design (Mantell, 2017). It has the ability to grow as its key attribute and designed to scale so quickly.

Creative people: In this study, the researcher defines creative people as the people that used to work to generate creative ideas that will be offer from startup to the market. Creative ideas is involving the imagination or original ideas, especially in producing an artistic and innovative work (Oxford, n.d.).

Managing creative people: There are some of model explained aspects affecting the performance of creative

ICMEM

people on generating creative ideas that must be managed by the company. The first model is developed by Ekvall in 1996. This Swedish researcher found out ten climate dimensions (only 1 negatively correlated, the other 9 positively correlated) that influence creativity in organizations. Another researcher who also studied the contexts affecting the performance of creative people is Amabile. She develop a framework to assess the creative climate by the work environment measurement: management practices, resources, and motivations. The model is called as KEYS model. In 2010, Solomon, a creativity and innovation expert also learned the aspects affecting creative people on generating creative ideas. He divided the aspects into organization context (includes organizational impediments, team dynamics, resources, and also autonomy) and personal context (reflects on dynamism and involvement) will affect in yield creative ideas. For researcher, the Solomon's model has the most complete and the most detail dimensions rather than the other two model. Besides, the object of the result of study by Solomon is aligned with this research which is people in startup company. While, the creative climate model by Ekvall and KEYS model of Amabile are the result of research in general company, not specifically startup company. Therefore, in order to develop efforts to manage creative people in startup, researcher prefer to use the Solomon's model as the guidelines as shown in the Figure 1.
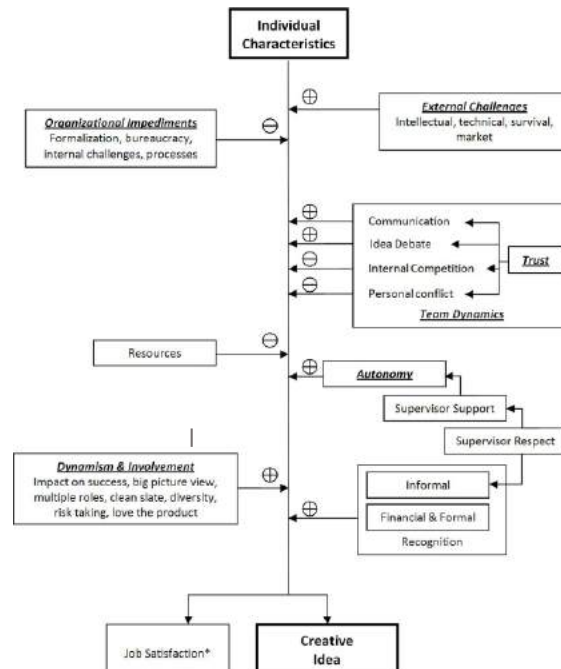
Figure 2. Creative people generate creative ideas (Solomon, 2010)

Certain factors in Figure 3 are in an underlined and bold font, this reflects that the effect of those factors on creativity means that the experienced and depicted by the participator was strong. While in the factors shown with standard font, it means that those factors were having low impact on their creativity for the participator. For each factor, there is a direction going from it to the "spine" (connection between individuals and the creative ideas they generate), Exhibiting a positive (+) or negative (-) impact on creativity, as experienced and depicted by the participator.

Individual Characteristic

Caitlin Pakosh in her book The Lawyer's Guide to the Forensic Sciences is considered individual characteristics as the exceptional characteristics that shape an object uniqueness and bolster the conclusion of linking a known object to the object in question (Caitlin Pakosh, 2016). However, there is still a debate whether individual characteristics that supports creativity are born or obtained, and whether creativity training could actually improve the creativity capabilities of individuals (Solomon, 2010). Therefore, further discussion of individual characteristics was not mandatory beyond this research, and the focus will be shifting to personal context and organizational context.

Organizational Impediments

ICMEM

Organizational impediments is the categorization of four aspects that gives obstacle to people in discover creative ideas. On the left side of Figure 3, the diagram starts to representing organizational impediments or obstruction and it negative effect on creativity, and are created of bureaucracy, formalization, internal challenges, and complex and non-optimized processes.

Formalization is a process standardized the work life dimension by rules and responsibilities as the whole company, teams, unit, or individual (Young & Tavares, 2004). While, bureaucracy is a system of government, administrative, or social based on hierarchical structure and also complex regulation and rules (Investopedia, n.d.). Internal challenges is the individual barrier and constraint factors (Abdul-Halim, Ahmad, Hanifah, & T. Ramayah, 2017). Work process is the unity between the way in which to organize a job to happen and how to manage a job, which contains the understanding of what, for what, and how to be accomplished (Widyatmini, 2011).

External Challenges

The external challenges are market-related elements, technical, intellectual, and survival-related. Since the external challenges is exist to the whole company, not directly for creative people, the result of managing these external challenges are not being affect only by managing the individual creative people, but there are so many factor that much greater effect such about marketing management or financial management. Therefore, this aspect is not being the studied further in this study.

Team Dynamics

On the right side of Figure 3, there team dynamics is the second box below external challenges box. This aspects consists of personal conflict and internal competition which have negative effect on creativity, and open communications and idea debate which have a positive effect on creativity.

Communication is the information sharing between individual includes the sharing of concepts, written content, imaginations, ideas, and behaviour. This information transfer can be held in different ways ("What is communication?," 2018). Idea debate is the discussion to provide argumentation of a topic between two parties or more. It is a tool that essential for building and preserving democracy and open societies (Popper, 1968). Internal competition is a rivalry or contest between two or more individuals in the workplace that exist for award, social status, profit, or prestige (Simandan, 2018). While, personal conflicts is form of frictions or arise quarrels within individual in a group because the actions of one or more group members are denied or can't be tolerated by the other one or more group members (Rahim, 2011).

Resources

Resources is a source of support, aid or supply, one that can be readily be used when needed that encompasses all assets, capabilities, organizational processes, firm attributes, information, knowledge, human capital, time, financial and budgetary, etc. These resources is important to the company success as it will emphasized implementation of strategy to combine strength and organize weaknesses (Barney, 1991). Even though not significant, resources is represented have a positive impact on creativity (the more available resources, the more people felt creative).

Autonomy

Autonomy has a positive effect on creativity strongly, yet it is affected by being supervised and being recognize. The supervision which, in turn, is also being affected by the respect that employees have to their supervisor. Supervision is a process to allow an individual to resolve and clarify issues and dilemmas presented by workplaces. It is applied to keep adequate standards of counselling and to ensure the efficacy of the supervisor relationship. These will affect to the increasing job satisfaction, reducing the risk, and improving work performance (RICO, 2010). Recognition is the acknowledgement of individual's effort, behavior or result which supports the company's values and goals (Harrison, n.d.).

Dynamism and Involvement

Dynamism was a factor that risen out of the narratives that has 7 elements: (1) the impact participators felt that they had on the success of the company and/or projects that has been done; (2) their ability to view from the broad outline; (3) operating in multiple roles; (4) starting in a new page/clean slate; (5) the variety of backgrounds, experience and knowledge; (6) risk taking; and (7) fond of the product and the positive impact they can give to the

ICMEM

society

Job Satisfaction

On that model where creative people generating creative ideas, Solomon found that participator have experienced a higher job satisfaction that is why they are being creative. Therefore, based on stories told by the participator in this study, it shows that beside creativity, job satisfaction also affected by the same factors that affect creativity.

Due to regiment the idea, and create conceptual distinctions, Figure 2 shows the framework of big picture of this research.
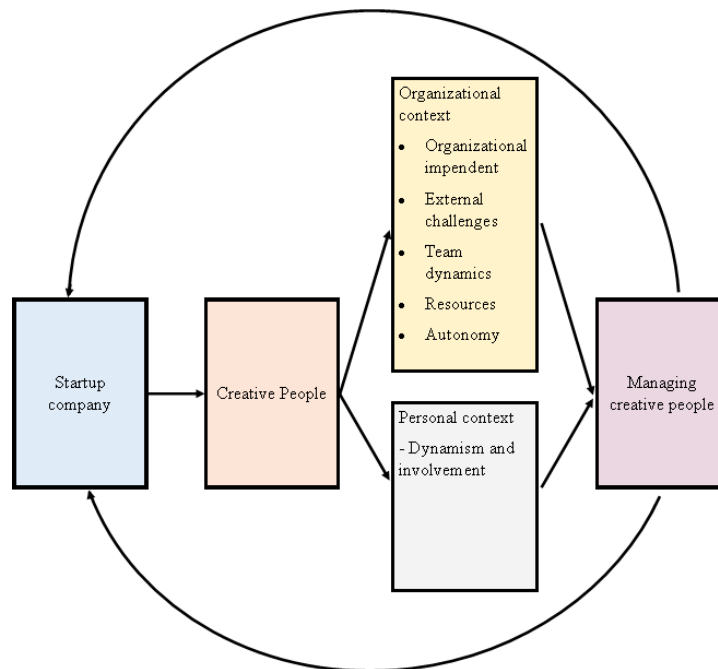
Figure 2. Conceptual Framework

This study aims to shows the startup company the efforts to manage creative people that accommodated the relationship for each aspects in generating ideas by creative people. The Solomon's model have explained the relationship each aspects on organizational context and personal context to the performance creative people on generating creative ideas. Then, this research try to identify efforts widely and deeply to manage for every aspects in the successful startup. In this study, when the startup company being categorized as the successful startup, it means they are approved to have well-management on two context of creative people. This research intended to gain insight about how the successful startup manage creative people which in the last is the result will be throwback to the other startups in Indonesia.

3. Methodology

This research consist of preliminary study, semi-structured interview for data collection, and the data analysis which used qualitative descriptive data analysis. The preliminary study begin with gathered the startup company profile for 8 companies that have been found by researcher, after that, researcher select the successful startup companies that would be examined. The successful startup company in this research is considered to fulfill at least one of the criteria: pioneers in the industries, popular in the community, and ever received awards. This was done to ensure whether the selected startup companies represent those with best practices. Furthermore, the researcher also take the consideration on the ease of access to collect the data (convenience sampling). The result of this preliminary study are the coronation of Digital Happiness, Agate International, Pixel Indonesia, The Wali Studio, and Octagon

ICMEM

Studio as the successful startup company in this research.

After that, the data was collected was based on semi-structured interview that enabled us to capture people's individual preferences, voices, opinions, and stories (Hennink, Hutter, & Bailey, 2011). A semi-structured interview is the combination of open questions and the opportunity to explore response further or particular topic for the interviewer. This type of interview are used to understand how something work, which in this study is how successful startup company manage the organizational context and personal context of creative people (Keller & Conradin, 2018). The data collection instrument is the researcher itself.

The interviewees are key person (CEO, HR, or COO) of 5 success startup companies that placed in Bandung which have been through the preliminary study. Table 1 will shows the list of those successful startup companies and its creative people composition.

Table 1. List of successful startup company and their creative people composition

Successful Startup Company	Job Position and Number of Creative People
Digital Happiness	Designer:7, Programmer: 7, Story Maker : 2
Agate International	Programmer: 22, Designer: 8, Artist: 22
Pixel Indonesia	Designer: 2, Programmer: 2
The Wali Studio	Designer: 4, Programmer: 4
Octagon Studio	Designer: 9, Artist: 4, Videographer: 2, Programmer: 10

All the interview conduct in Bahasa Indonesia. At first of the interview, researcher introduces the research topic to the participant, clearing any definition of this research, and make an agreement to participate. Researcher uses video recording device and ensure the confidentiality of the information given by participant. In order to guide the interview, Table 1 shows the guiding questions for the selected startup companies.

After the data being collected, the data will be analyzed by descriptive data analysis coding followed by content analysis to measure semantic aspects or what aspect of a message(Cooper & Schindler, 2014). After the interview data being collected, researcher creates transcribing (copying in written non-verbal and verbal communication) of it. From the written transcribe, arrange open coding by partition data in the labeled and conceptual unit. Next, doing axial coding where that unit and labeled data is organized, look out the relationship among them, and find the key categories. The last is researcher integrate the categories to produce the findings of the research(Saunders, M., Lewis, P.Tornhill, 2007).

For this study, in order to increase credibility, whether the conclusion by the participator is believable or not, thus, the researcher will do the triangulation of technique, data resources, and/or theory. (Denzin, 2012) defines triangulation as a combination or a combination of methods used to examine interrelated phenomena from different perspectives. Technique triangulation are done by comparing information or data in different ways. Data sources triangulation is to extract certain informal truths through various methods and sources of data acquisition. The last is theory triangulation where the information is then compared with the relevant theoretical perspective to avoid individual researchers bias upon the resulting findings or conclusions (Trochim, 2002).

4. Results and Discussion

The findings of research shows that organizational impendent is really organized to be avoided by the five successful startup company by not standardized everything in work life except for working hours. In other, they don't consider hierarchical reasoning in facing the existed issues if it just makes the condition become more complicated. Less bureaucracy and less formalized will helps creative people who work for the fun and enjoyment to be more creative. It also assists employees who are too afraid to take risks (performance-avoid individuals), perhaps because it indicates a culture of exploration (less risk for mistakes) (Hirst, Knippenberg, Chen, & Sacramento, 2011). Besides, the five successful company also let the creative people did their own work process which are simpler and more effective. Although in some successful startup there are provisions of work process, but it is not an absolute thing that must be followed. Implementation of the provisions of the work process becomes flexible to be tailored to each of creative people. The last effort to manage organizational impendent from the successful startup company is have principle to never let things that will be become internal challenges for creative people exist. They don't deliberately

ICMEM

create challenges for creative people and try to solve company problem by the top management as soon as possible, so the problem won't become the new challenges for creative people. But, there are two successful startup company who deliberately push their creative people to create self-challenges for their self-improvement based on their current performance. In order to balance between decreasing internal challenges and keep the creative people have self-improvement, do not deliberately create internal challenges but always remind creative people to keep improving.

The finding of this research also tell that the successful organized the team dynamics by tend to use casual communication whether superiors to inferiors or the other way around. The casual communication style is more relaxed and uses a more slangy language structure. It is more likely to make the jokes, play around, and emotions more free to express. This type of communication makes the startup company successfully support the open communication where have positive effect to the creative people. It is because the casual communication brings all parties are able to express ideas into one another such conversation or debate. In addition of communication, idea debate is the one of team dynamic that should be managed. In order to manage the debate, there can be 2 method. First, is done by voting. Second, is determined by the superiors. But after the decision, the decision maker should explain with logical reasoning in order to neutralize the condition of debate. Based on one of startup's experience, without explaining logical reason, the creative people usually underperformed after that. The next effort to manage team dynamics for creative people is about managing the existence of internal competition. The five successful startup company claimed that they are trying to eliminate the internal competition between members of organization. Three successful startup companies always assigned the creative people in which part they are working on. They never asked and choose the best idea from more than one that has similar role creative people to work on the same project. In their opinion, that treatment will rise the internal competition. In contrary there are two successful startup that that is still against with their claims. They want to reduce internal competition but still deciding that when they want to start producing a product, they will start by gathering ideas from fellow creative people and choose the best idea to work on which is still addressed as internal competition. The last aspect to manage team dynamics is that the four successful startup company asked the superior and coworkers of creative people to open to be consulted, at least communicated if there are personal problems of creative people which is impacting the professional work. But, there are one successful startup company trying not to interfere with its employee's personal problem because the company demands the workers to do their job with maximum efforts no matter what.

The findings of managing autonomy for creative people shows that all five successful startup supervise their creative people only for looked to the milestones achievement without looking on work duration, how they finish the job, or anything else (result-oriented). The frequency of supervision is weekly or based on the deadline time of milestones. This type and frequency of supervision keep the creative people to feel the supervisor support but also keep them free and confidence to do the exploration. Organizing the recognition for creative people also support the startup company to manage team dynamics by always recognize the creative people when they accomplished their target and/or reach any achievement. Recognition lets the creative people know that their hard work is valued. The five successful startup company provide recognition to the creative people into three different type: money bonus (informal recognition), mentioning those creative people and their achievement in front of the whole company (formal recognition), and also gives the creative people opportunity to come up represent the company in front of media and community.

The findings on this research shows that all company will try to provide the creative people the tools/items needed but just to produce a better creation. The companies also did not approve everything that is proposed by the creative people, only some of the proposal which has gone through deep consideration that will be accepted and provided by the company.

The findings of this research also gives picture of the five successful startup company about how they organize the personal context. By always gives a broad outline of the project for the creative people and also always urge its creative people to see from the bigger perspective when the creative people facing the problem, the five successful startup company try to improve the ability to see 'the big picture' of creative people as one of effort to manage personal context. Besides, the successful startup also always deliberately shows the feel that their creative people is impactful to the success of the company using praise or compliment, treating them better in proud and respect, and also write the creative people's name in the part of product. The successful startup company also always assign the creative people in many different roles in every different project or periodically. This multiple roles are very good to them because it

will eliminate sense of monotony and gives creative people many experiences and references to their creativity. In addition to previous aspect in personal context, successful startup also concern on make sure a clean slate of creative people because this is supporting the creative people in generating creative ideas. These startup urge the creative people to have the task that can be done from zero, not continuing what has been worked before by the other person. By doing it this way the result of the product would be more creative, because continuing work is limiting the creativity movement. Managing diversity around creative people also become a part of managing personal context. All five successful startup company has a variety of people that they required based on the required skills, experience, and how the creative people think. These 3 elements of hiring the employees prioritize the diversity on selecting a number of creative people. The diversity much more useful and fun because all the people comes from different background can learn from one another. The next aspect in personal context is about manage the risk taking of creative people. All successful startup company urge and support their creative people explore more, but sometimes there is a cost, time, and resources expense which give rise to the risk when their creative people exploring something new. In order to reduce that risk, the company would open to discussion whether the exploration and the activity of creative people which rise the risk is appropriate and proportional. The company would consider the opportunities and the cost-benefit of the risk taking exploration done by the creative people. The last effort to manage personal context is how company rising the feel to falling love with the product is one of managing personal context to creative people. The superiors would ask their creative people to use the product, reminding the benefits and the good things about the product, and giving reasons why they should love their own creation. The point is to that they can use and like their own product.

In order to shows the highlight for each aspects of efforts to manage creative people both in organizational context and personal context, Figure 3 is graph that shows it.

ICMEM

EFFORTS OF MANAGE THE CREATIVE PEOPLE

⊖ ⊕ = Impact on creative people's performance

Creative people

Formalization and bureaucracy (⊖)
- Not standardized everything in work life except for working hours.
- Not consider hierarchical reasoning in facing the existed issues if it just makes the condition become more complicated

Non-optimized Work process (⊖)
Let creative people do their work process the way they usually do

Internal challenges (⊖)
Do not deliberately create internal challenges but always remind creative people to keep improving.

Organizational context

Open Communication (⊕)
Building a casual communication

Idea debate (⊕)
- Let the idea debate happen by doing an open discussion
- Do either vote or/and superior's decision followed by explaining logical reasoning

Organizational context

Internal competition (⊖)
Assign sufficient creative people on the right job, do not compete ideas between two or more creative people \

Personal conflict (⊖)
Urge the superior to open for consultation of creative people's personal problems in case their personal problem affect professionalism

Supervision (⊕)
- The object of supervision is only the milestones achievement
- The frequency of supervision is weekly or based on milestones time deadline

Organizational context

Recognition (⊕)
Always recognize the creative people' achievement as well as formal, informal, or financial recognition

Ability to see 'the big picture' (⊕)
- Gives broad outline in every project
- Urge the creative people to see from the bigger perspective when the creative people facing the problem

Impactful on success (⊕)
Deliberately shows the creative people that they are impactful on company's success using praise or compliment; treating them better in proud and respect, or also write the creative people's name in the part of product

Personal context

Multiple roles (⊕)
Assign the creative people in many different roles in every different project or periodically rolling

Clean slate (⊕)
Start the creative people's task from zero, not continuing what has been worked before by the other person

Organizational context

Diversity (⊕)
Keep the employees diverse starts from the hiring

Risk taking (⊕)
- Let the creative people explore
- Open to discussion whether the exploration and the activity of creative people which rise the risk is appropriate and proportional

Creative ideas

Love the product (⊕)
- Asks creative people to use the product
- Reminding the benefits and the good things about the product, and giving reasons why they should love their own creation

Resources (⊕)
If the company has considers the cost-benefit of the proposal, and it is beneficial to the company. Then approve it if possible..

Figure 3. Highlight of efforts to manage creative people of startup company

ICMEM

5. Conclusion, Limitation, and Recommendation for Future Research

5.1 Conclusion

This research is aims to explore efforts to managing creative people in startup company in Indonesia through an exploration of best practices in the chosen startup company. The main finding of this research are how the successful startup company managing their creative people in organizational context and personal context. Each context have many aspects to be observe. Here are the conclusion of efforts to manage creative people in startup company.

1. Organizational Context
*   From formalization and bureaucracy aspects, the company urges not to standardize everything in work life except for working hours and also should not consider hierarchical reasoning in facing the existed issues if it only makes things more complicated.
*   For Non-optimized work process aspects the 5 company's would let the creative people do their work process the way they usually do.
*   While For internal challenges aspects, the 5 company's would not deliberately create internal challenges but always remind creative people to keep improving themselves.
*   For open communication aspects, the 5 company's would build a casual communication in order to create a more comfortable working atmosphere.
*   While for idea debate aspects, it is better to let the idea debate happen by doing an open discussion, and also do either vote or/and superiors decision followed by explaining logical reasons to everyone.
*   For internal competition aspects, it is better to assign sufficient people on the right job, which means not competing ideas between two or more creative people.
*   While for personal conflict aspects, it is suggested to urge superior to open for consultation for creative people's personal problems in case their personal problems affecting professionalism.
*   Supervision aspects is recommended to the object of supervision is only the milestones achievement and also the frequency of supervision is weekly or based on milestones time deadline.
*   The other aspects is recognition, which is best to recognize the creative people's achievement as well as formal, informal, or through financial recognition.
*   While resources aspects urge if the company has consider the cost-benefits of the proposal, and turns out it is beneficial for the company. Then approve them if possible.

2. Personal context
*   Ability to 'see the big picture' is best to gives broad outline in every project and also urge the creative people to see from the bigger perspective when the creative people facing the problem.
*   While impactful on success aspects is better to deliberately shows the creative people that they are impactful on company's success using praise or compliment, treating them better, feel proud and respects towards them, or also write the creative people's name in the part of the product
*   Multiple roles is recommended to assign the creative people in many different roles in every different project or periodically rolling the job.
*   For the clean slate aspect is that startup need to start the creative people in many different roles in every different project or periodically.
*   Startups also need to be very diverse right from the recruitment stage.
*   From risk taking aspects, it is best to let the creative people explore the way they want, and also all of the member should open to discussion whether the exploration and the activity of creative people which will rise the risk is appropriate and proportional.
*   For the employee to love the product, the company should asks creative people to actually use the product, reminding them the benefits and the good things about the product, and also gives them reasons why they should love their own creations.

Startup companies in Indonesia who are searching for knowledge on how to manage creative people, can use these efforts to manage creative people because it is an insight from 5 successful startup that is categorized as the best practices in startup industry in Indonesia.

ICMEM

5.2 Limitation and Recommendation for Future Research

This research is limited by restricting it into company in the form of digital startup. Therefore it is not clear that the findings of this study could be generalized to other type of companies. Thus, the future research can explore the efforts to manage creative people in another type of companies. The future research also can acquire a broader number of data resources in respond to researcher's limitation where the findings of this study may not represent the startup company in Indonesia at all because a time limitation affected the number of studied successful startup company. Besides, the future research can study the similar topic in quantitative ways.

Acknowledgement

References

Abdul-Halim, H., Ahmad, N. H., Hanifah, H., & T. Ramayah. (2017). The Impediments to Entrepreneurial Ventures among the Bottom of Pyramid Community in Northern Malaysia. In *Handbook of Research on Small and Medium Enterprises in Developing*.

Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*. https://doi.org/10.1177/014920639101700108

Caitlin Pakosh. (2016). *The Lawyer's Guide to the Forensic Sciences*. Irwin Law.

Chamorro-Premuzic, T. (2013). Seven Rules for Managing Creative-But-Difficult People. Retrieved March 16, 1BC, from https://hbr.org/2013/04/seven-rules-for-managing-creat

Cooper, D. R., & Schindler, P. S. (2014). *Busi n ess research methods*.

Denzin, N. K. (2012). Triangulation 2.0. *Journal of Mixed Methods Research*, *6*(2), 80–88.

Focus, I. C. (2017). Asia's Dynamic Economies Continue to Lead Global Growth. Retrieved March 16, 1BC, from http://www.imf.org/en/news/articles/2017/05/08/na050917-asia-dynamic-economies-continue-to-lead-global-growth

Harrison, K. (n.d.). Why employee recognition is so important – and what you can do about it. Retrieved June 26, 1BC, from https://cuttingedgepr.com/free-articles/employee-recognition-important/

Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative Research Method* (1st ed.). SAGE Publication.

Hirst, G., Knippenberg, D. Van, Chen, C., & Sacramento, C. A. (2011). How does bureaucracy impact individual creativity? A cross-level investigation of team contextual influences on goal orientation-creativity relationships. *Academy of Management Journal*, *54*(3).

Investopedia. (n.d.). Bureaucracy. In *Investopedia*. Retrieved from https://www.investopedia.com/terms/b/bureaucracy.asp

Kasseeah, H. (2016). Investigating the impact of entrepreneurship on economic development: a regional analysis. *Journal of Small Business and Enterprise Development*, *22*(3), 896–916. Retrieved from https://doi.org/10.1108/JSBED-09-2015-0130

Keller, S., & Conradin, K. (2018). Semi-Structured Interviews. Retrieved March 16, 1BC, from https://www.sswm.info/planning-and-programming/decision-making/gathering-ideas/semi-structured-interviews

Mantell, E. H. (2017). International Research Journal of Applied Finance A Theory of Financial Distress in Start-Up Companies International Research Journal of Applied Finance, *VIII*(1990), 573–581.

McGuinness, M. (n.d.). Lesson 25: Herding Cats – Managing Creative People. Retrieved March 16, 1BC, from https://lateralaction.com/managing-creativity/

Motwani, S. (2016). How important is creativity in startups? Retrieved March 16, 1BC, from https://www.quora.com/How-important-is-creativity-in-startups

Oxford. (n.d.). English Oxford Living Dictionary. In *Oxford University Press*.

ICMEM

Popper, K. R. (1968). The open society.

Rahim, M. A. (2011). Managing conflict in organizations. *Choice Reviews Online*, *48*(08), 48-4579-48–4579. https://doi.org/10.5860/CHOICE.48-4579

RICO. (2010). Supervision. Retrieved from http://www.rico.com.au/training/life_skills/supervision.htm

Robehmed, N. (2013). What Is A Startup? Retrieved March 16, 1BC, from https://www.forbes.com/sites/natalierobehmed/2013/12/16/what-is-a-startup/#7a584eb04044

Saunders, M., Lewis, P.Tornhill, A. (2007). *Research Methods for Business Students*. *Pearson Education Limited 2*. https://doi.org/10.1007/s13398-014-0173-7.2

Simandan, D. (2018). Competition, contingency, and destabilization in urban assemblages and actor-networks. *Urban Geography*, *39*(5).

Solomon, Y. (2010). From startup to maturity: A case study of employee creativity antecedents in high tech companies. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *71*(3–A), 1009. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2010-99170-056&site=ehost-live

Trochim, W. (2002). What is the Research Methods Knowledge Base ? Using the KB in a Course About the Author. *Research Methods Knowledge Base*, (November), 35.

What is communication? (2018). Retrieved June 26, 2018, from https://entrepreneurhandbook.co.uk/what-is-communication/

Widyatmini. (2011). *Pengantar organisasi dan metode* (Seri Dikta). Penerbit Gunadarma.

Young, S., & Tavares, A. T. (2004). Centralization and autonomy: Back to the future. *International Business Review*, *13*(2), 215–237.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Antecedents of Service Sweethearting

Erna Fitriastuti[a], Badri Munir Sukoco[b], Fiona Niska Dinda Nadia[c*], Yusak Anshori[d]

[a,b,c,d]Department of Management, Faculty of Economics and Business, Airlangga University, Airlangga Rd. 4 – 6, Surabaya (60286), Indonesia

Abstract

Background: Prospects of service industry sector in Indonesia constantly grow each year. Service employees are important for an organization's competitiveness for a number of reasons. Employee behavior is one of the success key for service industry. Service sweethearting is a new concept of deviance behavior that resulted in considerable loss, but rarely discussed in the prior research. Purpose: Research question aimed to be answered is what are the factors influence service sweethearting which contribute to control service sweethearting behavior, so that organizations able to minimize loss. Method: Conclusion is being resulted through responses gathered from 147 employees of Prime Plaza Hotels&Resorts group. Data analysis in this research using Partial Least Square (PLS). Result: Finding shows that opportunities to earn additional revenues and deviance of work groups' norms influence service sweethearting. Moreover, policies are being formulated in order to minimize service sweethearting behavior, through managing positive organizational climate, providing training on the rules of irregularities within organization, discussing personal integrity, and providing proper asessment, rewards, punishment and monitoring.

Keywords: Service Sweethearting; Deviance Behavior; Managing Service Employee.

1. Introduction

Industry sector in hotel accommodation services in Indonesia from year to year increasingly experienced growth, which explicitly means that the increasing use and utilization of hospitality accommodation services by the customer. This GDP growth rate shows the prospect of hospitality service industry sector in Indonesia is quite good in the future. Such a good prospect can be an opportunity for entrepreneurs to expand their business and vying to compete in the growing of hospitality industry.

The statement is based on GDP data of Indonesian Hospitality Services Industry Sector from 2013 to 2016 sourced from Central Bureau of Statistics (2018). The amount of GDP in Indonesia in the current year is classified by two types of GDP at current prices and GDP at constant prices. Based on GDP on current prices in 2013 the hotel services industry sector generated 63.489 billion rupiah of GDP, then increased by 16.96% to 74.255.1 billion rupiah in 2014. Similarly in 2015 increased by 8.8% to amounting to 80,790.5 billion rupiah. This number increases again at the value of GDP over current prices in 2016 which increased by 6.6% compared to GDP in 2015 so that it becomes worth 86,107.5 billion rupiah.

If viewed in terms of GDP over constant prices, the annual increase for the hospitality services industry sector continues to occur. In 2013 GDP at constant prices in the hospitality services industry amounted to 47,699.6 billion rupiah, this figure increased by 7.8% to amounted to 51,426.7 billion rupiah in 2014. Similarly, in 2015 the number of GDP has increased by 5.66% resulting in GDP value in 2015 amounted to 54.340.3 billion rupiah. In 2016, GDP increased 5.3% to 57,232.2 billion rupiah (Central Bureau of Statistics, 2018). These data reinforce the GDP number statement that the hospitality services industry in Indonesia has grown increasingly refers to the favorable prospects in the future.

---

* Corresponding author.

ICMEM

In the hospitality industry, frontline employees are the most important players in service delivery to customers (Karatepe, 2013). Service companies have the opportunity to benefit from the relationships that exist between frontline employees and customers, such as customer loyalty (Bove&Johnson, 2006). This is because frontline employees are company representatives who intensively interact directly through face to face and voice to voice with their customers (Karatepe&Aga, 2013). This important role implies that all forms of frontline employee behaviour will indirectly contribute to the achievement of organizational goals.

The organization is a container in which different employee behaviours are expressed with different consequences for the organization as a whole, both in terms of operational costs, productivity and decision-making processes (Appelbaum, Iaconi, &Matousek, 2007). Employee behaviour itself can be divided into two types, namely appropriate behaviour with organizational norms and behaviour beyond the norm organization (Coccia, 1998). Behaviours beyond the norms of the organization which are then referred to as deviance behaviour may result in harm to the organization (Daunt&Greer, 2017). Because deviance behaviour can cause harm to the organization, managing deviance behaviour is very important to be considered in any organization's strategic decisions (Agboola&Salawu, 2011).

One of the strategic decisions that can be considered is by implementing Customer Relationship Management (CRM). The root of CRM is relationship marketing which aims to improve long-term relationships with customers, which is the main source of profitability of service companies (Debnath, Datta, & Mukhopadhyay, 2016). In the context of relational marketing between employees and customers, some experts advise caution in assuming close relationships between customers and employees in relation to corporate interests as revealed by Bove&Johnson (2006).

The high intensity of deviance behaviour in the hospitality sector has been a concern for many managers and academics, which has implications for the increased cost of the organization's reputation (Tresidder&Martin, 2018). According to Amato-Mc Coy (2009) about 35% of losses in the retail sector arise due to the deviance behaviour of employees by providing free products, as well as discounts of products and services to friends. Previous empirical research conducted by Hawkins (1984) identifies one of the service behaviour of servant employees in the restaurant service industry, the phenomenon that there is often food and beverage consumption that does not appear in the bill. This matter after being traced by acts of theft committed by employees, one of them is a social theft with the motive of giving free food to friends of employees who visit the restaurant. Brady, Voorhees&Brusco (2012) studies indicate a negative side in the relationship between employees and customers and then classify those behaviours as service sweethearting that is deviance behaviour of employees by providing services or products for free, asking customers to pay below the price or with giving off-company discounts to customers who have a certain proximity relationship with employees.

The concept of sweethearting service is a unique and relatively rare concept of deviance behaviour. This is evidenced by there are only 2 scopus indexed articles with keywords "service sweethearting" (scopus.com, 2018). This concept has previously been studied in the context of restaurant, retail, salon and golf services (Brady et al., 2012) and in the context of retail companies (Dabil, 2013). While this research chose company in sector of hospitality and tourism industry as research object, that is Prime Plaza Hotels and Resorts group. Prime Plaza Hotels and Resorts is one of the market players in the hospitality and tourism industry sector which has a significant market share in Indonesia. The group with Plaza Hotels and Resorts brand has 4 star hotels located in strategic places in Indonesia and focuses on customers who travel on business or leisure.

The indication of service sweethearting behaviour in Prime Plaza Hotels and Resorts group is reflected in the attitude of employees who provide free drinks, food and laundry, and give discounts to stay to customers, especially customers known by employees. Having traced the behaviour has had an effect on the decrease in corporate earnings. The management company does not mention its exact nominal value, but it is quite detrimental. This was conveyed by one of the managers of Prime Plaza Hotels and Resorts group. The behavioural indications found underlying this study were conducted on Prime Plaza Hotels and Resorts group. This study contributes to know the antecedents that

affect the appearance of service sweethearting behaviour in Prime Plaza Hotels and Resorts group.

According to research Brady et al., (2012) there are 3 groups of factors that influence service sweethearting behaviour. The first factor is rewards consisting of repayments, and additional income. The second factor is the factors associated with the work, among others, such as deviances of norms working group, job satisfaction, commitment to the company. While the third factor relates to the prevention of irregularities such as the certainty of punishment, the level of punishment and job authority. In terms of its effect on service sweethearting, there are factors that serve as moderators, namely the nature of factors such as individual ethics, the need to be accepted in the social environment, and the tendency to be more willing to take risks. The prior research of Brady et al., (2012) found that the need for acceptability in the social environment and the tendency to be bolder in taking risks consistent with deviance behaviour, except for individual ethics. The nature factor of being a moderator is based on the research of Cullen&Sackett (2003) in which the nature factor moderates situational factors of deviance behaviour. On the other hand the properties factor can suppress the incidence of deviance behaviour (Colbert, 2004).

Based on some previous empirical research that has been presented, this study will examine the effect of these three factors antecedent of service sweethearting and factors need to be accepted in the social environment as a factor of moderation against reciprocity. The existence of the service sweethearting phenomenon and the incidence of losses due to deviance behaviour in the Prime Plaza Hotels and Resorts group behind the conduct of this research. The purpose of this study is as a recommendation for the company to suppress and control the existence of service sweethearting behaviour. This is important to examine because understanding of deviance behaviour can provide deep insight into the growing marketing realities (Daunt&Greer, 2017).

6. Literature Review

The saying that "people are the most important asset" is no longer relevant to the times, the saying has changed to "the right people are your most important asset" (Collins, 2001; Wirtz&Jerger, 2016). What is "the right people" is an employee who shows the behaviours that organization wants (Collins, 1999; Wirtz&Jerger, 2016). So that managing employees to be the right employees that display the desired behaviour to achieve organizational goals is an important task for the organization.

Formal organizations regulate the behaviour of members of their organizations through regulations, both in the form of formal guidelines established by management as well as informal norms set by the working group. In practice, unofficial norms are often inconsistent with the formal rules of the bureaucracy. This leads to violation of rules of behaviour known as deviance behaviour (Hollinger, Slora&Terris, 1992). Behaviour is considered to be distorted when organizational policies, or internal rules are violated and the consequences will affect the organization (Appelbaum et al., 2007; Robinson&Bennett, 1995). Academics call this behaviour with many different names, namely workplace deviances (Bennett&Robinson, 2003), counterproductive behaviour (Zheng, Wu, Chen, & Lin, 2017; De Cuyper et al., 2014) and antisocial behaviour (O'Leary-Kelly, Duffy, & Griffin, 2000; Giacolone&Greenberg, 1997).

Deviance behaviour has attracted many researchers in recent years. This is because employee behaviour can contribute significantly to organizational outcomes (Sharma Bhaskar&N. Khera, 2014), especially the behaviour of frontline employees in service companies (Lim, Lee, & Foo, 2017). One type of deviance behaviour that can be done by frontline employees but rarely explored is the behaviour of service sweethearting (Brady et al., 2012).

Service sweethearting has previously been studied in several contexts. Brady et al., (2012) conducted research in the US with a sample of employees in the restaurant field (52%), retail stores (32%) and other service companies such as golf courses and salons (16%). While the study conducted by (Dabil, 2013) focuses on the context of retail companies in Saudi Arabia. Also, Brewster et al., (2018) that tested the restaurant waitress in the US as a respondents of their survey about service sweethearting behaviour.

ICMEM

Brady et al., (2012) defines service sweethearting as a deviance behaviour of employees by providing services or products for free, asking customers to pay below the price or by providing discounts outside the company rules to customers who have a certain proximity relationship with employees. Service sweethearting is also interpreted as a behaviour with the aim to please customers but exceeds the organizational limit (Yagil&Shultz, 2017). In addition, if viewed from the perspective of employees, service sweethearting can be defined as "extra role behaviour" employees who can contribute to customer perspective of the organization (Collier, Barnes, Abney, & Pelletier, 2018). Extra role behaviours may include providing unrelated support services (Wang, 2011) as well as extra unexpected behaviour in the norms of commercial transactions to make customer service delivery more memorable (Collier et al., 2018; Price, Arnould, & Tierney, 1995).

Service sweethearting is a form of misbehaviour committed by employees to create harmony with customers, by opposing rules and norms applied by the organization (Boukis, 2016) and even modifying service delivery to meet customer needs, for example by giving unofficial discounts (Gwinner, Bitner, Brown, & Kumar, 2005) but at the company expenses (Brewster, Brauer & Lynn, 2018). Service sweethearting behaviour is against the rules set by the organization, but is different from other forms of irregularities. Most forms of employee and customer theft behaviour are usually done unbeknownst to others, but in the service sweethearting behaviour both employees and customers are aware and collaborate to achieve their respective goals (Brady et al., 2012). This is in accordance with Agency Theory which argues that customers will participate in the exchange process that occurs for their own benefit (Boukis, 2016). Therefore, sweethearting is different from other forms of irregularities and interesting to explore more deeply.

Empirical research on organizational behaviour suggests that employees engage in deviance acts because of a combination of individual and workplace factors (Greenberg, 2002; Hollinger&Clark, 1983). In addition, deviance acts are also associated with social and economic exchange (Greenberg&Scott 1996). Social Exchange Theory predicts that in a social exchange relationship the provision of feedback, rewards and benefits that occur within the organization will impact on the behaviour of organizational members (Holly Buttner, Lowe, & Billings-Harris, 2010). Social Exchange Theory strengthens the use of remuneration factors in this study, namely financial gain and reciprocity.

Other factors that are likely to cause service sweethearting behaviour are deterrent factors, namely punishment severity, punishment certainty and job control. Autonomy provided can be a gap for employees to collude with customers. This can actually be detrimental by generating lower margins for the organization, because pleasant transactions are the ultimate goal of service sweethearting behaviour (Zablah, Sirianni, Korschun, Gremler, & Beatty, 2017). If there is any leniency or work authority it can trigger the appearance of deviance behaviour (Brady et al., 2012).

Management of deviance behaviour in the workplace is increasingly gaining attention in organizations globally because such behaviour can harm organizational finances (Appelbaum et al., 2007) as well as affect the perception of jealousy of customers who do not get preferential services such as customers who have proximity to employees (Collier et al., 2018).

7. Hypothesis Development

Recent studies finding shows that there are three factors as a antecedents of service sweethearting behaviour, i.e. remuneration factors, job related factors and detterence factors. Remuneration factors is a new theme of antecedents of service sweethearting founded by Brady et al., (2012). Remuneration factors studied in this research are reciprocity and financial gain.

Material gains are the most powerful reason for employees to engage in deviance behaviour (Brady et al., 2012). The first remuneration factors that investigated in this research is reciprocity. Reciprocity defined as universal norms, specifically that people should help others that help them in the past and do not harm them too (Scholl, 1981). Several

ICMEM

prior research found that there are social obligations for customers known to employees to reciprocate the extra services provided by these employees (Belk, 1976; Brewster, et al., 2018). So there is a possibility that the greater the chance for repayment will be the greater the opportunity to do service sweethearting. Previous studies conducted by Boukis (2016) found that when employees act out of their role for the benefit of customers, with the purpose of meeting customer needs, there will be positive affective reactions from the receipt of benefits provided by employees, so that customers can also reply through actions that contribute to employee welfare on the basis of social exchange theory (Boukis, 2016; Brady et al., 2012).

Service sweethearting behaviour mostly motivated by the perceived of economic incentives (Brewster et al., 2018) and expectation of extra rewards (Sharma Bhaskar&N. Khera, 2014). In addition, additional tips given by customers may encourage behaviour to steal from employers by providing free food and beverages to customers (Lynn&Brewster, 2018). So the possibility of higher chance to get additional revenue then the greater the possibility to do service sweethearting. So hypothesis that can be formulated:

H1: Service sweethearting is high when there is an opportunity to (a) reciprocity and the opportunity to earn (b) an additional income.

Deviance behaviour is usually done by a group of people who are subject to group norms, but contrary to the prevailing organizational norms. Referring to the previous empirical research conducted by Priesemuth, Arnaud & Schminke (2013), each work groups have their own perception of a behaviour that classified as deviance, some of deviance behaviour precisely trusted as a normal behaviour in a particular organization because it was their culture basic assumptions (Campbell&Go, 2014). Previous studies conducted by Maine-Melis (2010) also found that employee deviance behaviour has different effects depending on the reference group they follow. In other words, employees who engage in deviance behaviour are employees who are consistent with certain social group norms that are distorted, because in their group it is an acceptable behaviour.

Mulki, Jaramillo, & Locander (2006) found there is relationship between job satisfaction and deviance behaviour. Dissatisfaction also identified as one of many antecedents that lead to increase deviance behaviour (Rashid, Saleem, & Rashid, 2012; Parsa, Paki, & Yazdani, 2014). If employee satisfaction is low, it will tend them to withdraw from work and exactly allows them to perform deviance behaviour including service sweethearting. Similarly, the lack of organizational commitment, is also the most possibility factor of engaging in unethical behaviour (Appelbaum et al., 2007). Previous research by Mulki et al., (2006) also claims that employees who are not satisfied with their work have lower organizational commitment levels and tend to be unconcerned about the future wellbeing of the company. Therefore, organizational commitment ultimately leads to deviance behaviour. Based on the reasons that have been put forward, the proposed hypothesis is :

H2: Service sweethearting is high if (a) deviance of work group norms is high (b) job satisfaction is low, and (c) organizational commitment is low.

While the research conducted by Kantor (1983) found that employees who feel the acts of irregularities within the company are difficult to detect, they will tend to easily do deviance. Employees who perform irregularities feel safe, because the possibility of sanctions given is light based on the rules or laws in the company. The costs incurred for dishonest acts committed by employees are greater than expected benefits. Therefore the organization should increase severity punishment (Mazar&Ariely, 2006). The Classical Criminology theory developed by Cesare Beccaria (1995) states that basically everyone has the opportunity to choose a criminal act if it is backed by big profits, but if the person realizes there is a firm sanction imposed then they will not commit a criminal offense, the criminal behaviour will the more interesting if the results obtained are greater than the applicable sanctions. In addition, employees who have wider employment authority are more vulnerable to deviances. Employees who are immoral and have more work authority tend to have deviance behaviour (Murphy, 1993). The greater the authority of a person in a job the greater the opportunity for the person to make a deviance, so strict supervision is required (Boukis, 2016). So hypothesis that can be proposed is :

ICMEM

H3: Service sweethearting is high if (a) the certainty of punishment is weak, (b) the severity of punishment is weak, and (c) the employee has greater job authority than it should.

When a person wants to be accepted in a particular social environment they will usually obey the norms prevailing in that social environment, because otherwise they may get social sanctions. This is in accordance with the social need theory initiated by Greenberg&Barling (1996), that the social motive of being able to join and cherish in its social group is a literal need of a human being. So that employees can perform deviance behaviour if aims to be accepted in the social environment and pursue the social approval (Kim&Choi, 2017). Cialdini (2007) finds that customers who receive a sweethearting gift often have an obligation to reciprocate, if this norm is violated it will lead to social sanctions such as being excommunicated from their social group. When a person with a need for acceptance in a low social setting may be less likely to take repayment, and vice versa if the need for acceptance in their high social environment sometimes feels obliged to reciprocate. Based on the relationship between service sweethearting, reciprocity and the need to be accepted in the social environment, the proposed hypothesis is:

H4: The need to be accepted in the social environment can reinforce the effect of reciprocity on service sweethearting.

8. Research Method

The context of this study was conducted at Prime Plaza Hotels and Resorts Indonesia. All permanent employees of the Prime Plaza Hotels and Resorts group are selected as a population due to indications of misbehaviour of service sweethearting within the organization. Data were collected through the distribution of questionnaires which were then processed using Partial Least Square (PLS). Sampling was conducted using purposive sampling technique with a total sample of 191 respondents. However, from a total of 191 questionnaires, it was reduced to about 44 questionnaires because of the incompleteness of the filled data so that the final data used were 147 questionnaires.

This research uses 2 dimension of reward factor that is reciprocity and additional income. Reciprocity and additional revenue are measured by items developed by Brady et al., (2012). While the factors associated with the work of dimensional deviances seen working group norms, job satisfaction, and commitment to the company. The deviance of the working group norms is measured by 4 items introduced by Beattie, Longabough, & Fava (1992). Job satisfaction is measured by 3 items developed by Hartline and Ferrell (1996). Commitment to the company is measured by 4 items adopted from Hunt, Chonko, & Wood (1985) and Hunt, Wood, & Chonko (1989) research.

In addition, this study also examines factors related to the prevention of irregularities, which are seen from the dimensions of the certainty of punishment, the level of punishment, and the authority of the work. Certainty of Punishment is measured by 5 items adapted by Robinson&O'Leary-Kelly (1998). The punishment rate was measured by 5 items developed in the Hollinger&Clark (1983) study. The job authority was measured by 3 items adapted from Dwyer&Ganster's (1991) research.

The need for acceptability in the social environment was used as moderation in this study. This variable is measured by 4 items developed by Lennox&Wolfe (1984). Service Sweethearting which became the main focus in this study was measured by 5 items constructed by Brady et al., (2012). The measurement scale used for all variables in the 5-point likert questionnaire ranging from 1 (disagree) to 5 (agree).

The study also used several control variables: gender, education, occupation, work experience, and income. Gender is measured on a 2 point nominal scale to distinguish between men and women. Respondent's education is also measured on a nominal scale of 6 points based on high school education, D-3 (diploma), S-1 (bachelor degree), S-2 (master degree), S-3 (doctoral degree) and others. The job type is measured on a nominal 2-point scale with encoding type of work directly related to the customer given the code (1) and for the type of work not directly related to the customer with the code (0). Work experience is measured on a 4-point nominal scale to differentiate employees with work experience of less than 3 years, 3 to 6 years, 7 to 10 years and over 10 years. While the income is measured on

ICMEM

a nominal scale of 4 points ranging from income of less than 3 million, 3 to 6 million, 6 to 10 million and more than 10 million.

9. Findings

This study uses partial least square analysis (PLS) to test the formulated hypothesis. The results of the PLS analysis found that significant hypotheses and models explain 46.6% variance of the sweethearting frequency. The result of PLS analysis shows that a number of 3 hypotheses are significant while the other 6 hypotheses are nonsignificant. Financial gain and deviance work group norms are very significant with coefficient p <.05 while punishment certainty is significant with p <.01. While reciprocity, job satisfaction, organizational commitment, severity of punishment, job control and reciprocity × need for social approval found no significant results. Table 1 below shows the results of hypothesis testing using PLS.

Table 1. Partial Least Squares Results for the Sweethearting Antecedents Model

Predictor	Coefficient
Remuneration Factors	
H1a: Reciprocity	0.071 [n.s]
H1b: Financial gain	0.28**
Job-Related Factors	
H2a: Deviance work group norms	0.279**
H2b: Job satisfaction	0.042 [n.s]
H2c: Organizational commitment	-0.012 [n.s]
Deterrence Factors	
H3a: Punishment certainty	0.116 *
H3b: Severity of punishment	-0.055 [n.s]
H3c: Job control	0.046 [n.s]
Trait Factors	
H4: Reciprocity × Need for social approval	-0.014 [n.s]
R^2	
	0.466

*p < .05.
**p < .01
Notes: n.s. = nonsignificant

Partial Least Square makes it possible to estimate the explicit latent variable (LV) score, and then in this study the bootstrapping resampling method was used to test the proposed model. The bootstrapping procedure is applied to generate a statistical t value as a model significance test. T-statistics are calculated for all coefficients, based on their stability across the sub-samples, thus indicating which relationship is statistically significant. As shown in Figure 1, the results illustrate both confirmed hypotheses and unsupported hypotheses.

In relation to antecedent remuneration factors, it was found that financial gain was significantly related to service sweethearting behaviour (t = 1.717> 1.96) but reciprocity was not found to be positively related to service sweethearting (t = 0.135 <1.64), so Hypothesis 1a was not supported while Hypothesis 1b was supported.

Then Hypotheses 2a, 2b, and 2c argue that antecedent job related factors that affect service sweethearting behaviour are deviances from work group norms (a), job satisfaction (b) and organizational commitment (c). The results showed that the deviance of work group norms was significantly related to service sweethearting (t = 2.155> 1.96), but job satisfaction (t = 0.358 <1.64) and organizational commitment (t = 0.16 <1.64) were not found to be positively associated with service sweethearting. So, only H2a is supported.

Hypothesis 3 predicts that antecedents of deterrence factors such as the certainty of punishment (a), the level of punishment (b), and work authority (c) are positively related to service sweethearting behaviour. The results showed that the certainty of punishment (t = 1.167 <1.64), the punishment rate (t = 0.654 <1.64) and job authority (t = 0.547 <1.64) were not significantly related to service sweethearting, so hypotheses 3a, 3b and 3c were not supported.

ICMEM

Then, Hypothesis 4 predicts that the need to be accepted in the social environment can strengthen the effect of reciprocity on service sweethearting. The results show the opposite, that the need for acceptability in the social environment actually weakens the effect of reciprocity on service sweethearting (t = 0.025 <1.64), so H4 is not confirmed.

In all control variables, it was found that there was no significant effect on service sweethearting, gender (t = 0.98 <1.64), education (t = 1.262 <1.64), occupation (t = 0.713 <1.64), work experience (t = 0.485 <1.64) and income (t = 0.77 <1.64). The magnitude of the overall effect of variables on service sweethearting is 0.466. In summary, the results of the hypothesis test analysis found are illustrated in Figure 1 below.
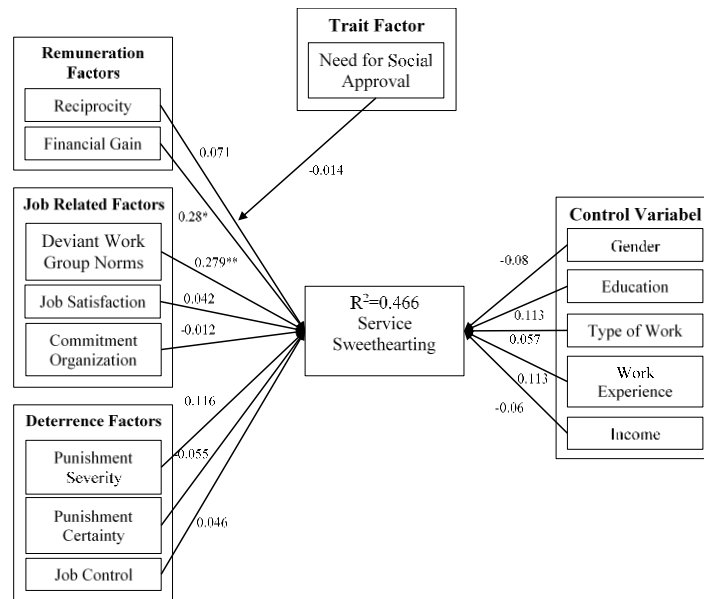
Figure 1. Results of Research Model

10. Discussion

Hypothesis 1 shows that reciprocity has no significant effect on service sweethearting. This means that even if employees have a great opportunity to return the favor, this does not affect them to do service sweethearting. So reciprocity is not a factor affecting employees to perform deviance behaviour sweethearting service. The average employee is also less likely to agree with this, even if someone should help others who have helped, but not necessarily respond with service sweethearting behaviour (Scholl, 1981). Prior research instead finds that employee behaviour that delivers exceeding customer benefits leads to surplus value for customers, one of which is customer reciprocity behaviour toward employees and organizations. In other words, the relationship is just the opposite, reciprocity is not an antecedent but a consequence of service sweethearting behaviour (Boukis, 2016).

However, the opportunity to earn additional income was significant for employees to do service sweethearting. Additional income provided by customers in the form of unofficial payments such as tip (Brady et al., 2012). Although the average employee thinks less agree if this service sweethearting can generate additional money but when there is an opportunity to get additional revenue it allows a factor that causes them to do service sweethearting, because additional revenue such as tuition earned can exceed the salary. Brady et al., (2012) describes that many frontline employees expect customers to tip more if given extra benefits. This behaviour is most common in the service industry where giving tip is the norm.

ICMEM

In hypothesis 2, it's found that one part of hypothesis 2 is significant, that is factor deviance of work group norm. Employees who know the deviance of their work group norms is high hence can have high influence for the employee to do deviance, such as service sweethearting. Because even if employees make irregularities, they are considered fair, so they remain accepted in their workgroup environment and are not considered a negative behaviour, (Greenberg, 1997; O'Leary-Kelly, 1998). The second factor of job related factors is job satisfaction. Satisfaction is identified as a key dimension for evaluating employee-customer relationships (De Wulf et al., 2001) and internal (employee) and external customer satisfaction are essential (Sharma Bhaskar&N. Khera, 2014). While the results showed that job satisfaction did not affect the service sweethearting, this illustrates that employees have been feeling a little satisfied with their work, their bosses and company policy. A person with a high level of job satisfaction will show a positive attitude towards his job while someone who is not satisfied with his work will show a negative attitude towards the job. With these positive attitudes, they are less likely to engage in deviance behaviour such as service sweethearting.

Similarly, the commitment to the company that was also not affect the service sweethearting. It indicates that although commitment is low but behaviourally does not affect deviances. But they can do other things like moving to other promising companies in terms of higher salaries, giving more freedom, higher positions as well as people who are more friendly because the average employee thinks somewhat agree with this. The linkage between commitment to one's behaviour is reflected in the condition that if commitment to a firm is high it can affect performance improvement and the decision to remain in the organization (Scholl, 1981; Brown&Gaylor, 2002). Organizational commitment that has a negative relationship with deviances demonstrates the importance of maintaining committed employees. Highly committed employees tend to have behaviours consistent with organizational goals and are consistent with organizational norms, guidelines, and policies. They resist the temptation to engage in deviance behaviour that could harm the organization or project a negative image of the organization (Mulki et al., 2006).

Certainty of punishment in hypothesis 3 does not have a significant effect on service sweethearting. Although many respondents rate it somewhat unlikely there is a certainty of punishment about service sweethearting in the company, but it does not affect them to do service sweethearting. However, the certainty of corporal punishment must remain clear and decisive given the assurance of a weak and dubious punishment may open up opportunities for irregularities because of the difficulty of such behaviour to be detected. As the research conducted by the Kantor (1983) employees who feel the acts of irregularities in the company is difficult to detect, then they will tend to be easy to deviate. The existence of a strong penalty of certainty should consider customer and employee relations especially in the frontline that is directly opposite the customer. In this study respondents who deal directly with customers is more dominant that is equal to 71.4%, the goal for the relationship between customers and employees are not disturbed by the certainty of punishment that has been established and does not reduce the positive impact of the relationship.

While the level of punishment in this study did not affect the service sweethearting, indicating that there is a tendency of neutral employees in assessing the level of punishment that exist in companies related to service sweethearting, the presence or absence of punishment threats, from the lightest to the heaviest does not seem to affect employee behaviour, which allows them to avoid deviance behaviours such as service sweethearting. But there is still a need for an appropriate level of punishment in order for employee behaviour to be maintained from the possibility of deviance behaviour, as stated in the Classical Criminology theory that basically everyone has the opportunity to choose a criminal act if it is backed by big profits, but if the person is aware there are sanctions that are applied strictly so that the concerned will not commit a crime.

Larger employment authority also has no significant effect on service sweethearting. There is a tendency of neutral employees to assess the authority of this work, although it has no effect on service sweethearting but this should be kept in mind because there is still the possibility of employees performing deviance behaviour, especially employees with low moral level (Murphy, 1993) So the deviance prevention factor consisting of the certainty of punishment, the degree of punishment and job authority entirely has no effect on service sweethearting.

Hypothesis 4 is the need to be accepted in the social environment that has a role to moderate the effect of reciprocity

ICMEM

on service sweethearting was actually found to weaken its influence. The need to be socially acceptable is one of the trait factors rarely discussed in the literature on deviance behaviour. However, according to social need theory, this is a relevant factor affecting the deviance behaviour of service sweethearting (Greenberg&Barling, 1996; Brady et al., 2012). Although many employees rate it somewhat amenable to the need to be socially acceptable to potential service sweethearting behaviours but still unable to reinforce the impact of reciprocity on service sweethearting. The possibility of employees providing a form of repayment not with service sweethearting but with other forms considering they are somewhat agree with the need to be accepted in the social environment. While all control variables are gender, education, type of work, work experience, and income does not affect service sweethearting.

11. Conclusions

The closeness between employees and customers in addition to a positive impact it also has a dark side. (Collier et al., 2018) found that positive impacts can, among others, increase customer satisfaction, create repurchase intention and loyalty to companies and can have a positive impact on Word of Mouth (WOM). While the dark side of the closeness between employees and customers, among others, can lead to irregularities such as service sweethearting that can harm the company. The deviance behaviour of service sweethearting is not only detrimental to the company's financial side (Brady et al., 2012) but it can also lead to jealousy of customers that lead to the perception of injustice (Ludwig, Barnes, & Gouthier, 2017). This jealousy is based on the question of why one customer receives privileged service while the other customer does not (Collier et al., 2018).

The results of this study found several factors that may affect service sweethearting that is additional income and deviance of group norms of work and the need to be accepted in the social environment as a moderator that weakens the relationship between reciprocity to service sweethearting. By doing this research is expected to be prevented or suppress the existence of deviance behaviour service sweethearting so that positive impact from proximity of employees and customers can be maintained and the losses incurred can be reduced.

This research on service sweethearting contributes to the company's management in several key aspects. For corporate managers, this study contributes as a guide to understanding how to respond to employee deviance behaviour related to its close relationship with customers (Boukis, 2016), particularly in the hospitality services industry. First, companies must create a positive working climate. A positive work environment can improve morale and affect employees' intentions to commit irregularities. A positive work environment can be created by building discipline, teamwork, loyalty, and freedom of expression. Second, companies need to do training. Every employee should be trained in the company's values and integrity and the rules and consequences of deviance behaviour should be communicated and affirmed. The third major aspect is that companies should implement employee performance appraisal systems and appropriate incentive systems. With the enactment of this matter then the discipline of employees will be better, so they are more aware and obey the rules that apply. A performance appraisal system that lists ethical standards of behaviour as an important point value is one of the formal ways to minimize service sweethearting. Based on the standards of conduct ethics, managers can set appropriate penalties for employees who exceed the limit to provide certain benefits to consumers (Boukis, 2016).

Bove&Johnson (2006) suggests another method of not letting frontline employees serve customers for more than two years, enforcing job rotation, using work teams, and ensuring customers have many employee contacts (not just an employee). In addition, strict managerial control implementation is required to minimize deviance behaviour of service sweethearting. Managers must monitor in detail and evaluate how frontline employees perform their roles when dealing with customers to avoid misuse of company resources (Boukis, 2016).

This study also has some important implications for the academic world, this study focuses on service sweethearting, a topic rarely studied in the literature on organizational deviance behaviour. This study refers to Brady et al., (2012) study taking samples in restaurants (52%), retail stores (32%) and other service companies such as golf

ICMEM

courses and salons (16%). However, in this study the overall sample studied is in the field of hospitality, one of the service industry sector in Indonesia whose prospect is getting better from year to year. This study illustrates that in the service industry, especially hospitality, the closeness between employees and customers can have a positive and negative impact on the company, the proximity can trigger a special treatment given by employees to customers, which is a phenomenon in Indonesia. This is very interesting considering Indonesia is a country with high collectivity with group interests more important than individual interests. Individuals in the Indonesian society tend to abide by the idealism of the community or the group in which the individual becomes part of it (Hofstede, 1991). The study also adds a number of literature on customer participation in transaction processes that deviate to service companies (Boukis, 2016) where service sweethearting occurs with collaboration between customer and employee (Brady et al., 2012). Not only that, this research also supports several theories of Social Exchange Theory (Holly Buttner et al., 2010) and Agency Theory (Boukis, 2016). Social Exchange Theory is supported by the accepted H1b, that the opportunity to earn rewards or additional income will encourage employees to do anything, including deviance behaviour. Similarly, the Agency Theory which states that customers collaborate with employees to perform acts of irregularities in order to get benefits for customers themselves.

This research is certainly not independent of the limitations that can be used as a reference for further research in the future. The difficulty to investigate and predict whether respondents are employees who have done service sweethearting is a limitation of this study. Future research with service sweethearting topics should take into account the samples are employees who have already done service sweethearting, so that factors can be found more. This study is only conducted on one organization, so the results can't be generalized to each type of company. Further empirical studies are needed to address this. In addition, this study is predominantly adapted from previous research conducted by Brady et al., (2012) including the questionnaire items, so it is better that future research will further explore and develop the concept of service sweethearting from various other sources. Then, in this study the company under study is a company in the field of services, companies in the field of manufacturing can be a consideration for future research in the future. Future research should also explore whether deviance service sweethearting behaviour should be neutralized and punished on the dark side for the organization (Boukis, 2016).

References

Agboola, A. A., & Salawu, R. O. (2011). Managing Deviant Behavior & Resistance to Change, *International Journal of Business & Management*, *6*(1). 235–242.

Appelbaum, S. H., Iaconi, G. D., & Matousek, A. (2007). Positive & negative deviant workplace behaviors: causes, impacts, & solutions, *Corporate Governance: The International Journal of Business in Society*, *7*(5). 586–598.

Belk, R. W. (1976). It's the thought that counts: A signed digraph analysis of gift-giving, *Journal of Consumer Research*, *3*(3). 155–162.

Boukis, A. (2016). Achieving favourable customer outcomes through employee deviance, *Service Industries Journal*, *36*(7–8). 319–338.

Bove, L. L., & Johnson, L. W. (2006). Customer loyalty to one service worker: Should it be discouraged?, *International Journal of Research in Marketing*, *23*(1). 79–91.

Brady, M. K., Voorhees, C. M., & Brusco, M. J. (2012). Service Sweethearting: Its Antecedents & Customer Consequences, *Journal of Marketing*, *76*(2). 81–98.

Brewster, Z. W., Brauer, J. R. & Lynn, M. (2018). Morality at Work: Do Employees Moral Commitments Inhibit Service Disparities & Reactive Workplace Behaviors?, *Social Currents*, 5(3). pp. 244–263.

Campbell, J. & Go, A. S. (2014). Culture Corrupts ! A Qualitative Study of Organizational Culture in Corrupt Organizations, *Journal of Business Ethics*, 120, pp. 291–311.

Collier, J. E., Barnes, D. C., Abney, A. K., & Pelletier, M. J. (2018). Idiosyncratic service experiences: When customers desire the extraordinary in a service encounter, *Journal of Business Research*, *84*, 150–161.

Dabil, S. (2013). Sweethearting : The Complicity Relatives Theft CRT in Saudi Arabia, *International Journal of Economics & Management Engineering*, *7*(3). 709–713.

ICMEM

Daunt, K. L., & Greer, D. A. (2017). The dark side of marketing: introduction to the special issue, *Journal of Marketing Management*, *33*(15–16). 1231–1235.

De Cuyper, N., Sulea, C., Philippaers, K., Fischmann, G., Iliescu, D., & De Witte, H. (2014). Perceived employability & performance: moderation by felt job insecurity, *Personnel Review*, *43*(4). 536–552.

Debnath, R., Datta, B., & Mukhopadhyay, S. (2016). Customer Relationship Management Theory & Research in the New Millennium: Directions for Future Research, *Journal of Relationship Marketing*, *15*(4). 299–325.

De Wulf, K., Odekerken-Schro der, G. & Iacobucci, D. (2001). Investments in consumer

relationships: a cross-country & cross-industry exploration, *Journal of Marketing*, 65, pp. 33-50.

Greenberg, Liane & Julian Barling (1996). *Employee Theft, in Trends in Organizational Behavior*, C.L. Cooper & D.M. Rousseau (Eds). New York: John Wiley & Sons.

Hawkins, R. (1984). Employee theft in the restaurant trade: Forms of ripping off by waiters at work, *Deviant Behavior*, *5*(1–4). 47–69.

Hollinger, R. C., Slora, K. B., & Terris, W. (1992). Deviance in the fast-food restaurant: Correlates of employee theft, altruism, & counterproductivity, *Deviant Behavior*, *13*(2). 155–184.

Holly Buttner, E., Lowe, K. B., & Billings-Harris, L. (2010). Diversity climate impact on employee of color outcomes: does justice matter?, *Career Development International*, *15*(3). 239–258.

Karatepe, O. M. (2013). The effects of work overload & work-family conflict on job embeddedness & job performance, *International Journal of Contemporary Hospitality Management*, *25*(4). 614–634.

Karatepe, O. M., & Aga, M. (2013). The effect of job resourcefulness on role stress, emotional exhaustion & overall performance: A study of frontline bank employees, *Journal of Financial Services Marketing*, *18*(2). 91–105.

Kim, M. J. & Choi, J. N. (2017). Group identity & positive deviance in work groups, *The Journal of Social Psychology*. Routledge.

Lim, E. A. C., Lee, Y. H., & Foo, M.-D. (2017). Frontline employees' nonverbal cues in service encounters: a double-edged sword, *Journal of the Academy of Marketing Science*, *45*(5). 657–676.

Lynn, M., & Brewster, Z. W. (2018). A within-restaurant analysis of changes in customer satisfaction following the introduction of service inclusive pricing or automatic service charges, *International Journal of Hospitality Management*, *70*, 9–15.

Mazar, N., & Ariely, D. (2006). Dishonesty in Everyday Life & Its Policy Implications, *Journal of Public Policy & Marketing*, *25*(1). 117–126.

Mulki, J. P., Jaramillo, F., & Loc&er, W. B. (2006). Emotional exhaustion & organizational deviance: Can the right job & a leader's style make a difference?, *Journal of Business Research*, *59*(12). 1222–1230.

Parsa, M. J., Paki, S. & Yazdani, M. (2014). The Investigation Of Moderating Effect Of Self-Esteem On The Relationship Between Deviant Behaviors & Emotional Exhaustion, Case Study: Employees Of Milk Company Of Pegah In Isfahan, *International Journal of Current Life Sciences*, 4(2). pp. 222–226.

Priesemuth, M., Arnaud, A. & Schminke, M. (2013). Bad Behavior in Groups: The Impact of Overall Justice Climate & Functional Dependence on Counterproductive Work Behavior in Work Units, *Group & Organization Management*, 38(2). pp. 230–257.

Rashid U, Saleem Z, Rashid S (2012). Perception of organizational politics & workplace deviance; mediating effect of job stress & low job satisfaction. *Asian Journal of Business Management*, 4(4): 396-406.

Scholl, R. W. (1981). Differentiating Organizational Commitment from Expectancy as a Motivating Force, *The Academy of Management Review*, *6*(4). p. 589.

Sharma Bhaskar, S., & N. Khera, S. (2014). Antecedents of discretionary risky-service behavior: an exploratory study, *International Journal of Bank Marketing*, *32*(6). 477–493.

Terris, W., & Jones, J. (1982). Psychological factors related to employees' theft in the convenience store industry, *Psychological Reports*, *51*(3, Pt 2). 1219–1238.

Tresidder, Richard & Martin, Emma. (2018). Deviant behaviour in the hospitality industry: A problem of space & time, *Hospitality & Society*, 8(1). 3-22.

Wirtz, J., & Jerger, C. (2016). Managing service employees: literature review, expert opinions, & research directions, *Service Industries Journal*, *36*(15–16). 757–788.

Yagil, D., & Shultz, T. (2017). Service with a conscience: moral dilemmas in customer service roles, *Journal of Service Theory & Practice*, *27*(3). 689–711.

Zablah, A. R., Sirianni, N. J., Korschun, D., Gremler, D. D., & Beatty, S. E. (2017). Emotional Convergence in Service Relationships: The Shared Frontline Experience of Customers & Employees, *Journal of Service Research*, *20*(1). 76–90.

Zheng, W., Wu, YCJ., Chen, XC., Lin, SJ. (2017). Why do employees have counterproductive work behavior? The role of founder's Machiavellianism & the corporate culture in China, *Management Decision*, *55*(3).pp.-

ICMEM

The 3rd International Conference on Management in Emerging Markets

Designing Compensation System to Increase Employee Performance in Cafe Asix

Dikki Palmin[a*], Nur Arief Rahmatshyah Putranto[b]

[a,b]School of Business and Management ITB

Abstract

Background: One of the sector in Indonesia's business industry that has a very high potential is restaurant industry. This growing industry is the second largest industry to contribute to Indonesia's GDP. One city in particular, Bandung, which is driven by the young demographic actively to contribute in innovation and entrepreneurship such as workshops, conferences, fashion, festivals, and the most it's culinary. However, the rapid growth in the restaurant industry gives a beneficial for the businesses itself but Cafe Asix was facing a serious issue which is declining in profit. After conducted a preliminary study to find the cause, it comes up with the unsatisfying in their compensation system.
Purpose: The purpose of this study is to determine a new design of compensation system that can be appropriately implemented in Cafe Asix to help overcome the issues and to increase the profit of the business.
Methodology: This study is using causal research to determine the cause of symptom that happened in Cafe Asix. Therefore, this research utilizes job analysis which consists job description and job specification that have been improved based on related theories for this case. Competencies that are included in job analysis will be used to calculate salary by using job-based structure and point method as the calculation process. After that an interview with the owner of Cafe Asix was conducted to validate and ensure that the aspects are compatible with the company.
Findings: The study resulted in a new design of compensation system that is most suitable for the company. Based on this recommendation, it is found that there are positions that is overpaid and underpaid. The selected recommendation is the most suitable with the company's budget capability, so that the new design of compensation system is expected to increase the profit of Cafe Asix.

Keywords: Human Resource Management; Compensation; Basic Salary

1. Introduction

Since 2014, Restaurant and Cafe Industry has consistently recorded extraordinary which grow 250% from 2009 to 2014 which is shown by increase of Indonesia's income per capita (Guide, 2017). Restaurant and cafe is a place where people can buy drinks, simple meals, and snacks, but nowadays in Indonesia, revealed that eating out has become part of ordinary social activities among Indonesians whereby they socialize and gather with families (Guide, 2017). According to Ministry of Trade (2015), the Indonesian culinary sector grew by 8.16% in 2015, together with fashion and handcraft industries. In order to survive in this particular industry, each restaurant or cafe has to provide a well-designed concept to offer to its customers and to differentiate itself from similar competitors (Mealey, 2018). They need to provide a complete experience for its customers, not only on how good the food and beverages are, but also an exceptional service, welcoming and comforting atmosphere of the place, and, what people nowadays called, Instagram-able interior, that would surely attract many customers to come. One of the city in Indonesia that has a lot of potential restaurants and cafes to be explored is Bandung. Bandung is known as world creative city in the world driven by young demographic active to contribute in innovation for creativity and entrepreneurship such as workshops, conferences and festivals, fashion, restaurant and cafe (UNESCO, 2018). Cafe Asix is one of 'must visit cafe' in

---

* Corresponding author.
  E-mail address: dikki.palmin@sbm-itb.ac.id

ICMEM

Bandung reviewed in *www.tripadvisor.com* in 2017, which is located in Jalan Talaga Bodas Burangrang, Bandung, provides great food and beverages from their original recipes that will not be found at any other places such as their famous Pizza Alle Carpaccio and their signature Sereh Iced Tea. Based on interview with the owner of Cafe Asix, this cafe is facing a serious problem which is a decline in its profit. Since 2014, Cafe Asix profit started to decline significantly about 10% per year. For any businesses, profit being the success indicators list which profitability is probably the first thing that people think to measure business success (Cutcher, 2016). In order to achieve the goals in business, employees become the most resource and being the key importance of the business (Ferres, 2018). By understanding employees, the business will be more profitable, lead more efficiency, create brand loyalty, close more deals and do better work (Ferres, 2015). Thus, to achieve this target then Cafe Asix should support and motivate their employee very well to work by improving its human resource management.

According to Dessler (2015), to ensure an organization has highly motivated employees, factors that should be considered are performance appraisal system, training conducted, and compensation. In order to find which factor that caused the declining of the profit and reducing the performance of employee, then questionnaire already distributed to employees as the prelimniasry study process to find the cause. The result shown most of employees are already satisfied with the performance appraisal system and training that held by Cafe Asix, but it is not happened for compensation in Café Asix. For the compensation fairness, it shown that only 8% of employees are satisfied while 92% of the employees are not satisfied with their compensation fairness. Salary includes in compensation as financial returns, benefits, tangible services the company provide towards employee as part of employment relationship (Milkovich, Newman, & Gerhart, 2014). In order to ensure that employees are willing to perform good, it is important for organization to have a well-designed compensation system to serve as a form of return for their contribution towards the company (Milkovich, Newman, & Gerhart, 2014). It is important to conduct this research to improve the compensation system of Cafe Asix to motivate their employee with better performance. Thus, the objective of this research is designing new compensation system that appropriate in Cafe Asix so it could increase the profit.

2. Literature Review

2. 1. Human Resource Management

Human Resource Management related with 'people' aspects which provide concepts and techniques where the people need to perform or personal aspects of company's management job (Dessler, 2015). Human Resource Management is focusing on managing people within the internal relationship specifically it involves the productivity use of people in achieving the company's business objectives in order to maintain the satisfaction of employees' necessity (Stone, 2017). In short, Human Resource Management gives people more reason to stand in a business with one company and drive one company to move forward compared to their competitor (Hall, 2008).

Human Resource Management is a part of competitive advantage, by improving this aspect, the company could be a noticeable improvement of performance, that could lead to improvement in profit which as the mainly goal for lot of businesses (Hall, 2008). Human Resource Management is the process of hiring, training, appraising, and compensating employees, and of attending to their labor relations, health and safety, fairness concepts (Dessler, 2015). There are several activities that included in Human Resource Management in order to support the business in one organization such as recruiting, selection, assignment, training, compensation, and other staffing actions (Walker, 1994). One of important Human Resource Activities is compensation because it plays a crucial and functional role as the heartbeat of Human Resource Management which vital to both employees and employer (Odunlami & Matthew, 2014).

2. 2. Total Return

Total return defined for employee work and loyalty within a company where the employee invests themselves especially the time for the company and it is a responsibility for the company to give returns on that time invested (Milkovich, Newman, & Gerhart, 2014). Total return for works shows that the variety of return that employee receive within a company for invested their time to work (Milkovich, Newman, & Gerhart, 2014).

2. 3. Basic Salary

ICMEM

Basic salary is a return that employee received if the employee successfully fulfilled the tasks and responsibilities (Milkovich, Newman, & Gerhart, 2014). To determine basic salary there are two methods within a company, the first one to pay for the person, regardless of the position filled in. Second method is to pay for position where salary payment is made based on competency requirement, job description, and job specification needed (Dessler, 2015). Pay for person approach usually referred as skill-based pay. The salary is determined through classifying attributes and skills owned by certain people without considered what position they are filling, it will be paid according with the skills (Dessler, 2015). Pay for position approach ensure salary are calculated thoroughly after considering all the considerations previously on equity, legal, and geographic aspects. It is often linked with competency-based job analysis in which the job analysis is accounting competency to assess each position (Milkovich, Newman, & Gerhart, 2014).

2. 4. Job Analysis

Job analysis is a systematically process of gathering information that consist of similarities and differences in the work within a company (Milkovich, Newman, & Gerhart, 2014). Job Analysis provides the fundamental information which it important to identify the content of job where these content use as input for describing and valuing work (Milkovich, Newman, & Gerhart, 2014). In compensation aspect, Job analysis have two critical uses, that are establishes similarities and differences in the work contents of jobs and it helps establish an internally fair and aligned job structure (Milkovich, Newman, & Gerhart, 2014).

2. 5. Job Evaluation

Job Evaluation is a process of systematically determining the proportionate worth of jobs to create a job structure within the organization (Milkovich, Newman, & Gerhart, 2014). The evaluation is done based on job content, skills required, value to organization, organizational culture, and external market (Milkovich, Newman, & Gerhart, 2014). Commonly, there are three methods to conduct job evaluation such as ranking method, classification method, and pint method. Ranking method defines as orders the job description from highest to lowest based on a global definition of relative value or contribution to the organization's success (Milkovich, Newman, & Gerhart, 2014). In classification method, a series of classes covers the range of jobs (Milkovich, Newman, & Gerhart, 2014). Class description is used as the labels where job description is compared to the class descriptions to decide which class is the best fit for certain job (Milkovich, Newman, & Gerhart, 2014). In point method, there are three common characteristics such as compensable factors, factor degrees numerically scaled, and weight that according to the importance of each factor (Milkovich, Newman, & Gerhart, 2014).

Based on the literature review done about compensation towards determining pay structure then researcher use job-based structure as the theoretical foundation to conduct data analysis where the salary will give based on employee's work and position. By using job-based structure, then researcher use point method to determine the salary of each employee's jobs. The reason of using point method are the salary can determine for each position in Cafe Asix where it is important to organization success equal as internal alignment with it is the advantage in systematic method that remove bias in each stage.

3. Methodology

The methodology that used for conducting this research consists of preliminary study, literature review, data collection, data processing and analysis, and conclusion and recommendation. This research used qualitative approach in conducting an interview and quantitative approach in conducting job evaluation, more specifically point method. The result salary calculation will be validated by means of interview before creating the conclusion and recommendation. In order to find the problem in Cafe Asix then researcher use questionnaire regarding to employee satisfaction toward compensation, performance appraisal, and training as well as interview with owner. In this research, secondary data includes job description as the explanation about the responsibilities of each position. Researcher reviews the job description that Cafe Asix owned and then construct the job analysis and determine competencies which act as the compensable factors. Then, researched determine the competencies based on the interview with owner of Cafe Asix and use Spencer and Spencer competency dictionary as the guideline. The

ICMEM

competencies divided into three parts such as; core competency, functional, and managerial competency, these parts called as the compensable factors. Then it is followed by determining compensable sub-factors which are taken from Spencer and Spencer competency dictionary. Additionally, working condition also added as the compensable factors.

The next step is conducted job evaluation by using point method. In conducting job evaluation, competencies in job analysis will be proceed by using Analytic Hierarchy Process calculator. The first step is conducting point method after determining compensable factors and sub-factors is determining the weight of each factors (Wi) and sub-factors (Wj). The owner was involved to determine the importance of each factors and sub-factors too. After determining the weight for each factors (Wi) and sub-factors (Wj), the weight of each sub-factors will be timed by the correspond factor to generate Wij. Wij represents the importance each sub-factor as total weight. Next, calculate maximum job value for each sub-factor by multiplying the total weight with 100000. The maximum job value is the score for the highest level for each sub-factor. After that, the step is determining the minimum job value by multiplying 10% in each sub-factor. After getting the maximum and minimum job value then determine the level of each sub-factors by using interpolation method. Interpolation is getting from maximum job value minus minimum job value then divided by number of scale of each competency minus 1. The last step in point method is to find job value by totaling all the competency value of certain job. Next, after done with point method, job salary can be calculated. In order to conduct this activity, it needs salary benchmarking per job value to know the job worth which getting from job value multiplying by benchmark salary. It will be 12 job worth generated from this activities with additional one is the average of the job worth for all of position. After conducting this activity, then interview with the owner of Cafe Asix is needed to ask the company about the salary recommendation from this research whether the result is acceptable, suitable, and applicable for Cafe Asix.

4. Findings and Argument

In Cafe Asix, there are eleven positions that researcher got from owner of Cafe Asix which are Restaurant Manager, Vice Restaurant Manager, Supervisor Kitchen, Supervisor Service, Cashier, Vice Supervisor Kitchen, Service, Pizza, Bartender, Kitchen, and Dishwasher. Core Competencies generates from Cafe Asix's value that got from the owner which are Customer Service Orientation, Teamwork, Organization Commitment, and Relationship Building. Next, for competencies that every division must owned are Self-Confidence, Initiative, Expertise, and Information Seeking. If the employee who responsible to lead another employee then required to have Managerial Competencies such as Team Leadership, Organizational Awareness, Analytical Thinking, and Flexible. Additionally, Working Condition use as the compensable factors which is consist of Comfort Level, and Risk Accident. This finding has been validated through interview with the owner of Cafe Asix. Core competency, functional competency, managerial competency, and working condition are the compensable factors that used in this research. The compensable factors and its sub-factors are shown in table 1. In determining the weights of each compensable factors and sub-factors, researcher asked the owner to select the most important factor and compare it with the other factors. In order to select the factor, it use Analytic Hierarchy Process (AHP) calculator and the weights generated are shown in table 1 along with the total weight, maximum job value, and maximum job value.

The value of each level in the compensable factors is determined by using interval method and the job value for each position is calculated by totaling all the competency value of the job. The result is shown in table 2. Price per Job Value Benchmark is then calculated by dividing the benchmark salary with the job value. Benchmark salary is obtained from another restaurants salary in the same industry. The third highest Benchmark/Job value is used as the standard to determine the salary for each position because it meets the budget capability of company which is Rp 52 Million . The job salary for each position is generated by multiplying the chosen Benchmark per Job Value and the results are shown in table 2.

Table 1. Factors and Sub-Factors' Weight, Max Job Value, and Min Job Value

Factor	Factor's Weight (Wi)	Sub-Factors	Sub-Factor's Weight (Wj)	Wij (Wi x Wj)	Max Job Value	Min Job Value
Core	47.70%	Customer Service Orientation (CSO)	36.80%	17.55%	17553.6	1755.36

ICMEM

Competencies		Teamwork (TW)	28.20%	13.45%	13451.4	1345.14
		Organizational Commitment (OC)	20.00%	9.54%	9540	954
		Relationship Building (RB)	15.00%	7.16%	7155	715.5
Functional Competencies	28.80%	Self-Confidence (SCF)	40.20%	11.58%	11577.6	1157.76
		Initiative (INT)	33.70%	9.71%	9705.6	970.56
		Expertise (EXP)	16.40%	4.72%	4723.2	472.32
		Information Seeking (INFO)	9.70%	2.79%	2793.6	279.36
Managerial Competencies	15.40%	Team Leadership (TL)	54.60%	8.41%	8408.4	840.8
		Organizational Awareness (OA)	23.20%	3.57%	3572.8	357.28
		Analytical Thinking (AT)	13.80%	2.13%	2125.2	212.52
		Flexible (FLX)	8.40%	1.29%	1293.6	129.36
Working Condition	8.10%	Comfort Level (CL)	50.00%	4.05%	4050	405
		Risk Accident (RA)	50.00%	4.05%	4050	405
Total	100%	Total		100%		

Table 2. Job Salary

Positions	Job Value	Benchmark Salary (Rp)	Benchmark/Job Value	Recommended Salary (Rp)	Salary Comparison
Service	21726.4	1,200,000	55.23234406	1,550,000	Constant
Pizza	20994.1	1,500,000	71.44864510	1,500,000	Slightly Higher
Kitchen	20994.1	1,500,000	71.44864510	1,500,000	Slightly Higher
Dishwasher	16865.1	1,200,000	**71.15285412**	1,200,000	Constant
Bartender	19583.3	1,500,000	76.58805328	1,400,000	Constant
Supervisor Kitchen	57425.9	2,500,000	43.53436341	4,100,000	Higher
Vice Supervisor Kitchen	57006.8	2,000,000	35.08353389	4,060,000	Higher
Supervisor Service	53780.9	2,500,000	46.48490449	3,850,000	Higher
Cashier	57518.5	1,500,000	26.07856603	4,100,000	Higher
Restaurant Manager	76500.3	4,000,000	52.28737665	5,450,000	Higher
Vice Restaurant Manager	74525.5	3,000,000	40.25467793	5,300,000	Higher

From the table above shows that there are few positions that getting slightly higher salary and higher salary. However, there are few positions that does not getting any improvement for the salary. Mostly the positions are getting higher than previous salary. For staff level, Service, Dishwasher, and Bartender are not getting improvement for the basic salary. It indicates that these positions are matching with their responsibilities. Next, Pizza and Kitchen are getting any improvement for their salary which means that their responsibilities are higher, so they need to pay more. For supervisor level, all of the positions are getting improvement for their basic salary. Supervisor also needs managerial competencies as their specification so this important to compensate more regarding to their responsibilities. Moreover, managerial level in Cafe Asix also getting improvement for their basic salary. Big responsibility and leadership make this level should pay more.

Regarding to Cafe Asix budget capability where it is Rp 52 M per month then compared with the last budget spent for basic salary, mostly of the positions are getting higher from the previous salary, it indicates that previously Cafe Asix is pay their employees lower than their budget capability. This thing could happen because Cafe Asix now facing a decline in profit so the revenue from the business might be not stable every time, so cafe decided to pay their employee lower than the capability. It means that it was a 'playing safe' process for the cafe because if they pay high the employees in the beginning then it gives effect to employee have high expectation so whenever any declining happens the employee cannot accept that because of the high expectation. But, this thing drives Cafe Asix into a serious problem to where the cause of their declining in profit caused by their employees itself where they are not satisfying with their basic salary. Thus, it is important to Cafe Asix to adjust their salary, so the internal fairness could be in keep. Mostly, the proposed salary is higher than the other cafe, so it indicates that the proposed salary will be competitive compared with another restaurant. The new salary hopes that increase the performance of the employee and affect to better performance for Cafe Asix. The better performance means that it will solve the symptom which is a decline in profit, so things will be fine further.

ICMEM

5. Conclusions

From the data that already process and analyze, the new basic salary was done generated which more suitable for the internal and external alignment as the necessary aspect in deciding compensation. Internal alignment ensures internal fairness as employee 's pay is equitable in relative to what their colleagues in the company are earning (Dessler, 2015). External alignment refers to the pay of what other employees get, those with the same job but work at different companies (Dessler, 2015). Moreover, the new basic salary is calculated based on the job requirement or demand so the salary that received of the employees are now become more compatible with the requirement, so it turns the employee to be more satisfied. The selected new salary was done by interviewing with the owner to ensure the recommendation is meet the company's budget capability. Cause, all of factors that considered in term of deciding compensation which are internal fairness, external alignment, and budget capability already fulfilled for the recommendation, so it is expected to give benefits for Cafe Asix in term of satisfying the employee about the salary aspect and then bring up the company to increase profit.

References

Badan Pusat Statistik. (2014). *Statistik Restaurant / Rumah Makan*. Jakarta: Badan Pusat Statistik.

Cutcher. (2016, October). *Cutcher & Neale*. Diambil kembali dari http://www.cutcher.com.au/blog/large-enterprise/top-four-indicators-to-measure-business-success

Dessler, G. (2015). *Human Resource Management*. Harlow: Pearson Education Limited.

Ferres, Z. (2015, May 11). Diambil kembali dari Entrepreneur Asia Pacific: https://www.entrepreneur.com/article/245848

Global Businees Guide. (2017). *Global Business Guide Indonesia*. Diambil kembali dari gbgindonesia: http://www.gbgindonesia.com/en/services/article/2017/indonesia_s_restaurant_and_food_franchise_sector_technology_and_innovation_key_to_future_growth_11800.php

Haan, J. d. (2017, April 27). Diambil kembali dari futuredirections: http://www.futuredirections.org.au/publication/indonesia-economic-developments-future-prospects/

Hall, B. W. (2008). *The New Human Capital Strategy: Improving the Value of Your Most Important Investment*. New York: Amacon.

Mealey, L. (2018, January 7). Diambil kembali dari https://www.thebalance.com/the-basics-of-choosing-a-restaurant-theme-2888693

Milkovich, G. T., Newman, J., & Gerhart, B. (2014). *Compensation*. New York: McGraw-Hill/Irwin.

Odunlami, Bolanle, I., Matthew, & Oludele, A. (2014). Compensation Management and Employees Performance in the Manufacturing Sector , A Case Study of a Reputable Organization in the Food and Beverage Industry. *International Journal of Managerial Studies and Research*, 108-117.

OECD Economic Surveys. (2016). *Economic Survey Indonesia*. EDRC.

Stone, R. J. (2017). *Human Resource Management*. Milton, Qld: John Wiley and Sons Australia.

UNESCO. (2018). *Bandung | Creative Cities*. Diambil kembali dari UNESCO Creative Cities Network Culture Sector: https://en.unesco.org/creative-cities/bandung

Walker, J. (1994). Integrating The human Resource Function With The Business. *Human Resource Planning*.

Zikmund, W. G. (2013). *Business Research Method*. Forth Worth, TX: Dryden Press.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Design Performance Management System for Flexible Organization in Telecommunication Company (TELCO)

Richard Alberto

SBM ITB, Jakarta 12950, Indonesia

Abstract

In era of disruption which new company like startup can defeat big telecommunication company (TELCO). One of reason for this thing can happen because new company develop and innovate new digital products and services. If we see, organization structure for new company like start-up, it more collaborative and flexible. TELCOs in order to survive and compete in this era, they need to change the organizational structure that is still based on the structure-based organization. The flexible organizational structure will provide acceleration to create new and innovative digital products and services, and can no longer rely on legacy products. Changes in flexible organizational structure of technology has become a very important thing to be done to win the competition in the digital era. One of the main aspects of flexible organization is designing performance management system (PMS) that can motivate employees to be able to provide innovations in digital products and services.

Keywords: Flexible; Organization; Design; Performance; Digital

1. Introduction

In the growing digital market is increasing rapidly, far leaving the growth of connectivity and traditional ICT (voice and short messages service (SMS)). Telecommunication companies cannot only rely on existing products because the revenue will continue to be dropped by an increase in revenue from digital business. Telco's current revenue is still dominantly derived from voice and short messages service (SMS), and revenue from digital is still very small. One of the obstacles faced there is no organization that focuses to manage the digital business. The organizational structure is still not adaptive to the development of digital products and services.
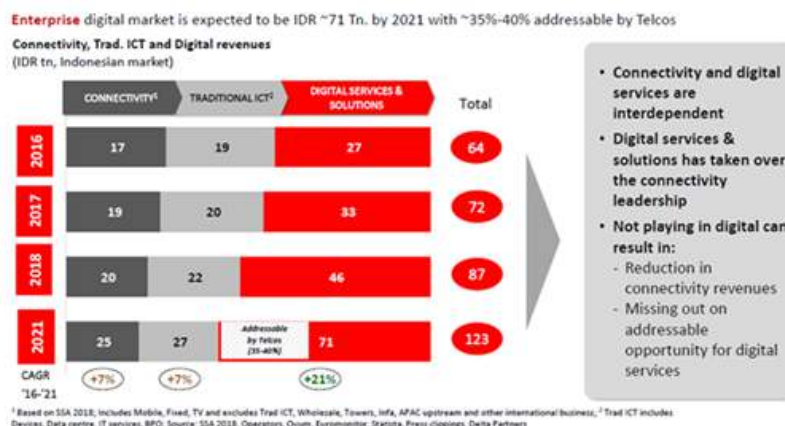
Fig. 1. Connectivity, Trad ICT and Digital Revenues

ICMEM

In Figure 1. the growth of digital revenue is not as fast as Telco's management expected, the negative revenue growth of connectivity (pipeline), traditional ICT (voice, short messages service (SMS) and decreasing faster and there is no digital product or service that can cover this revenue decrease.

2. Problem Identification

At present, the Telco's organizational structure is not fit to support business strategy of Telco, so it is necessary organizational structure that can support Telco service and product in digital business. Future organizational models lead to a flexible organization, which prioritizes collaboration between units and is more adaptive to technological developments.

In creating a flexible organization that can support Telco in achieving business strategy or program in the Year 2018, there are four main issues that need to be resolved:
  a. Choose the type of flexible organization that suits your needs in the digital age
  b. Design Performance Management System for a flexible organization
  c. Implement Performance Management System for flexible organization in Telco
  d. Create Benefits of Performance Management System for a flexible organization for Telco

3. Method And Data Collection

From Analysis Porter's 5C Model in Figure 2, it can be observed (1) *Threat of New Entrants*; Government deregulation has been pushing new players, especially major international players in the Telecommunications business (2) *Bargaining Power of Buyers*; Greater customer demand such as integrated services, automation, personalization and authentication. (3) *Threat of Substitute Products or Services*; Substitution products such as over the top (OTT) services, IP phones or video or machine learning networks have the potential to reduce voice and short messages service (SMS) revenue for wireless telecommunications operators. (4) *Bargaining Power of Suppliers*; The current focus on consolidation in the market provides an avenue for increasing interest in acquiring new vertical capabilities. (5) *Rivalry between existing competitors*; The saturated smartphone market and fierce price competition keep the market under pressure.

Fig. 2. Porter's 5C Model

2. 1. Structure Organization

The organizational structure in the future is believed to be more horizontal and in collaboration. However, most large companies in the world still maintain structural organizational forms such as Google, KPMG, Starbucks, Schneider Electric, Telco and others. Creating a more horizontal organization means empowering employees across all functions and collaborating to make something different or more innovative than the organization doing right now.

There are several types of organizational structures relevant to the business in the future:
  a. *Structure-Based Organization*: The organization of this model sees one-way communication from top to bottom and with little collaboration and inter-organizational communication. Top management makes decisions and delegates according to the chain of command. The Performance Management System (PMS) for the structure-based organization applies the Balance Score Card (Figure 3.a). Measurements of this model consist of tangible and intangible assets. Measurement indicators are lagging such as Financial Statement,

ICMEM

Customer, Business Process and Learning and Growth. The indicator in the BSC gives a report of something we did one years behind, but it does not really guarantee that it will help the company survive in the future. The company needs a leading indicator to help predict the future.

b. *Project Based Organization*: The organization of this model works on a project or program. This project can be in one department and cross-unit members in one department. The project objectives are usually to meet departmental objectives (Fig. 3. b1) and others are located between departments and cross-department members within a single company, a larger goal of company objectives (Fig. 3. b2). Every. Usually the project as an additional work of their daily work, so employees do not fully spend their time for the project. Performance Management System for two types of organizations keep using Balance Score Card. The project results are considered as the assessment points of the business part of the process and additional experience to employees in the self-development section.

c. *Digital Project Based Organization*: A fully horizontal Digital based project (product, service, business process) organization and lean manager. This structure is usually seen in technology companies, start-ups, and some medium-sized companies. Employees usually decide the direction of the company and the projects they are working on (Figure 3d). Performance Management System for two types of organizations still use the lean start-up method consisting of customer validation (CV), product validation (PV), business model validation (BMV) and market validation (MV). This process gives only two failed or successful options.
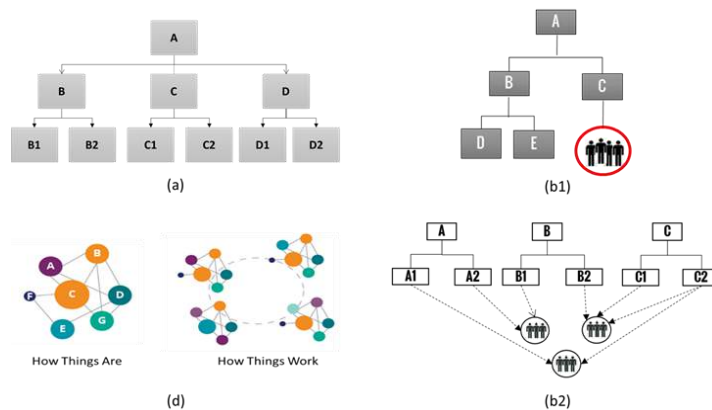
Fig. 3. Type of Organization

The condition of companies experiencing a decline in revenue in business legacy requires revenue from growing digital businesses today and the future. To earn revenue in the digital business there is a need for new digital products, services and business which cannot be maximized if the organization is still based on the structure.

2. 2. Digital Project Organization

Many Telco has developed internal digital project organization or internal start-up. This organization requires a large and continuous innovation. The author believes every innovation requires strong founders; people who live up ideas and pay attention to ideas and keeping like their babies. So, the program found the founders, providing funding and support for innovation until they created the next big things for the Telco. In digital projects, every employee collaborates on launching a product or service that different from existing. Employees create their own team usually consists of 2 to 4 members and then choose products or services they want to develop. Employees who are members of this project will be out of routine work.

ICMEM

One of the things that needs to be set up in digital project is to design a system management performance that suits the project. Performance Management (PM) is the set of processes and managerial behaviors that include defining, monitoring, measuring, evaluating and providing consequences for performance expectations.
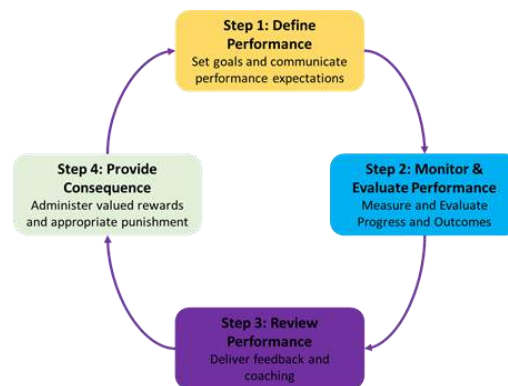
Fig. 4. Performance Management System Cycle

Stages in performing effective system management performance as shown in Figure 4. above are:
a.   Step 1: Create a Performance Definition. In making the definition of performance management system should be SMART (Specific, Measurable, Attainable, Results-Oriented, Time-Bound).
b.   Step 2: Monitor and Evaluate Performance. Make measurements, tracking or verification progress and still in accordance with the destination. Factors to be considered in step 2 are (Timeliness, Quality, Quantity and Financial Metrics)
c.   Step 3: Review Performance. The process of providing feedback and coaching so that the performance of employees in accordance with company expectations
d.   Step 4: Give Consequences. Provide consequences to employees who excel in the form of rewards and who do not excel in the form of punishment.

2. 4.   Design Performance Management System (PMS)

In Figure 5. The author described the framework of how to design a new PMS. Starting from Telco Group's revenue in the voice and short messages service (SMS) business is down by 20% every year and it is necessary to boost the growth of digital business to cover it. Digital businesses need to be focused on so they cannot rely on existing organizations One of the things that needs to be set up in a digital project is designing a management system that can make this project maximally contribute to the company.

In Balance Score Card (BSC), there are four perspectives as follows: (1) *Financial*: What are shareholders performance expectations for financial performance (2*) Customer*: To reach our financial objectives, how do we create value for our customers? (3) *Internal Process:* What process must we excel at to satisfy our customers and shareholders? (4) *Learning & Growth:* How we do align our intangible assets, people, system and culture to improve the critical processes?

In designing the PMS, the author does three approaches: (1) conduct interviews with Telco Group experts whose have digital competence, (2) surveys to internal digital projects members incorporated in AMOEBA, and (3) literature and references from internal Telco and from writing scientific journal on the internet.

ICMEM
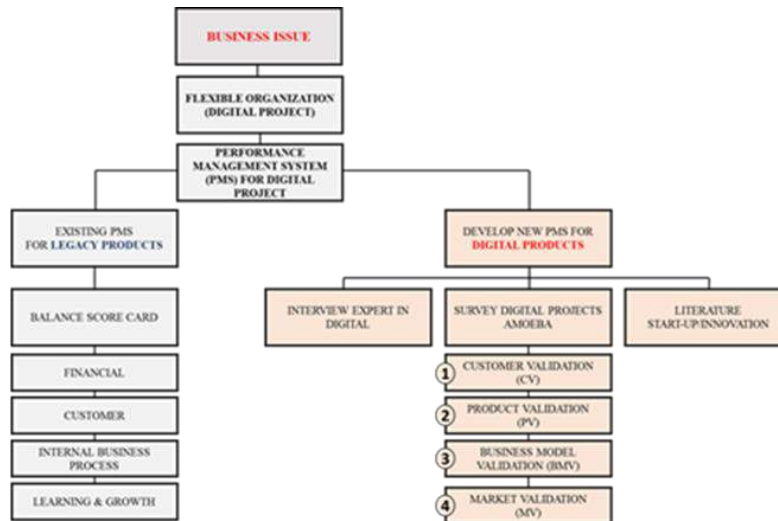
Fig. 5. Framework Performance Management System (PMS)

3. 5 Collecting Data

A. *Qualitative Data (Interview Expert)*

The author conducted an interview to the expert for the study of this paper so that it can get direct input on how to design PMS for internal digital project organization (AMOEBA). Interview is done by asking several questions such as:

o How to measure the performance of digital project management system?

o What is the biggest challenge to measure the performance of a digital project management system?

o Are there any other parameters in the future to measure the performance of digital project management system?

There are five experts that we ask and work in the digital project environment in Telco Group, with the following results:

o Director of Media Digital Investama;

For a digital project organization such as start-up we cannot create specific parameters of performance management system (PMS), which we can do to make common parameters. The fundamental difference between start-up with digital projects like AMOEBA, start-ups are only two choices succeed or fail but AMOEBA if it fails then they can again become Telco employees.

o Assistance Vice President (AVP) Talent Career and Development;

Currently we are still using two stages of microsystem that is used for daily measurements by AMOEBA Management (AMA Team) and macro system used one-year measurement using BSC. The micro stage will be part of the macro phase calculation at the end of the year. This calculation is not yet official because there is no company regulation that regulates it.

o Head of Project Digital Project;

We believe that digital projects such as AMOEBA will provide additional digital revenue for Telco Group. Currently, PMS measurement still uses lean start-up method plus reward point if AMOEBA gets achievement outside Telco. If they fail at lean start-up stage, then they are given a second chance and if they fail then there are two options to replace the project to a more profitable or returned to Telco.

o Head of Digital Service Division;

ICMEM

For the development of digital innovations need to process and patience, such as the cocoon into a butterfly there is time and standards that followed so that the results obtained can be perfect. PMS process also we coordinate with Human Capital Management (HCM) to find the model in accordance with AMOEBA.

B. Quantitative Data (Survey)

The survey was conducted from January to February 2018 to AMOEBA members who are members of the digital project. From the results of this survey according to their PMS using balance score card is still appropriate for digital project of 44.4% and the PMS assessment is done faster between 3 months and 1 month respectively 44.4%.

(a) BSC Appropriate for Digital Project ?   (b) Period of Time Measure Digital Project
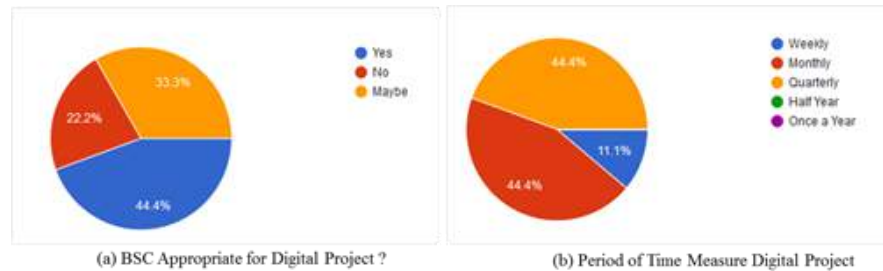
Fig. 6. Survey for Internal Start-up

C. Literature

Based on the literature and study data from Deloitte and Harvard Business Review on assessing employee performance and career to focus on the future requires more adaptive, real-time and more individualized mechanisms or parameters to drive future performance.

In figure 7. In the assessment of individual performance, the team project conducted by the team leader is made in the form of leveling which refers to the level of involvement and the possibility of compensation or reward that will be given to the individual in the team.

Fig. 7. Levelling Individual Performance in Digital Project

It is useful for systems to determine and analyze individual profiles (employees) when needed on other projects. For example, individuals who has excellence PMS will be referenced or offered on another project on a larger scale.

In Table 1. There is a difference in the old measurements with the new ones, one of the important differences in the timing of measurements in the old way once a year but in new ways more often can be every quarterly and more concerned with process collaboration. The boss in the old way only evaluates but in a new way focuses on coaching and developing employees.

ICMEM

Table 1. Old Rules vs New Rules Performance

Old rules	New rules
Performance appraisals and goal-setting conducted once per year	Check-ins conducted quarterly or more frequently; regular goal-setting occurs in an open, collaborative process
Feedback collected by manager at end of year	Feedback collected continuously and easily reviewed at end of year (often through apps and mobile tools)
Goals kept confidential with focus on individual achievement	Goals made public and transparent with increased focus on team achievement
Employees evaluated by their manager	Managers also evaluated by their employees
Employees force-ranked on a quantitative scale	Employees rated on a qualitative scale; rankings considered, not forced
Compensation kept confidential and focused on equity; bands based on performance ratings	Compensation levels more transparent, more frequently discussed, and focused more on pay for performance than on equity
Managers focused on evaluating performance	Managers focused on coaching and developing people
One leader evaluates each individual in a qualitative, opinion-based process	Many contribute to an individual's performance evaluation; evaluation draws heavily on data
Process considered to be a burden and waste of time	Process is agile, faster, continuous, and lighter

4. Analysis

The author make analysis from literature review and data collection from interview to digital experts and survey online to AMOEBA (digital project) members.

4.1 Performance Management System for Flexible Organization

In the Flexible Organization, financial targets no longer use or relate to units or locations where employees come from but are already set according to the flexible organization's financial targets. The objectives of Flexible Organization should be reflected in the three program perspectives in BSC: Customer, Internal Business Process and Learning and Growth. Shorter assessment time, if it has completed its task then the employees will get the point rewards and will increase if the results on the flexible organization and collaboration are excellence.

4.2 Performance Management System for Digital Flexible Organization

In the digital flexible organization there are two approaches taken to measure the process of AMOEBA members using a lean start-up model. Where stages start from customer validation (CV), product validation (PV), business model validation (BMV) and market validation (MV). This stage to know the progress of innovation that is being developed by AMOEBA and can be done in real time not wait for 1 year. This process is called the micro-PMS process and is placed in one of the perspectives of the BSC in the internal business process wherein there is a sub-section of innovation. The weight of a PMS micro in the internal business process can be greater than the other three perspectives. For the next stage is called a PMS macro which still uses a four-perspective BSC using BSC designed specifically for digital project organization. One consideration why still uses BSC because AMOEBA members are still employees of Telco Group so if he succeeds will continue to develop innovation but if not successful the employee can be returned to the unit of origin.
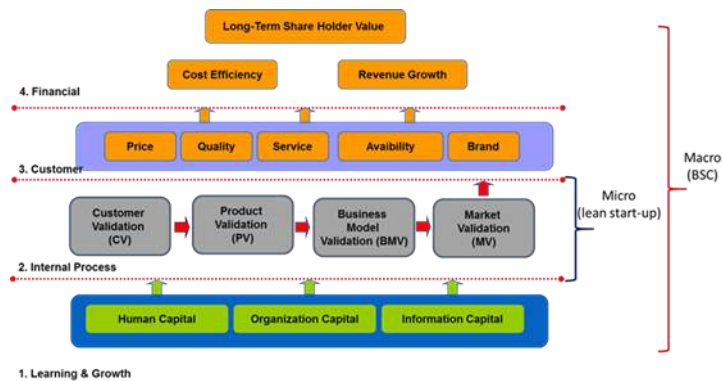
Fig. 8. Performance Management System for Digital Project (Micro and Macro)

4.3 Design New Performance Management System (PMS)

In the digital flexible organization there are two approaches taken to measure the process of AMOEBA members using a lean start-up model. Where stages start from customer validation (CV), product validation (PV), business model validation (BMV) and market validation (MV). This stage to know the progress of innovation that is being developed by AMOEBA and can be done in real time not wait for 1 year. This process is called the micro-PMS process and is placed in one of the perspectives of the BSC in the internal business process wherein there is a sub-section of innovation. The weight of a PMS micro in the internal business process can be greater than the other three perspectives. For the next stage is called a PMS macro which still uses a four-perspective BSC using BSC designed specifically for digital project organization.

Fig. 9. Executing Performance Management System for Digital Project

One consideration or advantage why still uses BSC because internal startup members are still employees of Telco so if he succeeds will continue to develop innovation but if not successful the employee can be returned to the unit of origin. The New PMS in digital project can be adjustable with Telco's Performance Management System, so it's very helpful to measure in both side from their digital project and their responsibility as Telco's employee.

The author makes a comparison of the three types of organizations currently available in Telco as shown in Table 2. With our design PMS, the author hopes to assist Telco in accelerating the formation of flexible organization and

ICMEM

digital flexible organization so that it will produce many digital products and services which can contribute revenue for Telco.

Table 2. Comparison Structural vs Flexible vs Digital Organization

Detail	Structural Organization	Flexible Organization	Digital Organization
Goals	Maximize legacy product (connectivity, voice, text)	Maximize new product or service which related with core business or legacy	Develop product or service in digital business
Hierarchy	Top Down (Vertical)	Flat (Horizontal)	Flat (Horizontal)
Management	Direction	Coaching and Developing	Coaching and Developing
Output	Evaluation of Achievement	Evaluation of Progress	Evaluation of Progress
Period	Once a Year	Quarterly / Half Year	Weekly/Monthly/Quarterly
Performance Management System	Balance Score Card (BSC)	Balance Score Card For Specific Project	Two Steps: a. Macro (One A Year): Balance Score Card For Specific Project b. Micro (Periodically): Lean Start-Up

5. Conclusion

a. The type of agile and flexible organizational structure that suits the needs of the digital era is a project-oriented and digital-based based organization.
b. In designing Performance Management System for flexible organization there are two approaches that can be used, namely:
   o using one Balance Score Card perspective (BSC) such as business process or customer,
   o new designs fit the organization's goals, such as a lean start-up model for projects like start-ups.
c. Implementing a Performance Management System for a flexible organization implementation cannot be measured only once a year but can be applied over a more variable timeframe according to the project-based stage (such as per 3 months or even 6 months or even real-time).
d. Benefits of implementing the new Performance Management System include:
   o increase motivation to be part of the project team.
   o be a plus for the project.
   o assessing the contribution and performance of employees becomes more objective.
   o enhance collaboration between business units.
   o make it easy to transition for a new business model.

ICMEM

Appendix A. Interview

Interview (1) with Mr. Gde Ngurah Sandhy Widhyasthana (Director PT Media Digital Investama)
Richard Alberto (R): Halo Pak Shandy, could we start interview?
Gde Ngurah Sandhy (S): Ok, let's start

RA: How do you measure a start-up company?
GS: My research before was Corporate Venture Capital Strategy for Start-up Company, from my research there forty-five parameters, like geographical, founder is very important, education background. These are general parameters. There specific or detail parameters, and depends on it products, mobile apps (daily active users), payment solution (how many transactions), regarding type of start-up. You cannot use specific parameters for all start-up, but general parameter can be used.

Interview (2) with Mr. Arief Mustain (Head of Digital Service Division)
Richard Alberto (RA): Halo Pak AM, could we start interview?
Arief Mustain (AM): Ok, let's start

RA: Do you think, Telco ready to develop digital product or service with structural based organization or cross-functional group? How do we measure it performance?
AM: Idea should be developed with cross-functional team. We will choose talent from many department in organization which has different skill and experience. So, we need flexible organization to solve this problem, to create more innovation in digital business. We cannot rely on structure-based to develop digital business, they focus on business as usual or achieve their own target. Internal digital project already used existing policy as part of corporation, we develop two options: (1) make specific policy performance for digital projects (2) conversion point because they are still Telco Employee and operation measurement use Lean Start-up OMTM (One Metric That Metter). The best solution for them, we create bridging between company and operation objectives.

Appendix B. Glossary

AMOEBA. Internal digital flexible organization (startup) in PT. Telco which develop digital product or services.
Build-Measure-Learn. The fundamental activity of a start-up is to turn ideas to products, measure how to customers respond, and then learn whether to pivot or preserve. All successful startup process should be geared to accelerate feedback loop.
Business Model Validation is the third stage to test the business model acceptable to early adopters
Customer Validation is the first step of incubation. In this stage which founders validate their business model, they expand sales and marketing activities to grow.
Lean startup is combination of customer development and agile development which is introduced by Eric Ries.
Market Validation is the fourth stage to increase the number of customers or users from a small scale to a commercial scale.
Product Validation is the second stage to create products that are liked and loved by the customer or the first user
Validated Learning. Startup exist not just to make stuff, make money or even more customers. They exist to learn how to build a sustainable business. This learning can be validated scientifically by running frequent experiments that allow entrepreneurs to test each element of their vision.

References

CEO Directions for Leaders Meeting Telco Group 2017, page 7

Michael E. Porter, Competitive Strategy (Techniques for Analyzing Industries and Competitors – with New Introduction), The Free Press, 1998, pp 37.

Unlocking the Flexible Organization (Organization for an Uncertain Future) Deloitte Press 2017, page 8

ICMEM

Organizational Behavior (A Practical, Problem-Solving Approach, 2nd Edition), page 203

Human Capital Management Master Plan (Towards a Digital, Disruptive, and Exciting Future!), 2018-2022.

Deloitte University Press (Rewriting the Rules for Digital Age) – 2017 Page 72

Steve Blank and Bod Dorf, The Startup Owner's Manual (The Step-by-Step Guide for Building a Great Company), K&S Ranch, Inc, 2012.

Steve Blank, The Four Steps to The Epiphany (Successful Strategies for Products that Win),5th Edition, Quad/Graphics, 2013.

Robert S. Kaplan and David P. Norton, The Balanced Scorecard: Translating Strategy into Action, 1996.

Robert S. Kaplan and David P. Norton, Alignment (Using the Balanced Scorecard to Create Corporate Synergies, Harvard Business Scholl Publishing Corporation, 2006, page 6.

Susan Albers Mohrman, Jay A. Galbraith, Edward E. Lawler III and Associates, Tomorrow's Organization (Crafting Winning Capabilities in Dynamic World), The Jossey-Bass Business & Management Series, 1998.

Eric Ries, The Lean Start-Up (How Today Entrepreneurs Use Continuous Innovation to Create Radically Successful Business), Crown Business, 2011.

Angelo Kinicki/Mel Fugate, Organizational Behavior (A Practical, Problem Solving Approach, 2nd Edition), Mc Graw-Hill, 2018)

School of Business and Management ITB, Research Methodology for Business, Academic Workshop, December 2017Fachinger, J. (2006).

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

Nurturing Knowledge Sharing: MRT Jakarta Case

Sapto Ashardianto[a*], Andy Credo Sibuea[b]

[a,b]PT MRT Jakarta, Wisma Nusantara Jl. MH Thamrin no.59, Jakarta, 10350, Indonesia

Abstract

Knowledge sharing as a subset of knowledge management is expected to be the initial step to create 'domino effect' in implementing the comprehensive aspects of knowledge management framework. In order to start knowledge management effectively, MRT Jakarta realized that promoting knowledge management initiatives through knowledge sharing culture inside the organization is fundamental. With the unique characteristic of MRT Jakarta as the first of Metro Railway operator in Indonesia, knowledge sharing helps in building organization's competitive advantage through employees acquiring, organizing, reusing, and transfering experience-based information of new technology, operational knowledge, and best practices in the industry. This paper explores the journey of knowledge management implementation in MRT Jakarta, starting from knowledge sharing session. The paper concludes with the benefits of having knowledge sharing first before implementing other knowledge management initiatives.

Keywords: Knowledge Management; Knowledge Sharing; Domino Effect

1. Introduction

In the current context of organization, the notion of knowledge as the intangible assets and resources of organization is undeniably unchallenged. It is widely accepted that knowledge is the richest resource of organization (Nonaka & Takeuchi, 1995). Across the globe organization are striving with similar issue to utilize knowledge in order to increase efficiency and effectiveness in organization (Holt et al, 2007). Numerous scholars even stated that placing knowledge as the intangible assets is actually underrated; knowledge is the actual assets of organization itself (Nonaka et al., 2000). The importance of knowledge within organization has led to an increasing focus on the concept that widely recognized as Knowledge Management (KM).

KM is becoming increasingly crucial to organizations that seeking to improve their efficiency and competitive abilities (Davenport & Prusak, 2000). To implement KM in organization, it needs a systemic coordination of an organization's people, technology, processes, and organizational structure which can be achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices to foster continued organizational learning (Dalkir, 2000). For some organizations, the challenges of KM implementation are not from knowledge creation process, as most of the organizations start KM from knowledge capture and codification, but the main challenge is how to effectively exploit the existing knowledge-based resources within organization (Damodaran & Olphert, 2000). Particularly, as employees' knowledge is difficult to transform, knowledge sharing becomes vital in organizations (Hu & Zhao, 2016). In fact, in most of the cases, knowledge within organization could not be fully utilized because knowledge not often widely shared and used (Abzari et al., 2011).

Knowledge exchange and learning from network connections across organizational boundaries can raise organizational innovation (Nooteboom, 2000). Abzari et al (2011) even argued that a positive knowledge sharing culture in organization may influence employees' attitude. However, knowledge-sharing organizations are not come through natural process, yet they are made through rigorous effort. Becoming knowledge sharing organization, requires changes in culture, particularly by strong leadership, supportive governance structures and finance and also support

---

* Corresponding author.

from external partnership, all to develop "the discipline practice of knowledge capture, learning, and sharing" (Janus, 2016).

Looking at the importance of knowledge exchange and sharing within organization, at the moment knowledge sharing is put at the forefront of KM initiative in MRT Jakarta. In MRT Jakarta case, to this date, knowledge sharing as a subset of KM is expected to be the initial step to create 'dominos effect' in implementing the comprehensive aspects of KM framework of MRT Jakarta. With mixture of daunting challenges, such as utilization of new technology without any previous experiences from similar industries in Indonesia, both in finishing the construction project, train system operation and maintenance, and business development, MRT Jakarta requires a clearly defined KM framework to guide the organization achieve its vision. This situation force MRT Jakarta to focus on company KM implementation since the early stage. Thus, knowledge sharing within internal PT MRT Jakarta is expected to build awareness of the importance of KM implementation while simultaneously also nurturing knowledge sharing culture inside the organization. This paper explores the implementation of knowledge management, particularly focusing on the creation of knowledge sharing culture in the case of PT MRT Jakarta.

This paper is organized as follows. First, the profile of MRT Jakarta is provided, to understand the organizational background and context where KM initiatives are implemented. Then, the importance of knowledge sharing and the list of activities are presented, why it is crucial to enhance KM initiative in PT MRT Jakarta through knowledge sharing. Finally, the benefit of implementing knowledge sharing initiatives as a start of comprehensive KM implementation in MRT Jakarta will be described in the conclusion section of this paper.

2. The Need of KM in PT MRT (Mass Rapid Transit) Jakarta

PT MRT Jakarta, is a Limited Liability Company, with its majority shares owned by Jakarta Provincial Government of DKI Jakarta. Officially established on June 17, 2008 by Regional Regulation of DKI Jakarta Province No.3 of 2008 on Establishment of Regional Owned Enterprise (BUMD). MRT Jakarta has the scope of activities for concessions and development of MRT structures and modes, the operation and maintenance (O&M) of MRT infrastructures and modes, as well as developing and managing properties/business at and around MRT stations and its surrounding areas, as well as its Depot.

As the first metro railway company in Indonesia, public put high expectation toward MRT Jakarta to solve the potential traffic gridlock in the capital Jakarta. MRT Jakarta not only expected to become the backbone of Jakarta's transport services, but the effect is much more psychological, to bring better life quality by less air pollution and improving mobility. In realizing this public's expectation, MRT Jakarta through its corporate vision formally stated "to be Indonesia's leading provider of mass rapid transportation, committed to driving economic growth by enhancing mobility, by alleviating commuter congestion, and through transit urban development"

However, this strong support and enthusiasm from public can be a double-edged sword for MRT Jakarta. As the 'first of its kind' in Indonesia, MRT Jakarta is prone to fail, especially after looking at the previous record of discontinued infrastructure project that can be found across Indonesia. Without any previous experiences of any metro railway industries in Indonesia, MRT Jakarta rely upon knowledge obtain from vendor and metro railway company abroad. With mixture of daunting challenges, such as utilization of new technology both for finishing the construction project, train system operation and maintenance, and also generating non fare box strategy through business development, MRT Jakarta requires a clearly defined long term business model and measured performance management to guide the organization achieve its vision.

One of the strategic performance management approaches that PT MRT Jakarta recently initiated and has formally highlighted on the corporate long term strategic plan is to develop MRT Jakarta's internal process readiness through Knowledge Management. According to the strategy map of MRT Jakarta, KM is expected to enhance organizational capacity & professional excellence (in Capabilities Development perspective), support value chain partnership (in Customer Focus perspective) and eventually contribute to financial management (in Financial Health perspective). In MRT Jakarta, KM function incorporated under the corporate strategy and planning division since mid-2017. Moreover, prior to the commercial operation of MRT Jakarta that set to begin in March 2019, the urgency of capturing the lesson learned of construction project phase one through KM initiatives is also very real and critical to be transferred for construction project phase two.

ICMEM

3. The Inception of Knowledge Sharing in MRT Jakarta

KM in PT MRT Jakarta is urgently needed to ensure that bombarding new data, information, and knowledge that the company acquired can be managed at the very early stage, even one year before the company officially start to operate and run business on March 2019. Embedding KM function under division that in charge of company strategic planning is the initial step that PT MRT Jakarta undertake to start KM. Research suggested that to have a positive impact on organizational performance, KM capacity requires strategic management (Chen & Fong, 2015). In order to start knowledge management effectively, MRT Jakarta realized that promoting KM initiatives through knowledge sharing culture inside the organization is crucial. KM system by utilizing technology and information systems evidently play a fundamental role in strengthening the organization's KM capacity and contribute to the success of KM initiatives (Edward et al., 2005). However, despite company have invested considerable time and money into KM system, the success of KM initiatives depend on knowledge sharing (Wang & Noe, 2010).

According to Janus' (2016), knowledge sharing is a "subset of KM encompassing the exchange of knowledge (information, skills, experiences, or expertise) within and across organizations". In simple word, knowledge sharing can be defined as "the act of making knowledge available to others within the organization" (Ipe, 2003). Although knowledge sharing can be one way approach, in general knowledge sharing is conveys in a two-way multilateral exchange in which the parties learn from one another. Knowledge sharing is not limited to giving knowledge to others, but also about "searching, locating, and absorbing knowledge" (Intezari et al., 2017). Knowledge sharing can be initiated via written correspondence or face-to-face communications through networking with other experts or documenting, organizing, and capturing knowledge for others (Wang & Noe, 2010).

Previous study that explore the benefit of knowledge sharing confirmed that knowledge sharing provides related skills and expertise that can enhance employee's self-concept in regard to being innovative and helps to enhance more effective problem-solving processes (Hu & Zhao, 2016). Especially when employees perceive knowledge sharing is encourage in organization, they are more willing to offer and share knowledge (Abzari et al., 2011). Knowledge sharing also encourages exchange of ideas and experiences to derive new ideas and create new knowledge (Wang & Noe, 2010). In the context of organizational performance, Hu & Zhao (2016) emphasized that knowledge sharing help to build organization's competitive advantage through employees acquiring, organizing, reusing, and transferring experience-based information.

In order to achieve successful knowledge sharing culture, leader of the organization (management/ director) play important role to become knowledge champion or supporter. Management responsible to provide an organizational climate that encourage employees to share their knowledge with others without any doubt of losing their unique value and to feel more influential in organization and among employees by sharing his/her knowledge (Abzari et al., 2011). Lee et al. (2006) found that employee commitment to knowledge management is largely influenced by top management support, affecting both the level and quality of knowledge sharing. Janus (2006) suggested that organizations that have strong knowledge-sharing culture can be reflected through some key characteristic, for example leaders that promote collaboration and knowledge sharing throughout the organization and also knowledge sharing is embedded in the organization's vision and strategy.

4. Nurturing Knowledge Sharing at MRT Jakarta

Prior to the establishment of KM team in Strategic and Planning Division, knowledge sharing activities at MRT Jakarta actually has already been started independently by each division, mainly in Construction Directorate and Operation and Maintenance Directorate. With the small number of employees less than 300 employees in 2017, knowledge sharing was initially initiated as a knowledge transfer session among engineers to explore and discuss the utilization of new technology, technique or best practice of metro railway construction and operation, especially from those who were assigned to learn in various trainings and other capacity building initiatives externally.

At corporate level, knowledge sharing is encouraged through Town Hall meeting, a monthly gathering of all employees facilitate by the Board of Directors. Through Town Hall meeting, Board of Directors can present and openly discuss particular topic that is relevant for organization each month. Topic that is covered in Town Hall such as change in the organization, construction and operation readiness progress, and other high level corporate informations. Other

ICMEM

divisions in MRT Jakarta have also attempted in organizing knowledge sharing sessions sporadically. They succeeded in gathering a great number of interested participants to gain new insight, but might not be sufficient to nurture the culture of knowledge sharing.

At the establishment of KM team in MRT Jakarta in the 4th quarter of 2017, a pilot project to introduce a more structured and sustainable knowledge sharing was conceived. Based on a discussion with top management, the knowledge sharing session was encouraged to embody the spirit of informality, thus the declaration of the name Café Talk.

Café Talk was planned as the main sharing session in MRT Jakarta, held at least once a month. The speakers are both internal and external experts, planned and scheduled for the whole year of 2018, as a start, with their own respective potential topics. KM team invited Director of Operations and Maintenance as the champion to start the first sharing session on the last working day of 2017. The response was good with the attendance of 118 employees. The overal trend of attendance for 6 Café Talks in the first semester of 2018 is as shown in the following figure:

Number of Cafe Talk Series Attendees
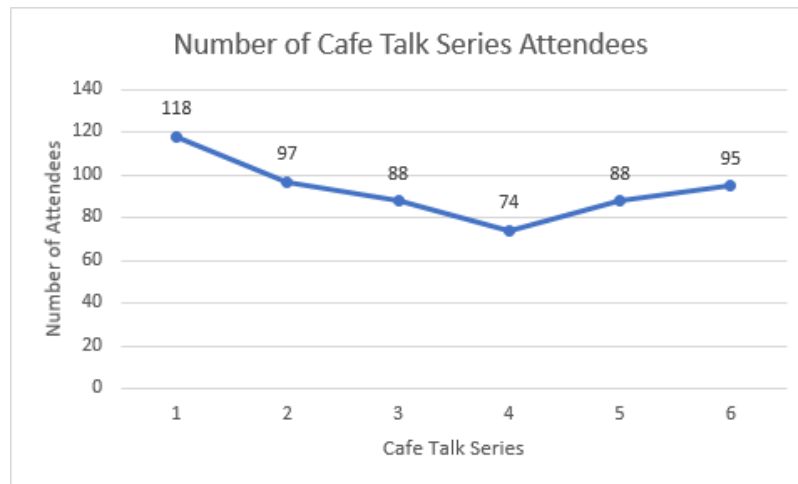
Leadership support for Café Talk is demonstrated through the commitment of the four members of Board of Directors to be present, at least one director at the session, either as the main speaker or to open the session. At the first Café Talk, which main speaker was the Director of Operation and Maintenance, the Main Director sent a short video to encourage knowledge sharing as a culture in MRT Jakarta, despite him being in a personal leave.

Sense of Community and Exposure of Knowledge Owners

The structure of a Café Talk is designed as simple as an opening from representative of Board of Directors, introduction of the speaker(s), knowledge sharing, discussion, and closing. One or two MC (Master of Ceremony) will guide the whole process, keeping the informal spirit. At the end of the sharing session, a photo session of speaker(s) and participant is conducted, along with a big banner of Café Talk, as a celebratory moment. This is meant to boost the sense of community and leave a lasting good feeling of learning and sharing. One of the purposes of the aforementioned session in MRT Jakarta is to nurture the culture of sharing knowedge among the employess, where an employee can learn from others, in a discussion inducing environment. In addition to that, the knowledge sharing session is expected to also exposes employees of MRT Jakarta who are experts of a certain subject, by being the speaker or by offering thoughts, questions, and insights in the discussion, so that other employees may be able to refer to them should they need the expertise in the future.

Dissemination and Guide of the Practice

The consistency and support given to Café Talk induced the confidence in knowledge sharing as a key factor in becoming better at work in MRT Jakarta. Requests to KM team had been made to organize more Café Talk, specific to the need and opportunities grabbed by Operations and Maintenance Directorate, for example. In the spirit of

ICMEM

disseminating the organizing capability, KM Team developed a guide to hold and organize a Café Talk session and a preparation check list, and encouraged the requesting directorate to organize their own Café Talk, dubbed Café Talk Extended Series. This resulted in two instances of Café Talk Extended Series sessions to this date, both with speakers from abroad who have had MoU (Memorandum of Understanding) with MRT Jakarta: Prasarana (Malaysia) and Institute of Railway Technology Monash University (Australia). Further practice of knowledge sharing with the standart of Café Talk is continued to be encouraged across the organization of MRT Jakarta.

The Domino Effect for Other KM Practices

As examples of knowledge sharing sessions are conducted consistently and the support of top leaders are clearly demonstrated, employees are made more aware about Knowledge Management and the team managing it. Shared materials are also collected by KM team, which needs to be made available to the whole organization. This subsequently push the planning and execution of a way to store and publish the collected codified knowledge. A simple knowledge repository is then created by using the exisiting shareable digital storage and a digital newsletter (dubbed KM Newsletter) are created. KM Newsletter is appreciated by employees of MRT Jakarta as a way to receive news of new codified knowledge and access them in a simple click, and is currently on its 3rd edition. To provide better access to the collected shared materials, a more structured knowledge repository accompanied by a knowledge taxonomy are planned to be implemented in the near future.

5. Conclusion

As experienced in MRT Jakarta which is a new corporation with new Knowledge Management team, the decision of nurturing knowledge sharing first is deemed to be the most suitable approach towards implementing a more comprehensive knowledge management framework.

The perceived benefits of implementing knowledge sharing initiative as the start of comprehensive Knowledge Management implementation in MRT Jakarta are as follow:

a. Gaining the attention of all employees of informal sharing session
    A knowledge sharing session with interesting topic and interesting speaker(s) are likely to gain the attention of employees, and thus allowing KM team to expose them to a knowledge sharing model designed for an effective knowledge sharing.
b. Demonstrating the feasibility and benefit of KM as a whole and subsequently gaining leadership support for comprehensive KM implementation
    Buy-in and excitement from employees to the knowledge sharing session, along with the expressed benefit gained from knowledge transfer and discussion, will help convincing top leaders in long-term benefit of KM implementation in the organization and thus gaining their ongoing support and commitment.
c. Exposing previously-unknown experts and discussion counterparts for a certain domain of practice
    In a small organization where everybody knows everybody, there is still a chance of hidden knowledge and expertise left unutilised. The chance is higher in a bigger organization. Knowledge sharing session provides a medium for every employee to showcase their expertise (as a speaker) and to show how they can contribute in a certain domain of practice (as participants).
d. The domino effect to roll out more knowledge management practice
    As knowledge sharing session continues to be held consistently, needs will emerge to collect and store the shared materials. The organization of the collected materials will then require a widely accessible platform along with a taxonomy to help finding the material later on. Soon after, a way to publish the newly acquired material will also emerge. Hence, KM team will be able to introduce new initiatives in a logical order to the whole employees, allow the excitement of having new things to last and finally allow KM team to smoothly gain the buy-in of employees in KM initiatives.

Considering these benefits, it can be concluded that nurturing knowledge sharing initiative before introducing other KM practices is a reasonable first step to start full implementation of knowledge management practices in an organization, as experienced by MRT Jakarta.

ICMEM

References

Abzari, M., Barzaki A.S., & Abbasi, R. (2011). "Knowledge sharing behavior: Organizational reputation or losing organizational power Case Study: Employee of agricultural bank in Fars state." *International Journal of Business and Social Science,* 2(17), 144-149

Chen, L. & Fong, P.S.W. (2015). "Evaluation of knowledge management performance: an organic approach", *Information & Management*, 52 (4), 431-453

Damodaran, L., & Olphert, W. (2000). "Barriers and facilitators to the use of knowledge management systems". *Behaviour & Information Technology*, 19(6), 405-413.

Davenport, T.H. & L. Prusak (2000). "Working knowledge: How organisations manage what they know". Boston: Harvard Business School Press.

Holt, D.T., Bartczak, S., & Trent, M.R. (2007). "The Development of an instrument to measure readiness for knowledge management". *Knowledge Management Research & Practice*, 5, 75-92.

Hu, B & Zhao, Y. (2016). "Creative self-efficacy mediates the relationship between knowledge sharing and employee innovation". *Social Behavior and Personality,* 44(5), 815-826.

Intezari, A., Taskin, A., & Pauleen, D.J. (2017). "Looking beyond knowledge sharing: an integrative approach to knowledge management culture." Journal of Knowledge Management, 21(2), 492-515

Ipe, M. (2003), "Knowledge sharing on organizations: a conceptual framework". *Human Resource Development Review*, 2(4), 337-359.

Janus, S.S. (2016). "Becoming a knowledge-sharing organization: A Handbook for Scaling up solutions through knowledge capturing and sharing." *International Bank for Reconstruction and Development / The World Bank Group*

Lee, J. -H., Kim, Y. -G., & Kim, M. -Y. (2006). "Effects of managerial drivers and climate maturity on knowledge-management performance: Empirical validation." *Information Resources Management Journal*, 19(3), 48-60

Nonaka I & Takeuchi, H. (1995). The Knowledge-Creating Company: How Japanese companies create the dynamic of innovation. Oxford University Press, New York

Nonaka, I., R. Toyama and N. Konno (2000) "SECI, ba, and Leadership: A Unified Model of Dynamic Knowledge Creation", Long Range Planning, Vol. 33, 5-34

Nooteboom, B. (2000). "Learning by interaction: absorptive capacity, cognitive distance and governance". *Journal of Management and Governance*, 4(1–2), 69–92.

Wang, S., & Noe, R.A. (2010). "Knowledge sharing: A review and directions for future research." *Human Resource Management Review*, 20, 115-131. http://doi.org/bp2rvg

ICMEM

The 3rd International Conference on Management in Emerging Markets

Designing the Delegation of Authority Process to Improve Empowerment Using Diane Tracy Model in PT. XYZ Regional Office West Java

Anindhita Chandradini[a*], Aurik Gustomo[b]

[a,b]*Institut Teknologi Bandung, Jalan Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

PT. XYZ Regional Office West Java has high category in employee engagement assessment. Employee engagement brings up employees' productivity and contributes significantly to organizational performance (Mercer, 2007). Nevertheless, with highly engaged employee assessment, the company still cannot achieve their target in membership and financial and perform a great performance. This research is to find which driver that hinder the process of employee engagement and propose a design that can improve the process in the company. This research used employee engagement survey, structured interview and focus group discussion to obtain data. Based on survey, empowerment is the lowest dimension of employee engagement in the company. Therefore, Diane Tracy Model was used to determine which variable that needs to be improved. It is found that authority is the possible solution that has a great impact with lowest effort. The delegation of authority process is composed of understanding type of authority and delegated task, select best person, define clear performance goals, provide training when needed, perform periodic review, feedback and recognition.

Keywords: Employee Engagement; Empowerment; Authority; Diane Tracy Model.

1. Introduction

PT. XYZ has been transformed into a public legal entity and has a great responsibility to the nation. PT. XYZ has one headquarters, eleven regional offices and one hundred and twenty-one branch offices located throughout Indonesia. The number of employees are 4446 employees. The total membership covered more than twenty million active workforces in Indonesia. PT. XYZ manages assets of Rp. 326.77 trillion. This amount consists of company's assets in the amount of Rp. 14.46 trillion and assets of social security fund employment amounted Rp. 312.31 (PT. XYZ, 2018). As the only company who has been appointed to organize the social security program for entire Indonesian workers, the company should be able to improve their competence and services, so they could cover the entire workforce as mandated before.

PT. XYZ West Java Regional Office is having an employee engagement issue which leads the company fails in achieving their membership and financial target. The data that shows addition of Individual and Corporate Membership can be seen in Figure 1.

---

* Corresponding author.

ICMEM

NEW ADDITION OF INDIVIDUAL MEMBERSHIP

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
■ Wage Earner Realization	48.425	120.590	193.858	265.474	335.682	403.476	472.071	551.203
■ Wage Earner Target	86.293	172.586	258.879	345.172	431.465	517.758	604.051	690.344
■ Non-Wage Earner Realization	16.719	20.757	47.997	61.081	77.943	97.314	131.093	210.154
■ Non-Wage Earner Target	17.973	35.946	53.919	71.892	89.865	107.838	125.811	143.784
■ Construction Service Realization	76.256	107.237	152.907	250.133	535.533	652.425	745.902	802.851
■ Construction Service Target	102.842	205.684	308.526	411.368	514.210	617.052	719.894	822.736

NEW ADDITION OF CORPORATE MEMBERSHIP

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
■ Realization	472	1.147	1.866	2.891	4.021	4.972	6.953	6.434
■ Target	1.122	2.224	3.336	4.448	5.560	6.672	7.784	8.896

Fig 1. The New Addition of Individual and Corporate Membership Indicator
(PT. XYZ, 2017)

It has been discovered that the realization does not match with the target number of the company have arranged before. Although there are few months that company could achieve the target, but most of them are still bearing 'poor' predicates which has an impact on another condition, which is financial aspect, especially in The Amount of Premium Payment. If the company could manage to achieve the target of the new addition of corporate and individual membership, it means that the company would be able to achieve their target in financial aspect.

There is a correlation between employee engagement and organizational performance. Mercer's research that stated engagement contributes significantly to organization's performance, leading to improvements in service quality and financial results (Mercer, 2007). However, the employee engagement survey result in 2017 shown that the company was bearing 99% value. Seen from the company's performance indicator in 2017 regarding their achievement in the new addition of corporate membership, individual membership and financial aspect, the company did not succeed in achieving their target. The main problem is, with highly engaged employees, the company is still would not be able to achieve their target and perform a great and sustainable performance. This condition is inversely proportional with the theory that supported a correlation between employee engagement and performance and also it is not reflected the indicator of Employee Engagement Index that has been measured by PT. XYZ.

In order to know further about problem that occurred in the company, an interview is conducted with Human Resource Administrators on eleventh of October 2017. The result of the interview has been poured into the form of fishbone diagram that shown in Figure 2.

ICMEM
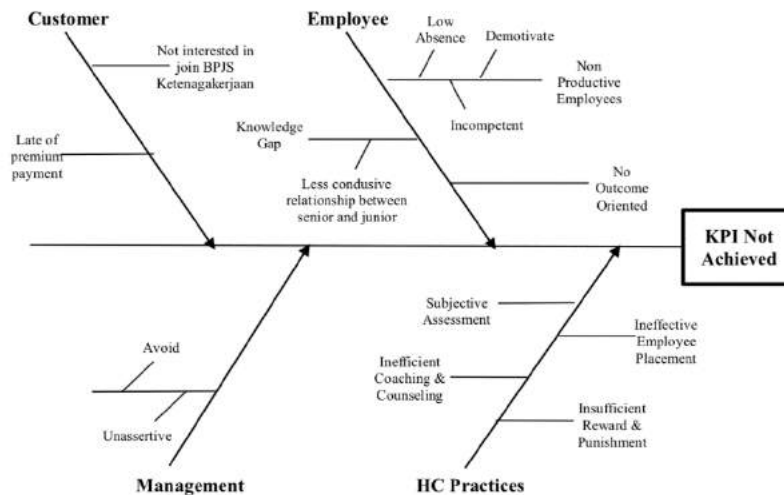
Fig 2. Fish Bone Diagram

From the fish bone diagram in Figure 2., it is known that the root cause of this problem is indicated to the employee aspect, because employee's work objectives and their overall contribution to the company are continuous process that leads to the result of company's performance (HR Council, 2018). The problems are non-productive employees (demotivate, incompetent, low absence), no outcome oriented and knowledge gap between employees. There are certain employees that considered incompetent for their job because they fail to deliver it as standard or as requested by the manager. As for the demotivate, simply because the employees feel that the manager would not be able to communicate clearly, thus make it difficult to do their jobs. The low absence is also an issue. Based on the interview, it has been obtained that some employees often are not in place whenever their colleague or manager needs them. There is a time that the employees are distracted and more concerned with other than office matters. There is also knowledge gap between senior and junior. This condition leads to less conducive relationship between employees and will be a bad impact, because the work environment will make employees' to be more productive is the one that inspires them, not the other way around (Barry, 2017). Other than that, the employee tends to be not concerned about the company's target, therefore the company's performance could not be achieved.

All of these factors are inversely proportional with the result of Employee Engagement assessment in August 2017 that has a high predicate. Employee engagement is about psychological state in which employees feel a vested interest in the company's success and are both willing and motivated to perform to levels that exceed the stated job requirements (Mercer, 2007). Employee engagement indicates that the more engaged employees are, the better performance overall. It is simply because engagement creates the capability and competency of the organization in a workforce to move their performance from good to great (Melcrum, 2007). However, the company is not able to achieve their target for these past months. Hence, this research will discover about which key driver that does not support the employee well so it could be enhance through designated employee engagement initiatives. By identifying the engagement drivers, it could help the company to meet the needs of their employees and focus on the specific areas of improvement that have the largest impact on engagement and business results (AON Hewitt, 2011). Based on the employee engagement survey result that conducted by Business Research and Indonesia Economic Forecast, empowerment is the lowest dimension of employee engagement in PT. XYZ Regional Office West (PT. XYZ Report, 2017). Therefore, Diane Tracy Model was used to determine the ideal condition and steps required to empower the employees. The variable from Diane Tracy Model that has a gap between the ideal and current conditions in the company will be the solution in this research.

ICMEM

2. Literature Review

The literature review is the theory that contained in this research. It can be seen in conceptual framework which is located Figure 3.
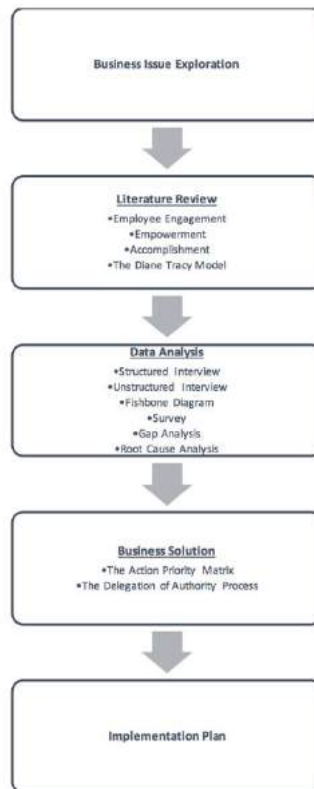
Fig 3. Conceptual Framework

2.1 Employee engagement

Employee engagement defined as a psychological state in which employees feel vested interest in the company's success and are both willing and motivated to perform to levels that exceed the stated job requirements (Mercer, 2007). Employee engagement brings up employees' highest productivity and contributes significantly to an organization's performance and leading to improvements in quality, customer satisfaction and long-term financial results (Mercer, 2007). Employee engagement has four variables which are sense of loyalty, sense of pride, connection to organizational goals and empowerment (Kador and Armstrong, 2010).

2.2 Empowerment

Weber in Fisher (1999) defined empowerment as "the ability to let others assume the responsibility, risks and rewards associated with making their own decisions". Mason (1996) stated that this process allows managers to share the leadership power with others and strengthen other's belief in their own sense of effectiveness (Fisher, 1999). Empowering the employee leads to the organizational encouragement for the employee to make decisions and foster their belief that they are in control which leads to self-motivation and sense of independence. It will be translated to greater loyalty and extra effort coming from the employee, because they believe that they control their own success through efforts and hard work which in turn benefits the success of the company (Ramesh and Kumar, 2014:1242).

ICMEM

2.2 The Diane Tracy Model

Diane Tracy Model defined that there are ten steps required to empowered employees (Fisher, 1999), which are:

- Understanding: A manager should empower the employees by giving them a clear understanding of their responsibilities of the job.
- Authority: A manager should empower the employees by giving them authority that is equal to the responsibility assigned to them.
- Standards: A manager empowers the employees by following the standards of excellence by the company which enable them to reach their full potential.
- Skills: A manager empowers the employees by developing their skills and confidence in order to reach the standards of excellence.
- Knowledge: A manager empowers the employees by providing the knowledge and information they need to be able to make good decisions.
- Feedback: A manager empowers the employees by giving them an honest feedback on their performance.
- Recognition: A manager empowers the employees by giving them recognition, which could enhance their self-esteem and motivate them to constantly do their best at work.
- Trust: A manager empowers the employees by trusting them, which helps them to believe more in themselves and be confidence about every step they are going to take to do good at their job.
- Permission to fail. A manager empowers the employees by giving them permission to fail, because employee will have a great lesson in every failure. It could make them to be more thoughtful and aware in the future.
- Respect: A manager empowers the employees by treating them with dignity and respect.

2.3 The Delegation of Authority

Empowerment without delegating the authority is an empty vessel (Fisher, 1999). Authority is the power to give orders or the right to act and it involves more than just carrying out specific duties according to detailed instructions. Authority legitimizes the exercise of power within the structure and rules of the organization (Sev, 2017). Delegation of an authority is the key to get subordinates and peers working collectively towards goals and more cost-effective solutions (Bell, 2014). To find out more about the delegation of authority process, overview of prior research will be shown in Table 1. The prior researches' step sequence has been sorted in according to the reconfigured delegation of authority process that can be seen in Figure 6.

Table 2. Overview Prior Research

Bell (2014)	Khasawneh (2016)	Sev (2017)	Marume et al (2016)	Lyons (2016)	Harvard Business Review (2011)	Team FME (2013)
Understand type of authority that can be transferred.	Determine authorized task and duties.	Define the given authority	-	Decide authority and task that need to be delegated	Decide authority that needs to be delegated	-
• Locate best person • Authority acceptance • Transfers authority	• Select the employees by their ability • Grant the authority	-	• Assign the duties and grant authority.	-	Matched with individuals suited the job	• Select the right person • Delegate the job
-	-	Goals must be clearly defined		Give an understanding of the assignment	Communicate plans to the workforce	Provide clear goal and set realistic deadline
-	-	Provide training to perform well	-	-	Provide training for those who need it	-
-	-	• Keep informed the subordinates • Establish control • Require completed work		-	-	Perform periodic review and recognition

			-			for the employee
-	-	Give recognition to motivate the employees	Monitor the employee to complete the work	Plan the provision of supervision and feedback	-	Give a recognition

3. Research Methodology

In this research, Diane Tracy Model is used to design the proposed solution for improving empowerment which is the lowest dimensions of employee engagement in the company. Figure 4 shows the research methodology process in this final project.
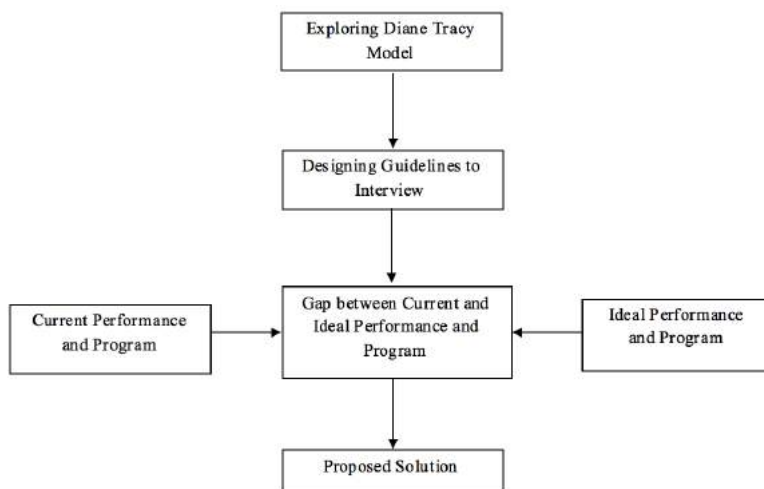
Fig 4. Research Methodology Process

After explored and designed guidelines to interview referring to Diane Tracy Model that can be seen in Appendix A, the next step is interview to the employees in order to know about the current conditions in PT. XYZ West Java Regional Office. Due to employee's busyness, there is no time for interview each of them one by one, so employees' interview is done in a focus group discussion way. The structured interview is done with the group head division whereas the focus group discussion is done with the human resources administrator, marketing administrator and services administrator. The findings that have gaps between the ideal and current condition will be prioritized by the Action Priority Matrix. This matrix will help the company to be more focus on one solution that comes with the greatest solution and the lowest effort by prioritizing between several possible solutions (Mind Tools, 2018)

4. Data, Discussion and Recommendation

Based on the findings from structured interview with Group Head Division and focus group discussion with subordinates, it has been found that there are four variables that have gap between the current and the ideal conditions. There are Knowledge, Recognition, Authority and Trust variable. The proposed solution for this research will be resolved by using the Action Priority Matrix. The action priority matrix was assessed together in the two different focus group discussions (FGD) by author along with staffs from Human Resources, IT and Risk and Quality Division. The other FGD is by author along with three Group Head from three different division, which are Marketing Group Head, Services Group Head and Finance Group Head. These FGDs represent the various divisions in PT. XYZ Regional Office West Java. In the FGD, each member will give their argument whether the possible solutions have how much impact for the company according to their effort made. The effort and impact scoring will continue to be

ICMEM

discuss until it reaches the agreement on which value deserved to be given. The possible solutions are shown in Table 2.

Table 2. Possible Solutions

No	Variable	Problem	Solution
1	Knowledge	Knowledge gap between manager and employees.	Create knowledge sharing activities that linking the manager and their employees also with reward system.
2	Recognition	No employee recognition that triggers the non-productive employees for being motivated and dedicated.	Create self-actualization work program and controlled the assessment of every accomplishment by the Group head and HR Division.
3	Authority	Not entrust the authority to the employees.	Create and monitor the delegation of authority process.
4	Trust	Not trust several employees and work keep them occupied, so the manager has got no time to build employees' confidence at their job.	Create a workshop for knowledge refreshment and team building.

The next step is to put all of the scores which has been assessed through FGDs into the action priority matrix. The matrix can be seen in Figure 5.
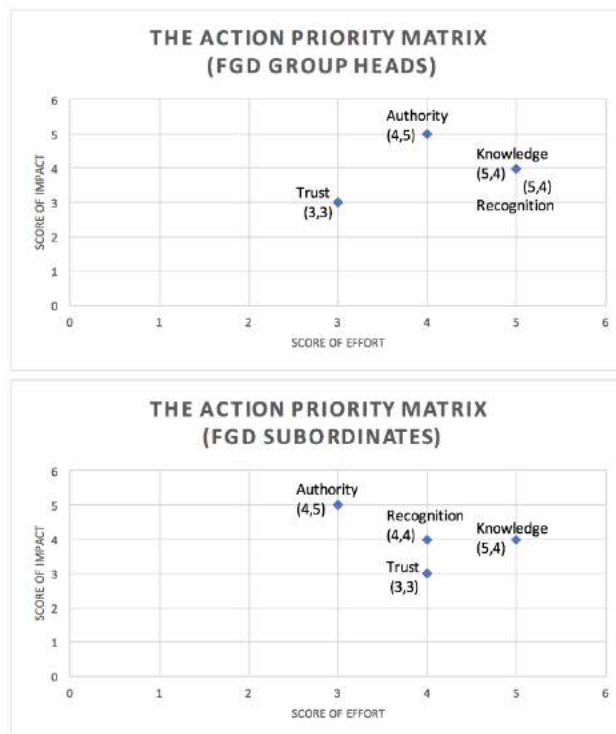
Figure 5. The Action Priority Matrix

The upper left quadrant in the matrix is called the quick wins quadrant. This quadrant will be the best solution that should be chosen by the company, because it gives the highest impact with the lowest effort. The quick wins from the

ICMEM

action priority matrix in Figure 5 is Authority variable. Therefore, it is concluded that create and monitor the delegation of authority process is the proposed solution that will be done in PT. XYZ Regional Office in West Java.

The chosen proposed solution is authority variable. Therefore, the root cause analysis was done through Focus Group Discussion (FGD). FGD is done in two different groups (Group Heads' and Subordinates' Group) to have an insight from diverse thinking perspective of the group. The problem statement appears from the authority variable, because of the authority become the proposed solution. The Root Cause Analysis Five Whys can be seen in Figure 6.
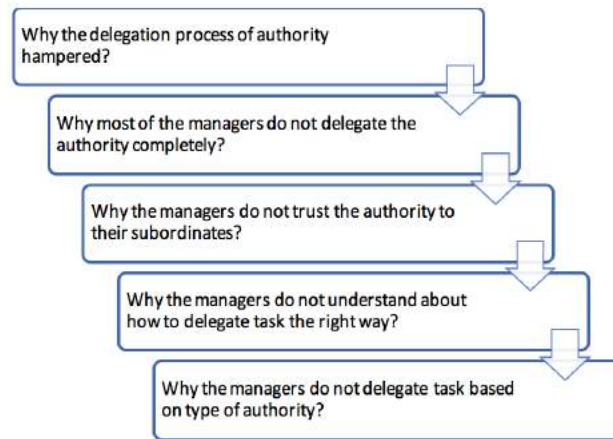
Figure 6. The Root Cause Analysis Five Whys

The defined problem is why the delegation process of authority hampered, it is said that because most of the managers do not delegate the authority completely. The managers do not delegate the authority completely, because the managers do not trust the authority to their subordinates. The managers do not trust the authority to their subordinates, because they do not understand clearly about how to delegate task the right way. The managers do not understand clearly about how to delegate task the right way, because the managers do not delegate task based on type of authority. The managers do not delegate task based on type of authority, because they do not have the structured process to delegate the authority to their subordinates. So, the proposed solution is to propose an implemented design that can be used to improve the empowerment in PT. XYZ Regional Office West Java.

Therefore, all of the delegation of authority processes from Table 2 will be reconfigured as the implemented design proposed solution at PT. XYZ Regional Office in West Java in this research. The reconfigured delegation of authority process is illustrated in Figure 7.

ICMEM

Fig 7. The Reconfigured Delegation of Authority Process

Based on Figure 6, the steps that have to be noticed to delegate the authority to the employees are:

- **Understand the type of authority and task that could be delegated**

Manager should understand which type of authority that can be transferred and which task that could be assigned. Authority differentiated in three types, there are Charismatic type of authority which described with characteristics such as reliability, progressiveness, determination, dignity and charisma, Traditional type which can be described with characteristics such as familiarity, esteem, categoricalness, tradition and habitualness and the last one is Bureaucratic type which described with characteristics such as credibility, exclusiveness, uniqueness, omnipresence and validity (Vukadibnovic and Njegovan, 2011). After knowing the type of authority, the work process of several divisions at PT. XYZ Regional Office in West Java can be defined with the type of authority so that the manager could delegate according to their best person of the task.

- **Select the best person**

In this step, the manager has to find the best person. Not only considered from the defined authority and task, the manager also has to ensure that the employees have the right skills and ability that suited to exercise the delegated authority. It is important for the manager to have an insight for the individual KSA's (Knowledge, Skills and Attitude) to know about the employee's competencies and behaviors (Team FME, 2013:13). There are certain factors that manager of PT. XYZ needs to notice in finding the best person within employees (Mind Tools, 2018), such as:

  a. Based on employee's skills, knowledge and experience

     The manager must know whether the employee's skills, knowledge and experience are adequate to successfully achieve the goal performance of the assignment.

  b. Based on employee's workload

     The manager also has to be aware with the workload that employee has.

  c. Based on employee's work style

     The manager has to observe the work style of their employees, so it can be put into the consideration of which type of authority that suitable to be delegated to the employee.

- **Give a clear understanding about the goal of the task**

The manager has responsibility to provide a clear defined goal performance of the assignment so they could understand about what the manager expected them to do, since the purpose of the delegation of authority is enabling the employee to act for their task and make decision on their own (Sev, 2017). It is essential to brief the employees until they have a clear understanding of the importance of the task. The goal should be communicated short, dense and clear with a certain period of time.

- **Provide Training when Needed**

Delegation of authority can be as effective as the employee's ability to perform their task well. Manager should conduct a training if the employee really need it, in order to build the employee's strength in the field of delegation (Sev, 2017). Training is a place where the employees could learn about certain things to enhance their knowledge in

ICMEM

detail which it certainly will help to improve their performance. So, the manager should provide particular addition training when it is necessary.

- **Perform Periodic Review, Feedback and Recognition**

The purpose is to make sure that the employees exercise their authority correctly and headed to goal performance that has been established before. Coaching and counseling are really essentials, because the manager could monitor and control the employees easily to ensure that they reach the goal and finished the task on time, also it would be an opportunity for the employees to give an update of their task progress. This program will be held twice a month. Right before the meeting, employees have to prepare their progress report as crosscheck tools for the manager. Furthermore, it is important for the manager to provide a feedback to the employees, because it will act as an input for the employees to improve their performance. The recognition in this step considered essential that the manager give a credit to the employees if they have done their task well. This provides with the personal recognition of their achievement (Team FME, 2013). Also, the manager could conduct a best employee program from their division every month and if there is an employee that win the title continuously for the whole year, then the manager can propose he or she to raise the grade to the superior which has a great impact for their career development.

5. Conclusion

The conclusions of this research are:
1. The employee engagement key drivers in PT. XYZ West Java Regional Office are sense of pride, sense of loyalty, connection to organizational goals, empowerment and accomplishment. The highest variable is sense of pride and the lowest variable is empowerment and accomplishment.
2. The hindering employee engagement process is from the empowerment dimension.
3. The proposed solution for the implemented design in this research is from the authority variable. The proposed solution is to create and monitor the delegation of authority process in PT. XYZ Regional Office in West Java.
4. The reconfigured delegation of authority process is (1) understanding type of authority and delegated task, (2) select best person, (3) clarify clear performance goals, (4) provide training when needed and (5) perform periodic review, feedback and recognition.

Acknowledgements

Appendix A. Guidelines to Interview referring to Diane Tracy Model

No	Variable	Define	Keyword	Question Guidelines

ICMEM

1	Understanding	The company will be more effective, if the employees have a common understanding about the performance and their part in the company. It will make the employees hold similar values, create identity and clear expectations.	• Defined Employee's responsibility • Purpose of the company's understanding • Conduct a workshop	• Does the manager give a clear understanding about their responsibilities of the job? (Q1) • Does the employee have a clear direction about the purpose of the company? (Q2) • Is there any workshop to enhance the employee's responsibility mind-set towards company's value? (Q3)
2	Authority	Authority is given to the employees so that they could perform the task well as its expected result by their manager.	• Delegated authority • Understands the given authority and the expected result	• Does the manager delegate the employee an authority so that they can perform their task? (Q4) • Does the employee understand about the authority that given to them and its expected result? (Q5)
3	Standards	Standard of the company should have an impact on company's business. Standards are needed to set out the employee's potential and behavior to achieve the success of the company.	• Standard aligns with company's business • Standard followed by the employee • Manager observes the employee	• Does the standard of excellence align with the company's business? (Q6) • Does the employee work based on following the standard of excellence? (Q7) • Does the manager observe the employee whether they work based on standard or not? (Q8)
4	Skills	Skill of the employees need to be developed in order to attain the company's standard of excellence.	Skills Developed	• Does the manager or the company develop employee's skills and in order to attain the standard of excellence? (Q9) • Does the manager or the company provide some sort of education or training for the employees? (Q10)
5	Knowledge	Employees need a relevant knowledge to be able to perform a great performance in their task and manager provides the	• Provide knowledge • Communication between staff	• Does the manager provide the knowledge and information that employee needs to make good decisions? (Q11)

ICMEM

		knowledge and information for the employees.	• Information System (IT) • Reward System •Organization Factor	• Is there any event for the employees to have an interaction for knowledge sharing? (Q12) • Is there any IT that support the employees for knowledge sharing? (Q13) • Is there any reward for knowledge sharing? (Q14) • Is there any support from the organization for knowledge sharing? (Q15)
6	Feedback	Feedback is needed to help the employees improve their task performance and productivity.	• Feedback upon employee's performance • Honest Feedback	• Does the manager like to give feedback upon employee's performance? (Q16) • Does the manager give an honest feedback for the employee in their performance? (Q17)
7	Recognition	The acknowledgment of an individual behavior, effort and accomplishment that support organization's goals or values.	Reward and recognition	Does the manager give reward and recognition upon your performance? (Q18)
8	Trust	Trust determined on how things are done in the company as the transparency and prevent the dubious communication among the employees.	Entrust the authority given to the employees	Does the manager trust the employee with the authority that has been given to them? (Q19)
9	Permission to Fail	Organization permits the failure or allows their employees to make an error in order to gain more information and opportunities to know how to be better in handle their job as way to be success.	• Permission to fail • Learn from employee's mistakes	• Does the manager give a permission to fail when the employees do their job? (Q20) • Does the employee learn from their mistakes? (Q21)
10	Respect	Treat the employees with respect will make them feel like they are part of the company and appreciated for	Treat with respect	Does your manager treat you with respect? (Q22)

ICMEM

		their skills. Accordingly, it will be easy for them to feel motivated and valued.		

References

AON Hewitt (2011) *Trends in Global Employee Engagement.* Available at: http://www.aon.com/ (Accessed: 22 January 2018).

Barry (2017) Available at: http://www.ciphr.com/blog/7-reasons-employees-unproductive-blame/ (Accessed: 24 january 2018).

Bell, Reginald (2014) *Delegation, Authority and Responsibility: Removing the Rethorical Obstructions in the Way of an Old Paradigm.* Available at:
https://www.researchgate.net/publication/261551662_Delegation_Authority_and_Responsibility_Removing_the_Rhetorical_Obstructions_in_the_Way_of_an_Old_Paradigm (Accessed: 27 April 2017).

PT. XYZ (2018) (Accessed: 1 January 2018).

PT. XYZ Report (2017) Laporan Kinerja Kantor Wilayah PT. XYZ Jawa Barat.

Fisher, Fred (1999) The Manager: Empowering Self, Organization and Community. Bratislava, Slovakia.

HR Council (2018) *Keeping the Right People*. Available at: http://hrcouncil.ca/hr-toolkit/keeping-people-performance-management.cfm (Accessed: 24 January 2018).

Harvard Business Review (2011) *HBR's Must Reads on Leadership.* Boston: Harvard Business Review Press.

Kador, J. and Armstrong, K, J. (2010) *Perfect Phrase for Writing Employee Surveys.* McGraw Hill.

Khasawneh, Akif L. (2016) *The Impact of the Delegation of Authority on Employees' Performance at Great Irbid Municipality.* Available at: https://www.researchgate.net/publication/282466762 (Accessed: 29 April 2018).

Lyons, Paul R. (2013) *Helping managers to more effectively delegate authority.* Available at: https://search.proquest.com/docview/1822358657/345ED5DA465645C2PQ/20?accountid=31562 (Accessed: 29 April 2018).

Marume *et al.* (2016) The Essence of the Principle of Delegation of Authority. *Journals of Research in Humanities and Social Science Vol. 4 Issue 6, 10-14.*

Melcrum (2007) Essentials Techniques for Employee Engagement. Available at: https://www.supplyfinder.com/downloads/pdfs/4957.pdf (Accessed: 3 March 2018).

Mercer (2007) *Engaging employees to drive global business success: Insights from Mercer's What's Working research.* Available at: https://www.dgfp.de/ (Accessed: 1 February 2018).

Mind Tools (2018) *The Action Priority Matrix*. Available at: https://www.mindtools.com/pages/article/newHTE_95.htm (Accessed: 22 April 2018).

Ramesh and Kumar (2014) Role of Employee Empowerment in Organizational Development. *International Journal of Scientific Research and Management Vol. 2 Issue 8, 1241-1245.*

Sev, Joseph T. (2017) *Effective Delegation of Authority as a Strategy for Task Accomplishment and Performance Enhancement in Business Organizations.* Available at: https://search.proquest.com/docview/1909557815/345ED5DA465645C2PQ/10?accountid=31562 (Accessed: 29 April 2018).

Team FME (2013) *Successful Delegation: Productivity Skills.* Available at: http://www.free-management-ebooks.com/dldebk-pdf/fme-successful-delegation.pdf (Accessed: 29 April 2018).

Vukadibnovic, Maja and Njegovan, Biljana R. (2011) Relationship between the Types of Authority and Authoritarianism. Available at: http://www.vps.ns.ac.rs/SB/2011/8.2.pdf (Accessed: 22 April 2018).

ICMEM

The 3rd International Conference on Management in Emerging Markets

Basic Salary Recommendation for Warung Nasi Sunda Pakuhaji

Atika Fatka Raihani[a*], Nur Arief Rahmatsyah Putranto[b]

[a,b]*School of Business and Managemen, Institut Teknologi Bandung, Jl Ganeca no. 10, Bandung 40116, Indonesia*

Abstract

Warung Nasi Sunda Pakuhaji is one of the restaurant located in Cimahi, Bandung. Established since 2008, the company has to face the constant number of profit from 2016. The reason behind this is because the high level of turnover happens in the company. The level of turnover appear because the employee felt unsatisfied with the the salary system. Therefore, there was a need to improve the compensation system. The research used competence based approached to define the new salary for the employees. Point method and salary benchmarking method will be used to meet the requirement of internal equity and external competitiveness. This research required ten position in calculating the new basic salary. The result of the research is the new salary plan which will expected to help the company reducing the employee level of turnover.

Keyword: Employee Turnover; Compensation; Point method

1. Introduction

As one of the developing country, Indonesia is one of the country that will have robust expansion in their GDP. The development is generate by the monetary condition, supportive environment, and higher commodity price (worldbank.org, 2017). Hospitality industry is one of the industry that have the bright prospect in the future (Liputan6.com, 2018). In 2018, the industry has a chance to growing bigger after becoming the fourth place in their contribution for national foreign exchange which have 9.3% compare with other sub-sector (merdeka.com, 2017). Hospitality industry also have several sector that include in it such as Restaurant and Bar sector (Mavale & Rautela, 2015).

Warung Nasi Sunda Pakuhaji is established in 2008 in the center of Cimahi city. The company provides Sundanese traditional food within buffet system. Famous for having a good taste and a strategic place, Warung Nasi Sunda Pakuhaji has an opportunity to grow as fast as the industry. But unfortunately in 2015, the company have to deal with high level of employee turnover. This happen because the employee feel that the basic salary assign does not unfair and does not represent their job task and responsibility. Furthermore, the owner did not have systematical method to calculate the basic salary.

Each year, Warung Nasi Sunda Pakuhaji has conducting the recruitment three times a year for occupy vacant position. It is considered as high level of turnover because each position has three until ten employees which will break down into a work shift every day. However, the owner assigns same basic salary to all the employee in the company. It is considered as unfair decision for the employee that have more task and responsibilities compare to other. Therefore, Warung Nasi Sunda Pakuhaji did not considering internal alignment and external competitiveness that will affecting the employee satisfaction through their current salary. Hence, the objective of this study aim to solve the high level of turnover by designing the new salary system for Warung Nasi Sunda Pakuhaji.

---

* Corresponding author.

ICMEM

2. Literature Review

Literature review provide the theory related with the basic compensation system.

2.1 Compensation

Compensation is everything employee receives for the output of their work (Darma & Supriyanto, 2017). Dessler (2015) stated that the compensation of employee including all forms of pay given to employees and emergent from their work. Besides, compensation is an aspect that can motivated the employee to work harder. The reason behind it because when the company compensated their employees well, they feel happier working at their work place (Aslam *et al*., 2015). Thus, compensation considered as critical part in an employee social well-being and economic (Milkovich, Newman, & Gerhart, 2014). In addition, because it considered as the heartbeat of human resource, compensation management is playing a significant rules and functional roles in human resource management (Odunlani & Matthew, 2014).

2.2 Basic Salary

The main compensation that salary given to the owner is basic salary. Basic salary can be paid hourly, daily, weekly, monthly, or yearly depends on the need and the culture of the company (Milkovich, Newman, & Gerhart, 2014). This can be considered as the employee rewards after fulfilling their task and responsibilities. There are many considerations to put before designing the compensation system which are internal alignment, external competitiveness, employee contributions and management who helped company built good pay system (Milkovich, Newman, & Gerhart, 2014). Internal alignment refers to job or skill level comparisons inside a single organization (Milkovich, Newman, & Gerhart, 2014). Meanwhile the external competitiveness is when the organization pays an employee wage considering external labor market (Romanoff, Boehm, & Benson, 1986). Employee contribution can affect employee's attitude and behavior. Furthermore, management assure that each employee will get the appropriate salary for achieve the right objective through the right way (Milkovich, Newman, & Gerhart, 2014).

2.3 Job Based Structure

Milkovich, Newman, and Gerhart (2014) stated that skill-based structure will focus on employee hard skills for the person who fulfilling the position. the abilities, skill and knowledge will link to the skill based structure that relevant to the assign work. The aim of skill based structure is to supports the strategy and objectives, support work flow, and give fairness of employees. This structure paid the individual for skills that they have regarding their certification although their assign work is required several part of it.

2.4 Point Method

Point method can also call as point factor of job evaluation, is the method that the company identifies the compensable factors and divided them into scales (Bergmann & Scarpello, 2001). Compensable factors are characteristics of value from the organization to help the organization pursue its strategy and achieve their objectives (Milkovich, Newman, and Gerhart, 2014).

2.5 Relationship between compensation and level of employee turnover

Several studies have examined the linked between the level of employee turnover into compensation. Employee turnover has been one of the concern for hospitality industry (Hinkin & Tracey ,2000). Research conducted by Bryant and Allen (2013) reveal that the reason why the employee quitting from their job is to take higher paying job offer somewhere else. Campion (1991) found that the important reason why voluntary turnover is high is because wages from other company. Rynes, Gerhart, and Minette also (2004) revealed that there is sufficient evidence that changing in pay level will determine people's decision to join or leaving the company. Furthermore, to reducing the employee turnover rate, the compensation level could be improve becoming internally and externally competitive (Cho *et al*., 2006).

ICMEM

3. **Methodology of the research**

This part will explain the step to design the basic salary for Warung Nasi Sunda Pakuhaji. Mixed method which are qualitative and quantitative used as the method for conducting the research. The qualitative method used for conduct the preliminary research and the quantitative used in the calculation of designing the new salary system. For collecting data, researcher used all the employee in Warung Nasi Sunda Pakuhaji as the population of this research Furthermore, researcher used purposive sampling as the sampling method because researcher has a criterion that have to be fulfilled for the respondent. Job based salary approach was used for calculating job salary system. This approach was selected because it defined the salary based on job responsibility of each position. Furthermore, point method will be applied for conducting job evaluation. The method was used because this considered appropriate for the company that have wide range of job and the value of the job would show in monetary terms.

In this study, primary and secondary data needed for conduct the research. Primary data obtained from interview with the owner. This considered because owner has a responsibility to supervise and manage the employee's performance. Secondary data collected using internet and collecting sources of data from the company. Benchmark salary data that aim to meet the requirement for external competitiveness will be obtained through the internet. Meanwhile, company's job description and job specification will be obtained through Warung Nasi Sunda Pakuhaji database.

In designing the new salary system, we followed the steps conducted by Milkovich, Newman and Gerhart (2014). There are several steps that need to be conducted in designing new basic salary. Job description and specification need to be improved into job analysis. Job analysis created by determining the competencies that will be used as compensable factors. The competencies will be divided into core competencies, managerial competencies, and functional competencies which will differ from one position to another position. The next step is defining description and level for each sub-factors. The level of competencies and the description are derived from Spencer and Spencer dictionary which will be divided into several ranges of scores. After we assigned level of each competence, we determined the weight for each factor and sub factor refer to owner preference. The weight for each factor and sub-factor aims to calculated the total weight for each competence. Maximum job value will be determined by multiplying the job value within 100.000. Moreover, minimum job value will be determined using total weight multiply with 10%. Maximum and minimum job value aims to make an interpolation by subtracting the maximum value with the minimum value and divide it with n-1to find the interval level for each competence. The resulted will be adjusted to the level available in each competence. The calculation is similarity used for all the competence required. After find the value for each competence level, we calculated the competence for each position by totalling the competence value in each job position. In sum, the job value calculated will be used for calculating job salary for each position.

4. **Result and Discussion**

The result of the research is the new salary system that may applicable for Warung Nasi Sunda Pakuhaji. Currently, Warung Nasi Sunda Pakuhaji has already have the job description that specify task and job responsibility. However, the current job description did not provide the goals for each job responsibility. The job description need to be improved more detailed by adding performance indicator, authorities, working relationship and working environment to meet the requirement for calculating job value. The benefit of using the improved job analysis is the company will have goals for each responsibility that employees have. It also gives the superiors controls for the employee performance during their works. Also the new job analysis is appropriate for designing basic salary system.

After transforming the job description into job analysis, the competencies will be determined using Spencer and Spencer Dictionary. There are five compensable factor that will be used which are Core competence, Managerial Competence, Functional Competence, Technical Competence, and Working Condition. Researcher then define the reach sub-factor appropriate for every competence. Core competence is competence derived from the company value. Warung Nasi Sunda Pakuhaji has three company value that will transform into several competences. First, Hospitality excellence transform into Customer Service Orientation (CSO), Concern for Order (CO) representing strive to efficiency, work in team will transform into Teamwork (TW). Managerial competence is competency aimed for

ICMEM

helping the leader lead subordinates. This consist of Impact and Influence (IMP), Team-Leadership (TL), Developing others (DEV) and Directiveness (DIR). Functional Competence required Initiative (INT), Self Control (SCT), Interpersonal Understanding (IU), and Expertise (EXP). Meanwhile technical competence required Working Experience to ensure the employees have experience in their field of work. Working Condition portray the condition in the work environment. This consist Comfort Level, Risk Accident, and Workload.

Table 4.1 Weight of Factor

Competencies	Priority	Rank
Core Competencies	20.80%	2
Managerial Competencies	14.40%	3
Functional Competencies	44.20%	1
Technical Competencies	11.30%	4
Working Conditions	9.30%	5

The weight for each competence and sub-competence will determined with the help of Analytical Hierarchy Process (AHP). AHP will help to define which factor will be prioritizing refer to the owner preference. Table 4.1 show the result of each weight for the competence. Functional competence become first priority for Warung Nasi Sunda Pakuhaji as it can be assumed each position has their specific roles to help the company run the business process. Core competencies consider as an important part rather than functional competence in the organization. The owner explain that it is important to employee understand the core value of the company rather than priorities managerial abilities. Technical competence put in the fourth ranks. The competence help define skills and knowledge needed in each job position. Working conditions put in the least important competence since the working environment mostly in indoor situation.

Table 4.2 Weight of Core Sub-Factor

Factor	Sub-Factor	Weight	Total Weight (Weight of Factor x Weight of Sub factor)
Core 17.80%	Costumer Service Orientation (CSO)	54.00%	11.23%
	Concern for Order (CO)	16.30%	3.39%
	Teamwork (TW)	29.70%	6.18%

In order to get total weight for each competencies, researcher must define the weight for each sub factor. The result for this step is shown in table 4.2 for core competence sub factor, the highest weight is Customer service orientation. The Customer service orientation put in the first rank because the company can be categorized as the service company which should be more concerned to provide good service to customers. The second value which consider after CSO is Team work as the owner one repeatedly emphasize cooperation is important to run this business. Within all of the consideration above, that is why the concern for order is placed as the last.

Table 4.3 Weight of Managerial Sub-Factor

Factor	Sub-Factor	Weight	Total Weight (Weight of Factor × Weight of Sub factor)
Managerial 14.10%	Impact and Influence (IMP)	10.40%	1.50%
	Team Leadership (TL)	40.90%	5.89%
	Developing Others (DEV)	16.50%	2.38%
	Directiveness (DIR)	32.20%	4.64%

ICMEM

Table 4.3 revealed the highest value for the managerial position is Team leadership put in the first place aims for a manager to lead subordinates achieving company goals. Directiveness (DIR) which the company put in the second rank to assist the leader in the company to ability of manager giving clear direction as the company expected to the managerial position. Developing others put in the second position as the owner need the leader that can help developing subordinates skills or knowledge. Impact and Influence needed by the manager to motivate the subordinates achieve the target in the company.

Table 4.4 Weight of Functional Sub-Factor

Factor	Sub-Factor	Weight	Total Weight (Weight of Factor × Weight of Sub Factor)
Functional 44.20%	Initiative (INT)	10.00%	4.42%
	Self-Control (SCT)	29.50%	13.04%
	Interpersonal Understanding (IU)	31.70%	14.01%
	Relationship Building (RB)	10.90%	4.82%
	Expertise (EXP)	17.90%	7.91%

Table 4.4 will show the company five functional competencies that appropriate. With Interpersonal understanding put as the highest weight, the company expected the employee to support the value of the company to the best service for its customer. Self-control put in the second rank considering most of the position in the company is interact with the customer. Expertise put in the third place because the company need specific skill in several position to help them run the business. Relationship building and initiative is similar to each other based on the owner preference.

Table 4.5 Weight of Technical Sub-Factor

Factor	Sub-Factor	Weight	Total Weight (Weight of Factor × Weight of Sub Factor)
Technical 11.30%	Working Experience	100%	11.30%

Technical competence as shown in Table 4.5 shown will represent the employee skill and knowledge. Working condition choose for represent the technical competence to make sure that all the employee have experience to do their work.

Table 4.6 Weight of Working Condition Sub-Factor

Factor	Sub-Factor	Weight	Total Weight (Weight of Factor x Weight of Sub Factor)
Working Condition 9.30%	Comfort Level	31.10%	2.89%
	Risk Accident	19.60%	1.82%
	Workload	49.30%	4.58%

Table 4.6 represent working Condition weight of sub-factor. This competence become the last competence to be considered since the employee workplace are majority at the indoor condition. Working condition including Workload to know how much the employee task and responsibilities. Second is comfort level essential for measuring the facilities provides to helps the employees doing their jobs. Risk accident put at least part because the company did the periodical check to make sure all the equipment safe and did not injures the employee's life.

In order to calculate total weight for each sub competencies, we have multiplied the weight of core competence and the weight of sub competence. The total weight aims to help researcher create the minimum and maximum value of each competence. In addition, to get minimum value of each competence we have to multiply the total weight with ten percent. Ten percent in here obtained from owner preference. Furthermore, to get maximum and we would multiply the total weight with 100.000. Interpolation can be created after obtaining maximum and minimum value to find the interval level for each competence. The resulted will be adjusted to the level available in each competence. The

ICMEM

calculation is similarity used for all the competence required. After we find the value for each competence level, the next step is calculating the competence for each position by totalling the competence value in each job position.

Table 4.7 Job Worth

Position	Job Value	Benchmarking	Job Worth (Benchmark/Job Value)
Restaurant Manager	42831.00	IDR5,500,000	128.41
Finance Administrator	33967.71	IDR3,500,000	103.04
Purchase Manager	33503.28	IDR2,000,000	59.70
Operational Supervisor	31730.34	IDR4,000,000	126.06
Cashier	15641.04	IDR1,500,000	95.90
Cleaning Service	12216.42	IDR1,500,000	**122.79**
Kitchen	19120.80	IDR1,500,000	78.45
Dishwasher	10381.28	IDR1,200,000	115.59
Waitress/waiter	17941.44	IDR1,500,000	83.61
Security	12523.12	IDR1,200,000	95.82
Average Job worth			100.94

The job value for each position in Warung Nasi Sunda Pakuhaji will be used for calculating the job worth for each position by divide it within the benchmark salary in Bandung area obtained from the internet. The job salary will calculate using the job worth (122.79). The value is taken after discussing it with the owner considering the company budget. The value then will be used to calculate the budget of the company for compensate the employees.

The value obtained is still appropriate although the salary is not highly improved but still competitive enough. This job salary calculation can also use as the improvement of Warung Nasi Sunda Pakuhaji existing basic salary especially after considering the internal fairness and external competitiveness inside the calculation.

Table 4.8 Total Budget for Each Position

Job worth used	122.79		Total budget needed for the position
Position	Job Value	Personnel	
Restaurant Manager	42831.00	1	IDR5,259,027
Finance Administrator	33967.71	1	IDR4,170,743
Purchase Manager	33503.28	1	IDR4,113,718
Operational Supervisor	36445.59	1	IDR4,474,991
Cashier	15641.04	2	IDR3,840,987
Cleaning Service	12216.42	6	IDR9,000,000
Kitchen	19120.80	10	IDR23,477,577
Dishwasher	10381.28	3	IDR3,824,014
Waitress/waiter	17941.44	4	IDR8,811,798
Security	12523.12	2	IDR3,075,317
TOTAL BUDGET	IDR70,048,172		

ICMEM

The adjustment in the calculation of basic salary are rely on internal fairness involvement. Based on the result from Table 4.9, all the position has increase their basic salary. It is happening in order to retain the employee and reducing level of turnover in the company.

Table 4.9 Salary Comparison

Position	Job Salary	Rounded Salary	Comparison to existing Salary
Restaurant Manager	IDR5,259,027	IDR5,260,000	Increase
Finance Administrator	IDR4,170,743	IDR4,171,000	Increase
Purchase Manager	IDR4,113,718	IDR4,114,000	Increase
Operational Supervisor	IDR4,474,991	IDR4,475,000	Increase
Cashier	IDR1,920,493	IDR 1,921,000	Increase
Cleaning Service	IDR1,500,000	IDR1,501,000	Increase
Kitchen	IDR2,347,758	IDR 2,348,000	Increase
Dishwasher	IDR1,274,671	IDR 1,275,000	Increase
Waitress/Waiter	IDR2,202,950	IDR 2,203,000	Increase
Security	IDR1,537,658	IDR 1,538,000	Increase

5. Conclusion

Compensation is one of the crucial thing in the company as it can affect the employee satisfaction in their work (Schwab & Wallace, 1974). Within unsatisfied employee toward existing basic salary in Warung Nasi Sunda Pakuhaji, the employee will have high intention to quit the company This research aims to help the company improve their current basic salary by considering the internal fairness and external competitiveness in it. Internal fairness is obtained using the competence derived by Spencer and Spencer dictionary. Meanwhile, external competitiveness using benchmark salary in the calculation helping the company to ensure that salary given is externally competitive.

The result of this research suggest Warung Nasi Sunda Pakuhaji to the new compensation system which including systematically calculation. Systematically calculation will clearly define the salary and reducing the bias of salary calculation. The result show that all the position has increase their salary. Within the new basic salary calculation, researcher expected this will help the company to reduce employee level of turnover.

Position	Job Salary	Rounded Salary	Comparison to existing Salary
Restaurant Manager	IDR5,259,027	IDR5,260,000	Increase
Finance Administrator	IDR4,170,743	IDR4,171,000	Increase
Purchase Manager	IDR4,113,718	IDR4,114,000	Increase
Operational Supervisor	IDR4,474,991	IDR4,475,000	Increase
Cashier	IDR1,920,493	IDR 1,921,000	Increase
Cleaning Service	IDR1,500,000	IDR1,501,000	Increase
Kitchen	IDR2,347,758	IDR 2,348,000	Increase
Dishwasher	IDR1,274,671	IDR 1,275,000	Increase
Waitress/Waiter	IDR2,202,950	IDR 2,203,000	Increase
Security	IDR1,537,658	IDR 1,538,000	Increase

ICMEM

References

Aslam, A., Ghaffar, A., Talha, T., & Musthaq, H. (2015). Impact of compensation and reward system on the performance of an organization: An empirical study on banking sector of Pakistan. *European Journal of Business and Social Sciences*, *4*(8).

Bergmann, T. J., and Scarpello, V. G. (2001). Point schedule to method of job evaluation. In Compensation decision.

Bryant, P. C., & Allen, D. G. (2013). Compensation, benefits and employee turnover: HR strategies for retaining top talent. *Compensation & Benefits Review*, *45*(3), 171-175.

Campion, M.A. Meaning and measurement of turnover: Comparison of alternative measures and recommendations for research. Journal of Applied Psychology, 1991, 76(2), 199–212.

Cho, S., Woods, R., Jang, S. and Erdem, M. (2006), Measuring the impact of human resource management practices on hospitality firms' performances. International Journal of Hospitality Management, Vol. 25 No. 2, pp. 262-77.

Darma, P & Supriyanto, A. (2017). The Effect of Compensation on satisfaction and employees performance. Management and Economics Journal (MEC-J).

Dessler, G. (2015). Human Resource Management (14th ed.). Pearson Education Limited.

Gupta, N., & Shaw, J. D. (2014). Employee compensation: The neglected area of HRM research. *Human Resource Management Review*, *24*(1), 1-4.

Hinkin, T. R., & Tracey, J. B. (2000). The cost of turnover: Putting a price on the learning curve. *Cornell hotel and restaurant administration quarterly*, *41*(3), 14-21

Mavale, S., & Rautela, S. (2015). Incremental Innovation for Sustainable Growth in Restaurant Businesses: Global Practices for the Growth of Local Business. *Annual Research Journal of Symbiosis Centre for Management Studies*, 80-87.

Milkovich, G. T., Newman, J. M., & Milkovich, C. (2014). *Compensation* (Vol. 11). New York: McGraw-Hill

Odunlami, I. B., & Matthew, A. O. (2014). Compensation Management and Employees Performance in the Manufacturing Sector, A Case Study of a Reputable Organization in the Food and Beverage Industry. *Jurnal, Ajayi Crowther University, Oyo. Nigeria*.

Romanoff, K., Boehm, K., & Benson, E. (1986). Pay equity: internal and external considerations. *Compensation & Benefits Review*, *18*(6), 17-25.

Schwab, D. P., & Wallace Jr, M. J. (1974). Correlates of employee satisfaction with pay. *Industrial Relations: A Journal of Economy and Society*, *13*(1), 78-89.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Developing Job Analysis in BUMDES Margabakti Persada to Decrease an Overlapping Job between Members

Alyanissa Noor Alfadhila[a*], Nur Arief Rahmatsyah Putranto[b]

[a,b]*School of Business Management, Jl. Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

The aim of this research is to reduce the unbalance work that happened in BUMDES Margabakti Persada by creating a job analysis. Job analysis needed because there is no job description and job specification in all positions in BUMDES Margabakti Persada. The job analysis will be used as the guideline for members in doing their work. In determining the job description, the researcher used the primary data from the interview result towards the chairman and used the secondary data such as organization structure and business process. Meanwhile, to develop the job specification, the researcher used the HRM approach that consists of knowledge and skills. The new job analysis provides detail information needed by members as a clear explanation about their duties and responsbilities. Additionally, by conducting the new job analysis, each position will also have its own target in order to finish the job.

Keywords: *Human Resource Management; Job Analysis*

1. Introduction

BUMDES (Village Enterprise) is a legal business entity which is established and owned by the village government. It is managed professionally and independently while the equity came from the village wealth (Dewi, 2014). According to the regulation of village government No. 4 year 2014 regarding BUMDES, it is stated that the aims of BUMDES is to strengthen the revenue of village, to advance the economy in village and to increase the community's prosperity. BUMDES run based on the potential of its village in the form of community empowerment. Therefore, the existence of BUMDES is very important to support the economy improvement for the village.

BUMDES Margabakti Persada established in 2015 and still progressing to achieve its goals. Currently, the main product of BUMDES Margabakti Persada is pure water. Pure water is chosen as the main product because people in Margahayu Tengah have difficulties to fulfill their water needs. Thus, BUMDES Margabakti Persada rised up as a solution to the community prosperity, particularly in water supply. Moreover, BUMDES Margabakti Persada is one of the best BUMDES in West Java and successfully prospering their community. Additionally, because of their success, BUMDES Margabakti Persada is also categorized as one of the pilots for others BUMDES is West Java.

However, according to the interview result towards the chairman and the staff of BUMDES Margabakti Persada it was shown that the work is not distributed well to the members and often happened an overlapping job between members. The overlapping job occurred because there is no clear job description and job specification in BUMDES Margabakti Persada. The inexistence of job description and job specification caused confusion between members because they do not understand their function and role. It is often happened that some members work beyond their position or some positions have to take over the others task. So, the purpose of this research is to develop a job analysis for all position to reduce the overlapping job in BUMDES Margabakti Persada. Furthermore, this research limited for only BUMDES Margabakti Persada and cannot be implemented in the other BUMDES. Moreover, the result of this

---

* Corresponding author.

ICMEM

research has not been applied yet, so that the researcher did not know the impact of the improvement to the organization.

2. Literature Review

Armstrong (2006) defined human resource management as the most valued asset in organization that need to be managed. Likewise, Stone (1998) described human resource management as the major contributor to the organizational success since it is related to manage the relationship between employer and employee. Moreover, the function of human resource management covers activities that significantly influence all areas in organization (Byars & Rue, 2004).

Stone (1998) defined job analysis as a process of determining the responsibilities, the relationship, the condition, and the personal capabilities towards job for satisfactory performance. Meanwhile, Dessler (2017) described the importance of job analysis because the information within job analysis supports almost all activities in human resource management such as job design, HR planning, recruitment and selection, performance appraisal, compensation, training, career planning and development, and for employee's health and safety.

Stewart & Brown (2010) explained the seven steps in determining the job analysis those are getting organized, choosing job, reviewing knowledge, selecting job agent, collecting job information, creating job description, and creating job specification. The first step is getting organized. Getting organized can be done by decided the party that would conduct the job analysis. The second step is choosing the job that will be analyzed. After choosing the job, then the organization needs to see the benchmark or the document that has been written about the particular job. This step called reviewing knowledge, it is important for understanding the list of tasks related to the job. The forth step is selecting the job agents. Job agents are the people who provide the job information. The next step is collecting the information about the job through observation, interview, or questionnaire. After the job information collected, the next step is creating job description. Job description is a task statement that explains about what should be done by employee to perform a job. Meanwhile, the job specification identified the knowledge, skills, and abilities that the employee needed in order to perform the list of task that has been mention in job description.

Bratton & Gold (2007) defined job description as a statement that describes the purpose, scope, duties, and responsibilities of a job. Likewise, Byars & Rue (2004) stated that the job description concentrates on explaining the job as it is currently being performed that involves of what the job is called, what is to be done, where it is to be done, and how it is to be done. Additionally, Bratton and Gold (2007) and Dessler (2017) stated that there is no standard content in job description. In fact, the content is depends on management preference and it could vary widely, and also it is depends on the uses to which the job description will be put (Stone, 1998). Moreover, most of job description contain information that covers (Dessler, 2017) :

- Job identification. Job identification consists of information that consists of job title, job class, job division, date of approval, who is approved, and revised date. The job title specifies the name of the job while the job class described the position. Meanwhile, the job division stated the category or which group the job is involved.
- Job Summary. In job summary, there must be clear statement that summarizing the essence of the job, including its major functions, activities and its objective.
- Responsibilities and Duties. This part present a list of tasks and responsibilities that employee must done. The tasks refers to the job requires.
- Performance Indicator. The performance indicator is the standard of the job requires which determine whether the employee already achieve the duties or not.
- Authority of Incumbent. The authority explains the specific rights and limitations that employee have related to the positions in making decision.
- Work Relationship. In this part, there is an explanation about the employee relationship with others in both internal and external the organization. It is consists of to whom to report, the supervisor, and the partner.
- Working Condition. Working condition describe the environment of the job including the safety and the health hazard in which the job is performed.

Furthermore, job specification refers to the list of knowledge, skills, and abilities (KSAs) that the employee needed to perform a job satisfactory (Mathis & Jackson, 2010). Moreover, job specification also can be defined as the detailed

ICMEM

statement of the human characteristics related to a job in order to achieve its performance (Armstrong, 2006). Additionally, according to Armstrong (2006), the content of job specification consists of technical competencies and requirements. Technical competency refers to the needs of employee to know and be able to do their task, including any special attitudes or skill required. Meanwhile, the requirement consists of the list of behavior, experience, education, and competency that the employee needed to perform the job.

3. Methodology

The method in this research is using the qualitative approach. In order to collect the data needed to develop job analysis for all positions in BUMDES Margabakti Persada, the researcher conducted the interview towards the chairman to get the job information that includes the each position's task, responsibilities, target, working condition, authorities, working relationship and requirements. Moreover, those job information will be used to create the job description and job specification. The chairman was chosen as the job agents because he has a deep understanding about the business process of the BUMDES Margabakti Persada that make him considered as the person who is able to provide clarification about the tasks and its standard that need to be done to make the members perform. Furthermore, the chairman also has an ability to represent the characteristics of people that would suitable with the job.

In order to develop job description, the researcher used the primary data from the interview result with the chairman to create job summary, responsibilities and duties, work target, and working condition. Meanwhile, to create the job identity, authorities, and work relationship, the researcher used the data from the organization structure of BUMDES Margabakti Persada. Moreover, the data that used to define the job specification was from the primary data through interview with the chairman of BUMDES Margabakti Persada. The job specification will be consists of skill and education that each position needed to perform.

After the new job analysis is done, the next phase is verification. The verification will be done with the chairman of BUMDES Margabakti Persada. The purpose of the verification is to assess the suitability of the new job analysis with the business process of BUMDES Margabakti Persada. The chairman will review the new job analysis one by one. If it is suitable, the researcher will go to the phase of data analysis. But if the new job analysis is not suitable, the researcher will go back to accomplish the job analysis.

When the verification result stated that the new job analysis is suitable with the business process of BUMDES Margabakti Persada, the next phase is conduct analysis. The analysis is done to assess the expected benefit from the new job analysis. Moreover, in doing analysis the researcher also compare the current and the expected situation by having the new job analysis for all positions in BUMDES Margabakti Persada. The comparison was obtained to find the improvement from the new job analysis. The last phase after verification is conclusion and recommendation. The conclusion consist of description of the expected result of new job analysis while the recommendation could help BUMDES Margabakti Persada in doing the implementation.

4. Result and Discussion

The current job description in BUMDES Margabakti Persada only consists of the list of task in general. For example, the job description of the machine staff, it is only stated that the task is to check the condition of the machine as it shown in figure 1. The weaknesses of the current job description are there are no job identity, no key performance indicator, no authorities, no work relationship, and no working condition. Meanwhile, those information are important to support the members to perform and to keep the members doing the work according to its position.

ICMEM
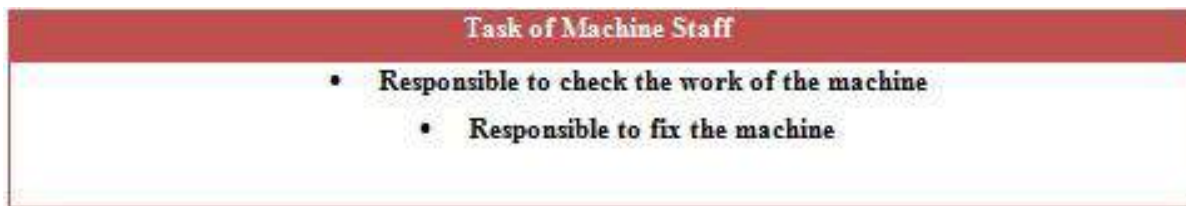
Fig. 1. The Example of Current Job Description in BUMDES Margabakti Persada

In order to make a clear job description in BUMDES Margabakti Persada, the researcher generated the detail of job description into job identification, job summary, task and responsibilities, key performance indicator, authorities, work relationship and working condition. First is the job identification. Job identification is needed to clarify the position's identity. It is consists of job title, job class, and job division. The inexistence of job identity caused the difficulties among members to understand which position that they belong to. After conducting job analysis, members in BUMDES Margabakti Persada could differentiate its position and have detail information about their job identity through job identification. Second is job summary. The job summary is a brief statement that described the main function or the main activity from each position. Currently, the job description in BUMDES Margabakti Persada did not consist of job summary. The inexistence of job summary caused confusion between members related its function in BUMDES Margabakti Persada. After conducting job analysis and generated the job summary, it could help the members in understanding the major function of its job. Moreover, through the job summary, each position has its own clear statement that describes their essence of the job. Third part is task and performance indicator. Task has a function in helping the members to understand their duties in detail. Furthermore, with the performance indicator, the members could also understand the standard from each task. With the new job analysis that generated the task and performance indicator for all positions could give the members a clear list of tasks and its standard to get the job done. So, each position has their own responsibilities and target in order to perform their job. Next is the list of authorities. The current job description of BUMDES Margabakti Persada did not have a list of authorities. However, This situation make the head position could not maximize their right to manage and direct their subordinate. Consequently, it is often happened that the head position took over the tasks and caused the unbalance job. The new list of authorities can help the head position to use their right to direct and command its subordinates based on their position, so the head position does not need to cover the subordinate's tasks anymore. The fifth part is work relationship. The work relationship clarified the communication line in order to coordinate and to build the teamwork in BUMDES Margabakti Persada. The last part of job description is working condition. However, with the new job analysis that provides the list of working condition, it will help the members to understand the kind of working place that could support their performance. Beside the job description, the new job analysis also generated the job specification that could be used as a basis in recruiting members so it could meet the job demands with the human factors required to perform the job successfully. The job specification for all positions in BUMDES Margabakti Persada is consists of education and skills.

However, with the result of job analysis, the members in Margabakti Persada are expected to have their own clear and specific job description and job specification that can be used as their guideline in doing their work. Moreover, with the new job description and job specification, each position could work properly and maximally based on their position. Moreover, the job description and job specification contains of any information needed for members to successfully perform in order to reduce the overlapping job between them.

Furthermore, to implement the new job analysis, the researcher suggested that BUMDES Margabakti Persada will need to conduct the specific program. This program will be used to socialize the new job analysis in order to ensure that all members understand the function and the content of the new job analysis. Moreover, the researcher also suggested BUMDES Margabakti Persada to have a system for controlling the use of job analysis. The aim of this controlling system is to keep the works that members do are suitable with its job analysis. The system could be conducted as a form that must members fill when they complete the task. Below is the example of the new job analysis for the staff of machine in BUMDES Margabakti Persada as it shown in figure 2.

ICMEM

JOB ANALYSIS			
Job ID		Date	
Job Title	Staff of machine	Created By	
Job Class	Staff	Approved By	
Job Division	Operation	Revised Date	

Summary of The Job Description
Responsible for examining the work of machine – Report the condition of machine every day to the chief operation

Task and Performance Indicator	
Task	Performance Indicator
Examine the condition of machine every day	No mistake in report
Fix the the machine based on the approval from the chief	the machine could work like usual no more than 2 days

Authorities
Report any situation happened related the machine to the supervisor
Handling everything related machine

Work Relationship
Vertical
Report to : Chief unit
Horizontal
Coordinate with the staff of payment

Working Condition		
Item	Level	Description
Comfort	3	Working full at outdoor
Risk Accident	1	Probability of accident is high because the job related with machine

Job Specification		
Item	Level	Description
Knowledge	0	More preferred the technical skills
Skills	2	Understand the parts and the works of water machine
Others		Domiciled and settled in the village for at least two years

Fig. 2. The Example of New Job Analysis in BUMDES Margabakti Persada

References

Armstrong, M. (2006). A Handbook of Human Resource Management Practice 10th Edition. London: Kogan Page.

Bratton, J., & Gold, J. (2007). Human Resource Management Theory and Practice 4th Edition. London: Palgrave Macmillan.

Byars, L. L., & Rue, L. W. (2004). Human Resource Management. London: McGraw-Hill.

Dessler, G. (2017). Human Resource Management 15th edition. Harlow: Pearson Education.

Dewi, A. S. (2014). Peranan Badan Usaha Milik Desa (BUMdes) sebagai Upaya dalam Meningkatkan Pendapatan Asli Desa (PADes) serta Menumbuhkan Perekonomian Desa. Journal of Rural and Development.

Mathis, R. L., & Jackson, J. H. (2010). Human Resource Management. Mason: South-Western Cengage Learning.

Stewart, G. L., & Brown, K. G. (2010). Human Resource Management Linking Strategy to Practice. USA: Wiley.

Stone, R. J. (1998). Human Resource Management. USA: John WIley & Sons Australia Ltd.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Relationship of Performance Appraisal Quality towards Employee Performance in PT Pertamina Mor III Jakarta Pusat

Annisa Dea Septiana[a*], Achmad Fajar Hendarman[b]

[a,b]*School of Business and Management Institut Teknologi Bandung*

Abstract

Performance Appraisal system has been a topic that explored by many researchers. Most of companies in Indonesia are already apply the appraisal system in its human resource management to control its employee performance in order to bring the result of performance will arise the company goals. In this research, the author focuses on the real case that happened in PT Pertamina MOR III. PT Pertamina has implemented performance appraisals to enhance employee performance and PT Pertamina is one of company in Indonesia that has a high quality of performance. The author tried to explore whether the performance appraisal quality have a significant relationship with employee performance, in this case is what quality of performance appraisal that have the positive relationship with employee performance in PT Pertamina MOR III. The results of this research show that the performance appraisal quality has a significant relation on employee performance, and the quality of appraisal that have positive relationship with employee performance are Strategic Congruence and Reliability. The results also show that Reliability of Performance Appraisal system is a quality that has a highest positive relationship with employee performance.

Keywords: : Employee;Performance;Quality;Performance Appraisal

1. Introduction

Human resources or people who work in a company are one of the company's most valuable assets. Human Resource Management (HRM) is the most appropriate strategy for managing the human resources. Managing human resources in organizations is very important. Managing employee performance is an integral part of human resource management that all managers and rating officials perform throughout the year. Performance management therefore is a "strategic and integrated process" which helps organizations to establish a "culture of sustained success" through improving the performance of their employees and also through the development of individual and team capabilities (Wairimu, 2015). Armstrong (2009) defines performance management systems as a set of organizational activities and processes that are interrelated and are treated holistically as an "integrated and key component" of the approach taken by an organization in the management of performance through its people and the development of the required skills and capacities of its human capital.

One of tools of Performance Management System is Performance Appraisal. To organize and supervise the performance of employees it is necessary to do performance appraisal of employees. Performance appraisal is basically a key factor to develop an organization effectively and efficiently, due to better policies or programs on human resources that exist within the organization. Performance appraisal is done to tell employees what is supervisors are expected to build a better understanding of each other. Performance appraisal focuses on assessment as a process measuring the extent to which the work of people or groups of people can be useful to achieve the existing goals. A performance appraisal system embodies the tools and procedures/guidelines used by trained assessors in conducting the assessment of employees (Fletcher, 2003). Performance appraisal is an important personnel management system

---

* Corresponding author.
E-mail address: annisa.dea@sbm-itb.ac.id

ICMEM

designed to identify employee strengths and weaknesses, enabling employees to improve their performance, as a basis for profiting or punishing employees with respect to contributions or inadequate contributions to corporate goals, motivating higher performance, identifying performance potentials, providing information for planning successions, promoting understanding of subordinate oversight (Onyije, 2015). Positive feedback on appraisal will gives employees a sense of worth and value especially if accompanied by a raise of salary. If supervisors provide poor employees scores on their judgment/appraisal, employees may feel deprived of motivation in where they work or may increase their motivation to work harder. This means that performance appraisals have an impact on employee performance (Onyije, 2015).

2. Literature Review

2. 1.   Employee

According to Herlina (2015), "Employees are human labor, physical and spiritual (mental and mind), which is always needed and therefore become one of the principal capital in business entities working together to achieve certain goals of organization." The civil definition pursuant to Law Number 43 Year 1999 concerning Amendment to Law Number 8 Year 1974 is as follows that every employee of the Republic of Indonesia, which has been determined to be eligible, appointed by an authorized official and entrusted with duty at a state office or, entrusted with other state duties and paid under applicable law.

2. 2.   Performance

Performance is a form of success achieved by an employee in the workplace to achieve goals set by the organization. Performance is strongly influenced by the policy of placing employers in the employee position according to their ability. According to Robbins (2007) performance is the result of an individual's job evaluation compared to established criteria, the idea of performance that results from the quality and quantity of a worker's job in performing their duties based on the responsibility already given. While according to Hasibuan M. S. (2013) explains that "Performance is the result of work achieved in executing the tasks assigned to him based on the skills, experience, sincerity and time".

2. 3.   Performance Management System

Wairimu (2015) define performance management as the systematic process through which organizations improve on their performance. This improvement is achieved through the development of the performance of individual employees or the teams that they belong to. Performance management therefore, entails getting better results from the individual employee and/or teams through understanding and managing of performance following an agreed framework of set goals, competence requirements and standards.

2. 4.   Performance Appraisal

The famous definitions is defined by Scott (2009) that Performance appraisal is the measurement of work and the results obtained by using a scale and index to measure the desired amount and quality with certain evaluation criteria. Measurement of an activity is undertaken by activity and comparison of results with the criteria that we can evaluate precisely the quantity and quality desired. Performance is how employees perform their duties and evaluation is the activity of assessing employee performance. According to A.S DeNisi (2006), performance appraisal provides information to help manage employees in such a way that employee performance improves. According to Piggot-Irvine (2003), effectiveness refers to when performance appraisal interactions are non-controlling, non-defensive, supportive, educative and yet confidential. Effective appraisal, therefore, is supported by a relationship of respect and has results directly linked to improved work performance. Also, information of appraisals process should be clear, objective, and have high integrity and ultimate goal of deep development.

ICMEM

2. 5.   Performance Appraisal Quality

Measuring performance appraisal quality requires having a quality standard. Brown defined performance appraisal quality as a function of both performance appraisal procedures and treatment i.e. explained in terms of employees' ability to evaluate the formal organizational procedures (the way they are enacted) and how they are treated through the performance appraisal. Consequently he identified level of communication and fairness of performance appraisal as indicators of quality performance appraisal process (Brown, Hyatt, & Benson, 2010). In addition, Dwipayana (2015) states that there is a main components of applying a performance appraisal system which can then be evaluated whether the system used is effective or fail, that is outcome of the appraisal performance itself. There is also Mitrasari (2008) stated that the necessary indicators to create an effective performance measurement system are the strategic congruence and the reliability of the appraisal.

2. 6.   Employee Performance

Employee performance is one of the aspects that must be considered by the company, because the employee's performance is required by the company to achieve its goals (Surbakti, 2013). On the other hand, employee performance, therefore, is the outcome of actions with the skills of employees who perform in an organization (Prasetya A, 2011). Thus, good performance is the step towards the achievement of organizational aims.

2. 7.   Theoritical Framework

Hypothesis:
H1: Performance Appraisal is positively relate with the Employee Performance in PT Pertamina MOR III
    Sub Hypothesis:
H2: There is a significant relationship between Appraisal's Strategic Congruence toward Employee Performance
H3: There is a significant relationship between Appraisal's Level of Communication toward Employee Performance
H4: There is a significant relationship between Appraisal's Reliability toward Employee Performance
H5: There is a significant relationship between Appraisal Output toward Employee Performance
H6: There is a significant relationship between Appraisal's Fairness toward Employee Performance

3.   Methodology

The author used the convenience sampling to distribute questionnaire to Employee of PT Pertamina in Pertamina's office MOR III Jakarta. To determine the number of people that will be the respondent, the author using the Slovin formula. This research will use 10% error tolerance, which means the accuracy of the data is 90%. The number of employee PT Pertamina MOR III is 156, using the Slovin and with the error tolerance 10% the minimum number that needed in the research is 61, in order to make sure the result of questioner, the author decide to make it become 100 respondents. In this research, the author will be used convenience sampling.

There are two questionnaires set that author use in this research. Each of the questionnaires set has a different purposes and objectives. Both of the questions will use Likert scale. The questionnaire is developed in Bahasa using five point scales: - Strongly agree (5), Agree (4), Uncertain (3), Disagree (2) and Strongly Disagree (1). Mean and standard deviation has been used to analyze the result. Readers should note that as the likert scale used ranges from 5 being strongly agree to 1 being strongly disagree a mean of a value less than 3 will show negative response and vice versa. The first part is general information of respondents that asks for the demographic information of the respondents like their age, sex, position and educational background. The second part is Employee performance appraisal Quality Questionnaire to identify the performance appraisal system that adapted in PT Pertamina, the author need to collect data directly from the employee of PT Pertamina. This part is measured from performance appraisal Quality in terms of strategic congruence, level of communication, reliability, appraisal output, and fairness about performance appraisal process. The third part is Employee performance Questionnaire that measures relation of performance appraisal quality on employee performance.

Data analysis will be use a correlation analysis for the data that have been gathered from the questionnaire. First the data should be valid and reliable using Pearson Correlation test and Cronbach Alpha test, then test the Classical

ICMEM

Assumption as a requirement before do the Multiple Linier Regression, then analyze the Multiple Linear Regression that calculated by IBM SPSS Statistic. For the Multiple Linier Regression Path Analysis, the Dependent variable is Employee Performance (Y) while the Performance Appraisal (X) as the core Independent variables. X refers to a vector of k control variables, i represent the individual worker, the b is the coefficients to be estimated and e is the error term. The value of Y is stated with regression in this equation:

$$Y = a + b_1 PA_i + bj Xik + e \qquad (1)$$

This study includes two types of variables—in order to control for various effects: the individual and firm level. The author will also be conducted multiple regression analysis in each of Performance Appraisal Quality variables as the Independent Variable and Dependent variable is Employee Performance. Below are the multiple regression analysis models:

$$Y = a + b_1 SC_1 + b_2 LC_2 + b_3 RE_3 + b_4 AO_4 + b_5 F_5 + bj Xik + e \qquad (2)$$

4. Findings and Argument

After spread 130 questionnaires to the employee in PT Pertamina MOR III, and the number of questionnaire that is returned is 90, the questionnaire was divided into 3 part which is respondent's profile, performance appraisal quality, and employee performance. The findings from respondent's profile is from 90 respondents, the majority of employee are Male. 53 respondents (51.9%) were male and 37 respondents (40.9%) female. The ages of respondents are diverse. The result of age that respondent that participates in questionnaire shows that the respondent of this research is dominated by employee 23-35 years old age group by 63.48%. While for the working period, the employees mostly already work between 1-10 years in PT Pertamina MOR III, which is 64.34%. Most of PT Pertamina's employees are Bachelor graduates, which is 76.5%. The number of employee who answered the questionnaire mostly works in a staff position, which is 35.7%. While most of respondent are from Taxes and Financial division, which is 33%.

After analyze the demographic information of respondent, the next step is validity test using Pearson Correlation and reliability using Cronbach Alpha. For the variables of performance appraisal quality that are Strategic Congruence, Level of Communication, Reliability, Appraisal Output, and Fairness validity, all variables are valid which is above 0.207 so the variables of performance appraisal are deemed valid, while for the reliability score using Cronbach Alpha is 0.634 which is above 0.600 which is passed the reliability test. Dependent variable that is Employee Performance also analyze using those test and the result is all of questions in Employee Performance questionnaire are valid with coefficient above 0.207 while fore the reliability test the score is 0.809 which is reliable. So based on validity and reliability test, variables that succeed passed those test are Strategic Congruence, Level of Communication, Reliability, Appraisal Output, and Fairness. Therefore all of the variables are used for further analysis. After done validity and reliability test, those variables that succeed will be analyzed using Multiple Regression.

There are 6 hypotheses in this research, after doing validity and reliability test all of the variables that succeed during those test therefore these variables will be used for further analysis, those variables are Strategic Congruence, Level of Communication, Reliability, Appraisal Output, Fairness. Therefore all of these 7 hypotheses will be used for further analyze in this research.

Multiple linear regressions was conducted to determine the significance level and relationship of independent variables (Strategic Congruence, Level of Communication, Reliability, Appraisal Output, Fairness) toward dependent variable (Employee Performance)

Table 1. Multiple Regression Analysis 1

ICMEM

Model	1 Employee Performance	2 Employee Performance
Performance Appraisal	0.620 (0.000)	0.530 (0.000)
Control Variable		
Individual Level		
Female	-0.005 (0.960)	0.025 (0.795)
High School	-0.224 (0.512)	-0.202 (0.548)
Vocational School	-0.116 (0.794)	-0.148 (0.736)
Diploma I	0.169 (0.727)	0.091 (0.856)
Diploma III	-0.185 (0.352)	-0.081 (0.685)
Diploma IV	-0.024 (0.957)	0.120 (0.785)
Bachelor	0.004 (0.982)	0.038 (0.811)
Age	-0.017 (0.243)	-0.023 (0.134)
Staff	-0.766 (0.106)	-0.594 (0.231)
Low_Man_Level	-0.731 (0.114)	-0.590 (0.213)
Med_Man_Level	-0.501 (0.240)	-0.448 (0.293)
Working Period	0.005 (0.726)	0.019 (0.181)
Constant	2.943	
Observations	90	
R_Squared	0.318	
Adjusted R-squared	0.201	
Firm Level		
Production/Operation		-0.018 (0.940)
R&D		0.303 (0.148)
Sales/Marketing		0.386 (0.121)
HR&OD		0.088 (0.668)
Taxes and Financial		-0.053 (0.778)
Constant		3.107
Observations		90
R_Squared		0.398
Adjusted R-squared		0.245

In order to check for robustness of the results on Hypothesis, and as already suggested, this study compares thwo models. Model 1 applies control variables at the individual level, and Model 2 applies control variables at the individual level and firm level. The results are robust for Model 1 and Model 2.

Additionally, Model 2 uses all control variables at the individual level and firm level. Their inclusion is meant to control for factors influencing employee performance. For example, at the individual level control variables, the job level of medium management always has a negative relationship with employee performance. Meanwhile, research and development activities, marketing department, and human resources control variables at the firm level have the positive relationship with employee performance. To check whether the inclusion of these variables improves the estimation quality and therefore the models' explanatory power, a Wald test on sets of dummies to check whether each set of dummies played a role has been conducted (Hendarman & Cantner, 2017). In principle, each set of dummies played a role; the null hypotheses that each dummy is equal to zero can be rejected since the F test gives a significant value.

From the table above it can be concluded that performance appraisal have a significant positive relationship with the employee performance in PT Pertamina MOR III. This can be concluded that Hypothesis 1 is accepted. This result is consistent with the statement of Onyije (2015) that stated performance appraisals have an impact on employee performance. Performance appraisal is an important to improve employee performance and to motivating higher

performance. It also supported by A.S DeNisi (2006) that stated performance appraisal provides information to help manage employees in such a way that employee performance improves.

The multi regression not only conducted on the performance appraisal, the quality of performance appraisal also processed to know what quality that should be improved to help increasing the employee performance.

Table below shows the multi regression results of each quality of performance appraisal in have the relationship with employee performance:

Table 2. Multiple Regression Analysis 2

Model	1 Employee Performance	2 Employee Performance
Strategic Congruence	0.226 (0.004)	0.183 (0.022)
Level of Communication	-0.040 (0.723)	-0.105 (0.371)
Reliability	0.286 (0.005)	0.298 (0.006)
Appraisal Output	0.212 (0.047)	0.163 (0.135)
Fairness	0.012 (0.886)	0.030 (0.715)
Control Variable		
Individual Level		
Female	0.005 (0.956)	-0.001 (0.993)
High School	-0.296 (0.378)	-0.300 (0.372)
Vocational School	-0.065 (0.882)	-0.118 (0.786)
Diploma I	0.130 (0.786)	-0.009 (0.986)
Diploma III	-0.197 (0.314)	-0.137 (0.491)
Diploma IV	0.244 (0.605)	0.270 (0.563)
Bachelor	0.034 (0.831)	0.039 (0.804)
Age	-0.014 (0.332)	-0.017 (0.271)
Staff	-0.440 (0.354)	-0.293 (0.558)
Low_Man_Level	-0.362 (0.438)	-0.256 (0.595)
Med_Man_Level	-0.262 (0.536)	-0.209 (0.626)
Working Period	0.006 (0.643)	0.017 (0.237)
Constant	2.088	
Observations	90	
R_Squared	0.388	
Adjusted R-squared	0.244	
Firm Level		
Production/Operation		0.101 (0.237)
R&D		0.349 (0.104)
Sales/Marketing		0.407 (0.106)
HR&OD		0.191 (0.364)
Taxes and Financial		0.026 (0.891)
Constant		2.344
Observations		90
R_Squared		0.450
Adjusted R-squared		0.269

Based on the regression result, some of the quality indicators of performance appraisal also give a positive impact to the employee performance. The Appraisal quality indicators that are gives a positive impact on employee performance in PT Pertamina MOR III are strategic congruence, reliability, appraisal output, and fairness about performance appraisal system. Meanwhile the level of communication itself gives the negative impact.

The Appraisal Quality indicators that got the highest value in impact positive the employee performance is Reliability with value 0.286 (model 1) and 0.298 (model 2). The significance Appraisal Quality indicators based on the table above are; Strategic Congruence, Reliability, and Appraisal Output (only in model 1) that significant at 0.05 level significant. It means that the significant performance appraisal quality have a relationship with employee performance.

It can be concluded that Strategic Congruence, Reliability, and Appraisal Output as a quality of performance appraisal have a significant positive relationship with employee performance in PT Pertamina MOR III, apply the performance appraisal system will have positive relation to employee performance.

ICMEM

From these results, it shows that, the performance appraisal quality that has the most significant and important as the quality of appraisal system is Reliability with value 0.286 (model 1) and 0.298 (model 2) which is the highest value among other quality factor. Therefore, the Reliability of Performance Appraisal system becomes the performance appraisal quality that can increase the employee performance in PT Pertamina.

To measure the independent variable variation in the model can be interpreted by the dependent variable, the determination coefficient test is conducted. The table below shows the results of determination coefficient calculation of all the Appraisal Quality indicators (Strategic Congruence, Level of Communication, Reliability, Appraisal Process, Appraisal Output, and Fairness) and Control Variables.

Table 3. Determinant Coefficient

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.671[a]	.450	.269	.390809927000000

a. Predictors: (Constant), Taxes and Financial, Age, High School, Vocational School,

Reliability, Diploma IV, Diploma I, Diploma III, Female, Strategic Congruence,

Sales/Marketing, Fairness, Low_Man, Production/Operation, Level of Communication,

R&D, Appraisal Output, Bachelor, HR&OD, Med_Man, Working Period, Staff

The table above shows that the value R^2 is 0.450. It has meaning that Strategic Congruence, Level of Communication, Reliability, Appraisal Output, Fairness, and Control Variables are impact 0.450 or 45% to the employee performance.

Hypothesis 1 statement: Performance Appraisal Quality is positively related to the Employee Performance.
Result from regression analysis shows that Performance Appraisal Quality is significantly related to Employee Performance.

Hypothesis 2: There is a significant relationship between Appraisal's Strategic Congruence toward Employee Performance.
Result from regression analysis shows that Strategic Congruence is significantly has a positive relationship toward Employee Performance. This result contradictive with the previous research by (Mitrasari, 2008) that stated there is the lack of congruence between aspects of performance appraisal with employee competency and assessment subjectivity, she also stated that it is necessary to adjust the assessment standard on the competency appraisal item, with the standard of competency of assigned positions.

Hypothesis 3: There is a significant relationship between Appraisal's Level of Communication toward Employee Performance.
Result from regression analysis shows that Level of Communication is not significantly has a positive relationship toward Employee Performance. This is indicating that there is no credible evident that the reliability of appraisal system has relationship with employee performance.

Hypothesis 4: There is a significant relationship between Appraisal's Reliability toward Employee Performance.
Result from regression analysis shows that Reliability is significantly has a positive relationship toward Employee Performance. The result is consistent with the statement of Bekele (2014) found that the clarity of performance expectations affected the job performance to a great extent. The clarity of performance is about the feedback mechanism that affected job perform to a great extent. Integrity and reliability/dependability of performance appraisal system affected job perform to a great extent.

Hypothesis 5: There is a significant relationship between Appraisal Output toward Employee Performance.

ICMEM

Result from regression analysis shows that Appraisal Output is not significantly has a positive relationship toward Employee Performance. This means Appraisal Process is not having a credible evident that shows it can influence the employee performance.

Hypothesis 6: There is a significant relationship between Appraisal's Fairness toward Employee Performance.
Result from regression analysis shows that Appraisal Output is not significantly has a positive relationship toward Employee Performance. This is indicating that there is no credible evident that the fairness of appraisal system has relationship with employee performance.

5. Conclusion

By the multi regression results, it can be known that performance appraisal quality has the positive relationship on employee performance. If the performance appraisal quality increases, it will also increase the employee performance. PT Pertamina must increase the quality of performance appraisal to make the better performance of employee. Reliability of performance appraisal system gives the highest positive relation on the employee performance. That's mean that performance appraisal systems should ensure that they are always reliable and serve as basis for promotions and pay increments. Most importantly, management should see performance appraisals as a blend of qualitative, quantitative and personal characteristics. The more employees believe in the performance appraisal system then the employee will run the system in earnest and will perform the best performance in order to get the best results of performance appraisal system. PT Pertamina must have the system that can trust by the employee, it means the performance appraisal system must have a clear system (the standardized procedures, convenient processes, and supervisors or managers who have time to assess the performance of their subordinates) that understand by the employee.

Strategic Congruence also has the positive relation on employee performance. That's means that the appraisal system must have the congruence with the target of work to support the goals of company. Manager must define responsibilities of each employee clearly and set standards that are measurable, realistic and challenging with the job performer. Employees need to be familiar with the purpose and role of the performance appraisal process and Appraisal should be set in a way that it clarifies objectives and sets clear future objectives with provision for training and development needs to establish the performance objective. The aspects of the assessment must relate to the duties and responsibilities that employee hold, and relate to the technical competencies of the employee, it will make the employee increase their performance and competencies in order to do their responsibilities because they know that they will appraised based on the responsibilities and competencies that related with their own. Manager should ensure that performance appraisal is carried out with clear objectives in mind.

To make the better quality of performance appraisal system in order to make the system has the positive relationship with employee performance, it must be there the involvement of employees/ managers in the stage of system design, not only increases sense of ownership of the system, it also has a positive impact on the co-operation and commitment of the individual employee to the performance review process. The more the employee is involved in the PA process, the more satisfied he/she is likely to be with the PR interview and the rater, and it is more likely to result in performance improvements (Anderson A. H., 1993).

To overcome the problem of fairness in the performance appraisal system in PT Pertamina MOR III, employees should be appraised based on their KPI and competence. In addition, if there is an appraisal based on the leadership ability and also based on relationships between other employees or superiors, that qualitative assessments must have strong evidence in order to make the employees know the reasons of appraisal result and that result can be accepted by the employee.

In this research the respondent of the questionnaire is still general, the employee of all unit in PT Pertamina. But, the classification for respondent is already used in this research because the respondent classification would be necessary since the perception of performance appraisal system could also affected because of some other factor; age, working experience, gender, educational background, level of job, and division/department. The comparison between public company and private company also need to be explored since in this research the author limited the research only in PT Pertamina MOR III Jakarta Pusat.

ICMEM

Refrences

Anderson, A. H. (1993). Successful Training Practice: a Manager's Guide to Personnel Development. Oxford UK: Blackwell Business Publishers

Anderson, V. (1993). Research methods in human resource management. London: CIPD.A. S De- Nisi, T. L. (1997). Organization, processing, and Use of Performance Information: a Cognitive Role for Appraisal Instruments. *Journal of Applied Social Psychology*, 27: 1884-1905.

A.S DeNisi, R. D. (2006). Management and Organization Review. 2:2 253–277, 1740-8776.

Armstrong, M. (2009). Armstrong's Essential Human Resource Management Practice: A Guide to People Management.

Bekele, T. (2014). Effect of Performance Appraisal Quality on Employee Performance.

Bekele, T. (2016). EFFECT OF PERFORMANCE APPRAISAL QUALITY ON EMPLOYEE PERFORMANCE. 56.

Brown, M., Hyatt, D., & Benson, J. (2010). Consequences of the performance appraisal. *Personnel Review*, 375-396.

Brown, M., Hyatt, D., & Benson, J. (2010). Consequences of the performance appraisal. 375-396. *Management Review*, 284-295.

Dwipayana, A. D. (2015). PENERAPAN SISTEM PENILAIAN KINERJA : DAMPAKNYA TERHADAP KEPUASAN DAN STRES KERJA KARYAWAN. *E-Jurnal Ekonomi dan Bisnis Universitas Udayana 4.10*, 17.

Dwipayana, A. D. (2015). PENERAPAN SISTEM PENILAIAN KINERJA ; DAMPAKNYA TERHADAP KEPUASAN DAN STRES KERJA KARYAWAN PT. AEROFOOD INDONESIA UNIT AEROFOOD ACS DENPASAR (GARUDA INDONESIA GROUP). 5.

Fletcher, C. &. (2003). Assessing Self-awareness: Some Issues and Methods. *Journal of Managerial Psychology*, 395-404.

Herlina, F. (2015). DESIGN OF EMPLOYEE PERFORMANCE APPRAISAL IN PT MANTU. *JOURNAL OF BUSINESS AND MANAGEMENT*, 2.

Mitrasari, R. T. (2008). PERSEPSI PEGAWAI TERHADAP EFEKTIVITAS "PROGRAM PENILAIAN KINERJA PEGAWAI" PADA PT PLN (PERSERO) DISTRIBUSI JAKARTA RAYA DAN TANGERANG. 113.

Onyije, O. C. (2015). Effect of Performance Appraisal on Employee Productivity in a Nigerian University. *Journal of Economics and Business Research*, 3.

Piggot-Irvine, E. (2003). Key features of appraisal effectiveness. *The International Journal of Educational Management*, Vol. 17, Iss. 4/5, pp. 170-177.

Prasetya A, K. M. (2011). *The effect of financial and non-financial compensation to the employee performance; Indonesia., The 2nd International Research Symposium in Service Management.* Yogyakarta.

Robbins, S. P. (2007). *Organizational Behavior.* Jakarta: PT. Prenhallindo.

Robbins, S. P. (2015). Organizational Behaviour. *11th edition, Prentice-Hall of India.*

Surbakti, M. P. (2013). *Analysis of Effect of Transformational Leadership and Motivation on Employee Performance (Unpublished thesis).* Semarang: Diponegoro University.

Wairimu, G. L. (2015). THE RELATIONSHIP BETWEEN PERFORMANCE MANAGEMENT SYSTEMS AND EMPLOYEE PERFORMANCE: A CASE STUDY OF ASSORTEDWAYS LIMITED. *A Research Project Report Submitted to the Chandaria School of Business in Partial Fulfillment of the Requirement for the Executive Master of Science in Organizational Development (EMOD)*, 23.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Learning Theory, Pedagogy, and Gamification: A Further Research

Hendarsyah Aditya Saptari[a*], Jann Hidajat T. [b], Donald Crestofel[c]

[a,b,c]*Doctoral of Science Management Program, SBM-ITB, Jalan Ganesha No. 10, Bandung-40132, Indonesia*

Abstract

Education at its core is an effort to develop the potential within a human to reach its maximum potential. Looking at the human quality in Indonesia based on United Nation Development Programme Report (2018), shows that currently Indonesia reach 0.689 Human Development Index (HDI). From this index, education sector shows 12.9 expected years of schooling which mean that in average Indonesia's citizen in majority go through education for 12.9 years in their life. Higher HDI index meant higher quality of human capital in a country, it has been known that human capital had a strong relationship with Gross Domestic Product (GDP) of a country. To measure relationship of human capital and GDP, ones could measure how much a country invest to the people education in its country. The purpose of this article is to give an insight for future study that will be done by the researcher about learning, pedagogy, and gamification. This article found that there are a lot of area in gamification that still needed to be researched, especially in the area where researcher going to study in the future as the continuation of this article.

Keywords: Learning, Pedagogy, Gamification

1. Introduction

Education at its core is an effort to develop the potential within a human to reach its maximum potential. With the current economic growth and development, a country dependent in the development of human capital to compete and increase the quality of life (Kasim Mansur, Mori Kogid & Madals, 2010). Those efforts included guidance and facilitation for them, in their process of learning. So it is important to understand education as a whole.Indonesia's projected to have a workforce of 65m young adults by 2035, Indonesia is turning its focus to education to better ensure its citizen will be prepared to perform in increasingly competitive economy (oxford business group, 2018).

Looking at the human quality in Indonesia based on United Nation Development Programme Report (2018), shows that currently Indonesia reach 0.689 Human Development Index (HDI). This index put Indonesia at 113 rank from 188 countries in the world. At this rank Indonesia considered a medium development country. From this index, education sector shows 12.9 expected years of schooling which mean that in average Indonesia's citizen in majority go through education for 12.9 years in their life.

Higher HDI index meant higher quality of human capital in a country, it has been known that human capital had a strong relationship with Gross Domestic Product (GDP) of a country. To measure relationship of human capital and GDP, ones could measure how much a country invest to the people education in its country. In Indonesia this investment could be seen through 2002 constitutional amandement which state that government of Indonesia will invest minimum 20% of its annual budget to education. This target firstly achieved in 2009 and has been maintained by the government since then. Presented below ASEAN's country GDP and HDI rank.

Based on Act of The Republic of Indonesia No. 20 (2003) on National Education System, education means conscious and well-planned effort in creating a learning environment and learning process so that learners will be able to develop their full potential for acquiring spiritual and religious strengths, develop self-control, personality, intelligence, morals and noble character and skills that one needs for him/herself, for the community, for the nation,

---

* Corresponding author.

ICMEM

and for the State. This act emphasizes that the process of learning and its support system determine the result of the student that went through educational process.

In education the process of learning happens between educator and student. An educator, need to have knowledge about various learning theory that relevant with current situation and condition. So the opportunity for a student to fully utilize their learning although were limited by various detailed coverage of course, will be maximize.

Having known the theory that relevant with current situation and condition, educators could on understand more about how their student learn in the process of education. It is generally accepted that matching an individual's learning with the appropriate form of instructional intervention significantly impacts upon the performance of the student and his/her achievement of learning outcomes (Becker, 2005; Cassidy, 2004).

Accordance with various learning theories of the student, pedagogy in education took part in it which known as the learning process. Pedagogy will involve a dynamic relationship between the learning of the student, teaching of the lecturer, and the culture in education itself. Teacher's beliefs also took as a consideration of the context where learning and teaching takes place. Livingstone et al (2017) propose seven possible principles for pedagogy: learner engagement; mutual respect between teachers and learners; building on prior learning; meaningful classroom interactions; relevance of curriculum; developing skills and attitudes as well as knowledge; and the alignment of assessment with curriculum and learner needs. It had been acknowledged that to provide a good quality of education requires pedagogy approaches that give relevant teaching and learning methods and content that meet the needs of all learners, taught by well-qualified, trained, adequately remunerated and motivated teachers, using appropriate pedagogical approaches and supported by appropriate information and communication technology (ICT). Gamification is one the technique that arise from the use of technology in education.

2. Literature Review

2. 1. Learning Theory

Student possess varied styles in understanding and processing information which can be done in various way such as seeing and hearing, reflecting and acting, reasoning logically and intuitively, analyzing and visualizing, steadily (Felder, 2001).In psychology, Jung (1971) introduced sensation and intuition as the two ways in which people tend to perceive things (Felder, R. M. and Henriques, E. R., 1995). Which Jung means by sensing is involves the act of observing, gathering data through senses, while intuition covers indirect perception by way of the sub-conscious-accessing memory, speculating, imagining. Felder in his paper, state from the theory of Jung that everyone uses both of sensing and intuition but the preference will be one of another.

According to Guney (2012) there are six most common learning theory, behaviorism (Skinner, 1953), cognitivism (Gagne, 1984), constructivism (Boyle, 1997), experiential (Kolb, 1984), humanistic (Huitt, 2009) and social-situational (Bandura, 1977). Other than six theories that mentioned by Guney in his paper, MuhibbinSyah (2017) in his book also mentioned another important learning theory which is connectivism which introduced by Edward, L. Thorndike in 1890.

Those learning theories are the ground where learning styles were generated. According to Grasha (1996), learning style is individual properties, which impact individual's ability to perceive information, their relationships with peers and teachers and their participation in learning experiences (as cited in Alşan, 2009). According to Kolb, learning style is the method individually preferred in extracting and processing information (Kolb, 1984). According to Dunn and Dunn (1993),learning style is the path that every learner follows in the course of extraction and processing of information beginning with their concentration upon new and difficult information (as cited in Veznedaroğlu & Özgür, 2005).According to Keefe (1990), learning style is a combination of cognitive, affective and psychomotor behavioral properties, it is an indicator, which determines how a student perceives, learn learning environment, how he/she interacts with learning environment. Felder (1995) defined learning style as distinctions in individual approach in the process of extracting and processing information.

Keefe in 1979 recognize that there is a bipolar concept of learning style dimension which is the field of dependence and independence. Since then the concept of field dependence and independence remains to be the most researched concept of learning style (Pithers, 2002). Herman Witkin a psychologist considered one researcher that most frequently

ICMEM

discussed about the concept of field dependence and independence (Witkin and Goodenough, 1981). The concept field of dependence and field of independence measures the degree to which an individual use "an analytical as opposed to a global way of experiencing the environment" (Keefe, 1979).

Field dependent individuals are interpersonally oriented and rely heavily on external stimuli, the external stimuli motivate the individuals to looks for reinforcement of opinions and attitudes (Wooldridge, 1995). Field independent individual depend more on internal than external factors, these individual prefer formal learning environments conducive to their competitive and achievement-oriented learning style (Witkin et al., 1971; Wooldridge, 1995).

Since then the theories of how individual learn keep transforming and developing up until now. Behaviorism, cognitivism, constructivism, experiential, humanist, social-situational, and connectivism were the most well-known learning theories at the present. Each had its own characteristic that needed to be understand by educators in facing diverse student.

Behaviorism Theory

Behaviorism Theory concerns The observable change in behavior. The main factor on behaviorism theory is where the learning process is a passive process where learners mostly gain knowledge from responding to the environment stimuli. Two kind of stimuli positive and negative stimuli will prevent unwanted behavior or could be used as a trigger of wanted behavior. The stimuli itself divided into two categories, classical conditioning where a natural reflexes respond to a stimulus and operant conditioning where a person reinforced to a certain stimulus. Several well-known researchers about behaviorism theory are Pavlov, Thorndike, Watson, and skinner.

Cognitivism Theory

Cognitivism theory emerged in the condition when researcher realized that behaviorism theory did not account all types of learning. According to this theory knowledge can be viewed as scheme, that is, symbolic mental constructions that are organized or processed in the mind. Learning occurs when there is a change in the learner schemata; the learner is an active participant (Gagne, 1984; Akinsami, 2008). According to this theory, children need to explore, manipulate, experiment, question, and to search for answers by themselves.

Constructivism Theory

Constructivism assumes that learning is a process of constructing knowledge rather than acquiring it. It takes the learner's social, cultural and contextual conditions into consideration and theorizes that the learner constructs knowledge through experience. In other words, learners interpret new information through their contextual experiences and build on their existing knowledge from the conclusions reached during the assimilation of new knowledge and reflection on it (Boyle, 1997; Devries and Zan, 2003).

Experiential Theory

Experiential learning theory is a holistic perspective on learning that combines experiences, perception, cognition and behavior. The theory emphasizes the central role of experience in the learning process. It is a continuous process grounded in experience (Kolb, 1984). Kolb in his theory mentioned that there are four types of learner. The types of learner are converger, diverger, assimilator, and accommodator. Later on Kolb's theory of learning was adapted by Felder and Silverman (1988). Based on Felder and Silverman, learning could be categorized into Sensing-intuiting, Visual/verbal, Active/Reflective, and Sequential/global. Kolb or Felder theory focus on experience approach which is one major stream in research of learning.

Table 1. Constructivism vs Experiential Theory

ICMEM

Similiarity	Differences		Cons	
	Constructivism	**Experiential**	**Constructivism**	**Experiential**
- Student Centered - Instructor is not always the expert - Instruction should fill in gaps - Works with the student where they are currently - High cognitive load	- Cognition over affection - Novice pair up with expert	- Affect over cognition - Little to no guided instruction	- Student experts may not be available - Students might not see the relevancies in the topics being explored	- Learners must be self motivated - Instructors may not know errors in student thinking - inefficient - No guarantee standards will be covered

Humanistic Theory

Humanists have priority for human needs and interests. They also believe that it is necessary to study the personas a whole, especially as an individual grows and develops over the lifespan (Edword, 1989; Kurtz, 2000; Huitt,2009). Abraham Maslow is a humanistic theorist and explained that every person is born with a set of basic needs as biological and physiological, safety, belongingness or love, self-esteem, and self-actualization needs. He believed that when lower needs are fulfilled, the higher level needs are emerged (Madsen and Wilson, 2006).

Social-Situational Theory

Social-Situational theorist emphasis that; learning takes place in social relationships. Social learning theory posits that people learn from observing other people. By definition, such observations take place in a social setting (Smith, 1999; Merriam and Caffarella 1991). According to Bandura (1977); most human behaviour is learned observationally through modelling: by observing other ones, they conceive idea about how new behaviours are performed, and eventually, this coded information serves as a guide for action. This theory interprets learning process as an interaction and observation in social context. Many of these theories which were mentioned in the beginning of this part (except the behaviourist learning theory) stress on the positive effect of observation, group workings and social interaction within this process as social-situational learning theory.

Connectivism Theory

Connectivism is a theoretical framework for understanding learning. In connectivism, the starting point for learning occurs when knowledge is actuated through the process of a learner connecting to and feeding information into a learning community. Siemens (2008) states, "A community is the clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together."

2. 2.   Pedagogy

By pedagogy, we mean the dynamic relationship between learning, teaching and culture. Teachers' actions in the classroom, in relation to learning and teaching, are underpinned by the ideas and values that they have about education. Pedagogy interacts with and draws together beliefs about learners and learning, teacher and teaching, and curriculum.

It also includes consideration of the context in which learning and teaching takes place. Pedagogy is often shaped by a teacher's own experience of learning. For many this was simply knowledge being transmitted by their teacher. Their role as students was to receive this knowledge without question or other interaction.

This approach will not give the students of today the experiences and skills that they need to learn, work and live in the 21st century – such as critical thinking, problem solving, communication and collaboration. On-going teacher education can help to address this short-fall but evidence shows it will not be enough to change policy and practice.

ICMEM

A key factor in pedagogy is developing approaches which work within different national and local contexts. A lack of critical engagement with pedagogy in global policy has allowed the space to be filled with ready-made prescriptions from a range of agencies concerned with classroom practice.

Some of these prescriptions are based on models of teaching and learning which carry assumptions about quality and the potential for educational change. For example, there are wide-ranging innovations which are promoted as learner-centered. On the other hand, some approaches are highly prescriptive in framing teacher action and classroom talk, such as so-called 'teacher-proof' textbooks, or teacher education with scripted lessons.

All countries need to ensure that their curricula are designed to equip children with appropriate skills and knowledge. Teaching and assessment methods also need to complement the aims of education. These are issues for both developed and developing countries.

It is argued that the international community needs to develop a global framework for pedagogy which enables them to learn from and can be adapted to different contexts.

2. 3.   Gamification

Games prompt powerful emotional responses such as curiosity, satisfaction and frustration (Kim, 2012; McGonigal, 2011). In 2011 there is a method that could incorporate the student to have a more effective way in learning which called gamification. Gamification is a term that refers to the "use of game mechanics in non-gaming contexts". Based on previous research gamification favorable in increase the engagement of student or employees in which organization applied the method.

In one empirical studies Michel, et al (2009) treat one class of student as an active teaching class (Gamification) while the other class treated the class with traditional method which emphasize lectures. Those studies result with the fact that student in the class which treated with active teaching class better at learning and memorizing learning materials. This studies of gamification still in research at the present,

This observation has led to the development of the concept of gamification. Gamification applies the mechanics, dynamics and aesthetics associated with games to non-game contexts (Simoes, Redondo, & Vilas, 2013a). It is important to distinguish gamification from the use of computer games in education (Squire, 2003). As well as a plethora of business simulation games, a range of commercial games such as Civilization, Railroad Tycoon and World of Warcraft have been used as learning tools. However, as a pedagogical concept gamification does not necessarily involve the use of an actual game or information technology. Rather, it involves the integration of design elements or activity patterns traditionally found in games into nongame contexts.

The use of game inspired prompts to mediate behaviour is not novel. Notable examples of processes that share at least some of the elements and characteristics associated with gamification include military training simulations, airline frequent flyer miles programs and collectible cards included with products. The first use of the term gamification in its modern sense was by Nick Pelling, who used it to describe techniques used to promote products and services (Werbach& Hunter, 2012).

In 2011 there is a method that could incorporate the student to have a more effective way in learning which called gamification. Gamification is a term that refers to the "use of game mechanics in non-gaming contexts". Based on previous research gamification favorable in increase the engagement of student or employees in which organization applied the method.

In one empirical studies Michel, et al (2009) treat one class of student as an active teaching class (Gamification) while the other class treated the class with traditional method which emphasize lectures. Those studies result with the fact that student in the class which treated with active teaching class better at learning and memorizing learning materials. This studies of gamification still in research at the present, Caponetto (2014) also shown that no single country outside of USA that published more than 8% of total published paper that related to gamification. The details on the country presented below,Caponetto (2014) also mentioned that many paper on gamification refer to training in a company or business organization rather than in education institution. Figure below present the detail on paper distribution,

Gamification is currently garnering significantly increased attention from both practitioners and academics across a wide range of disciplines. Market research published by Technavio in 2016 estimates that the value of the global

ICMEM

gamification market will exceed $6 billion by 2019 (Technavio, 2016). This interest is seen as a response to the rise of what Davenport terms the "attention economy", where the scarcest economic resource is the attention of individuals (Davenport & Beck, 2002). The posited ability of gamification to attract and hold the attention of employees, customers and other stakeholders is of huge interest to organizations.

There is a growing literature that discusses how gamification can be applied to a wide range of activities, including innovation management One specific domain in which gamification has excited considerable interest is education. Many of the challenges faced by business organizations with regard to the attention economy have direct analogues in the educational domain. These challenges have been exacerbated by the advent of a new generation group, most commonly referred to as 'Millennials' or 'Generation Y'. Widely seen as being the first digital natives, they have been exposed to information technology from birth. They are goal focused, confident, team-orientated and socially networked. The variety of activities in which they engage has developed their multi-tasking skills and they are seen as being adept at rapidly shifting between tasks and challenges. However, these positive attributes are balanced by shortened attention spans and the lack of time and/or skill they expend on engaging in the critical reflection required for developing in-depth knowledge. These attributes often present significant challenges in an educational setting. With its promise of positively engaging students and mediating their behaviour, gamification is seen as a valuable tool which can be used to address some of the negative behaviours associated with learners in general and with the millennial generation in particular.

Research to date on the effectiveness of gamification in educational contexts can be summarised as cautiously optimistic. However, there is widespread acknowledgement in the literature that further research is needed. Researchers who are broadly positive as to the pedagogical benefits of gamification also caution that further and more nuanced research in this area is needed. For example, Domínguez et al., 2013. note that "good results don't happen for everyone" (2013, p. 391). On the other hand, Hanus and Fox (2015, p.160), whose work is wary of the benefits of gamification, are careful to caveat their conclusions by noting that it is "important to assess who may benefit the most from gamification". Nicholson (2012) points out that different activities will appeal to different participants in different ways. He calls for research aimed at understanding how the effects of gamification vary at an individual level. Hamari, Koivisto, and Sarsa (2014) call for research to investigate the role of the qualities and attributes of users when considering gamified learning interventions. Miller, Cafazzo, and Seto (2014) echo this call for research investigating how the characteristics of users impact on the effectiveness of gamification. The importance of these calls is highlighted by related studies which investigate these issues in the context of educational games. Prior research has examined the impact of using a personalised computer game based on learning styles on students' learning motivation and achievement (Hwang, Sung, Hung, Huang, & Tsai, 2012). Findings suggest that both student performance and motivation were enhanced when students are presented with a game which matches their preference for either sequential or global learning. However, further research finds that students are unable to choose educational computer games that fit with their sequential or global learning style (Hwang, Sung, Hung, & Huang, 2012). The learning style element of both these studies was based on the global/sequential element of Felder and Silverman's (1988) model.

In an educational context, two attributes of individuals are particularly important. First, individuals have distinctive personality traits which influence how they experience and perceive the world. Personality traits will influence how individuals react to the behavioural triggers associated with gamified pedagogical interventions. The second important attribute of individuals in an educational context is that of learning style. Individuals have different learning styles which affect how they receive, interact with and integrate educational material. An individual's learning style may have a significant impact on their experience of a learning interaction.

It is generally accepted that matching an individual's learning style with the appropriate form of instructional intervention significantly impacts upon the performance of the student and his/her achievement of learning outcomes (Becker, 2005; Cassidy, 2004).

ICMEM

3. Methods

2. 1. Article Review

researcher filter the article from journal database (e.g., Science direct) based on keyword that related with this research such as "gamification", "engagement", and "behavior". Using that filter researcher end up with 67 article as the literature review foundation of this research. In detail the process of filtering the article shown in figure below,
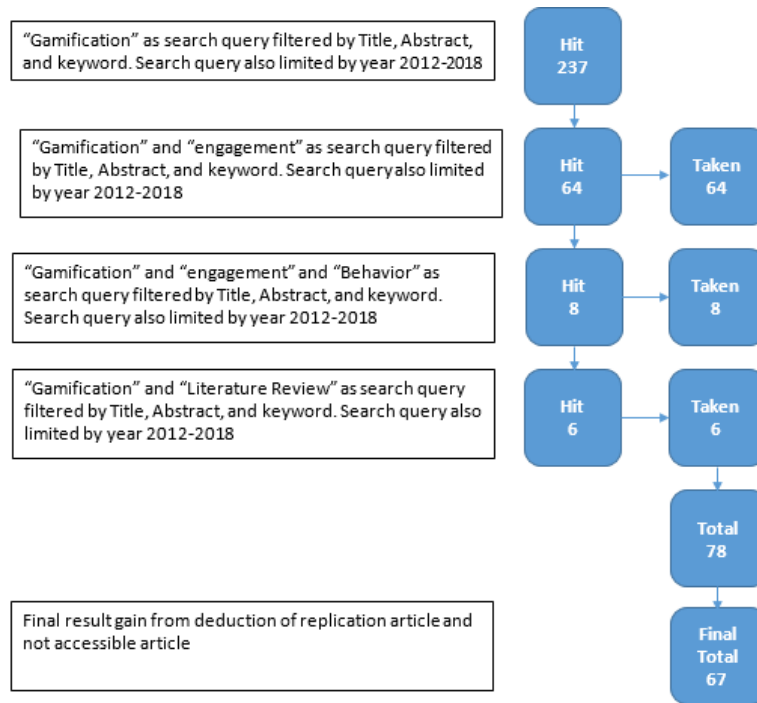
Fig. 1. Literature Review Systematic

Based on the figure above from 67 paper that reviewed by researcher, only 18 paper that study on the area of education. From that 18 paper only 3 of it study the area of higher education institution (Post-graduate) and the rest of it focus in the area of under graduate and below.

4. Findings

Looking at table below, from the 18 paper on gamification in education, most of it use simple model for the research. As Caponetto (2014) mentioned in his paper about gamification literature review, further research of gamification should be use more complex model. That statement related with the finding of the researcher that only two paper use complex model in their research. Regarding learning in this area of research, researcher found that only one paper by Buckley (2017) used learning style as the variable for the research and none of the paper reviewed by researcher

ICMEM
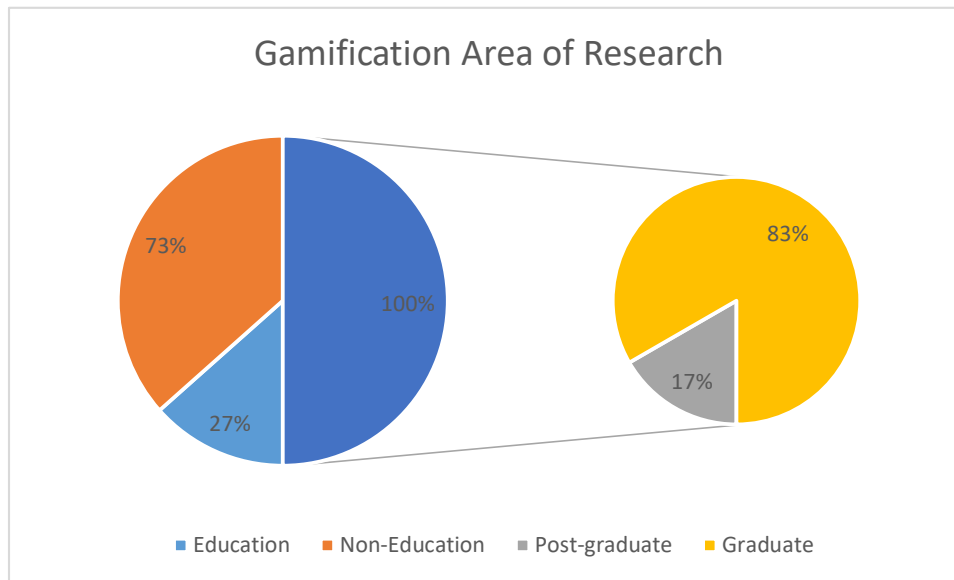
Fig. 2. Literature Review Systematic

Based on Livingstone (2017) on his report to UNESCO about the goals of education in 2030, current approach in education is not effective anymore. In the future, Teachers need to be trained to facilitate learning, understand diversity and "foster classroom environments that are respectful and secure, encourage self-esteem and autonomy, and use a wide range of pedagogical and didactical strategies".

In facilitate learning to give good quality of education other than understand how students learns, how lecturers teach, and the pedagogy of learning itself, infrastructure plays an important role. a recent study from the U.K. (2016) found that environmental and design elements of school infrastructure together explained 16 percent of variation in primary students' academic progress. This research shows that the design of education infrastructure affects learning through three interrelated factors: naturalness (e.g. light, air quality), stimulation (e.g. complexity, color), and individualization (e.g. flexibility of the learning space).

As summary of the literature review show how individual react differently on gamified educational context especially in the process of learning and show what gamification mechanism that most appropriate in learning based on their learning style. Gamification as a pedagogy expected to could improve the expected result from the student. By knowing how the student learn and what gamification mechanism that most suitable for different type of student will increase student result and capability. Gamification does not simply imply creating a game, it is a pedagogy used to make the student more engaged without deflation of educational credibility (Muntean, 2011).

5. Conclusion

To conclude this article, researcher believe that gamification is still on uprising trend in research. Area of gamification not fully explored yet especially in its relation with learning theory and pedagogy. Gamification relation with learning theory and pedagogy are the area of research that must be address more on the research of gamification. This kind of research could contribute more in the area of education and practical where there is a need for development of educational process especially where the student nowadays was the millennials generation.

The importance of knowing how to teach students, based on the changing of generation which has different characteristic. As had been known, in common there are several category of generation, generation X (baby boomers), generation Y, and generation Z (millennials). Generation X (baby boomers) born between 1966-1976, generation X people known for its skepticism character. Generation Y which born between 1977-1994 known for its sophisticated

ICMEM

character, technology wise, and flexibility. Generation Z born between 1995-2012, they are known for sophisticated character like generation Y but more accelerated and able to pin point diagnostic. This character emerged to the use of technology as basic needs in their life.

The further research result of would be beneficial for education institution where the student used as a sample for this research. For further research, researcher will explore more on the learning goals and learning objective as the core of education institutions in giving services to their students. What learning goals and learning objective could be more effective to be delivered using gamification method as the pedagogy of education. In order to use it in the other context or area, another research must be conducted to see its result. Further research will be conducted to have more accurate answer for the question of this research regarding the effect of gamification with learning theory and pedagogy.

References

Akinsanmi, B. (2008). The optimal learning environment: Learning theories. Retrieved 1 August 2011, Retrived from http://www.designshare.com/index.php/articles.

Alşan, E.U. (2009). Temel kimya laboratuarı dersinde öğretmen adaylarının başarılarına öğrenme stili tercihlerinin etkisi. Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi (EFMED), 3(1), 117-133.

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly, 15*(1), 5-32.

Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice Hall.

Becker, K. (2005). Games and learning styles. Calgary, Alberta, Canada. In Presented at the IASTED international conference on education and technology.Retrieved from http://mruir.mtroyal.ca/xmlui/handle/1880/46706.

Boyle, T. (1994). Designing for usability and effectiveness in a resource rich learning system. East-West Journal of Computers in Education, 1,37-45.

Boyle, J. D. (1997). Psychological foundations of musical behavior (third edition). Springfield, IL: Charles C. Thomas. 392 pages. ISBN 0-398-06720-1.

Buckley, P. & Doyle, E. (2017). Individualising gamification An investigation of the impact of learning styles and personality traits on the efficacy of gamification using a prediction market. Computers and Education, 106, p43-55

Caponetto I. et al. (2014). Gamification and Education- A Literature Review

Cassidy, S. (2004). Learning Styles: An overview of theories, models, and measures. Educational Psychology, 24(4), 419e444. Retrieved from https://doi.org/10.1080/0144341042000228834.

Davenport, TH & Beck, JC. (2001). The Attention Economy: Understanding the New Currency of Business. Boston, Massachusetts: Harvard Business School Press.

Dembo, M. H. (1994). Applying educational psychology (5th ed.). White Plains, NY: LongmanPublishing Group.

Deterding, S., Dixon, D. Khaled, R. &Nacke, L. (2011). From game design elements togamefulness: Defining gamification, in: Proceedings of the 15th InternationalAcademic MindTrek Conference: Envisioning Future Media Environments, ACM, pp. 9–15. http://dx.doi.org/10.1145/2181037.2181040.

Devries, R. & Zan, B, (2003). Educational leadership: journal of the Department of Supervision and Curriculum Development, N.E.A 61(1):64-67

Domínguez, A., Saenz-de-Navarrete, J., De-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education, 63*, pp. 380-392.

Downes, S. (2006, October 16). Learning networks and connective knowledge. *Instructional Technology Forum: 92*.

Dunn, R. S., Dunn, K. J., & Price, G. E. (1993). Learning style inventory (LSI): Price Systems, Incorporated (PO Box 1818, Lawrence 66044).

Edwords, F. (1989). What is humanism? Amherst, NY: American Humanist Association. Retrieved 17 December 2001, from: http://www.jcn.com/humanism.html.

Felder, R. M. (2001), Learning styles. Retrieved from http://www4.ncsu.edu/unity/lockers/ users/ f/felder/public/Learning_Styles.html

Felder, R. M. and Henriques, E. R. (1995). Learning and Teaching StylesIn Foreign and Second Language Education. Retrieved from http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/FLAnnals.pdf

Forbes Coaches Councils. (2018, Jan 30). 14 Leadership Trends That Will Shape Organizations in 2018. Retrieved from https://www.forbes.com/sites/forbescoachescouncil/2018/01/30/14-leadership-trends-that-will-shape-organizations-in-2018/#688f68715307.

Gagne, R.M. (1984). Learning outcomes and their effects: Useful categories of human performance. American Psychologist, 39, 377-385.

ICMEM

Guney Ali and Selda Al. (2012). Effective learning environments in relation to different learningTheories. Procedia – Social and Behavioral Science, 46, 2334-2338.

Grasha, A. F. (1996). Teaching with Style: A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles. Pittsburgh, PA: Alliance Publishers.

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does Gamification Work? – A Literature Review of Empirical Studies on Gamification. *Proceedings of the 47th Hawaii International Conference on System Sciences.* Hawaii, USA.

Hanus, M. D. & Fox, J. (2015). Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. Computers and Education.

Harzem, P. (2004). Behaviourism for new psychology: what was wrong with behaviourism and what is wrong with it now. Behaviour andPhilosophy, 32, 5-12.

Huitt, W. (2009). Humanism and open education. Educational Psychology Interactive. Huitt, W. Valdosta, GA: Valdosta State University. Retrieved from: http://www.edpsycinteractive.org/topics/affect/humed.html.

Hwang, G.J., Sung, H.Y., Hung, C.M., Huang, I. & Tsai, C.C. (2012). Development of a Personalized Educational Computer Game Based on Students' Learning Styles. *Educational Technology Research and Development, 60*(4), 623-638. Retrieved July 31, 2018 from https://www.learntechlib.org/p/67714/.

Jung, C.G. 1971. Psychological Types.Princeton, NJ: Princeton University Press.

Kasim Mansur, Mori Kogid, &Madais, S. J. (2010), Human capital investment: Literature review analysis and a case study among KadazanDusun of Pulutan Village, Menggatal, Kota Kinabalu, Sabah, Malaysia. Medwell Journals, 5 (3)

Keefe, J. W. (1979). Learning Style: An Overview. Reston. VA: National Association of Secondary School Principal.

Keefe, J. W. & Ferrel, B. G. (1990). Developing a Defensible Learning Style Paradigm. Educational Leadership, 48(2), 57-61.

Kim, C. J. (2012). Introduction to education psychology. Dongmoonsa. Seoul, Korea,

Knowles, M. (1984). The Adult Learner: A Neglected Species (3rd Ed.). Houston, TX: Gulf Publishing.

Knowles, M. (1984). Andragogy in action. San Francisco: Jossey-Bass.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. New Jersey: Prentice-Hall.

Kop, R and Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past. *International Review of Research in Open and Distance Learning, 9*(3).

Kramer, R. (2008). Learning how to learn: action learning for leadership development. In Morse. (Ed.), Innovations in public leadership development (pp. 296– 326). Washington DC: M.E. Sharpe and National Academy of Public Administration

Kurtz, Paul. (2000). Humanist Manifesto 2000: a Call for a New Planetary Humanism. Amherst, NY:Prometheus..

Lee, J. J., & Hammer, J. (2011). Gamification in education: What, how, why bother? *Academic Exchange Quarterly, 15(2)*, 146.

Livingston, K. et al. (2017). Why Pedagogy matters: The role of pedagogy in education 2030. A policy advice paper. UNESCO.

McGonigal, J. (2011). Reality is broken: Why games make us better and how they can change the world. New York, NY, US: Penguin Press.

Mergel, B. (1998). Instructional Design and Learning Theory. Retrieved from http://www.usask.ca/education/coursework/802papers/mergel/brenda.htm

Merriam, S., & Caffarella, R. S. (1991). Learning in Adulthood. A comprehensive guide, San Francisco: Jossey-Bass.

Michel Desmarais, et al. (2015). A Player Model for Adaptive Gamification in Learning Environments. AIED 2015, Jun 2015, Madrid, Spain. pp. 297-306, 2015.

Miller, A. et al. (2014). A game plan: Gamification design principles in mHealth applications for chronic disease management. SAGE Journal.

MuhibbinSyah. (2017). *PsikologiBelajar*. Rajawali Pers. Depok

Muntean, C. I. (2011). Raising engagement in e-learning through gamification. *Proc. 6th International Conference on Virtual Learning ICVL*, (pp. 323-329).

Nicholson, S. (2012). A User-Centered Theoretical Framework for Meaningful Gamification. Paper Presented at Games+Learning+Society 8.0, Madison, WI.

Oxfordbusinessgorup. (2018). *The Report: Indonesia 2018*. Retrieved from https://oxfordbusinessgroup.com/node/928846/reader.

Pithers, B. (2002). Cognitive learning style: A review of the field dependent-field independent approach. *Journal of Vocational Education and Training*, *9*(2), 47-60.

Revans, R. 1980. Action learning: New techniques for management. London: Blond & Briggs, Ltd.

Rizo,F.M. (1991). The controversy about quantification in social research: An extension of Gage's"historical sketch." Educational Researcher, 20 (12), 9-12

ICMEM

Siemens, G. (2008a). About: Description of connectivism. *Connectivism: A learning theory _for today's learner, website*. Retrieved from http://www.connectivism.ca/about.html

Siemens, G. (2008b). *Learning and knowing in networks: Changing roles for educators and designers.* Paper 105: University of Georgia IT Forum. Retrieved from http://it.coe.uga.edu/itforum/Paper105/Siemens.pdf

Simoes, J., Redondo, R., Vilas, A. (2013a). An experiment to asses student engagement in a gamified social learning environment.

Skinner, B.F. (1953). Science and human behavior. New York: Macmillan.

Smith, P. (2001). Action learning and reflective practice in project environments that are related to leadership development. London: Management Learning Sage.

Squire, K. (2003). Video games in education. International Journal of Intelligent Simulations and Gaming (2) 1.

Technavio. (2016). Gamification Market Research Analysis Market Trends. Retrieved from https://www.technavio.com/report/global-gamification-market-2015-2019.

United Nation Development Programme. (2018). *United Nation Development Programme Report*. Retrieved from http://www.id.undp.org/content/indonesia/en/home/presscenter/pressreleases/2017/03/22/indonesia-s-human-development-index-rises-but-inequality-remains-.html

Veznedaro÷lu, L., & Özgür, O. (2005). Ö÷renme stilleri: tanÕmlamalar, modeller ve iúlevleri, ølkö÷retim-Online, 4(2), 1-16, [Online]: http://ilkogretim-online.org.tr/vol4say2/v04s02m1.pdf

Weinstein, K. (1995). Action Learning: A journey in discovery and development. London: Harper Collins.

Werbach, K., & Hunter, D. (2012). For the Win: How game thinking can revolutionize your business. Philadelphia: Wharton Digital Press.

Witkin, H. A., Oltmann, P. K., Raskin, E., and Karp, S. A. (1971). A manual for the embedded figure tests. Palo Alto, CA: Consulting Psychologists Press.

Witkin, H. A., and Goodenough, D. R. (1981). Cognitive Styles: Essence and origin. New York: International University Press.

Woolridge, B. (1995). Increase The Effectiveness of university/college instruction: Integrating the result of learning style research into course design and delivery. In R. R. Sims and S. J. Sims (Eds.). *The importance of learning styles: Understanding the implications for learning, course design, and education* (pp. 49-67). Westport, Connecticut: Greenwood Press.

Zuber-Skerritt, O. (2006). An executive action learning program (SEAL) for professional development and higher degrees. In H. Welte, M. Auer, & C. MeisterScheytt (Eds.), Management von Universitäten: Zwischen Tradition und Post-Moderne. Munich: Rainer HamppVerlag.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Antecedents of Reverse Knowledge Transfer in Franchise Network: the role of Franchisee Autonomy and External Embeddedness

Yudhi Richard[a], Rangga Almahendra[b*], Reni Rosari[c]

[a,b,c]*Gadjah Mada University, Special Region of Yogyakarta 55281, Indonesia*

Abstract

This study develops a research framework to understand reverse knowledge transfer in franchisee network. This study aims to examine the effect of franchisee autonomy related to reverse knowledge transfer and to examine the effect of external embeddedness as the moderator of franchisee autonomy and reverse knowledge transfer. The research data was collected through direct survey using a prepared questionnaire. We conducted regression analysis from 107 franchisee network in Indonesia. The result showed that the franchisee autonomy have positive and significantly affect reverse knowledge transfer in franchise. However we also found that when franchisee is being overly embedded in their external environment, the franchisee autonomy shows negative relationship with reverse knowledge transfer.

Keywords: Franchisee Autonomy; External Embeddedness; Franchise; Reverse Knowledge Transfer

1. Introduction

Knowledge is the most important assets for competitive advantage for the organization (Grant, 1996; Nonaka and Takeuchi, 1995). Therefore every organizations need to develop their capability to create, transfer, integrate, and implement knowledge within their organization network. View of organizational learning theory explains that organizational learning occurs through the process of acquiring, sharing, integrating, and exploiting new knowledge either from outside or from within the company (Crossan et al., 1999). In the process of organizational learning, there must be tension between the process of acquisition of new knowledge (exploration) and the utilization of knowledge contained within the organization (exploitation) (Crossan et al., 1999; Levinthal and March, 1993).

Firms are facing several challenges when competing in the interconnected market. One of the most determined challenges is the question on how to manage dispersed network of partners in franchising firm.

Early practice of franchising firms were dominated on the centralization view of the firms wherein knowledge flowed from the franchisor to its franchisee (forward transfer). However, more recent phenomenon recognized the critical importance for decentralization and autonomy to leverage knowledge resources and innovation from its units (reverse transfer).

Although the study of reverse knowledge transfer is rapidly becoming an important issue in the literature of the differentiated MNC (Ambos et al., 2006; Gupta and Govindarajan, 2000; Håkanson and Nobel, 2000; Yang et al., 2008), little explicit attention has so far been given to study the phenomenon in the franchising firm context.

Over the past several decades, most studies in the field of management focus on the knowledge flow from parent company to its subsidiaries and reverse knowledge transfer performed by subsidiaries or branch of the company towards the parent company are underresearched.

In the context of franchise firms, reverse knowledge transfer refer to knowledge transfer done by franchise receiver (franchisee) towards franchise owner (franchisor). Reverse knowledge transfer has important benefit for the

---

* Corresponding author.

ICMEM

organization, such as in finding best practices (Szulanski, 1996), developing learning organizations (Reagans et al., 2012), promoting innovation (Iwasa and Odagiri, 2004), and enhanching firm's competitive advantage in general (Ambos et al., 2006; Iwasa and Odagiri, 2004).

Although the study of reverse knowledge transfer is rapidly becoming an important issue in the literature on innovation and learning organization (Ambos et al., 2006; Gupta and Govindarajan, 2000; Håkanson and Nobel, 2000; Yang et al., 2008), little explicit attention has so far been given to study the phenomenon in the emerging market context.

This is regrettable, since nowadays economists and management scholars have increasingly pointed to the shifting of economic gravity from developed to emerging market, however, most of these literatures have largely ignored one very important issue: how franchise company in the emerging market manage their portfolio of franchisees effectively to gain competitive advantage.

Most of recent literatures in reverse knowledge transfer focus in the multinational context, transfer of knowledge from parent companies towards subsidiaries (Chen et al., 2014; Weaven et al., 2014; Gorovaia, 2017). Only a few studies focus on reverse knowledge transfer, which stated the extent of the knowledge generated by the subsidiary to be transferred to the parent company (Rabbiosi 2011 Rabbiosi, and Santangelo, 2013, McGuinness et al., 2013, Najafi-Tavani et al., 2012).

As in the context of knowledge transfer between subsidiary to headquarter, we also believe that degree of autonomy given by the franchisor to franchisee may also influence the knowledge transfer process.

While many studies have provided valuable insights on elaborating the reverse knowledge transfer, none of these studies explicitly addressed the source and mechanism of these knowledge transfer from franchisee to franchisor especially in the context of hierarchical society. We also found that the result of the study on reverse knowledge transfer with autonomy still does not find consistent results. Silveira et al., (2016) Najafi-Tavani et al., (2014); Foss and Pedersen (2002) and Tsai (2002) found a positive effect of autonomy on reverse knowledge transfer.

Other researchers have suggested that the decentralization of franchise control and decision have a positive influence on the flow of knowledge between franchisee (Ghoshal et al., 1994). While other empirical study found a negative effect on the transfer of knowledge from the franchisee toward the franchisor (Gammelgaard et al., 2004). Rabbiosi (2008) also shows the negative effects of decentralization due to having too much autonomy, as Birkinshaw et al. (2002) found no impact of the franchisee autonomy on knowledge transfer.

Our research project aims to redress the gap between corporate reality and academic research by using two theoretical frameworks, first the complementarity of integration and local adaptation framework; and second, the contingency approaches in organizational design. Using the first framework we are looking on how actually franchisees could better persuade their franchise's owner and increase their legitimacy in the franchise's knowledge network.

In this study we use franchise network as our object of study. The use of franchise as our context of study because franchise owner sometimes are confronted with dilemma in managing their franchise network. In one side firms implement the realization of economic scale through the standardization of the system as a whole in various functional fields such as marketing, purchasing, and product development. In the other hand, the franchise owner should also learn new expertise and being responsiveness to adapt to the local market.

Franchising is still considered as one of the popular vehicle to expand business to new market (Altinay et al., 2014). The popularity of franchise network is growing in the recent year, although the success rate of those franchise networks remain questionable (Altinay and Brookes, 2012).

Knowledge transfer process in franchise usually involve sharing activities from the franchisors to give the franchisee operational, technology, and knowledge about the product market strategy in general. While usually franchisee gives the knowledge of local market conditions and buyer's fondness for supporting innovation and network development for the overall franchise (Weaven et al., 2014). Therefore the success of the franchise network depend on the capacity of the franchisor (Gorovaia and Windsperger, 2010) and the ability of the franchisee to absorb and implement knowledge transfer (Minguela average et al., 2010).

The aim of this study is to investigate knowledge transfers process between franchisees to franchise owner. In order to exploit the organization's knowledge stock and support knowledge creation, franchise owner need to develop capacity to absorb new knowledge from their franchise networks.

ICMEM

A lot of people still have a limited understanding on how franchisor need to manage the knowledge transfer process in their franchising network.

The shifting of influence from franchisor to franchisee can be seen as important for sustainability of the franchise's overall perfomance in the long run. This study may also contribute to enrich the theoretical relevance and practitioners' interest toward reverse knowledge transfer and the organization ability of to integrate competencies from different sources and to undertake effective knowledge management process to gain a higher level of performance (Coff, 2003).

2. Literature Review

Franchising as an alternative of market development strategy, gaining momentum in the last few decades. With the growing trend for firm to develop new market, many firms realize the urgency to tap opportunities from disperse locations. The study of reverse knowledge transfer plays an important role in the discussion of gaining global competitive advantage.

As more and more companies choose franchising as their core strategy to grow, it is necessary to do in-depth study regarding how franchisors should manage relationship with their franchisees, both in terms of the managing conflicts and tapping opportunities. Franchise business in emerging market and Indonesia are rising in general. According to AK and Partners (franchise consultant), the growth of national franchise in the period of 2010-2015 reached 17.13 percent on average. Furthermore, the main foreign franchises have grown an average of 9.7 percent/year during the same period (2010-2015)

However, according to the same report, more than 60% of the outlets owned by the local franchise is experiencing failure. SMfranchise argued that this is due to the unpreparedness of the franchisor for being responsive to local adaptation. However until now, we still have a limited understanding on how franchise owner manages the knowledge transfer effectively.

Study of reverse knowledge transfer is rapidly becoming an important issue in the literature of the knowledge based view (Ambos et al., 2006; Gupta & Govindarajan, 2000; Buckley et al., 2003). Empirical evidences exhibited by many studies have provided valuable insights on elaborating the reverse knowledge transfer such as subsidiary role (Gupta & Govindarajan, 2000; Ambos et al., 2006; Harzing & Noorderhaven, 2006), subsidiary location (Ambos et al., 2006; Fey & Furu, 2008), subsidiary age (Rabbiosi & Santangelo, 2013), perceived subsidiary capability (McGuinness et al., 2013; Nair et al., 2016), knowledge relevance (Yang et al., 2008; McGuinness et al., 2013; Nair et al., 2016), absorptive capacity (Ambos et al., 2006; Nair et al., 2016) and coordination mechanism (Ambos & Ambos, 2009; Rabbiosi, 2011). However, none of these studies explicitly addressed the source and mechanism of these knowledge transfer in the franchising context.

Early practices of franchising were dominated on the standardization view of the operation wherein knowledge flowed from the franchisor to its franchisee (forward transfer). However, in the last decades more and more multinational franchise firms are promoting to add more locally adapted innovation from franchisee in every country (reverse transfer).

Conceptually, many franchise owners may learn from their franchise subsidiary (reverse transfer) to exploit franchisee's knowledge to support overall franchise strategy and operations. This phenomenon indicates that each of franchise's subsidiary has a critical important role as a broker to provide new knowledge resources for HQ. Particularly, if the knowledge are critical and valuable to improve firm's global competitive advantage and to adapt the uncertain changes of the environment (Wong et al., 2008; Mudambi et al., 2014). Therefore our study intends to identify some preconditions and sources of persuasions which constitute the reverse knowledge transfer in the context of emerging market.

We frame our propositions to identify those preconditions and persuasions from the subsidiaries using integration-responsiveness framework (Prahalad & Doz, 1987) and contingency approach (Blau, 1970; Burns & Stalker, 1961; Galbraith, 1973). Many scholars argued that an effective reverse knowledge transfer is dependent on quality of relationship between subsidiary and external environment, and between subsidiary and headquarter (Mayer et al., 2011; Andersson et al., 2001; Frost et al., 2002). Therefore, as an extension to integration-responsiveness framework, we propose subsidiary autonomy and local embededdness as sources of persuasions of reverse transfer to filling the both of relationship.

ICMEM

2.1 Franchisee Autonomy and Reverse Knowledge Transfer (RKT)

Autonomy refers the extent to which the decision making authority given to individuals or groups which are at the lower hierarchy level (Aiken and Hage, 1968; Pugh et al., 1968) and it is understood as the extent to which freedom, independence, and a substantial discretion to the individual in making decision (Hackman & Oldham, 1980). Autonomy facilitates employee communication behaviour such as expressions of opinion, giving new ideas, related to work (Tangirala & Ramanujam, 2008). The principle of autonomy can be applied at the level of individuals, groups and organizations either separately or together (Nonaka, 1994).

We define franchisee autonomy as the extent to which the franchisee is allowed to make decisions on key strategic issues (Mudambi and Navarra, 2004), without direct intervention from the franchisor (Roth and Morrison, 1992).

In our study, franchisee autonomy is closely related to the mechanism of how far the franchisee has the authority to make important decisions within the franchise network.

We argue that higher level of autonomy may have positive effect related to creation and development of knowledge in franchisee. This argument is in line with Nohria and Ghoshal, (1997) and Persaud (2005) on the context of multinational subsidiaries, based on the idea that independent subsidiary has a strategic authority (Birkinshaw et al., 1998), which supports the local responsiveness (Bartlett and Ghoshal, 1989) and the development of knowledge by doing adaptations based on local knowledge (Andersson et al., 2002). However we also found that Frost et al., (2002) and Rabbiosi (2008) suggest otherwise. They suggested a negative relationship between autonomy of a subunit and performance of knowledge transfer. Rabbiosi (2008) argued if the autonomy granted by the parent company (in this context the franchisor) to subsidiaries (franchisee) are excessive then it may shows negative correlation to parent firm's performance. Najafi Tavani et al. (2012) further argued what really matters for this performance is not only the capacity of the subsidiaries to develop new knowledge, but it should be transfered effectively to the headquarter (Reverse Knowledge Transfer or RKT)

RKT has important advantages for the franchisor. The franchisor get benefits to learn something new from franchisee and at the end may also contributes to overall perfirmance, such as franchisor capability to develop new product and better relationship with external stakeholders (Ambos et al., 2006), exellences in innovation (Hansen, 1999) and development of competitive advantage (Tsai and Ghoshal, 1998; Tsai, 2001).

H1: The degree of franchisee autonomy is positively associated with reverse knowledge transfer (RKT)

2.2 External Embeddedness as the Moderating Variable

Embeddedness is related to firm's capability to facilitate social relationships with local players such as customers, universities, and local research institutions (Granoveter, 1985). More specifically, embeddedness refers to the mutual adaptation of activities in the surrounding social system (Tsai and Ghoshal, 1998). Therefore, the embeddeness in constructive relationship with partners is considered as important resources that need to be developed for companies.

External embeddedness in our study refer to what extend franchisee are developing local relationships in the market.

With strong external embededdness, firms may have easy access to resources from outside companies (Andersson et al., 2002). Inemek and Matthyssens (2013) previously suggested that access to external knowledge is one of the conditions of knowledge development and innovation. In the context of high uncertainty in the local market (Fang et al., 2010), every subunits need to be embedded in their local environment to absorb new knowledge (Miles et al., 1995).

In this study, we investigated the effects of external embeddedness as moderating variable in relationship between franchisee autonomy with reverse knowledge transfer.

In previous research, Najafi-Tavani et al. (2012) found that the external embeddedness can alter the ability of subsidiaries to develop new knowledge. External embeddedness is measured with the closeness to the local players, it reflects the ability of subsidiaries to absorb knowledge from the environment, and to create new knowledge for the company (Andersson et al., 2002). It directly improves the development of the innovation ability of subsidiaries, to develop new products, services, and technology (Andersson et al., 2005). External embeddeness may permit access of

ICMEM

new information and acquisition of new knowledge for innovation. (Ghoshal and Bartlett, 1990; Narula & Dunning, 2010)

A high level of external embeddedness is related to the context of the local knowledge is located. Subsidiary often interact with the nearest chain of suppliers and local institutions aiming to learn about customers and technology for capturing local knowledge (Figueiredo, 2011). It uses the relationship created between the subsidiaries and the parent company for the reverse knowledge transfer (Meyer et al., 2011; Najafi-Tavani et al., 2014). Researchers argue that the parent company and subsidiary in this context franchisor and franchisee can make some strategies to increase the competitive performance of the franchise, because of the franchise can get easier access in developing products, technologies and services.

We use the lenses of integration and adaptation framework which assume that franchisee autonomy and external embeddeness should be treated as a twin construct that complement each other.

Integration refers to the extent to which the principle coordinate and control all activities, whereas adaptation refers to the extend to which business being embedded in their external environment.

Using this twin construct in the organizational design literature, we suggest that having autonomy and being embedded externally have possible benefits for firm, but at the same time also entails risks that hinder the knowledge transfer process.

H2: External embeddedness moderates the relationship between Franchisee autonomy and reverse knowledge transfer

3. Research Method

3.1 Sample and Data Collections

The respondents in this study were the perpetrators of the franchise in the area of special region of Yogyakarta. The respondents in this study were the perpetrators of the franchise in the area of special region of Yogyakarta. We choose Yogyakarta region to conduct this study to avoid culture variations among regions. We assume that it would be interesting to observe reverse knowledge transfer phenomenon in a region characterized with high power distance index (Hofsede, 1990). Power distance refer to the nature of societies which accept unequal distribution of power. Societies that live in a region with a high power distance accept hierarchical order where every individual has a place and requires no further justification, while the communities who live in countries with low power distance try to get distribution of power equally and demanded the recognition of inequalities in power (Chen et al., 2010). The sample size of this study is as many as 120 franchisee as respondents.

3.2 Data Analysis

The whole research instruments in this study were adapted from previous studies i.e. Cochet et al. (2008) for the the franchise autonomy variable; He et al. (2008), Govindarajan and Gupta (2000) for reverse knowledge transfer variable, as well as Lane and Lubatkin (1998), Andersson et al. (2005), Andersson et al. (2001) for the external embeddeddness variable. We use Moderated Regression Analysis – MRA technique to test our hypotheses. We assume that MRA techniques is suitable to test simultaneous impact of independent variable to dependent variables using the moderating variable (Hair et al., 2014). This analysis technique can be used to examine the relationship between subsidiary autonomy and reverse knowledge transfer (RKT), as well as testing the external embeddedness as moderating role in the franchisee autonomy and reverse knowledge transfer capability.

In this study, statistical tests was used to test the independent variable on the dependent variables are significant, influential, as well as for moderating variables. Statistical tests used in this study include the test t, F, and R^2 to find out how big a role the variance independent variable effect on the dependent variable.

4. Result

Hypothesis testing in this study uses moderated regression analysis (MRA). This analysis technique is a form of regression that is designed to test the simultaneous impact of the variables are independent of the dependent variables using moderating variable (Hair et al., 2014). The results of hypotheses 1 and 2 are summarized in table 4.1.

ICMEM

Table 4.1 Moderated Regression Analysis Results

Description	Model 1	Model 2	Model 3
Independent Variable Franchisee Autonomy	0,775	0,409	1,701
Moderating Variable External Embeddedness		0,464	1,476
Interaction Franchisee Autonomy x External Embeddedness			-2,194
R^2	0,6	0,682	0,742
ΔR^2	0,600	0,082	0,060
F	157,7	111,462	98,846
T	12,558	5,164	-4,909

*note: N= 107; value standardized $p < 0,05$

shown is coefficient beta

Based on Table 4.8., R^2 is coefficient determination value which indicates the percentage magnitude of the independent variable in explaining the dependent variable (Hair et al., 2014). Statistical results show that an increase in the value of the coefficients of determination ranging from model 1 to model 3. The largest and most significant value of the determination coefficient happens in the model 1 by 0.600 (60%), it means that the ability of the independent variable that occurs in the second test can explain the variance of reverse knowledge transfer which is 60% while the rest which is 40% ($1-R^2$) is explained by other variables which is not found in the study.

Still based on table 4.8., ΔR^2 is the change in value of R^2 on the next regression model after the addition of other independent variables. The value of the largest and significant ΔR^2 occurred in model 2 which is 0.082 (8.2%). This shows that, the addition of external embeddedness variable provide additional explanation of 8.2% for variances that occur at reverse knowledge variable transfer.

To test F, the significance of model 1, 2, and 3 are below standard. This means that variables contained on the second test is simultaneously able to predict change of variable in reverse knowledge transfer. As for the t-test, model 1, 2 and 3 or the whole standard model their significance is below 0.05. Models 1 and 2 (t = 12.558 for model 1; and t = 5.164 for model 2) towards the dependent variable, because it has a positive value of t.

5. Hypotheses Testing Result and Discussion

5.1 Hypothesis 1

This study has two aims, first, to test the influence of franchisee autonomy to reverse knowledge transfer. We supports previous study conducted by Rabbiosi (2005) stating that autonomy is one of the antecedent of reverse knowledge transfer. Hypothesis 1 in this study states the positive effect of franchisee autonomy to the reverse knowledge transfer based on hypothesis testing supported by our data.

The beta coefficient value component in table 4.8 indicates that the franchisee autonomy influence positively and significantly toward reverse knowledge transfer phenomenon ($\beta = 0.775$; t = 12.558; $p < 0.05$). Therefore hypothesis 1 is supported.

These findings also support previous researches (Najavi-Tavani et al., 2013; Silveira et al., 2016; Tsai, 2002; Foss and Pedersen, 2002) stating that the autonomy variable affects reverse knowledge transfer . In the context of franchising in special region of Yogyakarta, this study obtained results which shows that the franchisee autonomy is high. Researchers assume that the close interaction between the franchisee with franchisor will increase the level of

ICMEM

trust between the franchisee and franchisor. Having a greater level of trust may also increase the autonomy granted to franchisee, which at the end the franchisee gets the freedom to innovate in terms of managerial and products. The franchisee provides the necessary knowledge for franchise companies so the phenomenon of reverse knowledge transfer happens.

The Positive impact on autonomy of reverse knowledge transfer based upon the argument that the freedom of subsidiaries provides access to local knowledge, knowledge of the local partner, and possibilities to innovate (Andersson et al., 2002; Govindarajan and Gupta, 1991). Therefore, subsidiarys' autonomy is requested as an important predictor in reverse knowledge transfer. Autonomy gives subsidiaries to explore deeply about his business and its market opportunities. This was done so that subsidiary can use external sources even for the sake of competitive advantage.

5.2 Hypothesis 2

Hypothesis 2 analyze the role of the external embeddedness as moderating variable to the relationship between franchisee autonomy and reverse knowledge transfer. The statistic results for hypothesis 2 is presented at (beta =-2.194; t =-4.909; p < 0.05). We found that external embeddedness weaken the relationship between franchisee autonomy and reverse knowledge transfer.

In the Hypothesis 2, we formulated the role of external embeddedness as moderating variable of franchisee autonomy and reverse knowledge transfer. Our hypothesis 2 suggested that the external embeddedness positively affects the relationship between franchisee autonomy and reverse knowledge transfer. Based on hypothesis 2 it can be explained that the external embeddedness or the connection between franchisee to environment i.e. customers, suppliers, universities, and research institutes is strengthening the relationship between the franchisors' given autonomy to the franchisee toward reverse knowledge transfer happened in franchise. However, based on the results of hypothesis, the testing shows that external embeddedness weaken the relationship between franchisee autonomy and reverse knowledge transfer that occurs in franchise.

The testing results of the hypothesis does not fit with previous research (Silveira et al., 2016; Figueiredo, 2011; Meyer et al., 2011) stating that the external embeddedness strengthen the relationship between the franchisee autonomy to reverse knowledge transfer, however, the study results reinforce the findings expressed by Najavi-Tavani et al., (2014) that found that when external embeddedness in the subsidiaries are high, it will weaken the reverse knowledge transfer in a company. Researchers assume that the franchisee autonomy granted is too big and the franchisor does not control the franchisee autonomy, so franchisee tends to be closer to the external environment where the franchisee running its business. Therefore, the relationships and the communication that occurs between franchisee and franchisor are reduced. Thus, the franchise did not do one of the task which is reverse knowledge transfer or a reduced activity of the reverse knowledge transfer that occurs in the franchise.

As already described in previous studies, the external embeddedness has an effect that is uncertain in the position of subsidiaries in the company (Andersson et al., 2002). The franchisee with a high level of external embeddedness has a tendency to respond to their surrounding stakeholder more frequently as compared to the franchise owner. Then, the process of reverse knowledge transfer that will happen in the franchise will be declining because of the franchisee that is too close with their environment. It creates conflict and reduce the trust acquired by franchisee (Asakawa, 2001). External embeddedness poses influence risks, turf wars, or entrenched commitments to external interests (Carlile, 2002, Brown, Lawrerence and Robinson, 2005). When the franchisor has doubts to its franchisee, franchisor will tend to reduce the autonomy they give. Therefore, when there are high levels of external embeddedness, it needs to create subsidiary innovation; it can create conflict and lack of trust with the parent company, and reduce the ability of subsidiaries to enhance autonomy in his company (Kaufmann and Roessing, 2005).

6.   Conclusion

This study was conducted to test the influence of franchisee autonomy antecedent to reverse knowledge transfer. The study also tested the role of external embeddedness as moderator on franchisee autonomy influence to reverse knowledge transfer. Based on that, then the resulting conclusion is as follows: franchisee autonomy has positive and significant impact toward reverse knowledge transfer. The results of hypothesis testing supports the research conducted by Rabbiosi and Santangelo (2013) and Silveira et al. (2016) where the study results states that the autonomy has a positive effect on reverse knowledge transfer, external embeddedness has negative and significant

ICMEM

effect on the relationship between franchisees' autonomy and reverse knowledge transfer. If the franchisee is given more autonomy then it will strengthen the relationship between franchisee and their external environment. When a franchisee is closely linked to its environment then it will weaken the reverse knowledge transfer that occurs between the franchisee and franchisor.

7. Limitations of Study and Further Research Suggestion

Researchers working optimally in designing, constructing, and producing better research but the study still has some limitations. As for some of the limitations and suggestions from this study are; this study only use autonomy, which was only one of the shaper aspect of reverse knowledge transfer and there are many more other shaper aspects of reverse knowledge transfer which are not included in the design or model research and research on the reverse knowledge transfer is still very limited that it need to be examined more deeply on this topic. This is become a suggestion for further research that the other antecedents aspects of reverse knowledge transfer needs to be tested further as well as the study on reverse knowledge transfer need to be done in another organization sector. Furthermore, the use of the context on different regions and countries can become a reference for further research to enrich the study results. This is because each region has different characteristic. For example, comparing the franchisee among the special region of Yogyakarta with other cities in Indonesia has a different characteristic and distinction, as well as other countries that have cultural differences. Lastly, this study is using self-report as the main way in getting the data. Self-report can be one of the weaknesses of this study, because they are prone to the occurrence of common methods bias. For future study, it is necessary to perform data retrieval by interviewing directly or via telephone on franchisor in addition to providing a questionnaire or interview to the franchisee. This is done to assert the data obtained from the franchisee which is in accordance with reality

References

Altinay, L. Brookes, M., Madanoglu, M., Aktas, G. (2014). Franchisee's Trust in and Satisfaction with Franchise Partnerships. Journal of Business Research 722-728.

Altinay, L., Brookes, M. (2012). Factors Influencing Relationship Development in Franchise Partnerships. Journal of Services Marketing 278-292.

Ambos, T., Ambos, B., Schlegelmilch, B. (2006). Learning From Foreign Subsidiaries: An Empirical Investigation of Headquarters Benefits From Reverse Knowledge Transfer. International Business Review 294-312.

Andersson, U., Forsgren, M., Holm, U. (2002). The Strategic Impact Of External Network: Subsidiary Performance and Competence Development In The Multinational Corporation. Strategic Management Journal 23: 979-996.

Asakawa, K. 2001. Evolving Headquarters-Subsidiary Dynamics in International R&D: The Case of Japanese Multinationals. R&D Management 1-14.

Bartlett, C. A., Ghoshal, S. 1989. Organizing for Worldwide Effectiveness: The Transnational Solution. California Management Review 31 (1): 54-74.

Birkinshaw, J., Hood, N., Jonsson, S. (1998). Building Firm-Specific Advantages in Multinational Corporations: The Role of Subsidiary Initiative. Strategic Management Journal 19: 221-241.

Birkinshaw, J., Nobel, A. R., Riddderstrale, J. (2002). Knowledge as a Contingency Variable: Do the Characteristics Of Knowledge Predict Organization Structure? Organizatiobal Science 13 (3): 274-289.

Chen, C. J., Hsiao, Y. C., Chu, M. A. (2014). Transfer Mechanism and Knowledge Transfer: Cooperative Competency Perspective. Journal of Business Research 2531-2541.

Chen, J., Sun, P. Y. T., McQueen, R. J. (2010). The Impact of National Cultures on Structured Knowledge Transfer. Journal of Knowledge Management 14 (2): 228-242.

Cochet, O., Dormann, J., Ehrmann, T. (2008). Capitalizing on franchise autonomy: relational forms of governance as control in idiosyncratic franchise dyads. Journal of Small Business Management 50-72.

Coff, R. (2003). The Emergent Knowledge-Based Theory of Competitive Advantage: An Evolutionary Approach to Integrating Economics and Management. Manage Decision Econ 245-251.

Crossan, M. M., Lane, H. W., White, R. E. (1999). An organizational Learning Framework from Intuition to Institution. Academy of Management Review 24 (3): 522-537.

ICMEM

Fang, Y., Jiang, G. L. F., Makino, S., & Beamish, P. W. (2010). Multinational Firm Knowledge, Use of Expatriates, and Foreign Subsidiary Performance. Journal of Management Studies 47 (1): 27-54.

Figueiredo, P.N. (2011). The Role of Dual Attachment in The Innovative Perfomance of MNE Subsidiaries: Evidence From Brazil. Journal of Management Studies 48 (2): 417-440.

Foss, N. J., Pedersen, T. (2002). Transferring Knowledge in MNCs: The Role of Sources of Subsidiary Knowledge and Organizational Context. Journal of International Management 8: 49-67.

Frost, T. S., Birkinshaw, J., Ensign, P. C. (2002). Centers of Excellence in Multinational Corporations. Strategic Management Journal 23 (11): 997-1018.

Gammelgaard, J., Holm, U., Pedersen, T. (2004). The Dilemmas of MNC Subsidiary Knowledge Transfer. Knowledge flows, governance and the multinational enterprise (Palgrave Macmillan).

Gorovaia, N. (2017). Knowledge Transfer in Franchising. Handbook of Research on Franchising 234.

Gorovaia, N., Windsperger, J. (2010). Knowledge Attributes and The Choice of Knowledge Transfer Mechanisms in networks: The case of franchising. Journal of Management and Governance.

Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Attachment. American Journal of Sociology (Sage) 481-510.

Grant, R. M. (1996). Towards a Knowledge Based Theory of the Firm. Strategic Management Journal 17: 109-122.

Gupta, A. K. and V. Govindarajan (2000). Knowledge flows within multinational corporations. Strategic Management Journal 21(4): 473-496.

Hackman, J. R., Oldham, G. R. (1980). Motivation Through The Design of Work: Test of a Theory. Reading: Addison-Wesley.

Hair, J. F. Jr., Black, W. C., Babin, B. J., Anderson, R. E. (2014). Multivariate Data Analysis. New Jersey: Pearson Education Inc.

Hansen, M. T. (1999). The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge Across Organization Subunits. Administrative Science Quarterly 44: 82-111.

Inemek, A., & Matthyssens, P. (2013). The Impact of Buyer–Supplier Relationships on Supplier Innovativeness: An Empirical Study in Cross-Border Supply Networks. Industrial Marketing Management 42 (4): 580-594.

Iwasa, T., Odagiri, H. (2004). Overseas R&D, Knowledge Sourcing and Patenting: an Empirical Studies of Japanese R&D Investment in The US. Research Policy 411-432.

Kaufmann, L., Roessing, S. (2005). Managing Conflict of Interest Between Headquarters and Their Subsidiaries Regarding Technology Transfer to Emerging Markets-A Framework. Journal of World Business 235-253.

Lane, P. J., Lubatkin, M. (1998). Relative Absorptive Capacity and Interorganizational Learning. Strategic Management Journal 461-477.

Levinthal, D. A., March, J. G. (1993). The Myopia of Learning. Strategic Management Journal 14: 95-112.

McGuinness, M., Demirbag, M., Bandara, S. 2013. Towards a Multi-perspective Model of Reverse Knowledge Transfer in Multinationa Enterprises: A Case Study of Coats PLC. European Management Journal (Elsevier) 31: 179-195.

Meyer, K., Mudambi, R., Narula, R. (2011). Multinational Enterprises and Local Contexts: The Opportunities and Challenges of Multiple Attachment. Journal of Management Studies 48 (2): 235-252.

Miles, I., Kastrinos, N., & Flanagan, K. N. D. Knowledge-Intensive Business Services: Users, Carriers and Sources of Innovation. PREST working paper . Manchester: PREST working paper . 1-117.

Minguela-Rata, B., Lopez-Sanchez, J. I., Rodriguez-Benavides, M. C. (2010). Knowledge Transfer Mechanism and The Peformance of Fanchise Systems: An Empirical Study. African Journal of Business Management 396-405.

Mudambi, R., & Navarra, P. (2004). Is Knowledge Power? Knowledge Flows, Subsidiary Power and Rent-Seeking within MNCs." Journal of International Business Studies 35 (5): 385-406.

Najafi-Tavani, Z., Giroud A., Andersson, U. (2014). The Interplay of Network Activities and Internal Knowledge Actions For Subsidiary Influence Within MNCs. Journal World of Business 4 (1): 122-131.

Najafi-Tavani, Z., Giroud, A., Sinkovics, R. R. (2012). Knowledge-Intensive Business Services: Does Dual Attachment Matter? The Service Industries Journal, 32(10), 1691-1705.

Nohria, N., Ghoshal, S. (1997). Differentiated Ft and Shared Values: Alternatives for Managing Headquarters-Subsidiary Relations. Strategic Management Journal 15: 491-502.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. Organization Science 5 (1): 14-35.

Nonaka, I., Takeuchi, H. (1995). The Knowledge Creating Company: How Japanese Companies Create The Dynamics of Innovation. New York: Oxford University Press.

Pataki, G. E., Madison G. H., Sinnon, G. C. (2002). Competencies: Report of the Competencies Workgroup, Workforce, and Succession Planning Work Groups. New York: New York State Governor;s Office of Employee Relation and the Department of Civil Service.

ICMEM

Persaud, A. (2005). Enchanching Synergistic Innovative Capability in Multinational Corporations: An Empirical Investigation. Journal of Product Innovation Management 412-429.

Rabbiosi, L. (2008). The Evolution of Reverse Knowledge Transfer within Multinational Corporations. Journal of World Business.

Rabbiosi, L. (2011). Subsidiary roles and reverse knowledge transfer: An Investigation of The Effects of Coordination Mechanisms. Journal of International Management 17(2):97-113.

Rabbiosi, L., Santangelo, G. D. (2013). Parent Company Benefits From Reverse Knowledge Transfer: The Role of The Liability of Newness in MNEs. Journal of World Business 160-170.

Reagans, R., Tortoriello, M., McEvily, B. (2012). Bridging The Knowledge Gap: The Influence of Strong Ties, Network Cohesion, and Network Range on The Transfer of Knowledge Between Organizational Units. Organization Science 1024-1039.

Roth, K., Morrison, A. (1992). Implementing Global Strategy: Characteristics of Global Subsidiary Mandates. Journal of International Business Studies 715-736.

Silveira, F. F., Sbragia, R., Lopez-Vega, H., Tell., F. (2016). Determinants of Reverse Knowledge Transfer For Emerging Market Multinationals: The Role of Complexity, Autonomy, and Attachment. Journal of Technology Management.

Szulanski, G. (1996). Exploring International Stickiness: Impediments to Transfer of Best-Pracice Within the Firm. Strategic Management Journal 27-43.

Tangirala, S., Ramanujam, R. (2008). Exploring Nonlinieirity in Employee Voice: The Effects of Personal Control and Organizational Identification. Academy of Management Journal 1189-1203.

Tsai, W. (2001). Knowledge Transfer in Inter-organisational Networks: Effects of Network Position and Absorptive Capacity on Business Unit Innovation and Performance. Academy of Management Journal 44 (5): 996-1004.

Tsai, W., Ghoshal, S. (1998). Social Capital and Value Creation: The Role of Intrafirm Networks. Academy of Management Journal 41: 464-476.

Weaven, S., Grace, D., Dant, R., Brown, J. R. (2014). Value Creation Through Knowledge Management in Franchising: A Multi-level Conceptual Framework. Journal of Services Marketing 97-104.

Yang, Q., Mudambi, R., Meyer, K. E. (2008). Conventional and Reverse Knowledge Flows in Multinational Corporations. Journal of Management 35 (5): 882-902.

INDUSTRY AND TECHNOLOGY

ICMEM   IBEC

ICMEM

The 3rd International Conference on Management in Emerging Markets

Six Sigma Approach to Fashion Small Medium Enterprise Lead Time Improvement

Nur Budi Mulyono[a], Rheyna Sinatrya[b*]

[a,b]*School of Business and Management, Bandung Institute of Technology, Jl. Ganesha no. 10, Bandung 40132, Indonesia*

Abstract

Six Sigma was initially from 1990s in manufacturing company for manufacturing and transactional processes. Six Sigma has proven successful in decreasing lead time, bring up customer satisfaction, and make profit significantly increasing. Commonly, Six Sigma method was only run by manufacturing in technology companies but now Six Sigma method can be used in manufacturing clothing company in fashion industry. In Indonesia, fashion small enterprise is currently growing very rapidly. Fashion small medium enterprise in Indonesia has a strong competitive level. Basically, problem fashion small medium enterprise related to efficiency, on time of production and delivery, and speed. In order to adjust the competitiveness level, company should elevate their competitiveness level by avoiding problem that relate to fashion SME. Fashion SME has 2 methods to produce its product with different quantities, both methods are make-to-stock and make-to-order. One of problem in fashion SME that used make-to-order method is varied production time. This paper discusses the implementation of lead time improvement in one of fashion SME that used make-to-order method. To improve lead time, researcher used Six Sigma method by using define, measure, analyze, improve, and control (DMAIC) to the critical process, bottleneck in business process can be identified and improved.

Keywords: Six Sigma, DMAIC, Fashion Small Medium Enterprise, Make-To-Order, Lead Time Improvement

---

1. Introduction

Six Sigma was initially from the 1990s in a manufacturing company for manufacturing and transactional processes. Six Sigma has proven successful in reducing costs, decreasing lead time, decreasing defects product, and bring up customer satisfaction. That advantage makes the company more profitable and makes profit significantly increasing (Tong & F., 2004). DMAIC is steps to do Six Sigma method to help from identifying the problem until make solution to solve the problem (Oakland, 2003). Beside that solution would impact in the implemented plan. DMAIC is also a statistical tool that makes Six Sigma method effective depends on defining, measuring, analysing, improving, and controlling the critical processes (Tong & F., 2004). Commonly, the Six Sigma method was only run by manufacturing in technology companies, but now Six Sigma method can be used in manufacturing clothing company, in fashion industry also fashion small medium enterprise.

The fashion industry in Indonesia is currently growing very rapidly. This fashion industry is a key driver of the creative economy in Indonesia (Xinhua, 2016). Based on data from Badan Ekonomi Kreatif, fashion products are the biggest contributor in exports in the creative industry with a total contribution of 61.13% of the total exports of creative industries (Zulaikha, 2016). From the data, it can be interpreted that currently in Indonesia, the fashion industry has a strong competitive level. Fashion industries related to efficiency, production and marketing functions, timeliness of production and delivery, speed, production capacity, and effectiveness of production (Effendi D., 2014). To adjust the competitiveness level, each company should elevate their competitiveness level by avoiding the problem that relates to fashion SME.

In fashion small medium enterprise and fashion industry both have two methods to produce its product with different quantities, both methods are make-to-stock and made-to-order. The use of a production system of MTO

---

* Corresponding author.

ICMEM

(Make-to-Order) and MTS (Make-to-Stock) is usually by the needs of the intended market. The production system of MTO and MTS is to ensure that the products produced can meet market needs. To meet the market needs, the production process is the factor that would affect to the lead time. Therefore the company should pay attention to the lead time (Rahman, 2017). In the fashion industry, especially clothing that performs production with both systems are dress, coats and suits, sportswear, etc.

One example of a fashion small medium enterprise that uses both of these production systems is Kamfee. Kamfee is one of the local brands in the fashion industry by offering sportswear products. Kamfee is one of the companies that use the production system of MTO and MTS. For MTS products, Kamfee already produces based on the calculation of demand through market research. As for MTO products, Kamfee produces when there is order entry. Based on customer preferences (Deeroy, 2012), the important things that influence people to make sports shirt or jersey are time completion, cost, quality, and flexibility. In the time category, there are points to develop a speed which means accelerating in the production process with the standard lead time in the company. Kamfee Company has not found a suitable lead time standard so that Kamfee must know the appropriate standard lead time for the MTO production system.

Varied lead time can be called as defects in the production process and to decrease the defects –to make it zero defect-- use method called Six Sigma. DMAIC is one of the methods in Six Sigma approach that could make zero defect. This is the most suitable method to solve the problems step because lead time can be identified as a defect in service quality. By using DMAIC step would be convenient to find the root cause of the problem and lead time can be improved.

2. Literature Review

Lean manufacturing is the best manufacturing system in the 21st century. Lean manufacturing can be implemented in Small Medium Enterprises (SMEs). There are 17 leans that feasible to implement in SMEs. Problems that occurred in SMEs are lack of capital and also resources. Usually, for the capital problem, only slightly people who want to invest in SMEs. SMEs also used Kanban and small lot sizes for their lean manufacturing, but Kanban and small lot sizes can be implemented if the production flow already efficient (Rose, Deros, Rahman, & Nordin, 2011).

According to Achanga et al. (2006), critical success factors for lean implementation in SMEs influenced by many factors. They also argue that SMEs are lack of capital to recruit ideal team what makes SMEs are lack of planning and leadership. What factors make SMEs not implementing productivity improvement strategy like lean manufacturing. There were correlations between management style and some outputs such as lead time, number of employees, and return on investment. The correlation is SMEs that managed by owner or stakeholders the lead time shorter than independent SME and also more profitable.

Beside using lean manufacturing for improving productivity in SMEs, Business Process Reengineering also can use to improving productivity. According to Denton & Hodgson (1997), SMEs has a unique identity and complexity to applied BPR in their system so that SMEs need consideration to apply BPR. BPR method focused on operational problems in the short term. Several SMEs that already used BPR their market share and turnover already increased by using BPR. But there is a thing that more important than BPR; it is identification shadow processes.

Six Sigma also can improve productivity in SMEs. Firstly, can Six Sigma be effectively implemented in SMEs? According to Dr Ronald Snee (2008), *"SMEs can, and have, effectively applied Six Sigma. Companies with 1 to 5 billion dollars in sales typically get 2 to 4 per cent of sales to the bottom-line each year using Six Sigma."* But there are issues for SMEs such as many distractions in running the business, difficult to dedicate six sigma black belts, and poor leadership. Dr Matthew Hu (2008) also said *"Six Sigma is very appropriate for smaller companies too. The Six Sigma process works well in a billion-dollar corporation as well as $25 million privately held companies. In fact, in my experience, the results are usually quicker and more visible in smaller companies."*

Six Sigma in SMEs appear and spread very quickly as the new wave of change in Six Sigma. In UK, SMEs which using Six Sigma is 16 from 60 SMEs, many of them using ISO 9000. They used DMAIC for an advanced method, and they also used DFSS. Six Sigma utilisation in SMEs (especially in UK) can influence their revenue up to £250.000. Average of the scoring scale of using Six Sigma in UK SMEs is 3,5 from 5. Utilization of Six Sigma in SMEs can increase in profitability, reducing operational cost, reducing in COPQ, and increasing in the production process.

ICMEM

Critical success factors from using Six Sigma method is the ability to integrate both tools and statistical technique also nonstatistical technique on DMAIC systematically (Antony, Madu, & Kumar, 2005).

According to Takao et al. (2017), this Six Sigma method is popular worldwide to solve the problem both in a big company and SMEs especially to improve the process. Six Sigma is a quality tool that is designed to reduce variability in processes, reduce cost, and increase customer satisfaction. One of Six Sigma step is DMAIC with market research in it as customer's voice. They also argue that company or SMEs which do not implement this method will fail in the market in within a few years.

To increase customer satisfaction, SMEs should know what customer needs by using VOC (voice of customers), one of the critical factor for the customer is lead time or production time. Researcher already found lead time reduction in SMEs but in the food industry. Lead time minimalisation is a quantitative measure in which focusing it through systematic data-driven approach will potentially improve the performance of an SME food. According to Arnheiter et al. (2005) by reducing lead time and achieving faster delivery, the company's competitiveness will be enhanced. It has been indicated that lead time, delivery time, and delivery on time are all important SCM steps because those measurements have impacts on quality. Based on Lamming (1996), it has been suggested that time is the most critical performance dimension for the distribution processes. According to Anthony (2006) reducing lead time and provide faster lead time as two customer value goals are considered when selecting a Six Sigma project. Reducing lead time in business is not only influenced to increase operational activity and to reduce the cost of poor quality but affect customer satisfaction in delivery performance.

Customize order for fashion is one of the service business. Lean Six Sigma for a service business is the best method for business improvement in reducing lead time (Nabhani, Farhad and Shokri, & Alireza, 2009). Researcher already found journal about reducing lead time in food SME and manufacturing SME. But researcher not yet found in fashion SME. This paper would give a solution for fashion SME in reducing lead time by using the Six Sigma method.

2. 1. DMAIC Framework

a. Define

The purpose of the define step on the DMAIC approach is to identify the stage to determine the subject matter, the objectives of the study, and the scope of the process. It is necessary for the data of customer needs so that it can be known the subject matter that must be researched, then the activity will be done along with the description of a process related to the process, and inspection of a product so that the next step is to determine what becomes Critical to Quality (CTQ) for customers.

b. Measure

Step measure is an operational step in Six Sigma quality improvement program. There are three main things to do in this phase: (1) selecting and determining key quality characteristics (CTQ) that are directly related to the specific needs of customers; (2) develop a data collection plan through measurements that can be made at the process, input, and output levels; (3) measuring performance at the process, input and output levels (Gaspersz, 2002).

c. Analyze

The objective of the analyse stage is to use data or information at the measurement stage to begin to determine causal relationships to the process and to understand the differences in variability. In other words, that at this stage, we will determine the ultimate cause of defects, quality problems, customer feedback, cycle times, and so forth (Gaspersz, 2002).

d. Improve

The improving phase aims to optimise the solutions offered will meet or exceed the project improvement objectives. In essence, the action plans will describe the allocation of resources and the priorities and alternatives to be implemented in the implementation of the plan. A form of supervision and efforts to study through data collection and analysis when implementation of a plan should also be planned at this stage (Gaspersz, 2002).

e. Control

Control is the last operational stage in a six sigma quality improvement project. At this stage the results of quality improvement are documented, good procedures are documented and standardised work guidelines, and ownership or responsibility is transferred to the process owner or responsible (Donald, Suzanne, & Elaine, 2003).

ICMEM

3. Methodology

3. 1.   Preliminary Study

First, this primary study Researcher using six sigma tool as the solution to the problem. Firstly, the preliminary study was for identified problem that occurs in Kamfee company. The researcher did a field observation and also interviewed stakeholders regarding the problem in Kamfee company. After the researcher did a field observation and interviewed, the researcher identified more about the problems and found out the most suitable method to solve the problems that occur in Kamfee company. The researcher did the literature review to found the method to solve the problem. The most suitable method to solve the problems is Six Sigma by using DMAIC step because lead time can be identified as a defect in service quality. By using DMAIC step would be convenient to find the root cause of the problem. There are five steps in Six Sigma; those are DMAIC (Define, Measure, Analysis, Improve, and Control). In this research, the researcher using those steps for this research. Define step there are problem identification, determine the research question, and literature review. Meanwhile, in Measure step, there is data collection. Analysis, the data from the company, is in the analysis step. The solution for the problem is in improvement step. The last step is controlled step to maintain the solution or the improvement step.

3. 2.   DMAIC Steps

Table 1 DMAIC and Tool Used in this Research

DMAIC and Tool used in this research		
DMAIC	**Phases**	**Tool Used**
D: Define Phase	• Identification of the problem that faced by Kamfee • Determining Critical to Quality	• Interview owners of Kamfee company • An online survey by spread questionnaire to loyal customers and potential customers
M: Measure Phase	• Calculating the losses • Business Process Mapping	• Data from company • Business Process model
A: Analyze Phase	• Analyze root causes • Analyze the process capability	• Current Reality Tree • Minitab – Process Capability Six Packs
I: Improvement Phase	• Define improvement strategy • Designing new business process	• Brainstorming • Business process model
C: Control Phase	• Determining strategic planning for evaluation • Controlling the improvement	• Plan Do Check Act

4. Six Sigma VS Lean Manufacturing

The differences between Six Sigma and Lean Manufacturing are divided into three key differences: Waste Classification, Focus, and Tools. Waste Classification for Six Sigma approach is variation meanwhile for Lean Manufacturing which belongs to waste non added value. Six Sigma Approach focuses on Problem while Lean Manufacturing focuses on process flow. Last is the Tools used, Six Sigma using statistical tools while Lean Manufacturing uses visual tools (Antony & Kumar, 2011).

Table 2 Benefits and Challenges of Six Sigma and Lean Manufacturing

Methodologies	Six Sigma	Lean Manufacturing
Benefits	Uniform process output	Cycle time reduction

ICMEM

	Defect reduction	Work in progress reduction
	Cost reduction	Cost reduction
	Productivity Improvement	Productivity Improvement
	Customer Satisfaction	Space Saving
	Market share growth	Less equipment needed
	Product/service development	Less human effort
Challenges	Long project duration	People issues
	Lack of specific speed tools	Process incapability and instability
	Processes are independently enhanced because system interactions are not considered	

Actually, according to Antony (2011), the two methods are similarly process-centric focused, both focus on business needs that have been described by the customer as they want, and both use the same multi-disciplinary to solve the problems that exist in the business.

But reducing Lead Time using the Six Sigma method has many advantages when the lead time has been improved. The advantages as mentioned in the table above. Companies can see reduced inventory cost, continuous inventory spinning, faster and more efficient production, less waste, less capital investment, improved customer relationship, improved customer satisfaction, improved quality, and increased profit continuously.

5. Findings and Argument

5. 1. Define

During the past one year, Kamfee experienced some obstacles in running its business. To do a business some people who work in it divided into several divisions, the divisions of the Kamfee company are marketing, operation, and finance. According to stakeholders of this company, problems that often occur is in the operational division. Problems that occur in the operational division is started from raw material, defect product, until late in delivery to the customer. These problems must be resolved immediately because they affect many things and cause great harm to the company. According to stakeholders, the big problems are:
- Difficult to find cheap raw material and by company value
- Many products are defective and not by the order
- Late in delivery to the customer
- The gap between promised time and finished time
- Design that is not by the order (such as design, change colour after passing through the print and press process)

From the five problems above, the researchers chose two problems that must be resolved because it has a great influence on this business journey and also affects customer satisfaction. Both problems are related to each other; the problems are late in delivery the products to the customer and the gap between promised time and finished time. Delayed finished time is resulting in late delivery.

5. 2. Measure

At this measuring step, the researcher did the calculation of problem that solved by Six Sigma tools. Researcher saw from losses incurred by Kamfee company based on time delay. Beside calculated the losses, the researcher also calculated the production time in the business process to finish an order.

Kamfee's founders, the company is applying a letter of agreement with the customer to ensure the customer feel safe and comfortable when ordering customise sportswear. On the agreement is written a payment agreement from the customer and also the completion of orders from the company. Each agreement has a different penalty, by the late delivery of each order. For 1-3 days of delay, the customer only pays 90% of what should be paid, for 4-6 days of

delay, the customer pays only 80% of what is supposed to be paid, as well as next (every 3-day dropped 10%). So far, Kamfee did not take big profit on every order because customer's preferences cost of making customized clothes is not too expensive. Repeated delays have resulted in substantial losses because Kamfee did not get any benefit from any incoming orders. What that also resulted in Kamfee is not being able to pay salaries to the employees.

Table 3 Data of Kamfee's Order

Order Number	Promised Time	Product Delivered	Total Payment		
			Penalty	Total Price	Loss
1	11-Nov-17	13-Nov-17	2 days	Rp 3.185.000	Rp 2.866.500	Rp 318.500
2	08-Feb-18	03-Feb-18	-	-	-	-
3	27-Jan-18	01-Feb-18	4 days	Rp 5.500.000	Rp 4.400.000	Rp 1.100.000
4	12-Mar-18	10-Mar-18	-	-	-	-
5	27-Mar-18	31-Mar-18	5 days	Rp 1.750.000	Rp 1.575.000	Rp 175.000

In addition to calculating the losses, Kamfee also provides data on the business process and also the lead time for each process. The business process of the Kamfee company is similar to the other business process in fashion businesses that apply the Make-To-Order system, starting from the purchase of raw materials until finished goods ready to be shipped to the customer.
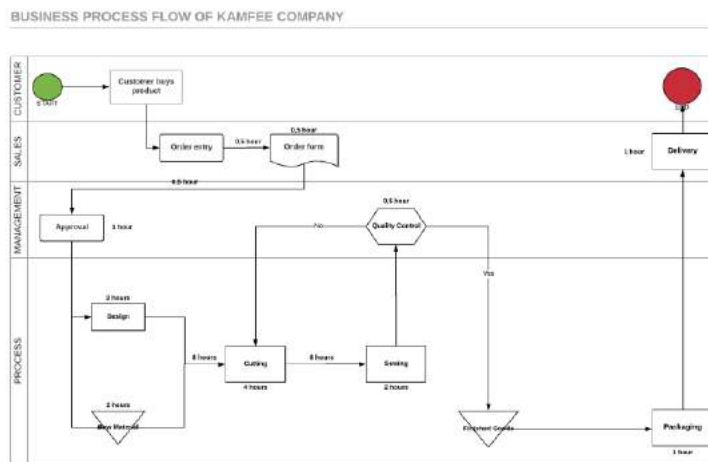
Figure 1 Business Process of Kamfee Company

*business process for processing 12 pieces or a dozen sport-shirt without printing and pressing process

5. 3.   Analyze

Within seven months, Kamfee only gets seven orders of make-to-order. Previously Kamfee only received orders from products that are ready stock. There are some things that prompted Kamfee to accept the order in make-to-order, so Kamfee decided to take orders custom or make-to-order. The data below is obtained from the number of incoming orders, the time from start of order entry until the goods are sent to the customer. Here is the data of the average lead time for each piece:

ICMEM

Table 4 Lead Time of Each Order

Order	Quantity of Orders	Total Lead Time	Average Time (in days)	Average Time (in hours)
A	49 pcs	17 days	0,346938776	8,3265306
B	22 pcs	11 days	0,5	12
C	16 pcs	17 days	1,0625	25,5
D	20 pcs	8 days	0,4	9,6
E	25 pcs	16 days	0,64	15,36
F	36 pcs	17 days	0,472222222	11,333333
G	36 pcs	16 days	0,444444444	10,666667

From the data above, to get the Average Time each sportswear is by dividing Total Lead Time with Quantity of Orders. Initially, the unit of Average Lead Time on the last day to be more specific again using clock units. After getting the average lead time data the next step is the test for the distribution of the data is normal or not.

1. Normality test
   a. Before
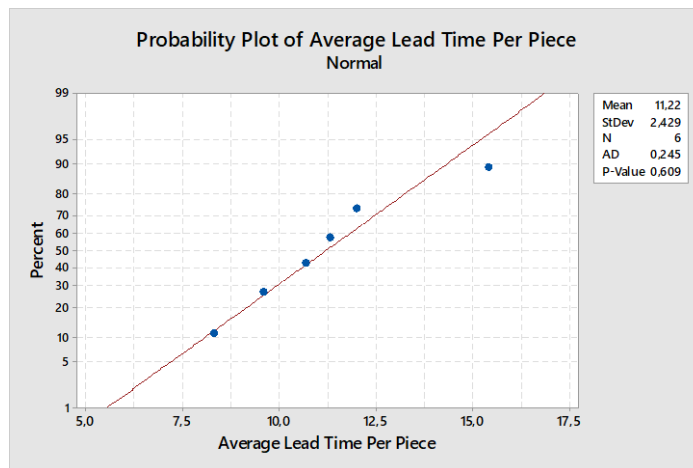
Figure 2 Normality Test of Average Lead Time

After doing the Normality Test of the average lead time data, in the graph can be as above. From the chart above can see that there is an outlier. The outlier is there because there is an order that spends 25.5 hours for one piece of sportswear. 1 data that makes the distribution of average lead time data becomes not normally distributed. The thing that causes the problem to happen is the sick tailor, so it does not come to work for a few days so much work is pending.

ICMEM
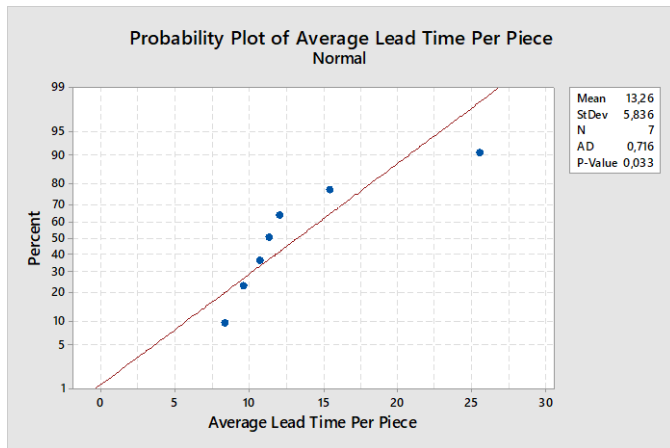
b. After

Figure 3 Normality Test after Eliminated Outlier Data

The graph above is a graph of the average lead time data that has eliminated the outlier data so that the graph obtained as above. From the graph above we can see that data is normally distributed. The Outlier is omitted because it is unnatural lead time and beyond normal limits.

2. Capability Six Pack

The following is the result of a six pack capability calculation for the average lead time data that has omitted the outlier data from the initial data. The company has made the standard total lead time for one pc sportswear maximum 12 hours (with a working time 8 hours per day) and a minimum of 0 hours. Standard lead time is a tolerable time and no complaints from the customer to work on one pc sportswear for total lead time.
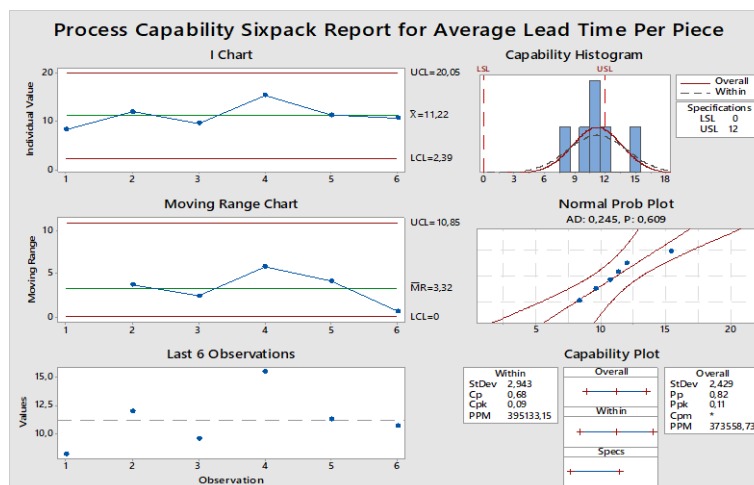
Figure 4 Process Capability Six Pack

The above five graphs are the result of a process capability six packet report for average lead time. Of the 5 data can be interpreted as follows:

- I Chart

    In this chart, the points vary randomly around the centre line and are within the control limits. There is no trends or patterns are present. The processing centre is stable enough to perform capability analysis.

ICMEM

- MR Chart

  In these results, the points vary randomly around the centre line and are within the control limits. No trends or patterns are present. The variation of the process is stable enough to perform capability analysis.

- Last six observation

  On this chart, the points are scattered away from the middle value of 12. That means the process of making this sportswear is not capable. These points should be at the midpoint or near the midpoint.

- Capability histogram

  In these results, the process data appear fairly centred between the specification limits. However, the process spread is larger than the specification spread, which suggests poor capability. Although most of the data are within the specification limits, there are nonconforming parts below the lower specification limit (LSL) and above the upper specification limit (USL).

- Normal Probability Plot

  AD: 0,245

  P: 0,609

  P-Value> 0.05 then the data is normally distributed. In addition to viewing p-value, it can also be seen from the distribution of data in the midline. From the graph above, the data is scattered in the midline area which means the data is normally distributed.

- Capability plot

  Cpk : 0,09

  Cpk <1 denotes an inefficient process (according to Henderson Six Sigma Quality Improvement with Minitab page 208).

  PPM: 395.133,15

  When the company performs 1 million times of sportswear production, about 395 thousand of the 1 million will be flawed (not completed on time).

In conclusion, the process in making the sportswear is not capable, and the company needs to take corrective actions by modifying the process so that the average of the data is close to the middle or equivalent to 12.

To find the root cause of the problem at Kamfee company, researchers find out by using root cause analysis through the current reality tree as a tool. By using root cause analysis, it becomes easier to find the root of the problems that must be solved based on the urgency and the loss. Root cause analysis from Kamfee company is as follows:
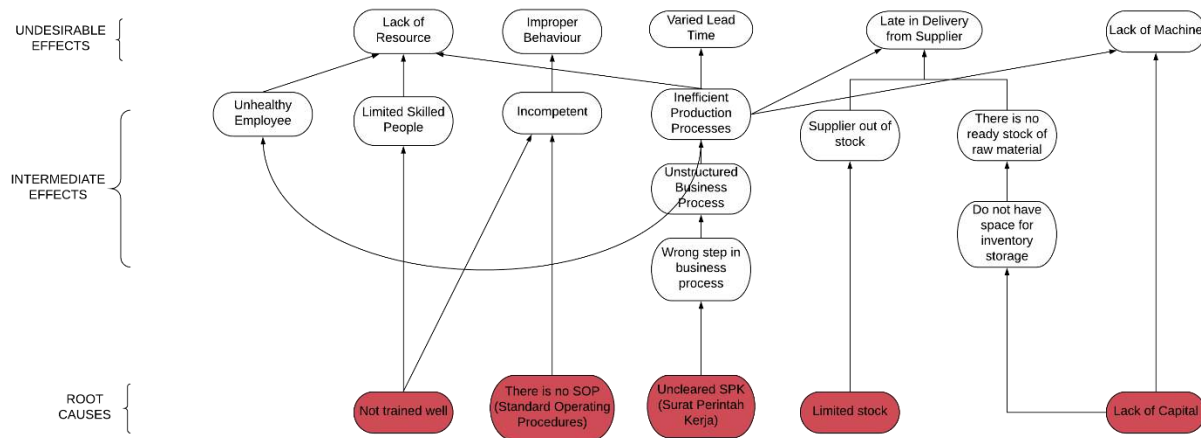
Figure 5 Current Reality Tree for Root Cause Analysis

Based on the root cause analysis above, there is five root cause that affects the business process of Kamfee company is not capable and make a late delivery to the customer. Before found the root cause, the researcher found undesirable effects that is unexpected things or problem that occur in the company. Undesirable effects viewed from a very visible

problem or problems that occurred on the surface. There is lack of resource, improper behaviour of the employee, varied lead time, late in delivery from suppliers, and lack of machine. Those problems make a big effect on the business process. One of the huge problems is the inefficient production process because it can be caused by many problems, those are an unhealthy employee, lack of resource, late in delivery from suppliers, and lack of machine. The researcher found root causes after made undesirable effects. There is an employee not trained well, there was no cleared SOP, uncleared SPK (Surat Perintah Kerja) from management, limited stock of raw materials, and lack of capital.

After analysed by using current reality tree from Late Delivery problem, researcher got the source of the problem is in Varied Lead Time point. Varied Lead Time is a problem that contributes to the biggest points that result in Late Delivery. Before the researcher provides solutions to the problem, the researcher analysed factors that make varied lead time occur. These factors are:

- Kamfee only has two tailors. One person from the tailor is the one who cut the material and shaping the fabrics into a shirt-shape.
- The waiting time from one process to another takes a long time. The range of waiting time from one process to another process takes about a day.
- The sewing machine does not work unexpectedly
- When fabrics and other raw materials run out must wait until the raw material is restocked. Kamfee uses fabrics that are not widely available in the general market.
- The problem is not only from internal, but there is another external factor that causes late delivery of orders. Another external factor is Kamfee doing *makloon* on printing and press process and its causing delays because the place that does both processes are working for another order.

5. 4.   Improvement

In this improvement step is a step that provides solutions to the problem of varied lead time. Researchers also look at the factors that make varied lead time as mentioned in the analysis step. Researchers provide two types of solutions on the problem of varied lead time, the first solution is to improve the business process from Kamfee company and the second solution is to provide solutions of the root of the problem that leads to varied lead time. This following is a business process that already improved by the researcher:
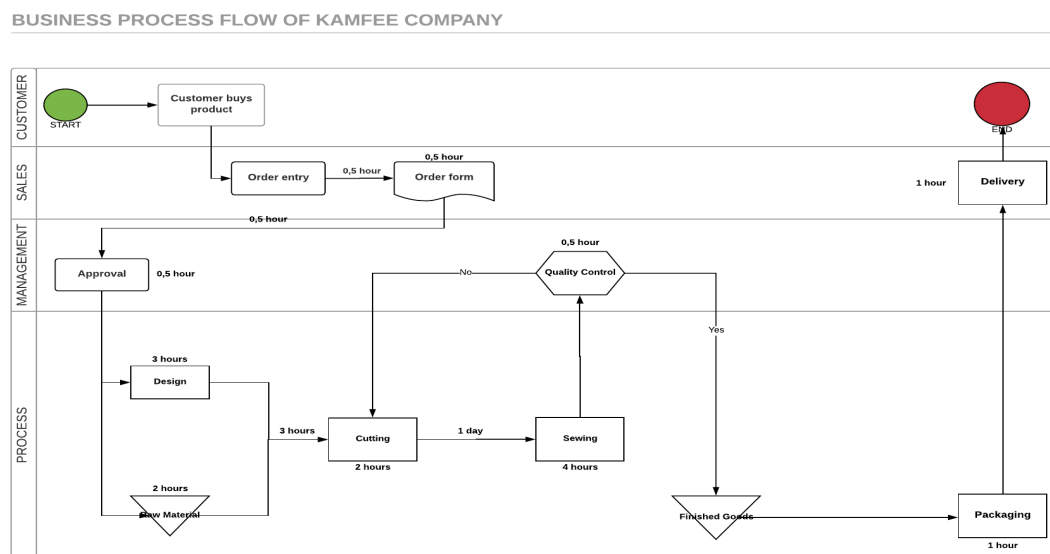
Figure 6 Business Process Improvement

ICMEM

As for second solution is to provide solutions of root problem that leads to varied lead time. The researcher proposes some of the solutions. Those solutions are:

- Recruit a new employee especially to cut the material and to shape the fabrics and outsource for a tailor who has his sewing machine
- Decreasing waiting time to be effective by improving non-bottleneck resources and processing in batches
- Maintain the sewing machine by check up every month while there is no order entry
- Searching new supplier who sell similar fabric with Kamfee's fabric or searching for new fabrics but still concerned about Kamfee's value
- Must have many vendor options to do printing and press process to adjust the company's production schedule

5. 5.   Control

The last step in the Six Sigma method is controlling. In the controlling step, the researcher made a maintaining plan to maintain the improved process so that the problems do not recur in the future. The things that should be controlled are the machines to keep functioning properly, making SOPs for employees, maintaining lead-time improvements, maintaining relationships with suppliers and vendors. Also, it must maintain an improved business process. In this controlling step also doing PDAC (Plan, Do, Act, and Control). Planning about the improvement, when will company implementing the improvement, who will be responsible or be a PIC for controlling in implementing existing solutions or improvements, and what parts should be maintained well. After that stage "Do" is implemented by doing what has been planned. Implement the previously prepared plan and monitor the implementation process. Monitor by the time set by the leader, who the PIC for controlling, and manage the journey of the controlling process. The next stage of "Doing" is implemented by evaluating the results of the improvement. At this stage must evaluate the changes or make up the controlling process that is being done. The next stage is "Controlling", at this stage, there is a process of providing suggestions for the results of the evaluation conducted in the previous stage. In this process also re-standardised the process and prepare for further improvements. And keep repeating these four stages to maintain the process to match the standard and get the best results.

6. Discussion and Results

Six Sigma is the best tools for reducing variability in processes and also increase sales and revenue (Takao, Woldt, & da Silva, 2017). From results, the researcher also found Six Sigma is easy to use by SMEs worldwide and easy to apply. Also, by using Six Sigma sales will always increase because the company know what customer need and want and can reduce the cost also variability in the process. With the existing stages of Six Sigma, SMEs which using this tool will be easier when they get into trouble so they can be quickly prevented and not repeated the same problem. In DMAIC step there is step controlling that do supervision and improve continuously for a company still give best to the customer.

7. Conclusion

Kamfee is one of the small medium enterprises that use make-to-stock and make-to-order production systems. The problem faced by Kamfee is often late in delivering products to customers. To solve the problem, the researcher used Six Sigma methods with DMAIC steps. Before finding the problem, the researcher identified the problem with interviewed stakeholder from Kamfee company. According to stakeholders of this company, problems that often occur is in the operational division. Problems that occur in the operational division is started from raw material, defect product, until late in delivery to the customer. After identifying the existing problems, the biggest problem of Kamfee company is late delivering the product to the customer. That problem must be solved immediately because it affects many things and causes great harm to the company. Kamfee always makes an agreement with customers regarding the order that contains payment time, completion time, and penalties. Also, the researcher also identified the business

ICMEM

process of the Kamfee company to search for the problematic process. After calculating the loss and production time of the business process, the next step is to analyze the root cause of late delivery problems. The root cause of the problem is the varied lead time that is affect the delivery time. Varied lead time is also influenced by several other factors such as employees, broken machines, and external problems. Finally, the researcher found root problems that must be improved such as recruiting a new employee, maintaining machine every month, and improving relationships with external. Also, researchers provide solutions for the business process to have a standard lead time.

8. Managerial Implocation

The managerial implications of the discussion and analysis results in research on "Lead Time Improvement through Six Sigma Approach to Fashion Small Medium Enterprise" are expected to be useful to similar parties especially for producers who create custom sports shirts and other sportswear. Where the implications in this study are as follows:

From the findings of this research, the researcher found that in terms of ordering custom shirts, shirts must be in accordance with the customer's wishes starting from materials, fabrics, price, quality, design, other small details such as the colour of sewing yarn, zipper (if using), to production time (based on Voice of Customer). So this research has implication for manufacturers other than Kamfee companies who also produce custom sports shirts that materials, price, fabrics, quality, design, and other small details, as well as production time, have an important role in customer decision making to make custom sports shirts. So in producing sports shirts, companies must pay attention to these things and must know what the main preference for customers. By knowing the main preference for the customer there will be increased customer satisfaction and also the demand.

Reference

Achanga, P., Shehab , E., Roy, R., & Nelder, G. (2006). The International Journal of Manufacturing Technology Management . *Critical Success Factors for Lean Implementation within SMEs* , 460-471.

Ahyari, A. (2002). *Manajemen Produksi Perencanaan Sistem Produksi Buku 1.* Yogyakarta: BPFE UGM.

Antony, J., Madu, C. N., & Kumar, M. (2005). International Journal of Quality and Reliability Management . *Six sigma in small- and medium-sized UK manufacturing enterprises: Some empirical observations* , 860-874.

Banaszewska, A., Cruijssen, F., Dullaert, W., & Gerdessen, J. C. (2012). Int. J. Production Economics. *A Framework for Measuring Efficiency Levels: The Case of Express Depots*, 484-495.

Brun, A., & Margherita, P. (2012). Int. J. Production Economics. *Measuring Variety Reduction Along The Supply Chain: The Variety Gap Model*, 510-524.

D., S. E. (2014, Oktober 24). *Ekonomi Kreatif: Permasalahan, Tantangan, dan Prospeknya.* Retrieved from Opinion: Universitas Muhammadiyah Malang: http://www.umm.ac.id/en/opini/ekonomi-kreatif-permasalahan-tantangan-dan-prospeknya.html

Denton, P. D., & Hodgson, A. (1997). *Impementing Strategy LED BPR in a Small Manufacturing Company*, 1-8.

Joonas, R. (2012). *Lead Time Terminology in Manufacturing*. Retrieved from leadtime: leadtimes.org

Kumar, S. A., & Suresh, N. (2008). *Production and Operations Management.* New Delhi: New Age International Publishers.

Lin, R., & Liao, C.-J. (2012). Int. J. Production Economics. *A Case Study of Batch Scheduling for an Assembly Shop*, 473-483.

Loannou, G., & Dimitriou, S. (2012). Int. J. Production Economics. *Lead Time Estimation in MRP/ERP for Make-To-Order Manufacturing Systems*, 551-563.

Mast, J. d., & Lokkerbol, J. (2012). Int. J. Production Economics. *An Analysis of the Six Sigma DMAIC Method from the Perspective of Problem Solving*, 604-616.

Mfwaya, J. L. (2013). Lead Time Management and Customer Satisfaction in the Telecommunication Industy in Kenya. 9-11.

Munawaroh, M., Rimiyati, H., & Fajarwati. (2016). Kewirausahaan untuk Program Strata 1. *Kreativitas dan Inovasi*, 40.

Nabhani, Farhad and Shokri, & Alireza. (2009). Journal of Manufacturing Technology Management. *Reducing the delivery lead time in a food distribution SME through the implementation of six sigma methodology*, 957-974.

Pandey, A. (2011, May 2). *Clasification of Fashion.* Retrieved from Slide Share - Linkedin: https://www.slideshare.net/amitfddi/classification-of-fashion

Rahman, A. (2017, May 15). *Sistem Produksi dan Jenisnya.* Retrieved from Universitas Brawijaya: http://arifindustri.lecture.ub.ac.id/opinions/op-sisprod/2

ICMEM

Rose, Deros, Rahman, & Nordin. (2011). Lean manufacturing best practices in SMEs. 872-877.

Setiawati, F. (2014). Analisis Pengendalian Proses Produksi untuk Meningkatkan Kualitas Produksi. 10-11.

Takao, M. R., Woldt, J., & da Silva, I. B. (2017). Advances in Mechanical Engineering. *Six Sigma methodology advantages for small- and medium-sized enterprises: A case study in the plumbing industry in the United States*, 1-10.

Tatsiopaulos, I. P., Hadzilias, E. A., Panayiotou, N. A., & Ponis, S. T. (2002). *Business Process Improvement for E-transaction of the Apparel Industry 2000*.

Tong, J., & F. T. (2004). A DMAIC Approach To Printed Circuit Board Quality Improvement.

Waddell, G. (2004). How Fashion Works: Couture, Ready-to-Wear and Mass Production. In G. Waddell, *How Fashion Works: Couture, Ready-to-Wear and Mass Production* (pp. 1-49). Oxford: Blackwell.

Xinhua. (2016, 10 27). *Fashion Industry Becomes Major Driver in Indonesia's Creative Economy*. Retrieved from Global Times: http://www.globaltimes.cn/content/1014330.shtml

Xu, H., Liu, Z. Z., & Zhang, S. H. (2012). Int. J. Production Economics. *A Strategic Analysis of Dual-Chanel Supply Chain Design with Price and Delivery Lead Time Considerations*, 654-663.

Zuhri, T. W. (2015). *Pantangan dalam Bisnis.* Jakarta: PT Gramedia Pustaka Utama.

Zulaikha, M. (2016, 11 16). *Membangun Komitmen untuk Sektor Ekonomi Kreatif*. Retrieved from BEKRAF - Badan Ekonomi Kreatif: http://www.bekraf.go.id/berita/page/10/membangun-komitmen-untuk-sektor-ekonomi-kreatif

ICMEM

The 3rd International Conference on Management in Emerging Markets

Audit for Effectiveness & Efficiency Principle in Good University Governance Focused on Alignment between Strategy Business with IT

Djoko C.U. Lieharyani[a*], R.V. Hari Ginardi[b], Rita Ambarwati[c]

[a,b]Institut Teknologi Sepuluh Nopember, Jl. Cokroaminoto No. 12 A, Surabaya and 60264, Indonesia
[c] Universitas Muhammadiyah Sidoarjo, Jl. Mojopahit, Sidoarjo and 61271, Indonesia

Abstract

Business Strategy and governance are key to run the business efficiently and efficiently. Governance in higher education can't equated with companies that issue on profit. The purpose of this research is to get the IT Process on the effectiveness & efficiency principle in GUG also recommendation for improvement from audit result which focus on alignment between business strategy and IT. This study was conducted based on theoretical exploration in literature review with help from expert who had experience with COBIT 5. The implication of this research is universities can use the assessment which is conducted to know the level of effectiveness & efficiency principle based on GUG and the appropriate recommendations to improve the level of effectiveness & efficiency principle in aligning business strategy with IT. The originality of this research is the combination of COBIT 5 with GUG which focuses for align of business strategy with IT on effectiveness & efficiency principle, to know the level of the principle at the university and the recommendation that needs if there is a gap.

Keywords: GUG; COBIT 5; Governance; Business Strategy; IT Governance; IT Audit

1. Introduction

Business strategies are policies and guidelines that define how a company competes in an industry (Craig & Grant, 1993). The strategic objective of the bank is to retain and consider the operational costs incurred (Ambarwati et al., 2014). Like in the banking sector, any organization must require consideration of operational costs, but in terms of IT operational costs that should be lower it may even become enlarged. this can be due to incompatibility between IT implementation with the needs of the organization (Fuad et al., 2010). IT that should be give benefit may cause other effect that didn't anticipate before because of this (such as: maintenance cost). This was some of few reason why organization need IT governance.

Good University Governance (GUG) is a derivative concept of Good Governance that focuses on higher education (university) governance. The university as the organizer of higher education and as the center of science and technology development is expected to increase its role in promoting and accelerating national development. Today almost all organizations use IT to support their business processes, as well as higher education. The two main IT Governance issues are: how IT can deliver sufficient value to the business and how existing and emerging risks of IT existence can be managed (CISA, 2010). The governance in higher education is different from the corporation, this is because the core values in terms of academic and social, both of these values value must be preserved in higher education (Nugroho & Surendro, 2013). Another different between corporation and higher education is competitiveness of the higher education system does not determine profit of any particular organization, but targets at

---

* Corresponding author.
  E-mail address: djoko.c.utomo@gmail.com

ICMEM

developing knowledge as a basis for the creation of new knowledge, development of exclusive competencies (Stonkiene, Matkeviciene, & Vaiginiene, 2016).

IT governance in higher education is essential because educational providers need to manage massive amount and diverse data (Yusuf, Ginardi, & Arieshanti, 2012). This is also demonstrated in a study reviewing IT governance at Australian universities. The research shows that university evolution leads to many IT related problems such as resource duplication, difficulties in achieving institutional alignment with strategic business objectives, and unmanaged IT risk (Hicks, Pervan, & Perrin, 2012). There is a framework that can assist in designing or analyzing IT governance in an organization or company called COBIT 5. Control Objective for Information & Related Technology (COBIT) 5 is a framework based on many best practices, and the latest version is COBIT 5.0 (ISACA, 2012). There also a research show that COBIT 5 can be integrated with higher education (Nugroho, 2014). Some of the previous research is the basis of researchers to take research related to IT governance in Higher education using COBIT 5 framework.

The objective of this study is to make an assessment for finding out the level and percentage of effectiveness & efficiency principle based on GUG and the appropriate recommendations to improve the level of effectiveness & efficiency principle in aligning business strategy with IT using COBIT 5 Framework.

2. Literature Review

2.1 Good University Governance (GUG)

GUG is a derived concept from GG (good Governance) that based on a conviction that a system placing sovereignty in the hands of people is more likely to invest in people, channeling public resources to basic education, health care and social services (Kardos, 2012). A well-known concept that is a derivative of GG is a company-focused that called GCG (Good Company Governance). GCG and GUG is different because the average company focuses on gaining profit while higher education focuses on improving education which can consider as non-profit. This also support by the research that stated governance in higher education is different from the corporation, this is because the core values in terms of academic and social, both of these values value must be preserved in higher education (Nugroho & Surendro, 2013). The first understanding of GUG is found by Clark which emphasizes how to define goals, implement them, manage institutions, and monitor achievement in universities and higher education systems (Ben-David & Clark, 1984). The broader and often used definition of university governance begins with an interesting attraction between the three main elements of governance: the state, the business community, and civil society (Ben-David & Clark, 1984).

The university also need to take on an entrepreneurial role, especially on the university that use conservative system of higher education based on out-of-date methods (Rudenko, Pogodaeva, & Golubev, 2017). Many university in Indonesia still use out of date method that make them not ready in IT era, this make university need governance for their self-management in this era. In Indonesia the basic concept of GUG is arranged in law that regulate about higher education. From this law there is 5 principle that is accountability, transparency, nonprofit, effectiveness & efficiency, and quality assurance (Indonesia, 2012)

2.2 COBIT 5

Control Objective for Information & Related Technology (COBIT) 5 is framework that give a very board view from governance to management for manage Information Technology (IT) in organization / institution (ISACA, 2012). COBIT 5 created based by 5 principles to help organizations to achieve business goals in governance and IT management. It can help the organization to create an optimum profit of IT by keeping up the harmony in the middle of understanding benefits, minimizing risk levels and utilizing existing assets. COBIT 5 made IT to organized and holistically managed by the entire company, using full end-to-end business, is responsible for IT functional areas, and takes into account the relevant IT interests of both internal and external stakeholders. COBIT 5 have dimension of capabilities that provide a measure of a process's capability to meet an organization goals for the process. The process

ICMEM

capability is expressed in terms of process attributes, grouped into 6 capability levels which the lowest is at level 0 and the highest is at level 5 (ISACA, 2013).

COBIT 5 used for this research because COBIT 5 is generic and useful for organizations of all sizes whether for commercial, non-profit business or the public sector (ISACA, 2012), so in here can be concluded that COBIT 5 is a framework that suitable for conducting IT audit on higher education. There also a research show that COBIT 5 can be applied to higher education sector based on the 7 enablers in COBIT 5 (Nugroho & Surendro, 2013). This was the reason why researcher used COBIT 5 as the framework for this research.

2.3 Effectiveness & Efficiency Principle

There are 5 principles that become pillars for management of universities, namely accountability, transparency, nonprofit, quality assurance, effectiveness & efficiency (Indonesia, 2012). This research will focus on the principle effectiveness & efficiency. Principle of Effectiveness & Efficiency are systemic activities to utilize resources in the implementation of Higher Education to be on target and not wasteful (Indonesia, 2012). There is also a research which shows that to enhance the knowledge sharing by faculty members managers should allow the freedom of the individuals to execute their tasks in specific ways and make less rigid rules (Yasir & Majid, 2017), this accordance with the purpose of effectiveness and efficiency principle in GUG.

Effectiveness & efficiency principle chosen because to achieving goals organization must first set goals and at the processing must conducted in the most fast, better, and useful way. There was research shows the most effective IT process in COBIT 5. The effectiveness of the COBIT process 5 is defined as the extent to which the process contributes to the realization of IT-related business objectives and targets relative to other processes (Bartens et. al., 2015). This research by Bartens has same common with the explanation of Law about higher education in Indonesia that is intended to realize the goals of the organization. Based on this researcher used the 10 most effective IT processes based on the Bartens research shown in Table 1 below.

Table 5. list of effective IT processes on Bartens's research

Code	IT Process
APO02	*Manage Strategy*
BAI02	*Manage Requirements Definition*
BAI01	*Manage Programmes and Projects*
APO05	*Manage Portfolio*
BAI05	*Manage Organisational Change Enablement*
EDM02	*Ensure Benefits Delivery*
EDM01	*Ensure Governance Framework Setting and Maintenance*
MEA01	*Monitor, Evaluate and Assess Performance and Conformance*
EDM03	*Ensure Risk Optimisation*
BAI03	*Manage Solutions Identification and Build*

3. Methodology

This research first conducted a literature study related to GUG and COBIT 5. Then chose place for case study that associated with this research (case study in here use one of polytechnic in Indonesia). The case study polytechnic was chosen because the evaluation result was accordance with the purpose of this study. The evaluation was stated that the case study polytechnic need to implement GUG. From here then the researcher starts an analysis to identify the domain and IT process, this research focus on stakeholder needs about "How can I best exploit new technology for new strategic opportunities". The research was focus on this because the results of the initial interviews that have been done before. After the mapping of COBIT 5 was conduct, then it was found that the focus of research was on IT related goal 1 "Alignment of IT and business strategy". There is 10 IT process that related to the IT related goal alignment of IT and business strategy in COBIT 5. Table 2 shows the result of 10 IT process that was found for alignment of IT and business strategy in COBIT 5.The next step is to made adjustments to the results of the mapping of the Bartens because the focus of this research is for Effectiveness & Efficiency Principle. The adjustments here is done by taking the IT proses which both of the mapping with COBIT 5 and Bartens have. The result shows at the Table 3.

ICMEM

Table 6. IT Process for Alignment of IT and Business Strategy

Code	IT Process
EDM01	Ensure Governance Framework Setting and Maintenance
EDM02	Ensure Benefits Delivery
APO01	Manage the IT Management Framework
APO02	Manage Strategy
APO03	Manage Enterprise Architecture
APO05	Manage Portfolio
APO07	Manage Human Resources
APO08	Manage Relationships
BAI01	Manage Programmes and Projects
BAI02	Manage Requirements Definition

Table 7. Final IT Process That Used for Assessment

Code	IT Process
EDM01	Ensure Governance Framework Setting and Maintenance
EDM02	Ensure Benefits Delivery
APO02	Manage Strategy
APO05	Manage Portfolio
BAI01	Manage Programmes and Projects
BAI02	Manage Requirements Definition

From the results then an assessment is conducted for each IT process that obtain, which in this research is used in the case study case that described earlier. First in here needs to determine the level expected in the future (To-Be), To determine the expected level, researcher conduct interview and discussion with the expert. From the results from interview and discussion with expert. The expert in here are people who have experience in COBIT 5 and also lecturer who are responsible for the audit course. From the interview and discussion result the Effectiveness & Efficiency Principle is at level 4 on COBIT 5 which is "At the company level has been running the IT process within the definite limits, that was defining the limit to achieve the results of the process". This process was level 4 because in its explanation Effectiveness & efficiency principle is empowerment for all components of the Society through participation in the implementation and quality control in Higher Education services which means there is planning and measurement to know what the limit needed. After the level expected (To-Be) then researcher start the assessment to find out the current capability level (As-Is) for each IT process. Literature is used as a reference for conducting this audit process (ISACA, 2013).

From these results then an analysis is conducted to find out the percentage of GUG for effectiveness & efficiency principle. This result is calculated using the weighted mean method, where the weighted value is based on the COBIT 5 rating scale. There is 4 rating scale for COBIT 5 which is N (Not Achieved), P (Partially Achieved), L (Largely Achieved), F (Fully Achieved). The weight of the value for N is 1, after that P scale is 2, then the scale L is 3 and the last F is 4 (Dharmawan et. al., 2016). The weighted means formula is shown in Equations 1 below.

$$X_n = \frac{\sum_{i=1}^{n}(X_i * W_i)}{\sum_{i=1}^{n}(X_i * W_{max})} \tag{1}$$

Information:
X_n	= weighted mean result of the dataset
n	= total amount of data in the dataset
i	= increment, start from 1
X_i	= data started from I in the dataset
W_i	= Weight data for I
W_{max}	= Maximum Weight (in here Maximum Weight is 4)

Then used mean method to calculate the total average implementation. Means is used to get the average percentage for each IT process that calculate from the result of weighted means. Formula for calculate means show at the Equations 2. Once the result is obtained then compared the results of effectiveness & efficiency principle implementation with the expected level. This is to find out the gap of effectiveness & efficiency principle from the assessment result with the expected level. From the result then prepared the recommendations needed for the improvement needed to achieve the expected level.

$$X_n = \frac{\sum_{i=1}^{n} x_i}{n} \qquad (2)$$

Information:
- X_n = mean result of the dataset
- n = total amount of data in the dataset
- i = increment, start from 1
- X_i = data started from I in the dataset

4. Findings and Argument

The assessment in here is to find out the level of each IT process that has been mapping before. The result found that almost all of IT process at the case study that chosen was at level 1 and there was 1 IT process is still level 0. Level 1 according to COBIT 5 means the company / organization has implemented the IT process and determine whether IT goals have been achieved or not (ISACA, 2012). The results this analysis is shown in **Appendix A-Assessment Result**. The result shows that the entire IT process has a large gap that was 3 except for EDM 01 which has a gap level of 4. From here then a radar chart (spider chart) is created to visualize current and expected future capability levels (As-Is). This is shown in Figure 1.
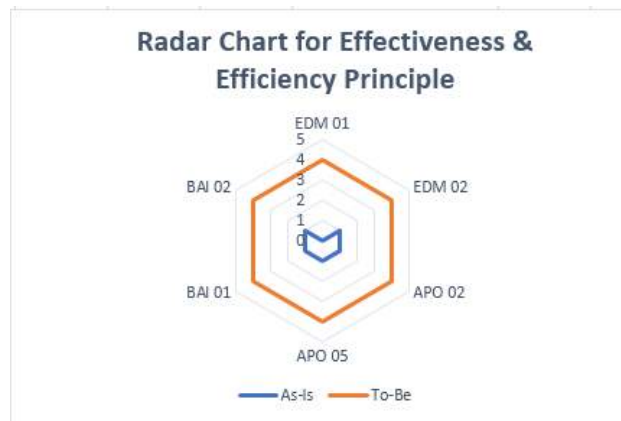
Figure 7. Capability Level As-Is & To-Be in Radar / Spider Chart

Result of the assessment then analyzed to get percentage of implementation of GUG for effectiveness & efficiency principle. To calculate GUG Implementation researcher were use weighted mean method that shows at Equations 1 and for the average GUG implementation, it is used the formula means shown in Equations 2. The implementation result of GUG for effectiveness & efficiency principle is shown in **Appendix B-GUG Implementation for Effectiveness and Efficiency Principle**.

From the result that shows at table 4, then researcher calculate percentage for GUG for Effectiveness and Efficiency Principle. Mean method was used to calculate the implementation, mean method shows at Equations 2. The result of implementation GUG for Effectiveness & Efficiency Principle shows at Table 4.

Table 8. GUG Implementation for Effectiveness and Efficiency Principle

GUG Principle	IT Process	IT Related Goal	Level Implementation	Implementation Effectiveness and Efficiency Principle
Effectiveness and	EDM01	Ensure Governance Framework Setting and Maintenance	58.33%	73.24%
	EDM02	Ensure Benefits Delivery	81.94%	

APO02	Manage Strategy	80.00%	
APO05	Manage Portfolio	65.28%	
BAI01	Manage Programmes and Projects	78.87%	
BAI02	Manage Requirements Definition	75.00%	

The results of table 5 then compared with the existing level of GUG implementation. The source used as a reference for measuring the level of GUG implementation is used is from GCG, this is because the level of GCG implementation has the same intention with GUG that is to know the category of implementation of GUG and also because there was still little research about GUG. List of scores shown in Table 5 which is a category based on the percentage of the results of the existing assessment.

Table 9. Interpretation score of GUG Implementation

Result	Category
20% - 35,99%	Not Good/ Ineffective
36% - 51,99%	Less Good/Less Effective
52% - 67,99%	Good enough/Effective Enough
68% - 83,99%	Good/Effective
84% - 100%	Very Good/Very Effective

Source: Dharmawan, et. al., 2016

From this research it's known that the level of effectiveness and efficiency principle in the polytechnic that used as case study has a measurement of Implementation 73.24%, that means it is good / effective. Although the level of effectiveness and efficiency is good there are some recommendations that need to be given to eliminate or at least reduce the existing gap. The recommendation in here were to improve the IT process at level 1 and also recommendation so the case study polytechnic can reach capability level 4. The recommendation divided into 4 sections based on the required capability level. Which are correction or improvement for capability level 1, correction to increase capability level to level 2, correction to increase capability level to level 3 and correction to increase capability level to level 4.

For capability level 1 the recommendations are to correction 1 IT process, that is EDM 01 that assess about Governance Framework Setting and Maintenance because the level for this process still lv 0 and for other processes (EDM 02, APO 02, APO 05, BAI 01, BAI 02) just need some improvement to get the fully achieved rating so the capability level could ascend until next level. Recommendation for level 2, 3 and 4 for each IT process is same according the literature that used for the assessment (ISACA, 2013). Each process from level 2 to level 4 has 2 attributes, so there is 2 recommendation each level.

For capability level 2 there are 2 kind recommendation about the management the performance of the process and the work product made by the process. First for performance management the recommendation is make the measure of the extent to which the performance of the process is managed and for the work product management make some measure of the extent to which the work products produced by the process are appropriately managed.

The recommendation for level 3 also have 2 kind recommendations about the process definition and deployment. Recommendation for process definition is to make a measure of the extent to which a standard process is maintained to support the deployment of the defined process. For the process deployment the recommendation is to measure of the extent to which the standard process is effectively deployed as a defined process to achieve its process outcomes.

The last recommendation for level 4 also have 2 kind that are about the measurement and the control for each process. The recommendation for process measurement is to make a measure of the extent to which measurement results are used to ensure that performance of the process supports the achievement of relevant process performance objectives in support of defined business goals. Recommendation for Process Control is to measure of the extent to

ICMEM

which the process is quantitatively managed to produce a process that is stable, capable and predictable within defined limits.

5. Conclusions

From the research result, researcher concluded that polytechnic used as a case study has capability level 1 for all IT process that assess, except EDM 01 which is still at level 0. It shows that the capability level has a very high gap (3 levels, except EDM 01 which has 4 level gap) with the expected of GUG based on Law about higher education in Indonesia. Then from the analysis results known implementation level for GUG has reached 73.24% which indicates that polytechnic was running a good effectiveness and efficiency principle.

There are several suggestions for future research, such as this research conducted only for 1 principle namely effectiveness and efficiency principle so the future research need conducted for four other principles on GUG: accountability, transparency, nonprofit, and quality assurance. In this research was only limited to analyze up to the level of IT process capability obtained from the mapping of the six IT processes, and to find out the implementation of GUG on effectiveness and efficiency principle also to provide recommendations for improvement and increase the level of capability of existing IT processes. Researcher expected that in the future research will be given priority for existing recommendations, this is because the recommendation given is not possible to be implemented at the same time due to the need of resources and the cost. Given this priority, it is hoped that recommendations can be undertaken with more effective and efficient scheduling and resource sharing, this also explained at another research that decision making involves many criteria to rank the alternatives of a decision (Saaty, 2008). Further study need to develop the theory, method, and appropriate model to be mapped between GUG principle and COBIT 5 which used to analyze GUG implementation principle in higher education. One of the disadvantages of the COBIT 5 framework is the lack about detail in IT service management, to cover these deficiencies the future research can used another framework for IT service management like ITIL (Information Technology Infrastructure Library), this support by research that ITIL can be guidelines for IT managers who are planning to adopt or already are adopting IT Service Management (Iden & Eikebrokk, 2013).

Appendix A. Assessment Result

GUG Principles	IT Process	Sub IT Process	Percentage	Capability Level
Effectiveness and Efficiency	EDM01	EDM 01.01 Evaluate the governance system	63%	Level 0
		EDM 01.02 Direct the governance system	57%	
		EDM 01.03 Monitor the governance system	17%	
	EDM02	EDM 02.01 Evaluate value optimisation	67%	Level 1
		EDM 02.02 Direct value optimisation	86%	
		EDM 02.03 Monitor value optimisation.	80%	
	APO02	APO 02.01 Understand enterprise direction.	100%	Level 1
		APO 02.02 Assess the current environment, capabilities and performance	75%	
		AP002.03 Define the target IT capabilities.	83%	
		AP002.04 Conduct a gap analysis.	53%	
		AP002.05 Define the strategic plan and road map.	71%	
		AP002.06 Communicate the IT strategy.	100%	
	APO05	APO 05.01 Establish the target investment mix.	67%	Level 1
		APO 05.02 Determine the availability and sources of funds.	56%	
		APO 05.03 Evaluate and select programmes to fund.	39%	
		APO 05.04 Monitor, optimize and report on investment portfolio performance.	63%	
		APO 05.05 Maintain portfolios.	33%	
		APO 05.06 Manage benefits achievement.	67%	
	BAI01	BAI 01 .01 Maintain a standard approach for programme and project management	50%	Level 1
		BAI01.02 Initiate a programme.	100%	

ICMEM

		BAI 01.03 Manage stakeholder engagement.	54%	
		BAI 01.04 Develop and maintain the programme plan.	57%	
		BAI 01.05 Launch and execute the programme.	60%	
		BAI 01.06 Monitor, control and report on the programme outcomes.	86%	
		BAI 01.07 Start up and initiate projects within a programme.	83%	
		BAI 01.08 Plan projects.	100%	
		BAI 01.09 Manage programme and project quality.	75%	
		BAI 01.10 Manage programme and project risk.	33%	
		BAI 01.11 Monitor and control projects.	100%	
		BAI 01.12 Manage project resources and work packages.	100%	
		BAI 01 .13 Close a project or iteration.	100%	
		BAI01.14 Close a programme.	33%	
	BAI02	BAI 02.01 Define and maintain business functional and technical requirements.	88%	Level 1
		BAI 02.02 Perform a feasibility study and formulate alternative solutions.	75%	
		BAI 02.03 Manage requirements risk.	0%	
		BAI 02.04 Obtain approval of requirements and solutions.	100%	

Appendix B. GUG Implementation for Effectiveness and Efficiency Principle

IT Process	Sub IT Process	Total N	Weight N	Total P	Weight P	Total L	Weight L	Total F	Weight F	GUG Implementation	Average GUG Implementation
EDM01	EDM 01.01	0	0	2	4	3	9	0	0	65.00%	58.33%
	EDM 01.02	0	0	3	6	2	6	0	0	60.00%	
	EDM 01.03	0	0	4	8	0	0	0	0	50.00%	
EDM02	EDM 02.01	0	0	2	4	3	9	1	4	70.83%	81.94%
	EDM 02.02	0	0	0	0	0	0	6	24	100.00%	
	EDM 02.03	0	0	0	0	7	21	0	0	75.00%	
APO02	APO 02.01	0	0	0	0	0	0	7	28	100.00%	80.00%
	APO 02.02	0	0	0	0	5	15	0	0	75.00%	
	AP002.03	0	0	0	0	3	9	0	0	75.00%	
	AP002.04	0	0	8	16	2	6	0	0	55.00%	
	AP002.05	0	0	0	0	1	3	0	0	75.00%	
	AP002.06	0	0	0	0	0	0	4	16	100.00%	
APO05	APO 05.01	0	0	0	0	3	9	0	0	75.00%	65.28%
	APO 05.02	0	0	1	2	2	6	0	0	66.67%	
	APO 05.03	0	0	6	12	0	0	0	0	50.00%	
	APO 05.04	0	0	0	0	2	6	0	0	75.00%	
	APO 05.05	0	0	3	6	0	0	0	0	50.00%	
	APO 05.06	0	0	0	0	4	12	0	0	75.00%	
BAI01	BAI 01 .01	0	0	4	8	0	0	0	0	50.00%	78.87%
	BAI01.02	0	0	0	0	0	0	5	20	100.00%	
	BAI 01.03	0	0	5	10	1	3	0	0	54.17%	
	BAI 01.04	0	0	0	0	3	9	0	0	75.00%	
	BAI 01.05	0	0	0	0	7	21	0	0	75.00%	
	BAI 01.06	0	0	0	0	0	0	5	20	100.00%	
	BAI 01.07	0	0	0	0	4	12	0	0	75.00%	
	BAI 01.08	0	0	0	0	0	0	1	4	100.00%	
	BAI 01.09	0	0	0	0	4	12	0	0	75.00%	
	BAI 01.10	0	0	4	8	0	0	0	0	50.00%	
	BAI 01.11	0	0	0	0	0	0	4	16	100.00%	
	BAI 01.12	0	0	0	0	0	0	3	12	100.00%	
	BAI 01.13	0	0	0	0	0	0	1	4	100.00%	
	BAI 01.14	0	0	5	10	0	0	0	0	50.00%	

ICMEM

BAI02	BAI 02.01	0	0	0	0	0	0	4	16	100.00%	75.00%
	BAI 02.02	0	0	0	0	4	12	0	0	75.00%	
	BAI 02.03	7	7	0	0	0	0	0	0	25.00%	
	BAI 02.04	0	0	0	0	0	0	3	12	100.00%	

References

Ambarwati; Zain, Djumilah; Sudiro, Achmad; Rohman, F. (2014). The Role of Multichannel Marketing in Customer Retention and Loyalty : Study in Emerald Bank Customer in Indonesia. *Asia-Pacific Management and Business Application*, *3*(April), 184–200.

Bartens, Y., Haes, S. de, Schulte, F., Voss, S., & Lamoen, Y. (2015). On the Way to a Minimum Baseline in IT Governance : Using Expert Views for Selective Implementation of COBIT 5. *Hawaii International Conference on System Sciences*, *48*, 4554–4563. https://doi.org/10.1109/HICSS.2015.543

Ben-David, J., & Clark, B. R. (1984). The Higher Education System: Academic Organization in Cross-National Perspective. *Contemporary Sociology*, *13*(4), 462. https://doi.org/10.2307/2069078

CISA. (2010). Certified Information Systems Auditor Review Manual. *ISACA*. https://doi.org/10.1017/CBO9781107415324.004

Craig, J. C., & Grant, R. M. (1993). *Strategy Management*.

Dharmawan, I. M. Y. A., Saputra, C. W., Akhmad, I., & Ginardi, R. V. H. (2016). Information Technology Governance Audit To Identify The Implementation Of Good Corporate Governance (GCG) Principles In Relation With IT Governance Framework Setting And Maintenance , And Management For IT Solution, *0*, 1–8.

Fuad, N., Surnarna, A., Prihantoro, Herrnana, B., Tarigan, A., & Suhendra, E. S. (2010). The Information Technology in Insurance Industry: Inhibitors and Supporting Factors in IT Implementation in Indonesia. In *Workshop on World Insurance Stance: Challenge and the Future of Insurance Industry in Developing Countries* (pp. 74–99).

Hicks, M., Pervan, G., & Perrin, B. (2012). A Study of the Review and Improvement of IT Governance in Australian Universities. In *International Conference on Information Resources Management (CONF-IRM) Proceedings* (Vol. 22). Retrieved from http://aisel.aisnet.org/confirm2012 Recommended%0Ahttp://aisel.aisnet.org/confirm2012/22/

Iden, J., & Eikebrokk, T. R. (2013). Implementing IT Service Management: A systematic literature review. *International Journal of Information Management*, *33*(3), 512–523. https://doi.org/10.1016/j.ijinfomgt.2013.01.004

Indonesia, R. (2012). Undang-Undang No. 12 Tahun 2012 Tentang Pendidikan Tinggi (Law No. 12 of years 2012 About Higher Education). Indonesia: Sekretariat Negara.

ISACA. (2012). *COBIT 5 - Enabling Processes*. USA: ISACA. Retrieved from papers3://publication/uuid/24E0C493-40C6-4495-946E-A25765C97BF1

ISACA. (2013). *COBIT 5: Process Assessment Model (PAM): Using COBIT 5*. *Isaca*. USA: ISACA.

Kardos, M. (2012). The Reflection of Good Governance in Sustainable Development Strategies. *Procedia - Social and Behavioral Sciences*, *58*, 1166–1173. https://doi.org/10.1016/j.sbspro.2012.09.1098

Nugroho, H. (2014). Conceptual Model of It Governance for Higher Education Based on Cobit 5 Framework, *60*(2), 216–221.

Nugroho, H., & Surendro, K. (2013). Proposed Model of Vocational University Governance and Measurement Model by Utilizing The ISO 38500 Framework And COBIT 5 Enabler.

Rudenko, D., Pogodaeva, T., & Golubev, E. (2017). Transition towards an entrepreneurial university: A case study of the Tyumen State University. *International Journal of Business and Globalisation*, *18*(1), 96–111. https://doi.org/10.1504/IJBG.2017.081026

Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *International Journal of Services Sciences*, *1*(1), 83–98. https://doi.org/10.1504/IJSSCI.2008.017590

Stonkiene, M., Matkeviciene, R., & Vaiginiene, E. (2016). Evaluation of The National Higher Education System's Competitiveness: Theoretical Model. *Competitiveness Review: An International Business Journal*, *26*(2).

Yasir, M., & Majid, A. (2017). Relationship between determinants of organisational structure and knowledge sharing. *International Journal of Business Excellence*, *12*(3), 294–307. https://doi.org/10.1504/IJBEX.2017.084439

Yusuf, A., Ginardi, H., & Arieshanti, I. (2012). Pengembangan Perangkat Lunak Prediktor Nilai Mahasiswa Menggunakan Metode Spectral Clustering dan Bagging Regresi Linier. *Jurnal Teknik ITS*, *1*(2), A246–A250.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Analysis of Cost of Production Geothermal Development and Impact to the Geothermal Tariff in Sumatra Island

Anggita Dwi Kristina[a*], Yudo Anggoro[b]

[a]BII Street Pasar Minggu, Jakarta 12520, Indonesia
[b]Komplek Sapta Pesona BB7 Jatiasih Bekasi , Indonesia

Abstract

Indonesia has affluent geothermal resources that can help meeting the country's rising electricity demand and at the same time increasing the electrification rates. Indonesia's estimated geothermal resource base is considered to be the largest in the world. According to the data from Renewable Energy and Energy Conservation estimate (2018) that Indonesia has 11,073 MW of geothermal resources and 17,435 MW reserves. Furthermore, based on the Ministry of Energy and Mineral Resources (EBTKE) data in 2018, Indonesia Geothermal installed capacity per 2018 is 1,948.5 MW. The utilization of Geothermal is only 11.7% from the total of Indonesia's geothermal reserves estimate. Ministry Energy and Mineral Resources has raised its targets of Geothermal electrification to be achieved by 2025 to 7,242.5 MW. This means that in the 8 next years from now the utilization of Geothermal energy must be strongly encourage to reach 450 percent of current utilization. The geothermal obstacles and challenges can only be overcome with cooperation from stakeholders, especially from the government official. The government has intensified its efforts to scale-up and speed-up geothermal power development through several regulations and incetives, however, many developers perceive these regulations to have been causing Geothermal projects to become commercially unenthusiastic. This research focuses on what causes the geothermal price to be relatively higher than the government's national production cost. The questions that may arise from the implementation are: (1) What are the component of costs of geothermal power development and production and what are the factors influencing each costs component of geothermal power development? (2) What is the role of government to minimize the cost of geothermal development? (3) How much is the annual average national electricity generation costs (BPP) to be economically attractive for Developer to develop geothermal in Sumatra for greenfield area? If the average national electricity generation costs (BPP) is lower than BPP local regional, there is an option for Business to Business negotiation mechanism. The modelling approach is to build up the capital and operating costs on a time base and then to compare these with the expected revenue, which in turn is based on an assumed tariff for the electricity being sold. The tariff can then be adjusted to generate the required return on developer's funds to develop geothermal. This paper presemt severals recommendation based on conducted study for further accelerate Geothermal development in Indonesia.

Keywords: BPP; Regulation; Government; Geothermal Cost; Geothermal Tariff; Sumatra Island

1. Introduction

According to the data from geoba.sea (June, 2018), Indonesia is the fourth largest population in the world with approximately at 262,936,096 people and with an expected population of 285 million by 2025. Based on these numbers, it will be a challenge for Indonesia to supply the future electricity needs.

The Government of Indonesia also has an aggressive goal to increase the share of renewable energy utilization in the country's energy mix from 22,6 percent by 2025 (RUPTL 2017 – 2026) to 23 percent by 2025 (RUPTL 2018-2027). With its overall potential to generate capacity at 788,000MW through renewable energy.

The Geothermal obstacles and challenges can only be overcome with cooperation from stakeholders, especially from the Government of Indonesia. The government has intensified its efforts to scale-up and speed-up Geothermal power development through several regulations. Firstly, the Ministry of Energy and Mineral Resources introduced regulation No.50 year 2017 about a new price and procurement schemes for a range of renewable energy sources.

---

* Corresponding author.

ICMEM

Secondly, the Ministry of Energy and Mineral Resources also introduced regulation No.1772/K/20/MEM/2018 related to PLN's electricity Power Production Cost (BPP in Rp/kWh or CENT us$/kWh). But, based on many developer perspectives these regulations have been causing Geothermal projects to become commercially unenthusiastic.

Under Regulation No. 50 year 2017, if local Power Production Cost (BPP Local Regional) is higher than national Power Production Cost (BPP National). Then, the purchase price of electricity from Geothermal power plant, shall be the maximum of local Power Production Cost (BPP Local Regional). On the other hand, if local Power Production Cost (BPP Local Regional) in Sumatra, Java, and Bali or other local electrical systems equal to or below the national Power Production Cost (BPP National). Then, the purchase price of electricity from the Power Plant will be determined and negotiated between the Geothermal developer and PLN. Based on this current situation, it is necessary for the government to make more attractive environment for Geothermal developers by reducing the risk of Geothermal business with some incentive regulations such as tax exemption, import duty facility, and review of the Geothermal Fund to make the Geothermal development more attractive by simplifying the mechanism.

Although, the government provides business to business (B2B) negotiation mechanism with PLN. The impact on the production cost of the required return on developer's funds cannot be calculated directly without calculating the anticipated revenue stream from which that return is derived. Therefore, the modelling approach is to build up the capital and operating costs on a time base and then to compare these with the expected revenue, which in turn is based on an assumed tariff for the electricity being sold. The tariff can then be adjusted to generate the required return on developer's funds to develop Geothermal. To limit the scope of my thesis, the focus set only is on Geothermal development in Sumatra Island, Indonesia.

2. BPP (Power Production Cost)

BPP electric power consists of fuel costs and non-fuel costs include maintenance costs, personnel expenses, depreciation expenses, administrative expenses, loan costs, and macroeconomic assumptions such as exchange rates, inflation, and primary energy prices including world oil prices. The average Power Production Cost (BPP) is calculated by summating the total generation, transmission, and distribution costs for PLN divided by the total sales of electricity produced for each island/subgrid.

Table 10 BPP for Sumatra Island based on Ministry of Energy and Mineral Resources No..1772/K/20/MEM/2018.

REGION/DISTRIBUTION/SYSTEM/SUBSYSTEM	BPP	
	Rp/kWh	cent US$/kWh)
SUMATERA ISLAND		
North Sumatera		
Aceh	**1.491**	**11,14**
Weh Island	1.818	13,58
Simeuleu Island	1.602	11,97
North Sumatera	**1.308**	**9,77**
Nias	2.677	20,00
Central Sumatera and South Sumatera		
West Sumatera	971	7,25
Kepulauan Mentawai	2.583	19,3
Riau and Kepulauan Riau		
Riau	**1.470**	**10,98**
Kepulauan Riau		
Bintan	2.052	15,34
Tanjung Balai Karimun	1.682	12,57
Natuna	2.060	15,39
Anambas	2.677	20,00
South Sumatera, Jambi, Bengkulu	**961**	**7,18**
Enggano island	2.677	20,00

ICMEM

	936	6,99
Lampung	**936**	**6,99**
Bangka	**2.247**	16,79
Belitung	**1.887**	14,1
Other small Island Sub System	**2.677**	20,00

3. Factor Affecting the Cost of Geothermal Power Project Development

Geothermal production costs are thus greatly related to the sum of two major components, which are cost of capital investment and O&M cost and both of these components are affected by a large of variability parameters. This final project will break down the details of the major cost components, identifies key variability parameters influencing cost, and analyses the various factors influencing each cost component in each phase. This paper will analyze about how the price of Geothermal power varies in different project from developer perspective.

Level ized Cost of Capital Investment Based on Phase

Geothermal power development is long & expensive process. In addition, the development consists of several development phases:
- Planning Phase: Permitting, EIA, Topo Survey, 3G, Socialization activity, Preliminary Reporting, etc.
- Exploration Phase: Continue EIA, Land Acquisition, Site Design & Construction, Infrastructure Construction, Locate the resources, Drilling, Complete Reservoir Engineering, Feasibility Study.
- Confirmation and Delineation Phase: Confirm the power generating capacity of the reservoir and the activity consist of Continue EIA, Land Acquisition, Site Infrastructure Extension, Drilling, Well Testing, Post Delineation Reservoir Engineer, FEED, Land Acquisition.
- Site Development Phase: Build the power plant and associated structures Engineering Project Management, Site Infrastructure Extension, Drilling, Well Testing, Steam Field, Power Plant.
- Corporate Overhead Cost.

3. 1. Capital Cost

Cost of Planning

The initial planning cost associated with several costs include (Randle, 2018):
- Permitting (starting before the preliminary survey, socialization, until exploration drilling activities). In addition, the early stage permitting is assumed to take 6 – 10 months from start of the project.
- Geoscientific and Topographical surveys is mandatory to confirm the currently assumed resource properties and hence provide a basis for the decision to proceed to exploration drilling with the field work over a period of 6 months. The cost of geoscientific survey is based on current estimates for undertaking 3G survey (Geological, geochemical and geophysical) plus soil gas survey to assist in identifying structural faults.

Cost of Exploration

The exploration phase begins with continue planning and Environment Impact Assessment (EIA) with work as required to extend the existing permits to cover the delineation phase. This phase also generates various kinds of prospecting and field analysis and ends with the drilling of the first successful full-size commercial production well. The total cost of this activity is limited as it is only an update of existing permitting, although it may include some baseline survey work (Randle, 2018).

Final decision to proceed to drilling is based on the engineering and well design activity. Moreover, the exploration drilling campaign, consist of three standard diameter wells, which are 7" slotted liner and 9 5/8" production casing. Whereas, engineering design will continue in parallel with upgrade or construction of the site access roads and well pads

Well testing will proceed in parallel with drilling and continue beyond the end of the drilling program. The associated reservoir engineering work required to update the inferred resource capacity report will overlap with the later stages of well testing, and a feasibility study will also be commenced during well testing and completed at the same time as the measured resource capacity report. A period of 2-3 months has been allowed after the end of the

ICMEM

Exploration Phase for discussions on the feasibility study and the decision as to whether to proceed with further development.

The most important cost component of the exploration phase is the exploratory drilling. So, all the factor affecting cost of drilling will affect the cost of exploration. There are also others several major factors affecting the cost of exploration, which are:

- The nature of the project (greenfield vs. brownfield) and the extent of the exploration activities. It will provide information about the extent of new exploration, confirmation and infrastructure construction work needed to develop the project.
- Different suite of technologies that aim to locate a productive Geothermal reservoir in each exploration phase.
- The size of the project or exploration activities (economies of scale).
- The rock and resource characteristics affecting drilling and surface facility costs.
- The site location and accessibility, leasing costs, building new roads remoteness & topography (road and connection infrastructure). In addition, the cost of construction of each well pad includes for the pad itself, cellar and sump, plus construction of up to 2 km of dedicated new access road to each pad (in order to provide for adequate well pad spacing with up to 3 directional wells per pad). A laydown area will be required for exploration drilling, as will a water supply.

In term of mobilization of the drilling rig is assumed to take 3 months from the decision to proceed with exploration drilling. In the case of difficult access projects, the rig mobilization and demobilization will take more time. In consequence, the rig mobilization will be delayed such that at least one pad can be completed before the rig is ready to drill.

Cost of Delineation and Confirmation

The delineation phase is required to demonstrate sufficient steam is proven and available upon the well head to satisfy the lenders that the project is viable and lead financial closure.

There are several factors that influence the cost of delineation:

- Financial closure for environmental and social impact assessment and the award.
- Land Acquisition for Delineation (Site Access Road, and Well Pads, Local Roads) of the requisite permits. In addition, this activity for the development stage of drilling and also for the power plant will proceed in parallel with the engineering work and will continue for a further three months beyond that.
- Site Infrastructure Extension (Mobilization and Demobilization, Main Access Upgrade, Laydown & Support Areas, Water supply, Well Pads & Roads). To minimize the cost of drilling, the drilling rig will be mobilized as soon as possible and will take approximately 3 months.
- Drilling activity (see the cost of drilling explanation).
- Well testing. This activity will be proceeded in parallel with drilling and after completion of the last well.
- Post Delineation Reservoir Engineering. This activity will be completed in parallel with the last stages of well testing.
- Front end engineering design (FEED) activity will overlapping with other work, and on the basis of which specifications will be prepared and tenders called for the power plant and steam field construction.

The project schedule for the completion of well testing, reservoir engineering and the FEED study, it will take 6 months period to complete financing of the development stage of the project.

Cost of Confirmation

The confirmation phase mainly consists of drilling additional production wells and testing the well characteristic needed to further confirm the project. It also involves reservoir study and engineering and the drilling of injector wells to dispose of fluids from production well tests.

In addition, all expenses incurred during the confirmation phase have to be funded with equity investment which requires a high rate of return and therefore affects the all in cost of the project. So, the cost of confirmation highly dependent upon the timeframe considered and possible time delays. The largest cost component in the exploration

ICMEM

stage is the cost of drilling (see factor influencing cost of drilling), road & pad construction, well testing, reporting, regulatory compliance & permitting, administration.

Cost of Site Development

Cost of site development will be influenced by several components such as the completion of drilling, the construction of the power plant and steam field above ground systems (SAGS), additional infrastructure (roads, well pads and water supply), environmental project permitting, land cost, labor cost, etc.

Cost of Drilling

Drilling costs are highly dependent upon resource characteristics, depth of the resource, size, number of wells to be drilled, the capability of the rig, topography, project schedule, site access, market condition. The parameters listed below affect the cost of drilling in each phase.

Resource and Brine Characteristic

1. Factors influencing the cost of drilling and completing one well:
   - The depth and pressure of the resource. Firstly, well blow out can be happened if the resources has a high pressure. In order to prevent this situation, the developer must use of blow out prevention equipment with stronger & heavier casing, and this may involve the drilling of a larger hole and it will make the cost more expensive. With this risk, it will bring danger for the drilling crew, and may be very expensive in cost because of the specific rig equipment. As the result, it can threaten the economic viability of the project. Secondly, nature, structure, hardness of the rock formation influences the drilling speed, the initial well diameter, the strength & number of casing strings needed and the time required to drill the well.
   - The cost of drilling activities will be increased rapidly and delayed the drilling completion when the geological formation above the resources has loss of circulation fluid because of pressure formation less than wellbore hydrostatic and there is permeability. As the result, project need more frequent casing stage (for instance use of lower density drilling fluids) and addition labor cost for casing construction and well head completion activity.
   - Other major effect on drilling cost is loss of circulation fluid in a productive zone of the resource. When the drill bit enters a highly permeable zone or open fracture, loss of circulation fluid can happen because the formation pressure doesn't compensate for the pressure of the column of drilling fluids, this fluid may flow into the resource rock formation. As the result, the project need temporarily plugged with specific material (e.g. cotton seed hulls) for the permeable zone.
   - The total number of casing strings and diameter requirements will increase the cost of drilling. Those parameters determined by depth and type of geologic structure drilled through, and estimate production capacity and determines the resulting productive diameter of the well. As the result, it will influence the overall well productivity through frictional damages. In the next process, after developer has analysis the resource characteristic, the developer can target a certain well diameter at a certain dept.
   - The cost of drilling can be affected by the required casing material. This material depends on the chemistry of the fluid, for instance, for a corrosive Geothermal fluid, the project requires adding a titanium liner, resistant pipes, cement to protect the casing for a corrosive Geothermal fluid. The same also applied for injector wells.
   - Cost of drilling vary widely, in some cases if the resources located in shallow resources or situated in sedimentary rocks area, the cost of drilling can be cheaper. While, it can be expensive wells are usually characterized by the depth.

2. Factors influencing the number of wells to drill
   - There are two major parameters, which are the well flow rate and the number of wells needed to supply the power plant's energy requirements, these are related to rock permeability and resource temperature & pressure.
   - Enthalpy Cases. The higher the enthalpy the higher the MW output of the wells and the higher the enthalpy the less reinjection wells are needed.

- Different technology: Downhole pumps can be use for low and medium temperature resources, while this pumps are intolerant of high temperatures and required an amount of electricity to be ran in most cases developer use binary power system.
- Drilling activity have different success rates at various phases in the project development, with the success rate increasing from 50 percent in exploration to 65 percent during delineation (70 percent for delineation following slim hole drilling as it is assumed that some of the delineation wells will actually shadow the slim holes) and 80 percent for production drilling. Injection well drilling is assumed to have a 100 percent success rate since in many cases unsuccessful production wells can also be used for injection use, and because injection wells have to encounter only adequate permeability, not temperature (Randle 2018). According to Hance report in 2015, the rate probability of 25 percent, 60 percent success rate for confirmation, and 70-80 percent success rate for site development drilling.

Other on Site Development Costs

   Other on site development costs consist of environmental project permitting, steam gathering system, power plant design & construction, all pipelines and pumps, pollution abatement systems, the electric substation and transmission-line connection, civil work (roads, etc.) engineering, legal, regulatory, documentation and reporting activities.

1. Environment Project Permitting
   Developer need to prepare and submit the environmental documents such as UKL UPL, AMDAL, etc. These documents are important to decide whether the required permit can be issued or not.
2. Steam Gathering System
   Cost of Geothermal development will be influenced by steam gathering system and depend on the fluid type, fluid characteristic distance from injection wells and the production to the power plant. According to Entingh & McVeigh (2003), cost of the steam gathering system corresponds to 5 percent of total capital cost.
3. Power Plant Design and Construction
   a. Impact of resource characteristics on technology choices and power system cost:
      - Temperature
        Design of power plant depend on the heat supply by the Geothermal fluid. In addition, there are three type of temperature of the resource (see Enthalpy Cases). This parameter is an essential parameter influencing the cost of the power plant equipment. The temperature of the resource determines the technology choice whether steam or binary technology. In addition, if the project earned a high temperature resources so the project can use steam power system, which are simpler and cheaper than binary technology. This is because more energy being produced with similar equipment and it will make the project more efficient in the power system.
      - Chemistry
        Cost of Geothermal development also affected by chemical characteristic (the chemistry of the brine) and may require specific equipment, technologies, and size of some power plant components. In addition, there are four chemical characteristics that affecting the cost, which are the brine scaling potential, corrosiveness, non-condensable gas (NCG) and hydrogen sulfide (H2S) content.
   b. Impact of site characteristics on technology choices and power system cost:
      The cost of power plant heat rejection system will be influenced by weather condition or water availability. In fact, there are two kinds of cooling system, which are air cooled and water cooled. When the water is available, the water cooled systems are considered to be built and cheaper. In the arid areas, the cost of power plant depends on the weather condition (air temperature and humidity) and can use air cooled heat extraction system for cost efficiency.
      On the other hand, the water cooled systems use the energy required to evaporate water to cool the condenser. Local weather conditions thus affect water consumption used in the cooling process but have much less impact on the power plant energy output. Those technologies implementation also impact to the O&M cost.
4. Construction Duration
   According to the EPC contract, the duration for construction is normally taken in 24 months and 2 months for commissioning of each unit after multiple units are being installed. The EPC contract duration for modular units,

as advised by GEG one of the modular plant company, and consider in 15 months from release of order, with up to a 2 months lag between multiple units.

5. Other Technology

   Technology will influence the cost of the power system. For instance, condenser type, turbine generator design and characteristics, control technologies, etc.

6. Transmission

   Cost of Geothermal development also influenced by the cost of building a new transmission line to connect the power plan to the grid.

7. Other costs

   Cost of Geothermal development also will be influenced by legal, regulatory, documentation, reporting activity, overhead costs, labor cost, raw material costs.

8. Financing Mechanism and Macro Economic Environment

   The cost of Geothermal development is influenced by debt length and interest rate. There are several variability parameters that impact the cost which are interest paid during construction or the cost related time to delays, and the existing supply & demand of goods and services in the market. These variables may rise or drop due to market imbalance.

   a. Market Condition

      Firstly, Oil and gas exploration and development activity also compete with the Geothermal industry for drilling equipment, and activity. As the result, the drilling rigs may not be readily available and has to be shared between oil& gas and Geothermal industry. Market condition imbalance between supply and demand and usually rise 20 percent or more. In addition, market conditions may also affect the cost of drilling through the cost and nature of the equipment including material (steel, cement, fuel prices), labor, standby rate, goods and services required, etc. Since 2015, oil price had dropped from $120/barrel to almost approximately &30/bbl in 2015 and $ 66.71/barrel as of July 18, 2018. The drop of oil price was caused by global economy is slowing down and over supply of oil and gas from OPEC. This situation will impact a new challenge for drilling contractor company. As the result, rig activity continues to drop, and drilling price will more competitive.

   b. Interest Rate

      Developers compete to obtain capital at the lowest price to run its business while the investors seek to invest in the lucrative business and expect return in the shortest term. The interest rate depends on supply (investors - money lenders) and demand (entrepreneurs - money borrowers), if the required capital for a certain type of project is in high demand, the interest rate will rise and vice versa.

   c. Debt Length

      The debt length for the Geothermal project will be influenced by the Power Purchase Agreement (PPA). PPA is an important factor that calculate the minimum price of electricity and covers the length of the debt period, and guarantees that the power plant will be able to deliver its power to the grid at a fixed price for a certain period of time.

      The debt payback period of the project is based on the PPA is usually within the range of 10-20 years. So, reducing the debt period will increase the value of the capital reimbursement thereby increasing the amount to each principal and interest payment.

Operation and Maintenance Costs

Operating and Maintenance (O&M) costs for Geothermal projects include the costs of operating and maintaining both the power plant and the steam field fluid gathering and handling system.

1. Operation Costs

   Operation costs include all expenses related to the operation of the power plant. In addition, operation costs are also strongly affected by:

Table 11 Operation Cost Breakdown

No.	Operation Cost	Factors influencing each costs component	Remarks
1.	Chemical and other consumables goods are important and vary widely	Consumable goods (e.g. lubricants, chemicals for H2S abatement, scaling and corrosion control, vehicle fuel, spare parts,	

	according to the geochemistry of the brine.	etc.), taxes and royalties, and other miscellaneous charges (e.g. waste disposal, parasitic load for various kind of pumps (e.g. cooling system), lighting and other internal electricity uses.	
2.	The size of the power plant will impact to labor costs.	The size of the power plant is another important parameter that affects labor costs.	- For instance, the number of operators needed to run a Geothermal plant is relatively independent of its size - power plants ranging from 15 to 100 MW require similar crews of 5 to 7 employees (working on 24-hour/7-day shifts).
3.	Site and resource characteristics especially through the resource depth and chemistry.	Other miscellaneous expenses may apply according to the resource characteristic: - downhole pumps electric load) - geographical location - weather conditions.	
4.	Technology (air cooled system or water cooled system).	Air cooled systems: cooling fan motors Water-cooled systems : require biotic and chemical water treatment to prevent algae blooms or mineral deposition	- Maintenance for air cooled system consist of annual check-up of fan motors and belts as well as system lubrication. But, less work is needed to operate and maintain a well designed air cooled system. - Operation costs of air-cooled systems are lower than the water cooled systems.

2. Maintenance Costs
   Maintenance costs involve all expenses related to the maintenance of the equipment (field pipes, turbine, generator, vehicles, buildings, etc.), painting, road repair, machinery overhaul.

Table 12 Maintenance Cost Breakdown

No.	Tasks	Factors influencing each costs component
1.	Make-up drilling	The most important factor influencing the cost of make up drilling is when the Geothermal production declining. So, the make up drilling activity is very important to help maintain power production to an optimal level during the entire lifetime of the power plant.
2.	Power plant maintenance costs	In 2001, EPRI74 estimated the annual cost of power plant maintenance as 5 percent of the initial capital costs.
3.	Steam field maintenance	Remaining steam field maintenance costs correspond to an additional 2 percent of initial drilling costs annually, total annual steam field maintenance costs.

4. Feasibility of Upcoming Projects in Sumatra Island

Based on the RUPTL (2018-2027) Sumatera Island Geothermal Upcoming project describe the development of 22 Geothermal area. According to the data, PLTP Sekincau, Sarulla, and Kepahiang will be the next largest upcoming Geothermal Projects in Sumatera Island (COD 2025).

Table 13 Geothermal Power Station for Sumatera Island

No.	Project Name in RUPTL	Capacity (MW)	COD Target
1	PLTP Bonjol (FTP2)	60	2025

2	PLTP Bukit Daun #2	30	2024
3	PLTP Bukit Daun #3	30	2025
4	PLTP Danau Ranau (FTP2)	40	2022
5	PLTP Graho Nyabu #2 (PLTP tersebar Jambi)	55	2025
6	PLTP Hululais #3	55	2023
7	PLTP Hululais #4	55	2025
8	PLTP Hululais Small Scale	20	2023
9	PLTP Kepahiyang	110	2025
10	PLTP Lumut Balai (FTP2) #3	55	2022
11	PLTP Lumut Balai (FTP2) #4	55	2024
12	PLTP Lumut Balai Small Scale	5	2020
13	PLTP Margabayur #1	30	2023
14	PLTP Margabayur #2	30	2024
15	PLTP Sarulla II (FTP2) #2	110	2025
16	PLTP Sekincau (FTP2) #2	110	2025
17	PLTP Seulawah Agam (FTP2) #2	55	2025
18	PLTP Simbolon Samosir (FTP2) #2	55	2025
19	PLTP Simisioh	55	2025
20	PLTP Sipohon Ria-Ria (FTP2)	20	2023
21	PLTP Sungai Penuh Semurup	30	2023
22	PLTP Tambang Sawah	10	2023

4. 1.   *Production Cost Model Calculation for Sumatra Island*

The production cost model example is for the Project A in Sumatra Island Indonesia with 55MW capacity. According to the calculation and assumption, the BPP Local Regional regulation for Sumatra Island is lower than the tariff from the Production Cost Model.

4. 2.   *Business to Business Implementation of BPP Geothermal Tariff*

According to the calculation, the BPP Local Regional in Sumatra area is lower than the tariff from the production cost calculation. Then, the purchase price of electricity from the PLTP is assumed to be determined based on B2B negotiation mechanism between developer and PLN is used to determine tariff. In addition, indicative ceiling tariff is determined per region by minimizing the effect to overall BPP of the power system. Through this B2B negotiation

ICMEM

mechanism, there are two steps involved in this mechanism, which are ceiling tariff based on reasonable effect on local BPP for Sumatra and Review based on developer cost estimation after Feasibility Study.
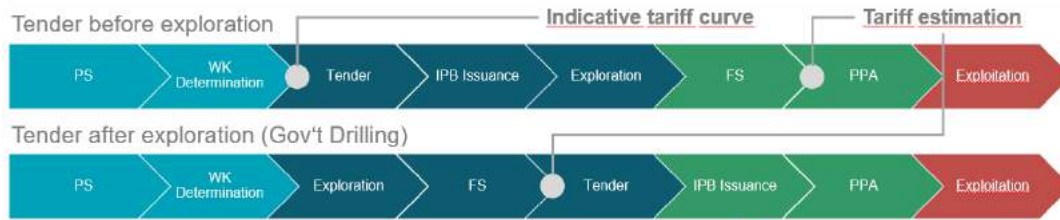
Figure 8 Business to Business Negotiation Mechanism After FS

Furthermore, there are several parameters used for tariff estimation to get the PPA tariff, which are: Area (km2), Thickness (m), Temperature, Porosity, Proven Reserve (MW), Nos (unit) & Capacity, No. of Production & Injection Wells (Steam Flow rate, Brine Flow rate, Capacity of Production, Capacity of Injection), Power Plan Technology/System, CAPEX, Agreed Financial model; Type of cash flow (equity / project IRR), Cost input method (actual minus inefficiency / actual cost), Payback period, Cost of debt (interest rate), Debt to equity ratio).

a. Ceiling tariff based on reasonable effect on local BPP for Sumatra
In this mechanism, the new BPP considers the recent BPP, energy produced, tariff of energy mix in the certain system and B2B negotiation mechanism tariff should be lower than new BPP.
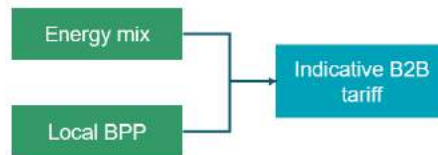
Table 14 Ceiling Tariff Based on Reasonable Effect on Local BPP for Sumatera Island

Power Plant	Capacity Total (MW)	Capacity Factor	Tariff
Thermal	1,000	70 percent	
Hydro	500	80 percent	
Geothermal (existing)	50	90 percent	
Geothermal (upcoming)	X	90 percent	B2B negotiation Tariff

b. Review based on developer cost estimation after FS and.
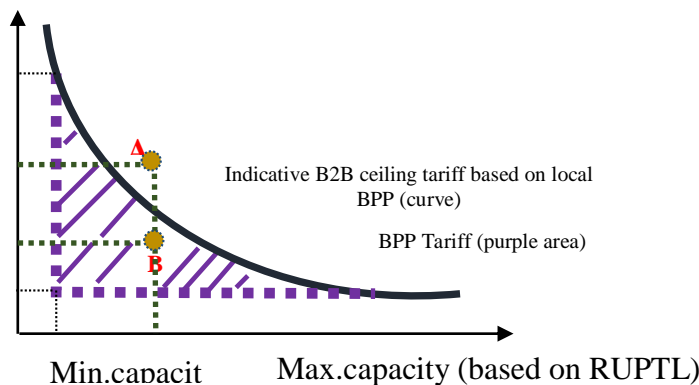
Case A is applicable if the Developer's expected tariff exceeds the indicative ceiling tariff and should be lowered with maximum limit of the indicative ceiling tariff. Otherwise PLN will not accept.

Case B is applicable if the Developer's expected tariff is lower than the indicative ceiling tariff and PLN will use the value.

ICMEM

5. Methodology

This Final Project is conducted using Mixed-Method in evaluating Geothermal Production Cost Model is an approach to inquiry that combines or associated both qualitative and quantitative forms of research (Creswell, 2009). The Mixed-Method model used in this Final Project is Sequential Explanatory Design, which implies collecting and analyzing quantitative data in first stage and then collecting and analyzing qualitative data in the second stage, to strengthen the results of quantitative research conducted in the first stage.

The overall research methodology procedure is presented in this Figure.

```
                        ┌──────────────────────┐
                        │ Problem Formulation   │
                        └──────────────────────┘

┌──────────────────┐   ┌──────────────────────┐   ┌──────────────────┐
│ Pre-Test Interview│   │ Preliminary Survey:   │   │ Initial Literature│
│ to Policy Maker   │   │                       │   │ Review            │
│                   │   │ Evaluation of Current │   │                   │
│                   │   │ Regulation and        │   │                   │
│                   │   │ Geothermal            │   │                   │
└──────────────────┘   └──────────────────────┘   └──────────────────┘

                       ┌──────────────────────────┐
                       │ Quantitative :Production  │
                       │ Cost Modeling             │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Qualitative Confirmation: │
                       │ Interviews to Key         │
                       │ Informants                │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Data Evaluation and       │
                       │ Analysis                  │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Analysis of Alternatives  │
                       │ Solution:                 │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Triangulation             │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Conclusion: Summary and   │
                       │ Recommended Solution      │
                       └──────────────────────────┘

                       ┌──────────────────────────┐
                       │ Implementation Plan       │
                       └──────────────────────────┘
```

6. Conclusion and Recommendation

6. 1.   Conclusion

This Final Project reviewed the evidence from Government and Geothermal developers and expert opinion on the Geothermal price setting.

In this conclusion, below are some answer of my research questions.

a. What are the component of costs of Geothermal power development and production and what are the factors influencing each costs component of Geothermal power development?

ICMEM

The Geothermal development consists of several development phases: **Planning Phase**: Permitting, EIA, Topo Survey, 3G, Socialization activity, Preliminary Reporting, etc. **Exploration Phase**: Continue EIA, Land Acquisition, Site Design & Construction, Infrastructure Construction, Locate the resources, Drilling, Complete Reservoir Engineering, Feasibility Study. **Confirmation and Delineation Phase**: Confirm the power generating capacity of the reservoir and the activity consist of Continue EIA, Land Acquisition, Site Infrastructure Extension, Drilling, Well Testing, Post Delineation Reservoir Engineer, FEED, Land Acquisition. **Site Development Phase**: Build the power plant and associated structures Engineering Project Management, Site Infrastructure Extension, Drilling, Well Testing, Steam Field, Power Plant, Corporate Overhead.

b. What is the role of government to minimize the cost of Geothermal development?
    Firstly, tax allowance regulation through Government Regulation No.18 of 2015, Ministry of Energy and Mineral Resources 2015, Ministry of Finance regulation No.89 of 2015. The tax allowance government regulation consist several facility, which are: Net Income Deductions 30 percent of the total Investment (tangible fixed assets, including land) used for the main business activities is charged for 6 (six) years each of 5 percent (five percent) per annum calculated from the commencement of commercial production; Depreciation and amortization are accelerated Income tax of 10 percent; Compensation loss of 5 but not more than 10 years. Secondly, Import Duty Facility through Ministry of Finance Regulation No. 177 of 2007, Ministry of Finance Regulation No.142 of 2015, Ministry of Finance Regulation No.175 of 2015 related to encourage the development of national Geothermal energy, it is necessary to provide facilities not subject to Value Added Tax (PPN) or Value Added Tax and Sales Tax on Luxury Goods (PPnBM) on the import of goods and machine for the activities of exploitation of Geothermal upstream: Goods cannot be produced domestically; Goods are manufactured domestically but not yet meet the required specifications; Goods are already produced domestically but the amount is not sufficient for the industry.
    Thirdly, Exemption of Land and Building Tax through Ministry of Finance Regulation No.172 of 2016, reduction of land and building taxes up to 100 percent for the exploration stage in mining sector/ Geothermal operations at the Exploration Stage. Tax reduction facility will be obtained for IPB holders for 5 years starting from the license of Geothermal has been published and the IPB holder can extend the facility with maximum of 2 years extension.

c. How much of the annual average national electricity generation costs (BPP) is economically attractive for Developer to develop Geothermal in Sumatra for greenfield area? If the average national electricity generation costs (BPP) is lower than local BPP, there is an option for Business to Business mechanism. The implementation plan for the solution will be explained in the next section.
    Under Regulation MEMR No. 50 year 2017 and align with the Ministry of Energy and Mineral Resources also introduced regulation No.1772/K/20/MEM/2018 related to PLN's electricity Power Production Cost, if local Power Production Cost (BPP Local Regional) is higher than national Power Production Cost (BPP National). Then, the purchase price of electricity from Geothermal power plant, shall be maximum of local Power Production Cost (BPP generator local).
    On the other hand, if local Power Production Cost (BPP Local Regional) in Sumatra Island or other local electrical systems equal to or below than the national Power Production Cost (BPP National). According to the other side implementation, if the BPP local region is lower than Developer Calculation. Then, the purchase price of electricity from the PLTP will be determined based on the agreement of the party.
    According to the calculation, the BPP Local Regional in Sumatera Island for Greenfield (55MW) area should be: Above $12 cent kWh for high enthalpy; Above $13 cent/kWh for medium enthalpy; Above $15.5 cent/kWh for low enthalpy. In fact, the greatest number of BPP ($20cent/kWh) are available in Nias, Anambas, Pulang Enggano. Whereas, Lampung is the lower number of BPP ($6.99 cent/kWh). To recapitulate, the BPP local region in Sumatera Island is lower than Developer calculation and Developers can be negotiated through B2B negotiation mechanism to determine tariff. In addition, indicative ceiling tariff is determined per region by minimizing the effect to overall BPP of the power system. Through this B2B negotiation scheme, there are two steps involved in this mechanism, which are ceiling tariff based on reasonable effect on local BPP for Java Bali and Sumatra and Review based on developer cost estimation after Feasibility Study.

ICMEM

6. 2.   Recommendation

Some recommendations from this preliminary study include
1. The Geothermal development can be attractive if the government will cover at least the early stage of risks of prospecting Geothermal work areas prior to tender:
    -   Review, and boost the Geothermal Fund utilization to make Geothermal development more attractive by simplifying the mechanism. Current Geothermal Fund had been only utilizing for just 1 project in Waisano, Nusa Tenggara Timur, mainly because unattractive price in others region.

    -   The Geothermal development can be attractive if the Government can drill at least 1 or more wells drilled and tested by the government before the tender for Geothermal Working Area.
    -   Referring to Ministry of Finance Regulation No. 62/PMK.08/2017 on Geothermal Fund managed by PT Sarana Sarana Multi Infrastruktur (PERSERO), in the event of inadequate geothermal field data and information assessed by Independent Assessor, it has to be de-risked through additional data acquisition in which the cost has to be divided between the Government and the state owned enterprise or its subsidiaries who operates in Geothermal Energy. The regulation states that the government can bear maximum of 50% of the total cost of the data acquisition.

        Those 50% of the total cost then has to be calculated to evaluate the economic value and determine whether it can drop down the cost of electricity production in geothermal field with low electricity tariff or not. If the economic evaluation could significantly reduce the electricity production cost or same with BPP, according to the regulation, the specified filed can be offered to private company through PSPE (Preliminary Surveys and Exploration Assignment) Scheme.
    -   Government initiates special exploration insurance program to support prospecting developers.
    -   The successful bidder will cover the cost of drilling and evaluation when the financial closure of the project.
    -   Need to conduct thorough and detail preliminary survey (eg: closer MT data) to minimize the risk of exploration.
    -   Selective geothermal resource development candidacy. The selection process has to match the community local economy with the regional BPP. For instance, set focus on geothermal field with electricity tariff that match the developer economic (Eastern Indonesia Region).
    -   Integrated geothermal preliminary survey data inventory (database) conducted by the government to ensure data accuracy and reliability.
    -   Boost economy with infrastructure development. After the economy reach a certain point where people can afford higher electricity price, then more geothermal energy can be developed.
    -   Use appropriate and fit to purpose technology implementation for Geothermal Development.
2. Other required supporting actions from the government include:
    Business to Business for new tariff negotiation should promote economic efficiency, clearly, calculate the risk in each energy sources, rational and mutual benefit with developer and PLN.
    -   The government of Indonesia must design the Geothermal tariff methodology that should be guided by the several principles, such as transparent, clearly, rational, clearly stated with detail assumption, should promote economic efficiency, the methodology should not be changed at frequent intervals and should be published by MEMR so that developers and lenders can assess factors that are likely to change in the future.
    -   The Government of Indonesia must to consider about regulation amendment related to the new BPP tariff. In addition, BPP tariff regulation must calculate the production cost with each energy source risk.
    -   Assurance the long term regulation.
    -   The Government of Indonesia should clarify the licenses governing Geothermal development in the area of National Parks, conservation forests. Licensing in the area is expected unconditionally so that the developer can ensure investors that the implementation of Geothermal development for the area is supported by the government.

ICMEM

- Implementation of AMDAL, UKL and UPL licensing regulations is not in accordance with the timeline regulated in the regulation so as to require better consistency, improvement and oversight of the Ministry of Environment.
3. How much of the annual average national electricity generation costs (BPP) is economically attractive for Developer to develop Geothermal in Sumatra for greenfield area? If the average national electricity generation costs (BPP) is lower than local BPP, there is an option for Business to Business mechanism. The Government of Indonesia must to consider about regulation amendment related to the new BPP tariff. In addition, BPP tariff regulation must calculate the production cost with each energy source risk

In addition, for Business to Business new tariff negotiation should promote economic efficiency, clearly, calculate the risk in each energy sources, rational and mutual benefit with developer and PLN.

To support those recommendations, my final project had been developed the Government Engagement Strategy Plan for further process negotiation mechanism.

References

Arthur J. Keown, Johm D. Martin, J. William Petty, David F.Scott, Jr,.(2005), Financial Management, Tenth Edition, Pearson Prentice Hall.

Asian Development Bank & World Bank (2015). Unlocking Indonesia's Geothermal Potential. Retrieved from http://hdl.handle.net/11540/3311.

Aswath, Damodaran, (2011) Applied Corporate Finance, Hoboken: Wiley

Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan, (2011), Cost Accounting a Managerial Emphasis, 14th ed., New Jersey

Geothermal Law, Indonesia (2014). *Panas Bumi* [Geothermal Law No. 21/2014]. Retrieved from
http://jdih.esdm.go.id/?page=home

Gitman, L.J., and Chad, I.Z., (2012) Principles of Managerial Finance, Boston: Pearson Education International.

Government Regulation, Indonesia. (2015). *Fasilitas Pajak Penghasilan untuk Penanaman Modal di Bidang-bidang Usaha Tertentu dan/atau di daerah-daerah Tertentu.* [Government Regulation No. 18/2015, Income Tax Facilities for Investment in Certain Business Fields and / or in Specific Areas]. Retrieved from https://peraturan.bpk.go.id/Home/Details/5582

GT Management (2016). Cost of Production From Geothermal Projects in Indonesia: Author.

Randle, Jim (2018).

Hance, C.N., (2005) Factors Affecting Cost of Geothermal Power Development (2005), Washington: Geothermal Energy Association for the U.S. Department of Energy

Lawless, Jim - Sinclair Knight Merz (2009), Assessment of Current Costs of Geothermal Power Generation in New Zealand, New Zealand.

Ministry of Energy and Mineral Resources, Indonesia [MEMR Decree]. (2018). *Rencana Usaha Penyediaan Tenaga Listrik PT. Perusahaan Listrik Negara (Persero) Tahun 2018 s.d. 2027* [MEMR Regulation No. 1772 K/20/M/2018,Electricity Power Supply Business Plan PT. Perusahaan Listrik Negara 2017-2026]. Retrieved from https://www.esdm.go.id/id/publikasi/lain-lain

Ministry of Energy and Mineral Resources (Directorate General of New Energy and Energy Conservation), (2018). Government Commitments toward National Prosperity with Support of Geothermal . ITB International Geothermal Workshop. Retrieved from https://www.itb.ac.id/

Ministry of Energy and Mineral Resources, Indonesia [MEMR Regulation]. (2018). *Besaran Biaya Pokok Penyediaan pembangkitan PT Perusahan Listrik Negara (Persero) Tahun 2017* [MEMR Regulation No. 1567 K/21/MEM/2018, 2017 PLN's Power Production Cost]. Retrieved from https://www.esdm.go.id/id/publikasi/lain-lain

Ministry of Finance, Indonesia [MoF Regulation]. (2007). *Pembebasan Bea Masuk atas Impor Barang untuk Kegiatan Usaha Hulu Minyak dan Gas Bumi serta Panas Bumi* [MoF Regulation No. 177/PMK.011/2007, Customs Exemption for Upstream Oil and Gas and Geothermal Business Activities]. Retrieved from http://www.sjdih.depkeu.go.id/fulltext/2007/177~PMK.011~2007Per.htm

Ministry of Finance, Indonesia [MoF Regulation]. (2015). *Tata Cara Pemberian Fasilitas Pajak Penghasilan untuk Penanaman Modal di Bidang-bidang Usaha Tertentu dan atau di daerah – daerah tertentu Serta Pengalihan Aktiva dan Sanksi Bagi Wajib Pajak Badan Dalam Negeri yang diberikan Fasilitas Pajak Penghasilan* [MoF Regulation No. 89/PMK.010/2015, Procedures for Income Tax Facility for Investment in Certain Business Fields of and or funds in certain areas and Transfer of Assets and Sanctions for Domestic Taxpayers granted with Income Tax Facilities]. Retrieved from http://jdih.bpk.go.id/wp-content/uploads/2015/12/89PMK.0102015Per.pdf

Ministry of Finance, Indonesia [MoF Regulation]. (2015). *Perubahan Keempat atas Keputusan Menteri Keuangan No.231/KMK.03/2001 Tentang Perlakuan Pajak Pertambahan Nilai dan Pajak Penjualan atas Barang Mewah atas Impor Barang Kena Pajak yang Dibebaskan dari Pungutan Bea Masuk* [MoF Regulation No. 142/PMK.010/2015, Fourth Amendment of the Ministry of Finance No.231 / KMK.03 / 2001 Concerning the

ICMEM

Treatment of Value Added Tax and Sales Tax on Luxury Goods on the Import of Taxable Goods Released from Import Duty]. Retrieved from http://jdih.bpk.go.id/wp-content/uploads/2015/12/142PMK.0102015Per.pdf

Ministry of Finance, Indonesia [MoF Regulation]. (2015). *Perubahan Keempat atas Keputusan Menteri Keuangan No.154/PMK.03//2010 Tentang Pemungutan Pajak Penghasilan Pasa 22 Sehubungan Dengan Pembayaran atas Penyerahan Barang dan Kegiatan di Bidang Impor atau Kegiatan Usaha di Bidang Lain* [MoF Regulation No. 107/PMK.010/2015, Fourth Amendment of the Ministry of Finance No.231 / KMK.03 / 2001 Concerning Collection of Income Tax Article 22 In connection with Payment for the Delivery of Goods and Activities in the Field of Import or Business Activities in Other Fields]. Retrieved from http://images.fedex.com/downloads/id/gov/newpph22.pdf

Ministry of Finance, Indonesia [MoF Regulation]. (2016). *Pengurangan Pajak Bumi dan Bangunan untuk Kegiatan Usaha Pertambangan/ Pengusahaan Panas Bumi Pada Tahap Eksplorasi* [MoF Regulation No. 172/PMK/010/2016, Reduction of Land and Building Tax for Mining Activities / Geothermal Exploitation at the Exploration Stage]. Retrieved from http://www.sjdih.kemenkeu.go.id/fullText/2016/172~PMK.010~2016Per.pdf

Ministry of Finance, Indonesia [MoF Regulation]. (2017). *Pengelolaan Dana Pembiayaan Infrastructur Sektor Panas Bumi Pada Perusahaan Perseroan PT Sarana Multi Infrastruktur* [MoF Regulation No. 62/PMK.08/2017, Geothermal Fund of Infrastructure Financing Management for PT. Sarana Multi Infrastruktur]. Retrieved from http://www.jdih.kemenkeu.go.id/fullText/2017/62~PMK.08~2017Per.pdf

ICMEM

The 3rd International Conference on Management in Emerging Markets

Supplier Selection in Small Medium Enterprise Using a Factor Rating Methods Based on Standard Quality Approach: Case Study of Viage Indonesia Company

Lirih Hartini Utami[a*], Desy Anisya Farmaciawaty[b]

[a,b]*School of Business and Management, Bandung Institute of Technology*

Abstract

Today many SMEs facing the challenge to keep update continuously, maintain the quality, flexible and reactive to market trends while being characterized by lack of resources and managerial expertise. Nowadays supplier selection is gradually seen as a strategic issue in SMEs. Viage Indonesia is one of SMEs running in fashion industry that has problems to selecting the qualified supplier. The objective of this research is to analyze and determine the selected supplier to increase the quality of Viage Indonesia Company. The researcher uses the preliminary study to get the criteria for supplier selection. The data collection uses the primary data which is conducted by spreading the questionnaire using purposive sampling to 81 respondents and do the depth-interview to a fashion company in order to establish the criteria for selecting the supplier. This research presents the study of Analytic Hierarchy Process (AHP) methods to measure the weighted of each criterion. Afterward, researcher uses factor rating methods to calculate the score from interviewing two selected supplier based on performance, experience, and service. The result of this research is the qualified supplier for Viage Indonesia are SEMSTA supplier with total score 89.82 five points higher than its rival supplier.

Keywords: Supplier Selection; Small Medium Entreprise; Analytic Hierarchy Process (AHP) Method; Factor Rating Method

1. Introduction

Fashion has been growing globally in modern society (Kawamura, 2006). For many years, the fashion industry has attracted the attention of researchers (Yang et al., 2017). In the fashion industry, companies should be more flexible and responsive to rapid changes of trends in markets (Martin et al., 2004). Being on trends can be seen as a form of "insurance" for fashion company (Lantz, 2016). However, the same rapid change of trends also makes the fashion industry highly competitive (Molderez and Van Elst, 2015).

Recently, new entrants companies choose to capture the latest fashion trends by emphasizing quality over quantity to determine a sustainable and long-lasting approach (Gockeln, 2014). In the fashion industry leads to a movement from price and quality towards timing so that new designs can be quickly introduced to markets. The longer lead time may affect a gap between products and consumer's expectations (Cortez et al., 2014).

The point of quality will define by customers using specifications, standards, and other measures (Evans and Lindsay, 2002). Quality is obviously one of the key element to providing superior value to the customers (Goetsch and Davis, 2014). Quality should be aimed at the needs of the customer todays and future because the consumer is the most important part of the production line (Russell and Taylor-Iii, 2008). The production process has an important role in the creation of a quality product in an effort to meet customer demand. Based on the perspective of the needs-based production process can increase the quality to determine by what the customer needs and willing to pay for.

The quality of product or service depended upon the quality of the inputs, process, etc. it is, therefore, essential that the inputs are procured only from those vendors who have demonstrated their capability to supply the inputs of desired

---

* Corresponding author.
  E-mail address: lirih.hartini@sbm-itb.ac.id

ICMEM

quality at an acceptable cost and within the agreed time schedule (Shin et al., 2000). Correct supplier evaluation helps an organization, directly and indirectly, to improve product quality, and reduce production costs and lead times for new product introductions (Singh, 2015). Some benefits for using vendor as outsourcing are lower wages, taxes, and risks of capital loss due to the minimal investment in manufacturing facilities (Göransson et al., 2007). Nevertheless, companies using outsourcing usually find it challenging to control their product quality (Göransson et al., 2007). In today competitive operating environment, it is impossible to successfully achieve low cost, high quality products without having reasonable vendors. Thus, one of the most important purchasing decisions is the selection and maintenance of a competent group of vendors (Singh, 2015).

Small and medium-sized enterprises (SMEs) are critical to the health and dynamism of the global economy because of their flexibility and ability to innovate (Jamil and Mohamed, 2011). They play a significant role in providing employment opportunities and supporting large scale organizations. Nowadays, companies, including SMEs, are competing in globalized markets. In order to compete in continuously changing environments and sustaining their competitive advantage, it is very crucial that they need to understand and monitor their company's performance. Facing the challege to keeping continuously updated, which need to be extremely flexible and reactive to market changes while being characterized by a lack of resources and managerial expertise, its the ability that SMEs company needed (Su and Gargeya, 2016). This makes vendor (supplier) selection one of the key issues for SMEs in their day-to-day management (Singh, 2015).

One of Small medium enterprise Company in Bandung that focus on fashion industry especially produce bag is Viage Indonesia that has the product multifunction bag without need to detach the strep. Viage Indonesia has missions to provide simplicity, multifunction, and comfortable. To achieve that mission, as company that running in fashion industry Viage Indonesia need to provide high quality of products to fulfil customers' needs. As the SME company Viage Indonesia still use an outsources vendor production to produce bag to compete with the other company in the same industry. In additional, the company want to find the most suitable vendor selection method that can help the company to select and evaluate the vendor, to improve company performance.

2. Theoretical Foundation

2.1. Supplier Selection Process

Experts agree that no best way exists to evaluate and select suppliers, and thus organizations use a variety of approaches (Monczka et al., 2015). The overall objective of the supplier selection process is to reduce risk and maximize overall value to the purchaser. The company must select suppliers that can do business with over an extended period of time. An effective supplier selection should have certain characteristics such as comprehensiveness, objectiveness, reliability, flexibility and finally, has to be fulfil the company standard. To ensure that a supplier selection has these characteristics is recommended a step-by-step process when creating this tool. Fig. 2.1 presents the steps to follow when developing such a system of supplier evaluation and selection audit development (Monczka et al., 2015).

ICMEM
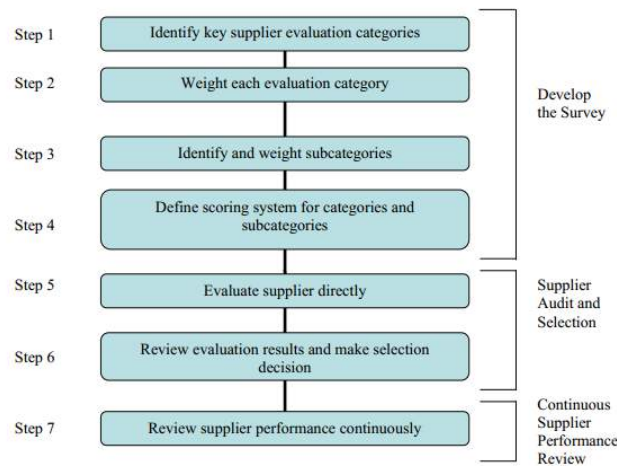
Fig. 2.1. Supplier Evaluation and Selection Audit Development

This framework should have certain characteristics such as: be comprehensive, objective, reliable, flexible, and be mathematically straightforward. The use of weights and points should be simple enough so that each individual involved in the evaluation understands the mechanics of the scoring and selection process. This step-by-step process is recommended to ensure that a supplier survey has the right characteristic.

2.2. Supplier Selection Methods

There are several supplier selection methods available in the literature. Supplier selection method was studied to find out supplier's credentials and capabilities in supplying. Many Organizations had used some approaches for supplier selection in the past. In research the researcher use some authors propose linear weighting models in which suppliers are rated on several criteria and in which these ratings are combined into a single score. These models include the analytical hierarchical process (Saatey, 2013) and Factor Rating Method (Wedley, 1990).

Analytic Hierarchy Process (AHP)

Analytical Hierarchical Process (AHP), a decision-making method developed by Saaty (2013) for prioritizing alternatives when multiple criteria must be considered and allows the decision maker to structure complex problems in the form of a hierarchy, or a set of integrated levels. Generally, the hierarchy has at least three levels: the goal, the criteria, and the alternatives. For the supplier selection problem, the goal is to select the best overall supplier. The criteria can be performance, experience and service. The AHP offers a methodology to rank alternative courses of action based on the decision maker's judgments concerning the importance of the criteria and the extent to which they are met by each alternative. Managerial judgments are used to drive the AHP approach. These judgments are expressed in terms of pairwise comparisons of items on a given level of the hierarchy with respect to their impact on the next higher level. Pairwise comparisons express the relative importance of one item versus another in meeting a goal or a criterion. Each of the pairwise comparisons represents an estimate of the ratio of the weights of the two criteria being compared. Because AHP utilizes a ratio scale for human judgments, the alternatives weights reflect the relative importance of the criteria in achieving the goal of the hierarchy. The use of the AHP approach offers a number of benefits. One important advantage is its simplicity. The AHP can also accommodate uncertain and subjective information, and allows the application of experience, insight, and intuition in a logical manner. The AHP approach, as applied to the supplier selection problem, consists of the following five steps (Saaty, 2013):

a. Specify the set of criteria for evaluating the supplier's proposals.
b. Obtain the pairwise comparisons of the relative importance of the criteria in achieving the goal, and compute the priorities or weights of the criteria based on this information.
c. Obtain measures that describe the extent to which each supplier achieves the criteria.

ICMEM

d. Using the information in step 3, obtain the pairwise comparisons of the relative importance of the suppliers with respect to the criteria, and compute the corresponding priorities.
e. Using the results of steps 2 and 4, compute the priorities of each supplier in achieving the goal of the hierarchy. This procedure is summarized in the following example.

Factor Rating Methods

Factor Rating method is involves the qualitative and quantitative inputs, and evaluates alternatives based on comparison after establishing a composite value for each alternative (Wedley, 1990). Factor Rating consists of six steps:
a. Determine relevant and important factors.
b. Assign a weight to each factor, with all weights totalling 1.00.
c. Determine common scale for all factors, usually 0 to 100.
d. Score each alternative.
e. Adjust score using weights (multiply factor weight by score factor); add up scores for each alternative.
f. The alternative with the highest score is considered the best option.
g. Minimum scores may be established to set a particular standard, though this is not necessary.

As the SMEs company need to periodically evaluate vendor performance in order to retain those vendor which meet their requirements in terms of several performance criteria. The evaluation element typically consists of identifying the attributes, criteria, or factors relevant to the decision and then measuring or rating each vendor by considering each of the relevant factors. A critical part of the overall Supplier selection process is the determination of the relative importance of each of the factors. The advantages of the Factor Rating method include the ability for the organization to include numerous evaluation factors and assign them weights according to the organization's needs. The subjective factors on the evaluation are minimized. The major limitation of this approach is that it is difficult to effectively take qualitative evaluation criteria into consideration.

2.3. Previous Study of Supplier Selection

There is a previous study by Su and Gargeya (2016), regarding supplier selection in small and medium sized firms the case of the US textile and apparel industry the conclusion of the research is there are 24 supplier selection criteria reflect seven aspects of supply selection, addressing issues with regard to product quality, price of product, supplier responsiveness, strategic consideration, supplier capability, relationship, and compatibility. Multiple regression analysis of firm performance and the seven aspects of supplier selection revealed that quality level and strategic consideration each significantly affected overall customer service levels and overall customer satisfaction. The managerial implication is that managers must invest to improve product quality and quality is the most significant contributor to firm performance. Based on Kotula, Ho, Dey, & Lee (2015) finding that quality is the most critical success factor.

Besides that, the previous study by Mahendra Singh (2015), regarding Factor Rating Method: Vendor Evaluation System. The present study shows how efficiently factor rating method is applied in above three cases. Factor and their rating based on weightage provide enough ground for evaluating vendor performance. Such helpful in different decision areas like vendor evaluation, vendor selection, vendor relationship management and day to day coordination with respect to supplies. Ratings have also been used in penalizing defaulter suppliers or notifying them for making improvements in the concerned areas of performance like quality and delivery as in cases. The comparison shows that factors used in such supplier ratings are specific to organization but are usually driven by basic framework of supplier rating system.

Based on the previous study, Supplier Selection creates multi criterion decision making in supply chain management. Supplier evaluation and selection has always been considered as an important function of SCM for the companies. Teaming up with the right supplier and managing them is getting more significance now with the strategic partnerships being implemented with supplier to achieve a competitive advantage and the involvement of suppliers in product development stages. Therefore, effective methodologies that have the capability of evaluating and continually monitoring suppliers' performance are still needed.

ICMEM

The right supplier selection process creates a factor that affecting the standard quality of company. Which is improve the company performance. The hypothesis for this research, H1: the right supplier selection process influence to the company performance.

```
┌─────────────────────────┐      ┌─────────────────────────────┐
│   Supplier Selection    │  H1▷ │   Company Performance       │
└─────────────────────────┘      └─────────────────────────────┘
```
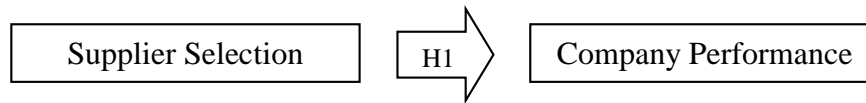
Figure 2.2 Research's Hypothesis

3. Methodology

The research methodology applied here starts with the selection of criteria and ends with a Factor Rating Methods for vendor selection. Taking the Preliminary research, market survey using questionnaire to 81 respondents, and do the interview with one competitor to get the criteria of supplier selection. The results of that company get the 8 variables criteria. These criteria are calculated using AHP Methods to determine the weights through pair-wise comparisons by expert judgment such as lecture, competitor, business owner, board of director, etc. with total of 28 respondents. Each of the criteria being pairwise comparisons represents an estimate of the ratio of the weights of the two criteria being compared. To calculate the weigh point for each criterion the researcher use expert choice application for combined all the expert judgment to get the score. The researcher also making the indicator for each key factor or criteria using rubric value. After all, the researcher do the interview with the selected supplier to get the scoring for each supplier. Schematic presentation, with all the step-by-step procedures, is shown in Fig. 3.1.
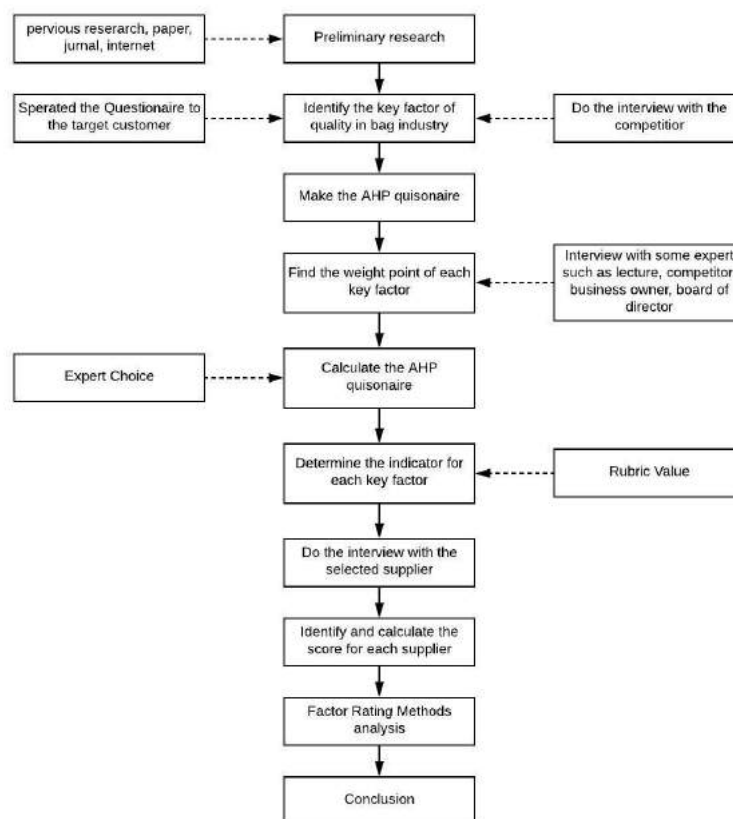
Fig. 3.1. Schematic Presentation of Research Methodology

ICMEM

4. Data Analysis

4.1. Set the Criteria

Goal in this research is get the select the best overall supplier based on the criteria that company already set. To set the criteria of select supplier the researcher do the literature review to get the references and indicator. The researcher use the preliminary research to get the criteria of the supplier selection. Table 4.1 are presented the preliminary research that researcher read:

Table 4.1. Preliminary Research

Title of research	Author	result
Identifikasi Kebutuhan Pelanggan Dalam Perancangan Dan Pengembangan Konsep Tas Backpack Yang Ergonomis Dan Multifungsi	Nataya Charoonsri Rizani , Agie Satria	In this research are focusing in the quality that customer needs in perspective of product. There are 25 factor that can be indicator of high quality product.
A Case On Vendor Selection Methodology: An Integrated Approach	Nikhil Chandra Shil	In this research are focusing on the selecting the vendor using AHP methods and multiple regression analysis. There are three focusing factor there are performance, experience, and satisfaction. Each factor have the sub criteria for each factor that can be indicator.
Vendor Selection Using a New Fuzzy Group TOPSIS Approach	Shahanaghi, Seyed Ahmad Yazdian	In this research are focusing on the New fuzzy and TOPSIS approach to selected the vendor or supplier. There are six criteria that can be indicator.

The researcher uses the two kind of perspective to construct the criteria of qualified supplier based on customer perspective and competitor perspective. For choosing the criteria that researcher uses in the Analytical hierarchy process (AHP) and Factor rating methods the researcher constructs the questionnaire to the target customer with the criteria of respondent are live in Bandung, in rage age between 15 – 25 years old, and like to use a bag in daily activities. Moreover, the researcher also conduct the guideline of interview with the competitor based on the preliminary research. Based on the journal of (Rizani and Satria, 2013) there are 25 criteria of high quality bag based on customer needs. From the 25 criteria the researcher take the 9 criteria of standard quality of product and spread the criteria to the target customer to get the customer needs. The result of Questionnaire to get the customer needs perspective criteria with total respondent are 81 people are presented in table 4.2.

Table 4.2. Result of the Questionnaire to Target Customer

Criteria	Value of each	Percentage for each criteria	Cumulative percentage
Bag that has a neat stitches	48	15.84%	15.84%
Bag made of light and quality material	62	20.46%	36.30%
Bag made of waterproof/hardy/fire resistant	25	8.25%	44.55%
Bag that do not have many accessories	27	8.91%	53.47%
Bag that have zippers that are qualified and efficient	36	11.88%	65.35%
Bag equipped with safety lock/ bag safe from burglar	5	1.65%	67.00%
Comfortable bags	57	18.81%	85.81%

Bag that has many functions/multifunctional	17	5.61%	91.42%
Bag that can carry a lot of stuff	24	7.92%	99.34%
Models and designs are preferred	1	0.33%	99.67%
Branded bag	1	0.33%	100.00%
Total value all criteria	303	100.00%	

The last of two categories are fill by customer not from the preliminary research. After the calculation for each the categories, the researcher uses the pareto chart to analyse the highest criteria that customer choose, the pareto chart of the result are presented below in Fig 4.1
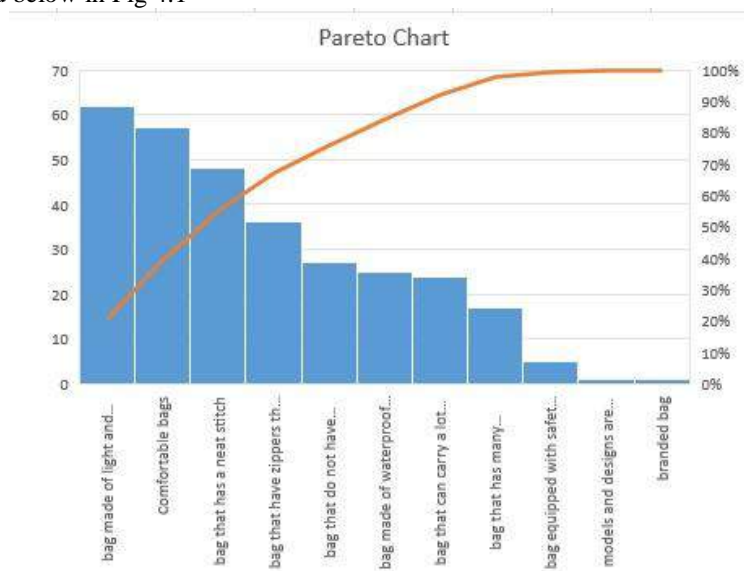
Fig. 4.1. Pareto Chart of Criteria from Customer Perspective

From the pareto chart analysis we can see the priority that customer choose as the criteria to select the high quality of product is bag are made from light and quality material, comfortable bag, bag that has a neat stitch, and bag that has zipper that has qualified and efficient. The researcher also does the interview with the competitor in the fashion industry especially in producing the bag about which the criteria of the qualified supplier. The result of the interview with the competitor are presented below in Table 4.3.

Table 4.3. Result of the Interview with Competitor in Same Industry

No	Criteria	No	Criteria
1	Timeliness of delivery	13	Trust
2	Quality of product upon service	14	Quality level
3	Efficiency in handling problems	15	Price/cost of product
4	Quality of service provided	16	Quick response time
5	Competitiveness of term conditions	17	Communication openness
6	Staff recruitment	18	Honest & frequent communication
7	Number of order	19	Customer service
8	Number of order completed	20	Correct quantity
9	Number of successfully completed	21	Willingness to continually improve the product &process
10	Business with buyers in months	22	Past and current relationship
11	Years operation	23	Geography capability

ICMEM

12	Staff experience	24	Flexibility to respond to unexpected demand

After the researcher analyze the criteria baes on customer perspective and competitor perspective, the researcher do the focus group discussion with the managerial company to combining all criteria with the needs of company expectation of the finish product that supplier product or the output that supplier process for the company. Here the list of the total eight criteria that Viage Indonesia company will use as the key factor to choose the supplier in table 4.4 below:

Table 4.3. Result of the Interview with Competitor in Same Industry

Factor	Criteria	
Factor 1: performance	a.	Timeliness of production
	b.	Finish product have neat stitches
Factor 2: Experience	c.	Number of orders successfully completed on time
	d.	Past and current relationship with customer
	e.	Number of complaining customer
Factor 3: Service	f.	Location of the supplier
	g.	Quick response time
	h.	Flexibility to unexpected demand

4.2. Analytical Hierarchy Process (AHP)

In the previous step the researcher already set the goal and the criteria to select the supplier based on result from literature review, market survey to target customer and interview the competitor. The problem is placed at the top of the hierarchy while the middle layer contains all the criteria needed. In this AHP methods the researcher want to know the weight point for each criteria. The Hierarchy of criteria as selected is shown in fig 4. and will be used for AHP methods.
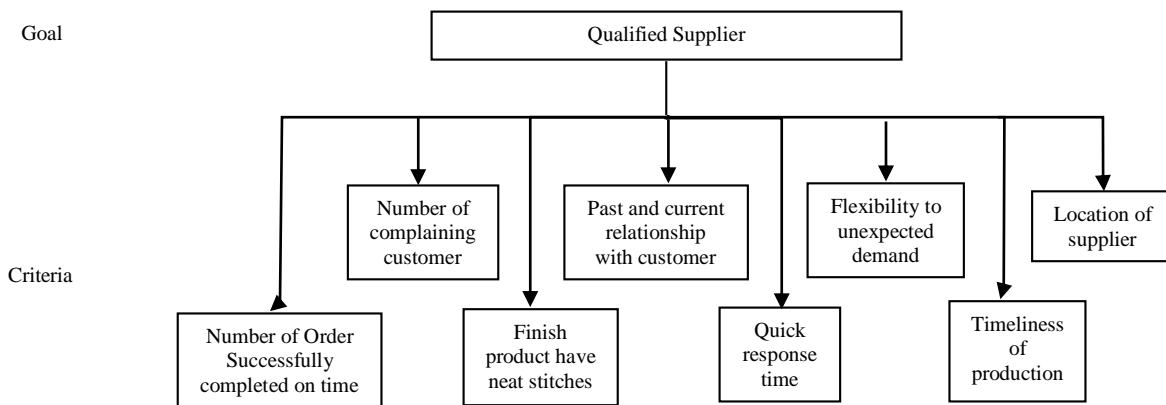
Fig. 4.2. Hierarchy of Criteria

ICMEM

There are 8 criteria that are considered in AHP. After completion of the hierarchy a prioritization procedure is followed to assign the priority to the elements of the hierarchy structure. To get know what is the criteria that should be priority the researcher constructed a judgmental procedure use pair-wise comparison among the criteria (Bayazit and Karpak, 2005). AHP uses a standardized comparison scale of nine levels to make the pair-wise comparison. all of nine levels pair-wise comparison are the reflection of the people judgment in verbal from showing different degrees of preferences that need quantification. all the judgment is quantified with numeric values assigned as shown in table 4.4.

Table 4.4. Scale for Relative Importance

Intensity Of Importance	Definition
1	Equal importance
2	Weak importance
3	Moderate importance
4	Moderate plus importance
5	Strong importance
6	Strong plus importance
7	Very strong importance
8	Very strong plus importance
9	Extreme importance

The pair-wise comparison starts each time with the question: "Which criterion is better than the other and by how much in comparison with the other?" to measure the priority of one criterion over another. There is no requirement that the scaling necessarily falls between 1 and 9 but for qualitative data such as preference, ranking and subjective opinions, it is suggested (Saaty, 2013) to use the scale of 1 to 9 with the meaning as presented in Fig. 4.3.
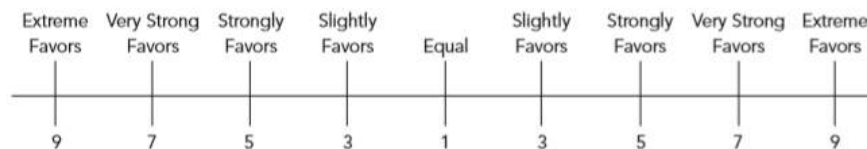
Fig. 4.3. Priority Scale

In this research the number of comparisons is totally dependent on the number of variables to be compared. The maximum possible number of combinations in pairs may be computed by using the equation of:

$$n = \frac{n(n-1)}{2} \tag{1}$$

n : number of criteria

Firstly decision-makers need to make the pair-wise comparisons among the criteria to express the dominance of one criterion over another. For n number of criteria pair-wise comparisons are needed. The result can be preserved in an (n x n) evaluation matrix A where each element represents a pair-wise comparison between each criteria. This is also use for how many expert that decision-makers ask for submitting the AHP questionnaire. In this case the researcher ask the 28 expert from lecture, business owner, loyal customer, etc.

ICMEM

AHP use people judgment that expert in the industry and hence inconsistency may aise in the pair-wise comparison. So, the consistency of the pair-wise comparison mush be calculated through a consistency index (CI), the equation of CI as follow:

$$CI = \frac{\lambda_{\max} - n}{n - 1}$$ (2)

The final consistency ratio (CR) is calculated as the ratio of the CI and the random consistency index (RCI) and is calculated as :

$$CR = \frac{CI}{RCI}$$ (3)

RCI is the index value selected from Table 4.5 with respect to the different rank of matrix.

Table 4.5. Random Consistency Index

Matrix rank	1	2	3	4	5	6	7	8
RCI	0	0	0.58	0.90	1.12	1.24	1.32	1.41

The acceptable CR range varies according to the size of matrix:
- 0.05 for a 3 by 3 matrix
- 0.08 for a 4 by 4 matrix
- 0,10 for all larger matrices with n≥5

If CR is equal to or less than that value, it implies that the evaluation within the matrix is acceptable or indicates a good level of consistency in the comparative judgments represented in that matrix. Otherwise, inconsistency has occurred and the evaluation process should therefore be reviewed, reconsidered and improved. To calculate the consistency ratio the researcher use the expert choice to get weight point of each criteria and the result of the calculation from expert choice as presented in Table 4.5 below:

Table 4.5. Weight Point for Criteria

Criteria	Weighted point
Number of orders successfully completed on time	0.224
Finish product have neat stitches	0.161
Number of complaining customer	0.148
Quick response time	0.125
Timeliness of production	0.115
Past and current relationship with customer	0.105
Location of supplier	0.072
Flexibility to unexpected demand	0.051
TOTAL	1.00

Inconsistency = 0.02
With 0 missing judgments

ICMEM

From the result of the expert choice analysis, the criteria of number of orders successfully completed on time it's get the highest weight point from other criteria with the 0.224 point. It indicated that from 28 expert respondents choose number of order successfully completed as the most criteria that should be concerning to select the supplier.

After that, the second criteria are finish product have neat stitches be the concern to choose the right supplier it because related to the quality of product that supplier make, it also related to the customer satisfaction if the product that company make have the high quality product. In the Viage Indonesia this criterion also have important role because the company wants to provide the high quality product. Beside that, the number of complaining customer can indicated the performance of the supplier. the experience from the previous customer can indicated the supplier give the best service to the customer or not because the review of the customer also important in the running the business especially in service. And also Quick respond time to the customer can indicated the service that supplier to respond the order that come to them.

In the business timeliness of production is the crucial criteria that supplier needs to have. Because the good supplier can calculate and determine the time of schedule in the production time so the finish product can finish on time.

The criteria of past and current relationship with the customer also can indicated the service of the supplier, rather that they can maintain the good relationship with the customer or not.

As the SMEs company like Viage Indonesia the location of the supplier can be the criteria that should be concern because to minimize the cost of delivery finish product. Besides that, in the SMEs company that still have a unexpected demand it also the criteria that should be concern to get the good supplier.

4. 3.   Rubric value

After get the weight point of each criteria the researcher make the indicator for making the score for selected supplier to determine which consideration to scoring the supplier. To construct the rubric value for each criteria the researcher use the forume group discussion (FGD) with the managerial of Viage Indonesia Company. The rubric value for each criteria are presented in Table 4.6 below:

Table 4.6. Rubric Value for each Criteria

Criteria	Weighted point			
	99 – 80	79 – 60	59 – 40	<39
Number of orders successfully completed on time	All order completed on time	1–2 order are delay	3-4 order are delay	>4 order delay
Finish product have neat stitches	No defect	1-2 defect	3-4 defect	>4 defect
Number of complaining customer	<3% complain from total order	3% complain from total order	5% complain from total order	>5% complain from total order
Quick response time	>3 channel for gathering order	2 channel for gathering order	1 channel for gathering order	Offline channel for gathering order
Timeliness of production	Less then the targeted time	On time	Delay 1-2 days	Delay more than 2 days
Past and current relationship with customer	Have special offer or loyal customer	Maintain the communication every month	Maintain the communication every years	There no special offer or maintaining the communication
Location of supplier	< 4 km from Jl. Ciumbuleit	5-8 km from Jl. Ciumbuleit	9-12 km Jl. Ciumbuleit	>13 km from Jl. ciumbuleit
Flexibility to unexpected demand	There no minimum and maximum order	1 dozen for minimum order, 5000 pcs for maximum order	100 pcs for minimum order, 10000 pcs for maximum order	1000 pcs for minimum order, >10000 pcs for maximum order

4. 4.   Factor Rating Methods

ICMEM

The factor rating methods is used for assessing performance of supplier in comparison to other. This helps the decision-makers to make a decision. Supplies are discontinued if rating is below a certain limit (defined). Here, factor rating methods is done considering the following main criteria. These ratings are calculated for interviewing the esgotado as the first supplier and the SEMSTA as the second supplier. Overall rating is done on eight criteria that already discuss. The detailed factor ratings result is as given in table 4.7.

As an illustrative data below the following equation present how table 4.7 is calculated :

$$Supplier\ 1 = (0.224 \times 90) + (0.161 \times 75) + (0.148 \times 93) + (0.125 \times 85) + (0.115 \times 79) + (0.105 \times 80) \\ + (0.072 \times 86) + (0.051 \times 79)$$

$$Supplier\ 2 = (0.224 \times 90) + (0.161 \times 85) + (0.148 \times 95) + (0.125 \times 90) + (0.115 \times 89) + (0.105 \times 82) \\ + (0.072 \times 94) + (0.051 \times 99)$$

Table 4.7. Factor Rating Methods on Supplier selection in Viage Company

Criteria	Weighted point	Score		Result	
		Supplier 1	Supplier 2	Supplier 1	Supplier 2
Number of orders successfully completed on time	0.224	90	90	20.16	20.16
Finish product have neat stitches	0.161	75	85	12.08	13.69
Number of complaining customer	0.148	93	95	13.76	14.06
Quick response time	0.125	85	90	10.63	11.25
Timeliness of production	0.115	79	89	9.09	10.24
Past and current relationship with customer	0.105	80	82	8.40	8.61
Location of supplier	0.072	86	94	6.19	6.77
Flexibility to unexpected demand	0.051	79	99	4.03	5.05
TOTAL	1.00			84.33	89.82

According to the result of the supplier selection using the factor rating methods, the higher weight belongs to supplier 2 and is judged to be the best overall.

5. Conclusion

Supplier selection is a very important and critical multi-criteria decision-making problem in SMEs nowadays such that making an improper decision has adverse effects on the entire company performance. This fact has attracted attentions of many researchers to find better and more realistic approaches to dealing with this problem. This paper presented the weight point for each criterion the researcher use Analysis Hierarchy Process (AHP) approach to get the objective point for each criteria. In the proposed approach, a two-hierarchy problem consisting of goal and criteria to construct the weighted normalized decision matrix of the AHP method. After that the researcher scoring for the supplier selected using Factor Rating Methods approach. The result of this research is use the study case of Viage Indonesia company that running in fashion industry. The result of this research is the qualified supplier is the SEMESTA supplier with the total score is 89,82. Finally, an illustrative was conducted to show applicability of our approach in selecting an appropriate supplier(s) by a decision-makers.

For further research, on supplier selection methods can be developed in many ways. The researcher recommends adding more criteria based on company needs that can influences the overall performance of company. The research

ICMEM

can also have a broader limitation from respondents with different background of demographics. In this research method may have some limit the generalization of the results of this study. Further research with a broader sampling frame should be further to find the most essential criteria that needed by SMEs to select the supplier. Since this study only examines bag product, future research that includes different fashion products will enhance our understanding in this industry. Finally, future research in different sub-sectors within the creative industry will broaden our perspectives on the importance of supplier selection, thus could give us better insights of how supplier selection could have an impact across different industries. Also, further study on how owner/manager characteristics and firm characteristics determine the adoption on supplier selection would bring more detailed insights of supplier selection among SMEs in Indonesia.

References

Bayazit, O. & Karpak, B. 2005. An Ahp Application In Vendor Selection. Isahp, Honolulu, Hawaii, July, 8-10.

Cortez, M. A., Tu, N. T., Van Anh, D., Ng, B. Z. & Vegafria, E. 2014. Fast Fashion Quadrangle: An Analysis. Academy Of Marketing Studies Journal, 18, 1.

Evans, J. R. & Lindsay, W. M. 2002. The Management And Control Of Quality, South-Western Cincinnati, Oh.

Gockeln, L. 2014. Fashion Industry Analysis From The Perspective Of Business Model Dynamics. University Of Twente.

Goetsch, D. L. & Davis, S. B. 2014. Quality Management For Organizational Excellence, Pearson Upper Saddle River, Nj.

Göransson, S., Jönsson, A. & Persson, M. 2007. Extreme Business-Models In The Clothing Industry-A Case Study Of H&M And Zara.

Jamil, C. & Mohamed, R. 2011. Performance Measurement System (Pms) In Small Medium Enterprises (Smes): A Practical Modified Framework. World Journal Of Social Sciences, 1, 200-212.

Kawamura, Y. 2006. Japanese Teens As Producers Of Street Fashion. Current Sociology, 54, 784-801.

Kotula, M., Ho, W., Dey, P. K. & Lee, C. K. M. 2015. Strategic Sourcing Supplier Selection Misalignment With Critical Success Factors: Findings From Multiple Case Studies In Germany And The United Kingdom. International Journal Of Production Economics, 166, 238-247.

Lantz, J. 2016. The Trendmakers: Behind The Scenes Of The Global Fashion Industry, Bloomsbury Publishing.

Martin, C., Robert, L. & Helen, P. 2004. Creating Agile Supply Chains In The Fashion Industry. International Journal Of Retail & Distribution Management, 32, 367-376.

Molderez, I. & Van Elst, B. 2015. Barriers Towards A Systemic Change In The Clothing Industry. Journal Of Corporate Citizenship.

Monczka, R. M., Handfield, R. B., Giunipero, L. C. & Patterson, J. L. 2015. Purchasing And Supply Chain Management, Cengage Learning.

Rizani, N. C. & Satria, A. 2013. Identifikasi Kebutuhan Pelanggan Dalam Perancangan Dan Pengembangan Konsep Tas Backpack Yang Ergonomis Dan Multifungsi. Jurnal Teknik Industri, 3.

Russell, R. S. & Taylor-Iii, B. W. 2008. Operations Management Along The Supply Chain, John Wiley & Sons.

Saaty, T. L. 2013. Analytic Hierarchy Process. Encyclopedia Of Operations Research And Management Science. Springer.

Shin, H., Collier, D. A. & Wilson, D. D. 2000. Supply Management Orientation And Supplier/Buyer Performance. Journal Of Operations Management, 18, 317-333.

Singh, M. 2015. Factor Rating Method: Vendor Evaluation System. Scms Journal Of Indian Management, 12, 25.

Su, J. & Gargeya, V. B. 2016. Supplier Selection In Small-And Medium-Sized Firms: The Case Of The Us Textile And Apparel Industry. American Journal Of Business, 31, 166-186.

Wedley, W. C. 1990. Combining Qualitative And Quantitative Factors—An Analytic Hierarchy Approach. Socio-Economic Planning Sciences, 24, 57-64.

Yang, S., Song, Y. & Tong, S. 2017. Sustainable Retailing In The Fashion Industry: A Systematic Literature Review. Sustainability, 9, 1266.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Improvement of Headrace Tunnel Excavation Productivity at Jatigede Hydro Electric Power Plant Project

Ainanto Nindyo

School of Business and Management, Institut Teknologi Bandung

Abstract

In most part of Indonesia, demand for electrical energy has rapidly been growing since the last two decades. To catch up this increasing demand, Government of Indonesia plans to build a number of electric power plants. The program was divided into two phases or Fast Track Program (FTP), 10,000 MW Project Batch I and 10,000 MW Project Batch II. Under the circumstances, PT. PLN (Persero) is developing a new hydroelectric power plant at Sumedang District, West Java Province. At this area PLN intends to build Jatigede hydroelectric power plant project with an installed capacity of 110 MW (2 x 55 MW). The Contractor who works on the construction of Jatigede Hydro Electric Powerplant Project is Sinohydro-PP Consortium. The Design & Construction supervision is handled by PLN Enjiniring and subconsulted by Fichtner.

One of critical path in the construction is the excavation of the headrace tunnel. Seen from the geological condition exposed by excavation, the excavation progress of the headrace tunnel is mainly limited by tunnel working space, unforeseenable bad geological conditions and the great change of the surrounding rock type in the tunnel, which results in slow excavation progress. In order to greatly reduce the pressure of construction period impacted by delayed headrace tunnel on the whole project, it is needed to find alternatives solution to catch up the schedule. The productivity target from the contract was 2.53 m/day. At the first there was no problems to the productivity and can achieved to 6 m/day. The problems arise when the bad geological conditions faced in the underground impacted the productivity of excavation became 1 m/day.The method analysis of the research is using root cause analysis.

The problem solving alternatives generated from the causes of the analysis. The alternative solutions then being prioritized using priority matrix. Working method changed is decided to answer the productivity problems and it will automatically give a set of solutions (additional human resources, additional equipment resources, additional material resources). The solution also consider the factors of construction safety, economy and construction schedule.Combined the site survey with layout of headrace tunnel, ground and terrain condition along headrace tunnel, scope of land acquisition by dam and supplementary geological investigation data, the method change is adding working faces to the headrace tunnel excavation from the new portal Adit Tunnel No.3. The design was submitted and reviewed by all parties. The implementation is being monitored and the work is distributed to every Person In Charge. Today the Adit Tunnel No.3 is not yet reach the upper headrace tunnel location, the tentative improvement of productivity from the excavation Adit Tunnel it self is 2.1 m/day. Saving from the working method changes is 254.5 billion rupiah, and the cost is 27.3 billion rupiah (assumpted the cost already deal between contractor and PLN). From the analysis we can set the benefit cost ratio is 254.5 billion rupiah / 27.3 billion rupiah or B/C ratio = 9.32

Keywords: Improvement of Tunnel Excavation Productivity; Tunneling Working Method Change

6. Introduction

PT. PLN (Persero) is developing a new hydroelectric power plant at Sumedang District, West Java Province. Cimanuk River has the potential for a Hydro Electric Power Plant (HEPP) and a dam in Jatigede helps to accommodate water for irrigation built by Ministry of Public Works. The water for irrigation will first flow through the tunnel to generate electricity in the power house and then distributed by regulating dam to irrigate. At this area PLN intends to build Jatigede hydroelectric power plant project with installed capacity of 110 MW (2X55 MW). PT PLN (Persero) expects to immediately complete the construction of the hydropower project of Jatigede HEPP in Sumedang by the end of 2019. The Jatigede HEPP is a priority project of the government to increase power generating capacity for Electricity Java-Bali System. It is part of projects to be handled by PLN other than Pumped Storage Upper Cisokan

ICMEM

HEPP, Asahan 3 HEPP and Matenggeng HEPP. The project is in the cooperation between the Ministry of Public Works and PLN. PLN has the role in constructing The Power House and the Public Works Ministry has the role in constructing the dam. The Contractor who works on the construction of Jatigede Hydro Electric Power plant Project is Sinohydro-PP Consortium. The Design & Construction Supervision is handled by PLN Enjiniring sub-consulted by Fichtner.

The main issue in the construction of electricity infrastructure are the time project delivered and the quality of project within price of the contract. This three indicator are very important to the projects. PLN UIP JBT I also use the Indicators to control and monitoring the existing projects. These indicators also used as target each year depend on the progress of the construction since usually power plants are multi years projects. Each project's target in that year depends on their owned S Curve.

One of critical path of the construction is excavation of the headrace tunnel in Jatigede HEPP Project. Seen from the geological condition exposed by excavation, the excavation progress of the headrace tunnel is mainly limited by working space in the tunnel, unforeseeable bad geological conditions and the great change of the surrounding rock type in the tunnel, which results in slow excavation progress. In order to greatly reduce the pressure of construction period impacted by headrace tunnel on the whole project, it is needed to find alternatives solution to catch up the schedule. The productivity target from contract was 2.53 m/day. At the first there was no problems to the productivity and can achieved to 6 m/day. The problems arise when the bad geological conditions faced in the underground impacted the productivity of excavation became 1 m/day.

Based on the original contract, each day delay on the project, the contractor will get penalty for USD 82.560,52 and IDR 635.827.333,28. it means that if the Contractor can not fastened the speed of the excavation in the headrace tunnel, the schedules will lose and power can not be delivered on 2019. If there is no innovation or changed in the working method, then the project will suffer delay almost 2 years. On the other side, the loss potential from PLN side is IDR 686 million each day delay if a hydropower power plant can not join the system because of the use of fuel outside renewable energy (Assumption that price IPP for peak load 7.2 cents/kwh, Rp 13.000/USD, 8 hour used for peaking, Capacity Factor 0.82% and multiplied by size of unit power plant). The main focus of this thesis is the improvement for working method in the headrace tunnel excavation of Jatigede HEPP project.

The research is to find solutions to catch up the schedule to minimize losses of the projects using Root Cause Analysis from the headrace tunnel excavation issue.

7. Method

The conceptual framework that defined in this paper will be based on Project Management Process from Project Management Institute especially in the process group of monitoring & controlling processes that allows project management to manage their projects in ways to control and monitoring the process.
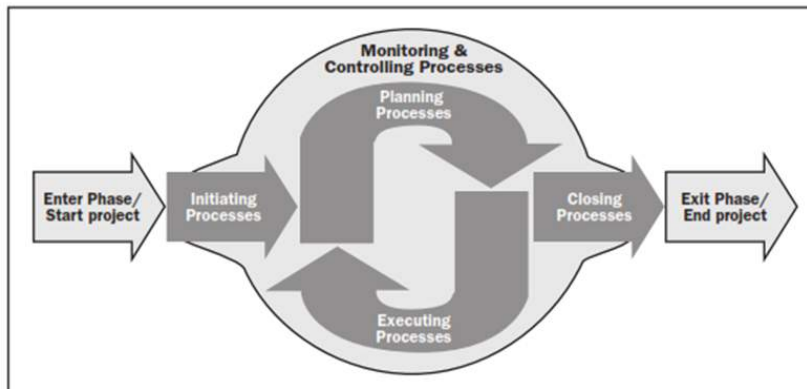
Figure 1 Project Management Process Group "a Guide to Project Management (Source : Body of Knowledge (PMBOK Guide) – 2008 Project Management Institute)

ICMEM

This research will be one of the process in executing process group and also monitoring and controlling group. The project of Jatigede HEPP already signed in the 2014, and today is in the executing phase of the contract. many disciplined are implemented in the project such as civil, mechanical, electrical, geologic engineering. Many problems faced in the projects, and should be mapped one by one to make sure all are being anticipated.

The main issue that will be comprehensively discussed in this research is the proposal of Action Plans of improvement productivity in the excavation of headrace tunnel in Jatigede HEPP. The Conceptual framework of this final project is shown in this below picture.
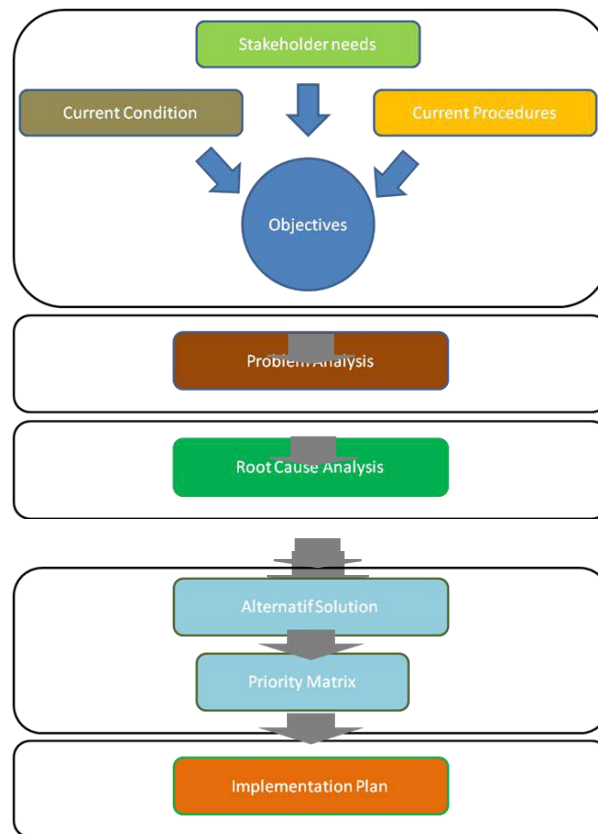
Figure 2. Conceptual Framework

Analysis of Business Situation can be formulated to find problem by identifying issues in the construction of Jatigede HEPP in the current working procedures, especially in the productivity issue. These problems will be follow up further to find/analyze the root caused

Up to January 2018, the actual accumulated progress accounts for 26.81%. The Actual Progress of the month's delayed is 8.90%. The delayed works mainly include:

1. Upper headrace tunnel : A closed conduit or pipe for conducting water to the powerhouse.
2. Surge Shaft : a structure to muffle the fluctuating water to minimize cavitation and water hammer.
3. Power station : The structure that houses generators and turbines
4. Construction area of tailrace tunnel and open channel : the downstream channel away from the power station into the open channel.

ICMEM

5. Construction of downstream regulating weir : regulating dam used to control the water flow in the downstream to irrigate.

Regard of the delay of upper headrace tunnel, surge shaft, power station, construction area of tailrace tunnel and open channel and downstream regulating dam, the following tables show the detail differences between Master Project Schedules and Actual Progress of each parts of civil works

Table 1 Delay Progress Activity

Item	2.1 Preparation Works	2.2 UPPER HEADRACE TUNNEL	2.3 Access Adit Tunnel (Work Adit NO. 2)	2.4 SURGE SHAFT	2.5 SURGE SHAFT TRANSTITION	2.6 HORIZONTAL PENSTOCK TUNNEL	2.7 EMBEDDED STEEL PENSTOCK (VERTICAL PENSTOCK TUNNEL)	2.8 BYPASS TUNNEL (WORK ADIT NO. 1)	2.9 BIFURCATION (branch pipes)
General Program	5.51%	3.33%	0.59%	0.82%	0.19%	0.36%		0.81%	0.10%
Actual Progress	5.40%	1.75%	0.59%	0.80%		0.44%		0.79%	0.11%
Delay	0.12%	1.58%		0.02%	0.19%			0.02%	

Excavation in the headrace tunnel began in the early September 2017. At the beginning the excavation can take more than 6 meters deep productivity in a day, unfortunately the next excavation was not as good as the beginning due to the bad geological condition. We all know that the unforeseen condition in the underground work are very high. Lately productivity is only capable of 1 meter per day, where if we simulate the total time is completed with the productivity is up to 2021. Volume of excavation can be seen in picture below

Table 2 Progress Report per 25 December 2017

Unit	Descriptions	Tailrace Surge Shaft	Tailrace Tunnel	Surgeshaft Section 1	Surgeshaft Section 2	Surgeshaft Section 3	Surgeshaft Section 4	Headrace Tunnel to Upstream & Downsteram	Vertical Penstock	Horizontal Penstock
Meter (m) in length or depth	Contract	25.44	1055.84	11.00	9.00	46.00	46.50	2218.73	89.89	702.99
	Update Progress	25.44	1055.84	0.00	9.00	46.00	0.00	750.00	0.00	241.50
	Remaining	0.00	0.00	11.00	0.00	0.00	46.50	1468.73	89.89	461.49

ICMEM

From the volume report above, it can be seen that the remaining volume is 1468 m deep long. If it is not completed soon then it will effect all of the project schedule since it is in the critical path.

Figure 3 Longitudinal Section of Jatigede HEPP (Source : Design of Jatigede HEPP Presentation, 2016)

The RCA of 5Whys were done by the technical analysis between expert discussion and literature study to provide insights into how deep is the understanding of the tunnel excavation process.
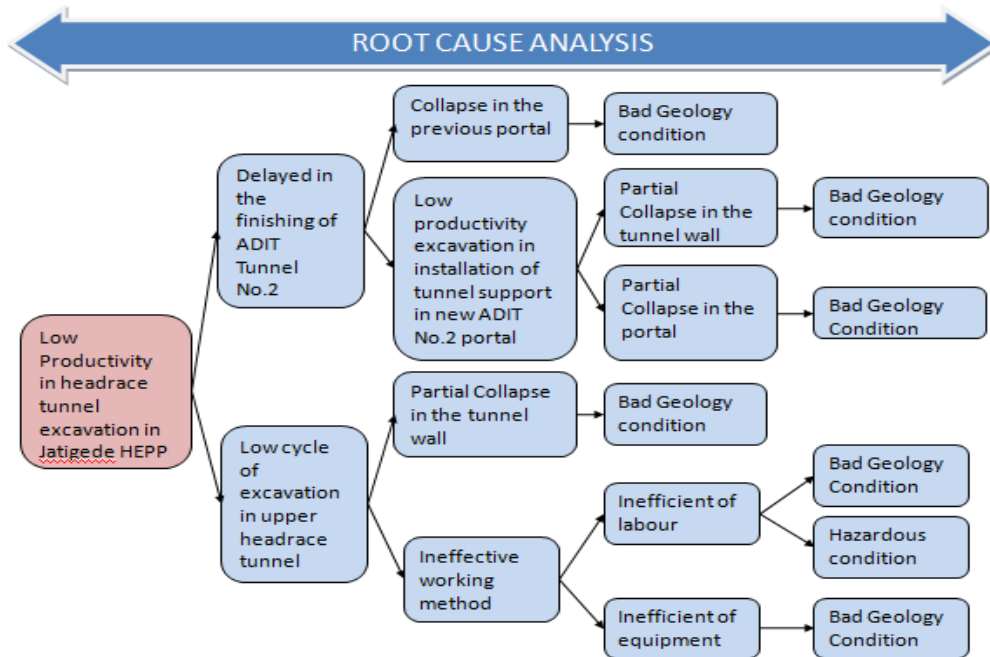
Figure 4 Root Cause Analysis (RCA) in Tunnel Excavation of Jatigede HEPP

Findings as mentioned above will be analyzed and prioritized using Action Priority Matrix. To help managing alternatives there are 4 steps to prioritizing projects, such as:
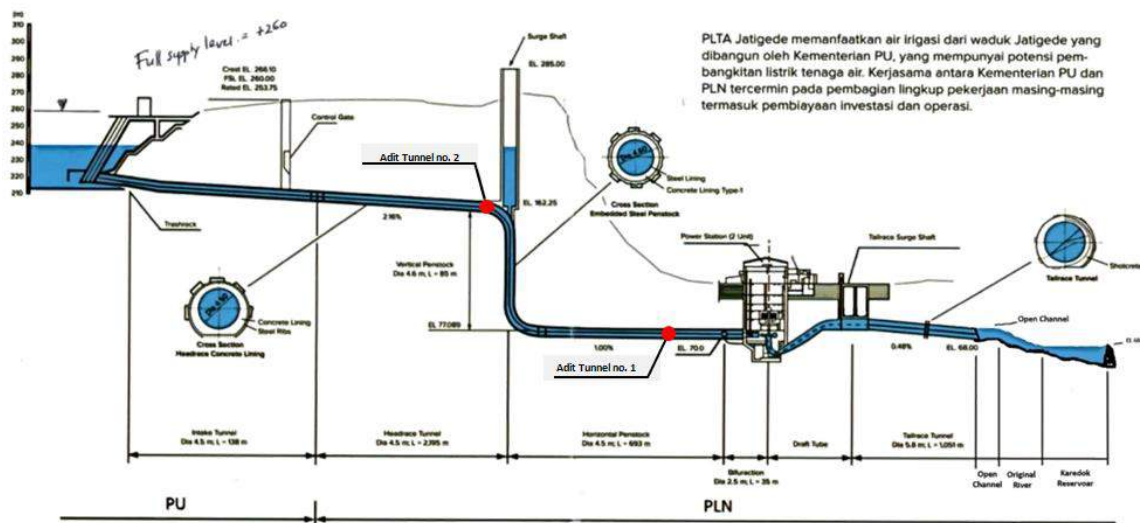
ICMEM

1. Form team that have the competence in discussing the matter. In this study, teams were made up of Site team and expert between Contractor, Consultant and the Owner.
2. Collect the list of all tasks.
3. Identify effort needed and its impact.
4. Assess each task's value.

In developing potential solution, data collection are explained as followed:

1. Daily reports, weekly reports, and monthly reports : daily, weekly, and monthly written paper that reports progress, obstacles, alternative mitigation in the project administration.
2. Expert Discussion : technical meeting that involve experts in the specific function
3. Study Literature : theory references that are used to get information
4. Weekly meeting and monthly meeting : meeting that discuss evaluation of progress of project

Based on the description of the Tunnel Excavation Process and procedures, Productivity Analysis and Root Cause Problem Solving Analysis, we can get some root causes to the productivity problems, such as :

1. Bad Geology Condition : Rock Mass Type faced is not similar with category stated in the contract
2. Hazardous Condition : one of the causes from the productivity problems is the ineffective labor caused by hazardous condition related to tunnel works (poisonous gas, ground collapse)

On those root causes must be overcome options to answer of the productivity problems. Therefore, this research will focus to solve the above issues by designing possible Action Plan to productivity on headrace tunnel excavation that is suitable with project situation, that will lead to the improvement of time delay issues in Jatigede HEPP.

8. Result and Discussion

The chapter will describe about the alternatives solutions and prioritize the possible solutions based on business analysis and findings from previous chapter. And get a deeper analysis from the chosen available solutions, proposed Action and Implementation Plan will be established in the next chapter. The business solution it self would be analyzed using Root Cause Problem Solving (RCPS). From the analysis of the RCPS then being followed up with the priority matrix to level the impact and the ease of the alternative solutions.

Exploration the strategy alternatives available for improving productivity of headrace tunnel excavation in Jatigede HEPP was based on the monthly meeting, weekly meeting, special meeting, FGD that had been done by the Contractor, Consultant, Site Manager, Deputi Manager of project control and monitor, Deputi Manager of Contract Administration, Operation and Construction Manager. Possible solution that was generated are described in Figure below.

ICMEM
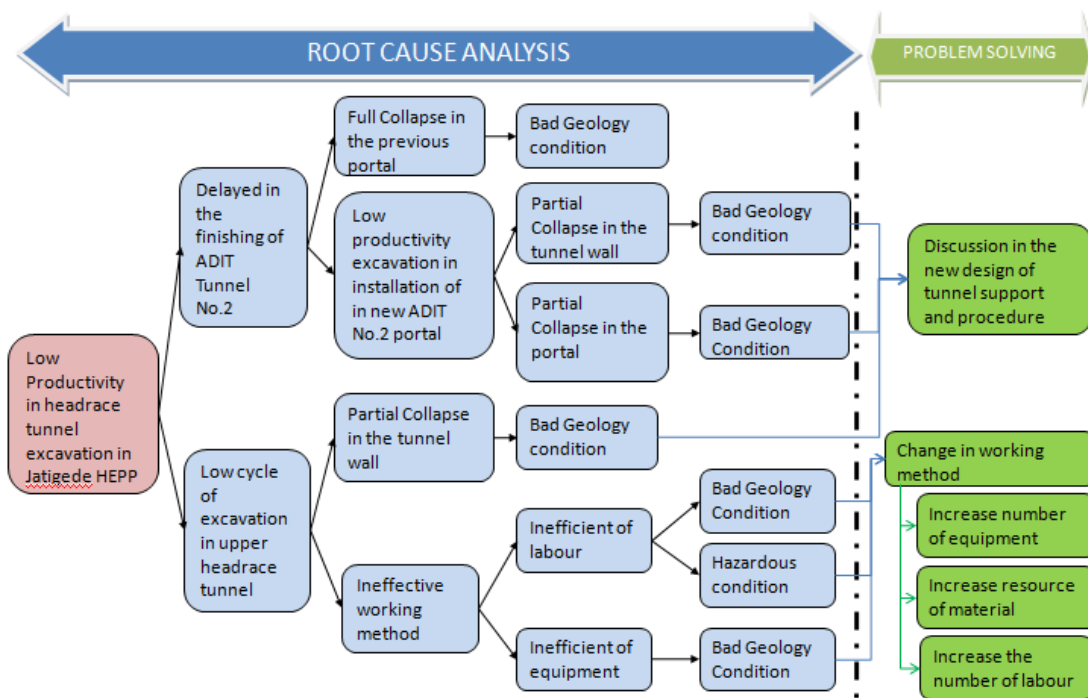
Figure 5. Root Cause Problem Solving Analysis (RCPS) of in Tunnel Excavation of Jatigede HEPP

On Figure 5 it can be inferred that there are 5 possible solutions to improve Tunnel Excavation Productivity at Jatigede HEPP Project. The analysis of alternative solutions will be more elaborated in a descriptive manner. Each of the solutions analyzed as follow :

a. Discussion in the new design of tunnel support and procedures

This alternative solutions is exposed due to the Category Rock Mass Type (RMT) which is different from the statement in the original contract. It needs to discuss a new design of support tunnel and the procedures of the installation, to make sure that the tunnel support can be applied .

The dimension of Grouted Rockbolt stated in the contract are 2 type, first type is diameter 25mm length 3m that should be applied in the upper headrace tunnel, access ADIT Tunnel No.2 (Work ADIT No.2), Embedded Steel Penstock, Bypass Tunnel (Work ADIT No.1), Bifurcation, Silo, Draft Tube, Tailrace Tunnel, Tailrace Surge Shaft. The other dimension for diameter 25mm length 4m and it should be applied in the Surge Shaft, Surge Shaft Transition.

Based on the Discussion of the Expert between all parties, it were needed 4 new dimension for rockbolt with diameter 25mm for length 4.5m, diameter 25mm for length 6m, diameter 25mm length 9m, and diameter 25mm length 12m. The grouted rockbolt will be applied every 8m long in the tunnel depend on the type of the surrounding rock after application of wiremesh.

Negotiation of new price for new dimension rockbolt already dealed by PLN and contractor. The justification of new dimension grouted rockbolt already approved but the administration is not yet finalized.

b. Change in working method

This alternative solution is to find another space to work in the headrace tunnel. The scheme is to make additional portal to go to the other side of headrace tunnel. Adit tunnel no.3 is proposed to make single working face into 2 or 3 working faces. It must began with site survey to determined location of Adit Tunnel no.3. Time saving of the new working method can be seen in Appendix A (Without Adit no.3) and Appendix B (With Adit No.3)

ICMEM

Adit tunnel No.3 is scheduled to be built according to the requirements of construction progress on site. Recommendation of Site Survey that Adit tunnel No.3 is located on the west side of upper headrace tunnel, and intersects with the upper headrace tunnel at chainage PT0+445, mainly serving as an access tunnel for construction activities including excavation, support work and lining, etc., within chainage section PT0+000~PT0+800. Restricted by geological condition, the gradient of Adit tunnel No.3 10 percent slope ratio. Length of the tunnel is supposed to range from 226.2m. The support shall be of inverted "u" shape, and available space after excavation and support would be 4.8m (width) X4.5m (height). Geological condition of Adit tunnel No.3 is mainly featured by clay stone.

SYMBOL	DESCRIPTION
A	JATIGEDE DAM
B	INTAKE STRUCTURE
C	HEADRACE TUNNEL
D	ADIT II
E	SURGE SHAFT
F	PENSTOCK
G	ADIT I
H	TAILRACE TUNNEL
I	TAILRACE CHANNEL
J	OUTLET WORKS
K	KAREDOK WEIR
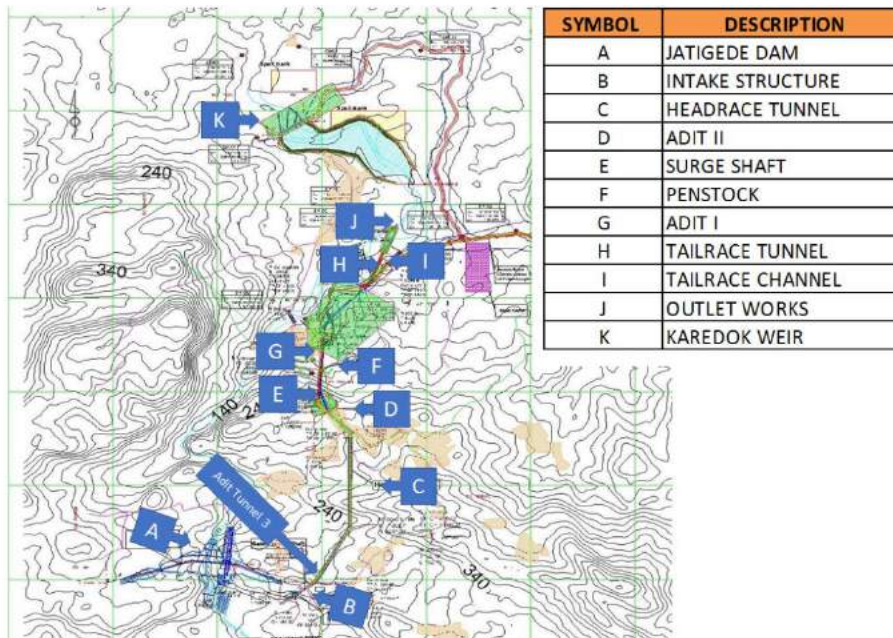
Figure 6 Location of Adit No.3
(Source : Design Drawing Proposal by Contractor, 2017)

c. Increase the Number of labor

One of ways to increase speed of the excavation work is to get more worker in construction work. The number of labor can be explicitly one of method to fasten the construction work, except in the tunnel condition. Tunneling use heavy equipment such as road header, excavator. Some case use blasting for rock excavation. The addition of labor only effective if there is another additional working face in the tunnel to operate the machine. If the construction work still in single face, adding more worker will not significantly effected to tunneling work.

d. Increase Number of equipment.

Equipment are very essential to fasten the construction work. Since tunneling work has a very limited space, it can be very dangerous to add any equipment such as road header in the same space. It can collide between the equipment and can make a very serious problems in safety requirement in the contract. This solution only work if there is another additional working face in the tunnel.

Based on those alternative solutions, prioritizing solutions need to be done that give the highest impact and require the lowest effort. Action Priority matrix has been done by Expert Team to decide which solution will give the quick win. Quick win is a solution falling into the upper right-hand quadrant where the lowest effort and highest impact are achieved by the proposed solutions. Below are Action Priority Matrix that had been analyzed by Expert Team based on the scoring of Priority on Impact and Effort.

ICMEM

Table 3. FGD Result of Action Priority Matrix to Find the best solution

No	Improvement Chances	Idea Initiatives	Result of Effort	Result of Impact	Remarks
1	Bad Geological Condition	Discussion in the new design of tunnel support and procedures	3.4	9	New grouting rockbolt design that is not listed in the contract.
2	Bad Geological Condition	Increase the number of labour	8.6	2.2	Since tunnel excavation have a limited space, it is very dangerous if add any labour only using one face excavation. it is only can be implemented if there is additional space to work
3	Bad Geological Condition	Increase the number of equipment :	7.2	1.4	Remarks : Tunnel excavation have a limited space, it is very dangerous add any equipment if only using one face excavation. it is only can be implemented if there is additional space to work
4	Bad Geological Condition	Increase the number of raw material (steel rib, wiremesh, shotcrete) :	8.2	1.2	Additional Raw Material only can be added if there is a new working method and add space of excavation work
5	Bad Geological Condition	Change in working method	6.6	8.8	Use an additional portal adit (ADIT tunnel no.3) to make excavation face in two ways direction Forward and backward

The number of the "result of effort" and "the result of impact" are averages value of the FGD.
The category of scoring measurement are:
1.   Effort / the ease of implementation.
       Score 1: Highest effort needs to be done.
       Score 10: Lowest effort needs to be done .
2.   Impact.
       Score 1: Lowest impact can be delivered.
       Score 10: Highest impact needs to be done .

Matrix of Effort vs Impact
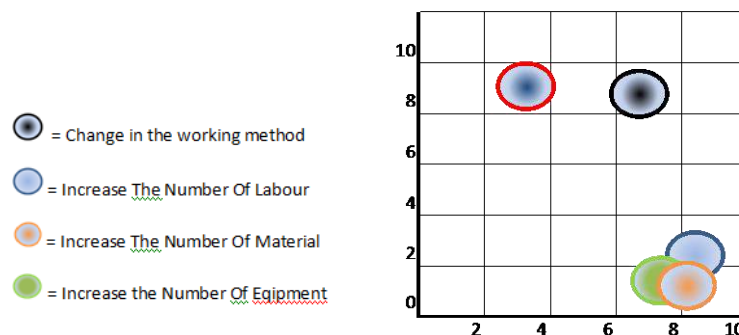
Figure 7 Action Priority Matrix of possible solution

ICMEM

The upper right quadrant as the quick win quadrant, shows the solution that will give the lowest effort and highest impact of solution to be done in PLN UIP JBT I

The analysis shows that the recommendation solutions are set of solutions, that are new designof tunnel support and procedures and change in the working method

the implementation of the proposed solutions from previous chapter are translated into specific action plans. The action plans describe what actions required to be taken at the Headrace Tunnel Excavation in Jatigede HEPP Project along with the person in charge of each actions. The implementation will be represented in time schedule and resources required to do the action plan.

Based on the decision of priority matrix, best solutions have the highest impact and the easiest effort to do, new design of tunnel support and change of working method (automatically need a set of additional equipment, additional labor, additional raw material) are proposed solutions, action plans to deliver the solution need to be constructed. The Action Plans can be seen in the table below

Table 4. Implementation Plan of Remedying Headrace Tunnel Excavation Productivity Program

INITIATIVE DETAILS																							
Initiative	Headrace Tunnel Excavation Productivity		Project :		Jatigede HEPP																		
Name	Ainanto Nindyo																						
PROJECT PROGRESS TRACKING																							

Activities	Deadline	Status	Timeline (Weekly)																			Status
			December 2017				January 2018				February 2018				March 2018				April 2018				
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1. Data collection	31-Dec-17	Plan / Actual																					On Scheduled
2. Expert Discussion (Constractor - Consultant - Owner) - Includes Soil Investigation	26-Jan-18	Plan / Actual																					Delayed on Submission Justification and price Proposal
3. Design Drawing	15-Feb-18	Plan / Actual																					Delayed on Submission and Approval of
4. Contract Administration (Amandment Process)	18-May-18	Plan / Actual																					Delayed on Submission of Justification
5. Resources Preparation	31-Dec-18	Plan / Actual																					On Progress
6. Evaluation on new working method	31-Dec-18	Plan / Actual																					On Progress

Based on the Implementation schedule above, every action and effort to do should be clear informed to the person in charge in every activities. Every action plan /activities should done with the specific person in the specific function. Any mismatch of the Person In Charge with their function will lead to the unfinished work.

Determining all the responsibilities can be mapped into responsibility matrix as follows :

ICMEM

Table 7. RASCI

No	Activities	RASCI					
		Contractor	Consultant	Site Manager	Deputi Manager of Project Control and Monitoring	Deputi Manager of Contract Administration	GM
1	Data collection	A	R	C	S	S	I
2	Expert Discussion (Contractor - Consultant - Owner) - Includes Soil Investigation	S	A	C	R	S	I
3	Design Drawing	R	A	C	S	S	I
4	Contract Administration (Amandment Process)	S	A	S	S	R	C
5	Resources preparation	R	A	C	S	S	I
6	Evaluation on new working method	A	R	C	C	S	I

Legend :
R = Responsible ; A = Accountable ; C = Consulted ; S = Support ; I = Informed

Description of action plans in the Implementation Plan in the table 4 can be detailed as follow :

1. Data Collection
   Data Collection was done using daily report, weekly report, and monthly report and can be seen the slowing productivity in October – November 2017.
   Site investigation was done in December 2017.
2. Expert Discussion.
   It is mainly discuss in Monthly meeting, weekly meeting, special meeting, and also Design Review Meeting (DRM). The method that would the best working procedures for ADIT not.3 are as follows
   Main Construction Method :
   Construction flow: intercepting drain→Open excavation and slope support of portal of the adit tunnel→Tunnel excavation and temporary support→Top heading excavation and temporary support of headrace tunnel →Lowerbench excavation and temporary support of headrace tunnel→Lining of headrace tunnel→Plugging of the Adit tunnel.
   For the work of ADIT Tunnel no.3 above, the contractor stated that the cost implied for this work is 27.328.201.784 rupiah or around 27,3 Billion rupiah. The price negotiation still not reached between all parties and still in going process, but the tentative decision is that the contractor stated there is no additional cost will be proposed or reimbursed for the ADIT tunnel No.3, but if there is any advantage or benefit that effected outside of the ADIT tunnel No.3, than the contractor will have a change to negotiate of sharing profit between all parties.
3. Design Drawing.
   To follow up the plan of the ADIT No.3 is should be going to design stage. Discussion of the design was done by Design Review Meeting (DRM) that is submitted by Contractor and Reviewed by Consultant and Consulted to the owner. The overall design can be seen as follows:

ICMEM

Table 5. Design of ADIT no.3

	Item	Unit	Value
	Total length	m	293.83
	Longitudinal gradient (adverse slope)		10%
	Tunnel rock excavation	m3	6928.3
	Grouted rockbolt φ25 L=4.5m	pcs.	845
	Grouted rockbolt φ25 L=3m	pcs.	1338
	Shotcrete	m3	581.3
	Steel wire mesh φ6 @ 15 cm x 15 cm	t	11.5
	Steel support H125 @1.0/1.5m	t	61.4
	Invert concrete Class C,20cm	m3	307.7
Tunnel Body	Concrete for sealing Class B, 15 m	m3	350
	Total length	m	32.4
	Elevation of portal	m	217.5
	Longitudinal gradient(adverse slope)		0.50%
	Open earth and rock excavation	m3	29634
	Grouted rockbolt, φ25L=3m	pcs.	311
	Shotcrete	m3	739.9
	Steel wire mesh φ6 , @15cmx15cm	t	21.9
	Reinforced concrete , retaining wall, Class A	m3	118.9
	Reinforcement	t	9.51
	Canopy, φ75mm*3.5mm	pcs	30
	Canopy, φ75mm*3.5mm, length	m	30
portal	Invert concrete Class C, 20 cm	m3	36.6
Construction road （4.5m)		m	700
Land acquisition area		m2	78207.69 74272
Constuction period		d	255

4. Contract Administration

Changing method that change Bill Of Quantity (BOQ) will be arrange in the Contract Amendment. All Justification needed to fulfill legal requirements in the contractual aspects and minimize dispute in the future. Justification is ongoing process and not finish yet.

5. Resources Preparation

All meeting between Contractor, Consultant and Owner also discuss resources needed to be prepare of the new working method. Detail resources can be seen in sub item 4.2 Resource Requirements

6. Evaluation of New Working Method

Today the Adit Tunnel No.3 still in process to reach the headrace tunnel. The productivity of headrace Tunnel excavation still not get the conclusion whether it is effective or not, Evaluation only can be achieved from the data of Adit Tunnel No.3 it self. We can see the Progress of the Adit Tunnel at the table below.

Table 6. Progress of Adit Tunnel No.3 up to April 2018

Unit	Descriptions	Adit Tunnel no. 3
Meter (m) in length or depth	Plan	226.22
	Update Progress	186.50
	Remaining	39.72

ICMEM

Percentage	Plan	100.00%
	Update Progress	82.44%
	Remaining	17.56%

From the table above we can see that the progress average of the Adit Tunnel No.3 from January until April 2018 around 2.1 m per day.

The solution of changing the working method to make additional working face need to be supported from all division. The first is the equipment resources, and the second is human resources. The main equipment resource needed is the additional road header and followed with the other equipments. This method change is automatically need additional operator (additional labor to operate the machine) and all people related to the work. Since there is an additional working faces to do the excavation, the raw material follows the excavation to do the tunnel support such as wiremesh, rockbolt, steel rib, shotcrete material.

The equipment to support the method change would be a set of different equipment including the main equipment it self. According to requirement of construction schedule and method statement for this area, allocation of main construction equipment is presented in Table below:

ICMEM

Table 8. Allocation of Main Construction Machinery Equipment

No	Name Of Equipment	Qty	Source of equipment
1	ZX350H/ZX870H	1/1	Dispatched form existing equipment
2	Dump truck 20/25t	4/5	Dispatched form existing equipment
3	3 Dump truck 4t	6	Rent
4	Geological drilling rig	2	Dispatched form existing equipment
5	Air compressor	1	Dispatched form existing equipment
6	Axial flow ventilator	2	Newly purchased
7	Backhoe loader/excavator	1	Dispatched form existing equipment
8	Loader （90ZV-2）	1	Dispatched from the upstream surge shaft workface after excavation there completed
9	Rotary Drum Cutter （XE215C）	1	Dispatched from the upstream surge shaft workface after excavation there completed
10	Mucking Loader	1	Newly Purchased
11	Air-leg rock drill (YT-29）	4	Dispatched form existing equipment
12	Concrete Shotcreting Machine (TK 700)	2	Dispatched form existing equipment
13	Full section steel formwork trolley of needle beam type	1	Newly purchased

To support the equipment, it is also needed a personnel team from the general labor until the presence of the manager. According to method statement for this area, manpower resources for site construction shall be deployed as shown in Table below

Table 9. Allocation of Human Resources.

No	Description	Chinese Personel	Indonesian Personnel	Subtotal
1	Manager	1	0	1
2	Foreman	1	0	1
3	Hiigh Skilled Labour	3	0	3
4	Skilled Labour	0	3	3
5	General Labour	0	15	15
	Total (day shift and night shift)	5	18	23

In the tunneling excavation work, the productivity is very critical and depends on the mass rock type faced in the underground. The limited space to excavate is one of the unique situation in the tunneling works. Changing working method to make additional face working for tunnel excavation is recommended to fasten productivity.

9. Conclusion

In the Jatigede HEPP, set of solution to improve the productivity problems are new design tunnel support and add working face with an additional ADIT portal in ADIT Tunnel No.3 (which will automatically need a set of equipment, human resource, and material) and new design for tunneling support. From the Master schedule with and without ADIT Tunnel No.3 (Appendix A & Appendix B) was supposed to save 1243 - 872 days = 371 days (the days without ADIT no 3 subtracted by the days with ADIT no.3) on the schedule. This scheme very helpful to maintain Jatigede COD (Commercial Operating Date) on schedule in 2019.

From the schedule saving mentioned above, the money that can be saved from the changing of the method can be formulated as 371 days (the days without ADIT no 3 subtracted by the days with ADIT no.3) then multiplied with potential loss per day approximately 686 million rupiah, and the result potential saving is 254.506 million rupiah or around 254.5 billion rupiah.

From the analysis we can set the benefit cost ratio is 254.5 billion rupiah / 27.3 billion rupiah (asumpted the cost already deal between contractor and PLN) or B/C ratio = 9.32

Appendix C. Progress Plan Without Adit No.3
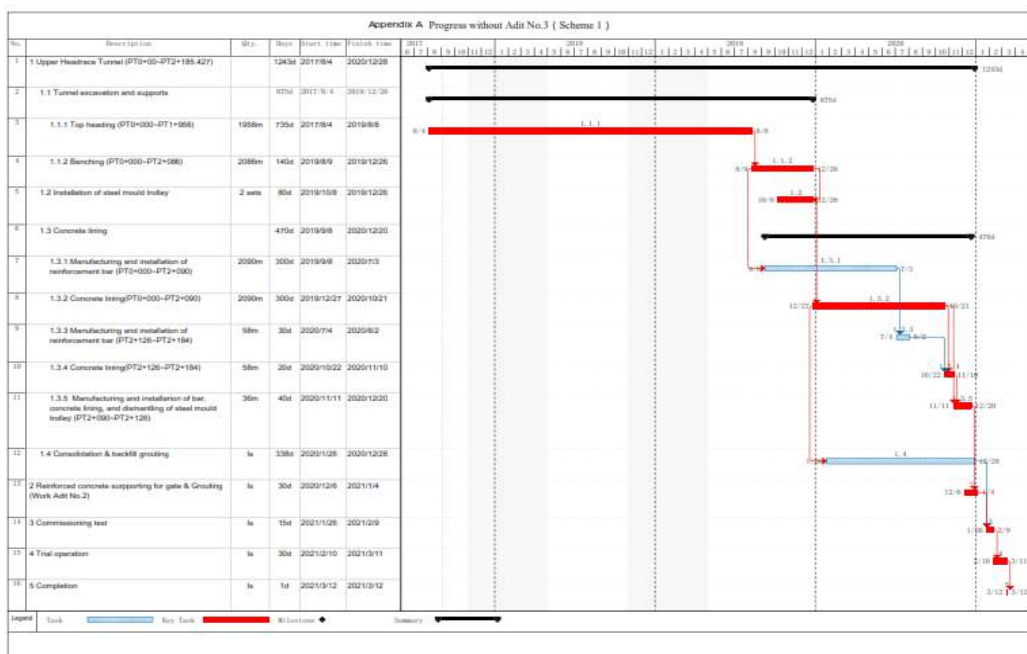
ICMEM

Appendix D. Progress Plan With Adit No.3

Appendix B Progress with Adit No.3(Scheme 2)
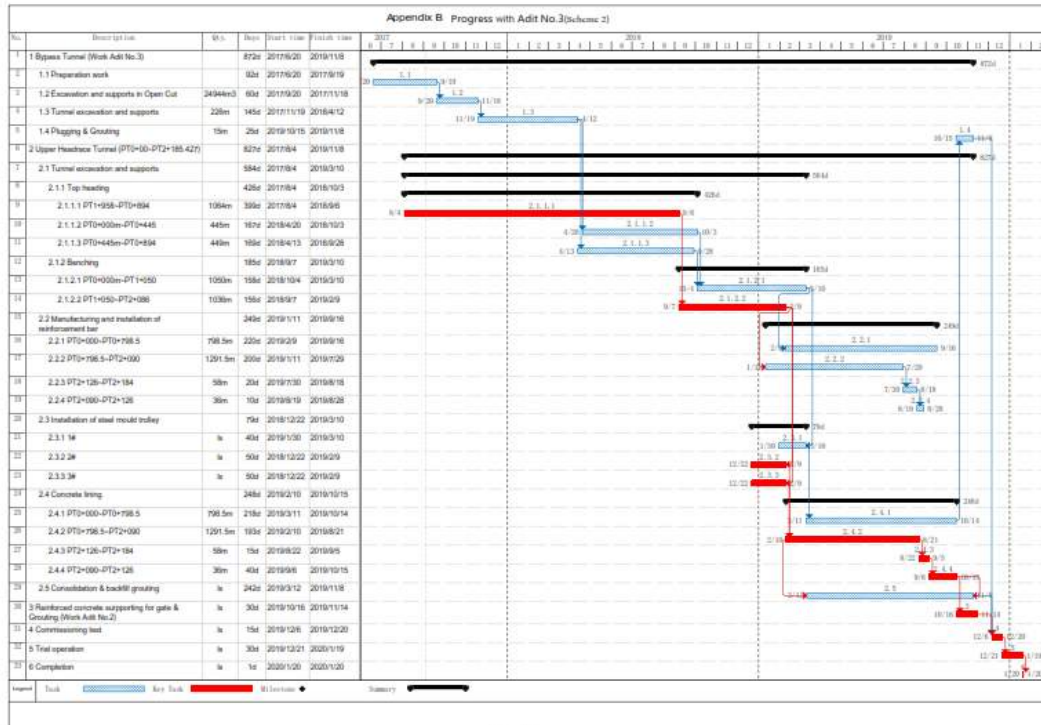
References

Barry H. G. Brady & E. T. Brown (1985). Rock Mechanics for Underground Mining. Kindle Edition Dr. Rahim K. Jassim (2010) Power Plant Engineering. Yanbu Industrial College, Department of Mechanical Engineering Technology

Einar Broch (2010). Tunnels and Underground Works for Hydropower Projects. Muir Wood Lecture

EL Wakil (1984). Power Plant Technology. Tata-McGraw Hill, 1st edition

https://www.energy.gov/eere/water/glossary-hydropower-terms

https://en.wikipedia.org/wiki/New_Austrian_tunnelling_method

John Hudson & John Harrison (2000). Engineering Rock Mechanics An Introduction to The Principles. Elsevier Science

John Conrad Jaeger,Neville G. W. Cook, Robert Zimmermann (1969). Fundamentals of Rock Mechanics. Wiley-Blackwell

Jorge Diego Fuentes Sanchez (2008). A Guide to the Project Management Body Of Knowledge (PMBOK Guide) - Fourth Edition.Project Management Institute . retaken from www.cs.bilkent.edu.tr/~cagatay/cs413/PMBOK.pdf

Kam W, Li and A. Paul Priddy (1985). Power Plant System Design. John Wiley 1st edition

Kaustubh Mani Nepal (2017). New Australian Tunneling Method Workshop

Nag, P.K. (2008). Power Plant Engineering. Tata-McGraw Hill, Higher Education, 3rd edition.

PT PLN (Persero). (2017).Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2017-2026 PT PLN (Persero).PT PLN (Persero)

PT PLN (Persero). (2018). Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2018-2027 PT PLN (Persero). PT PLN (Persero)

Weisman, J. and Eckert, L (1985). Modern Power Plant Engineering. Prentice hall 1st edition

Yosef Jabareen (2009) Building a Conceptual Framework: Philosophy, Definitions, and Procedure. University of Alberta Journal

Internal Report

PLN E - Fichtner (2017). Monthly Report of October – December 2017

PLN E - Fichtner (2018). Monthly Report of January – April 2018

Sinohydro-PP (2017). Monthly Report of October – December 2017

ICMEM

Sinohydro-PP (2018). Monthly Report of January - April 2018

MARKETING

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Influence of Event Planner Instagram Content to Customer Purchase Intention
Case Study of "Seperti yang Diimpikan" Event Planner

Sofwatun Nida[a]*, Evy Rachmawati Chaldun[b]

[a,b]*School of Business and Management Institut Teknologi Bandung, Bandung, 40132, Indonesia*

Abstract

Social media become popular nowadays especially for a company to do marketing strategy. Big to small business doesn't need huge investment and can generate market awareness. Instagram is one of popular social media, that allows users to shared photos or videos among users. What's make instagram interesting is content itself. The content consist of message that want to be shared by the users. In this research we develop 4 hypothesis that can influence customer purchase intention which are product centric, user-generated content, celebrities endorsement, and event-highlight video. In this paper, we present quantitative data we got from questionnaire that spread to 225 respondents online. The research using non-probability sampling with respondent's criteria are age 17-30 years old, live in Bandung and Jabodetabek, and active Instagram user. Based on that, we identify Seperti yang Diimpikan event planner's Instagram content and analyze the data which influence customer purchase intention. Our result reveals the hypothesis is acceptable.

Keywords: Social Media Marketing; Instagram Content; Customer Purchase Intention; Multiple Linear Regression

1. Introduction

Social media is an online media that helps user to share content or information they want to be shared and make other users easily to participate and communicate (Hansel & et.al, 2016). From big to small businesses, they use social media to promote their products or services (Hird, 2013). All over the world, social media becoming one of marketing tool that is effective to reach the target market and impactful to used (Hird, 2013). Through social media, business does not need huge investment to advertise their product and they can do better to get market awareness (Zarella, 2009). Using social media we can share or create any content such as advertisement, video, banner, and posters (Hansel & et.al, 2016).

Social media has a big role in the community. Facebook, YouTube, Tumbler, Instagram, Twitter, Snapchat, Path, LinkedIn is a sample of social media which popular with the huge number of user (Hitz & Blackburn, 2017). Facebook has the main function as a place that enables us to connect with our friends or families and place to share or discover news. Twitter is a place to know what's happening now, its real time and up to date information and news. Last, YouTube is a place to watch streaming video. Instagram is a place to share photo and video and everyone easily to find an Instagram profile of others so it's useful to create people awareness. Even tough Facebook, YouTube, and Twitter have more users, they have a different function than Instagram (Hitz & Blackburn, 2017).

---

* Sofwatun Nida. Tel.: +62-812-838-34143
  E-mail address: sofwatun.nida@sbm-itb.ac.id

ICMEM
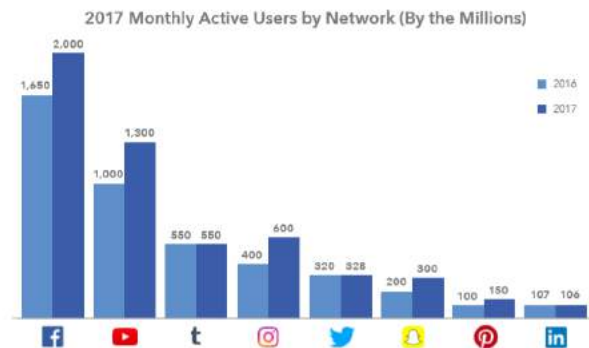
Figure 1 Social Media User in 2017
(Source: Hitz & Blackburn, 2017)

Figure 1 shows that the number of Instagram users in 2017 increased compared to the previous year. In 2016 Instagram has 400 million users and got the 4th position of most popular social media. Within a year, in 2017 the number of Instagram users rise to 600 million users (Hitz & Blackburn, 2017).

In general, the use of Instagram can be divided into interpersonal communication or communication between companies with their customers. Instagram is brings people around the world closer to each other and this applies also between companies and consumers (Nummila, 2015). For Instagram businesspeople are used to introduce their products, build awareness, and even become a medium to communicate with consumers before and after sales transactions. Instagram have many brands use their features, and the number of brands using Instagram is 70% in 2017 compared to 48% brands in 2016 (Hitz & Blackburn, 2017).

What makes Instagram interesting is the content itself. Instagram consists of content that wants to be shared by the Instagram user. The photo and video is an Instagram content that filled with information from the user to their followers. While Caption, Hashtag, People tag, a Location tag is a thing that supports content. According to the Jahn and Kunz (2012), interesting content can give impact to the company and their customer so they can interact with each other. The valuable content, either the content is functional or hedonic, is the content that can attract follower's intention so they can leave a like or comment as a proof they have an interest in it. To get follower awareness we have to create an interesting, entertaining, and innovative content to be impactful (Jahn & Kunz, 2012).

From the content that shared on Instagram, businesses will get customer awareness that drives a potential customer to purchase intention. Purchase intention is a customer's objective toward a product; in a conscious state they make an effort to purchase it. Now, the customer can purchase a product through the online platform and can do the transaction using the internet (Long-Chuan & et.al, 2014).

"Seperti Yang Diimpikan" is a Small-medium Enterprise that focused on event planning that helps people to celebrate their special event and the concept of the event is based on their interest and personality. Celebrate a special event a trend nowadays. Celebrity, middle-up class, and even common people celebrate their special moment in their life. Not only to create a memorable event, but also for increase pride in social life. They have target market at the age of 17-30 years old, upper-middle economy income, and live in Bandung.

"Seperti Yang Diimpikan" uses Instagram since June 2017 to get market awareness and drives the potential buyer to purchase intention. They shared photo and video with the same hashtag, different location, and different caption. They got the data from Instagram Insight. The highest impression from content "Seperti Yang Diimpikan" shared was 615 impressions. Impressions are the number of times the content is displayed by Instagram users, no matter if it was clicked or not. They also got the data of Reach. Reach are the total number of people, the number of unique people who see their content.

Figure 1.2 shows Instagram insight of "Seperti Yang Diimpikan" Instagram profile. The table shows the average number of impression and reach for every post.

ICMEM
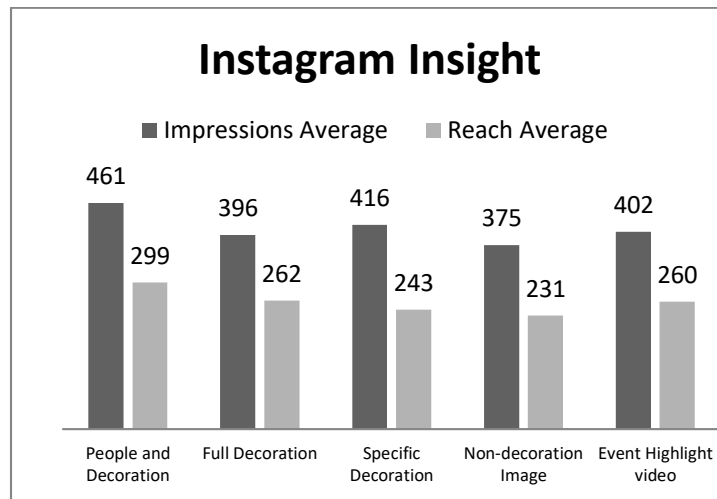
Figure 1 Number of Impression and Reach of "Seperti Yang Diimpikan" Instagram Content
(Source: Seperti yang Diimpikan Company Report)

Based on company report in 2017, for people and decoration post the company got the average of impressions in the amount of 461 impressions and the average of reach is 299 reaches. For full decoration post the company got the average of impressions in the amount of 396 impressions and the average of reach is 262 reaches. For specific decoration post the company got the average of impressions in the amount of 416 impressions and the average of reach is 243 reaches. For Non-decoration post the company got the average of impressions in the amount of 375 impressions and the average of reach is 231 reaches. For event-highlight video post the company got the average of impressions in the amount of 402 impressions and the average of reach is 260 reaches.

From the data, we can see the numbers of reach not equals with the number of impressions. When people see "Seperti Yang Diimpikan" Instagram's content on their explore not all of them click and see the content. Some of them just passed the content. Should be in line with the high level of impressions, the number of consumers who buy also increases. But in company report, only 5 people bought the product. The high level of impressions can indicate that market awareness is good enough, but company only got 5 customers. So there's a gap between market awareness to purchase intention.

Based on the background above this research will identify the influence of Instagram content to market awareness and how it drives to customer purchase intention.

2. Theoretical Foundation

2.1 Social Media Marketing

Internet appears since 1990s. It changed the world and the way we live. People can easily keep contact from miles away, they can interact socially. In line with the growth of Internet, social media appears in Web 2.0. Series. Social media refers to wide range of internet-based and mobile service that allows people interact easily. They can share news, thoughts, photos or videos, and do online discussion through internet. The first social network on internet is SixDegrees.com that appear in 1997, and after that other social network began to emerge (Dewing, 2010).

Social Media Marketing makes used social media as a platform to promote companies products and services. It needs strategic and methodical process to gain company's reputation in online community. The community consists of potential customers, loyal customers, readers, and followers. Social Media helps company to persuade customers and potential customer to know their product is worthwhile. Social Media also Helps Company builds social network and exchange ideas and information among the community. Big to small businesses use social media to promote their products or services and its also cost effective for the company to use compared with traditional media (Hird, 2013).

ICMEM

There are some popular social media marketing among Indonesian community like Facebook, Twitter, Instagram, YouTube, Snapchat, LinkedIn, Pinterest, and Tumblr. As a business using social media they can reach a large targeted audience with some features that provided in a social media. They can use online video and photo sharing, blogs, news sharing, and do direct communications toward their target market (Hitz & Blackburn, 2017).

Even though many company still experimenting what social media that suit for them to help them persuade the market, the marketers said that social media plays an important roles to obtain and maintain customers in the future (Neti, 2011). Social media can provide an identity of the products and services and about the company itself. It helps the company to create a relationship with people who might not know the products and the company who's produces it. Social media makes companies seen by target market; it helps them to look "real" to customers. They not only talk about their products or services but they share company personality to audience. Social media helps company to communicate with their customers and provide what interaction they looking for (Neti, 2011).

2.2 Instagram Content

Content is the source of Instagram experience. That's why hundreds of millions people visit Instagram every day to see beautiful and interesting pictures on their feed and share their own unique photos and videos on Instagram (Instagram, 2012). Successful marketing involves creating content that convinces and attracts customers to engage and act through digital channels (Ponomarenko, 2018).

Sharing interesting content can inspires the followers to like, comment and share the content, the followers will be more correspansive. This in turn, increases the likelihood that the followers will also view the upcoming posts. The same pictures should never be posted again. The content should be different every time. Also, the images should be contextually relevant to the content that they link to (Nummila, 2015).

Instagram team said 9 ways to optimize Instagram profile and photos in the *How to Uses Instagram for Business* powerpoint that shared on the internet. There are business username, go-public profile, business name, links on bio, location, post reliable and inclusive content, customize post, high quality photos, calls-to-actions links. The powerpoint also said 9 type of post every marketer should try on Instagram. There are food, product-centric, customer-centric, employee-centric, working photos or in the field events, motivational posts, videos or boomerang, giveaways or contest, and guest takeovers (HubSpot & Iconosquare, 2012).

Instagram also filled by user-generated content (UGC). UGC happens when previous buyer share their opinion or review about the product so it allows the potencial buyer read it and knows about the product (Bahtar & Muda, 2016). The information can change potencial customers mind and affect their purchase intention toward a product. UGC can be positive or negative statement towards the product. There are three dimensions to measure UGC that affected purchase intention which are perceived credibility, perceived usefulness, and perceived risk (Bahtar & Muda, 2016).

Next is celebrity endorsement. Celebrity endorsement is a marketing technique by using celebrity to promote a product (Emma & Matilde, 2017). They can be an artist, an athlete, a movie-star, or any other public figure that can used their reputation to share sponsored content (Emma & Matilde, 2017). Social media celebrity can be traditional celebrity or normal people that transform themself to be a blogger or influencers that gained large amount of fans and followers in social media channel such as Instagram (Emma & Matilde, 2017). The celebrity that used for endorsement had to have at least three dimensions credibility which are trustworthiness, expertise, and attractive (Emma & Matilde, 2017)

From the literature reviews got Instagram contents which important for company's Instagram. This study follows the factors that found on literature reviews, but it will re-arrange by the researcher that fit with research objective. This research define 4 types of Instagram content that event planner shared on Instagram.

Product-centric content is a content that company creates which concentrated on their product than their customer. The company invests a lot of effort and money to develop new and better product and it will shows the company identities (InsideView, 2013).

Instagram also filled by user-generated content (UGC). UGC happens when previous buyer share their opinion or review about the product so it allows the potencial buyer read it and knows about the product (Bahtar & Muda, 2016).

ICMEM

Celebrity endorsment content. Company needs celebrity endorsement to reach it goals. Especially when company wants to be more recognize by market (Rantanen, 2017). Company post celebrity's endorsement content on Instagram to get market awareness.

Even-highlight content used for marketing purposes. Event-highlights video can be used as an opportunity to display corporate image and convey the vision of a brand that can involve the audience emotionally (Santos, 2016).

2.3 Purchase Intention

Purchase intention is the stage occurred when the consumers perceive product preference in the stage between making purchase evaluation and the actual purchase action. Purchase intention is a customer willing to buy certain product (Sagala & Rachmawati, 2013). Purchase intention not always drives the customer to actual purchase choice (Kotler & Armstrong, 2011). Customer who already influenced by advertisement, shift their interest to the brand that advertised their product. This condition gives opportunity for company to attract customers' purchase intention (Sagala & Rachmawati, 2013).

Purchase intention has another aspect that the consumer will purchase a product after evaluation. Many factors affect the consumer's intention while selecting the product and the ultimate decision depends on consumers' intention with large external factors. The kknowledge about the product by the consumer plays an important role during product purchase decision (Younus, 2015).

Furthermore, the customer purchase decision according to Kotler and Armstrong (2012) are consists of need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. The second and third stage gives possibility for company to attract customer by providing content that suits their preferences. The second stage is information search, in order to fulfill their needs customer searching for information about solution they needed. Kotler and Armstrong (2012) mentioned that the information sources can be from personal sources; such as family, friends, neighbors, and acquaintances, commercial sources; such as advertising, salespeople, dealer website, packaging, and display, public sources; such as mass media, consumer rating organization, and Internet searches, also from experiential sources; such as handling, examining, and using product. Instagram as one of commercial sources will be one of solution for customer to search information that they needed.

A good content of Instagram will serves good impression to customer (Sagala & Rachmawati, 2013). Next, the evaluation of alternatives will evaluate the information they got to come up with best choice. Sometimes the buying decision made not by customer itself but because of its friends recommendation, online reviews, or salespeople. So, it is possible for company to influence customer by serve content like brand ambassador, customers testimony, etc. (Kotler & Armstrong, 2011) that might affected their purchase intention to bought products.

2.4 Conceptual Framework

Based on literature review, the conceptual framework that will be used on this research is:
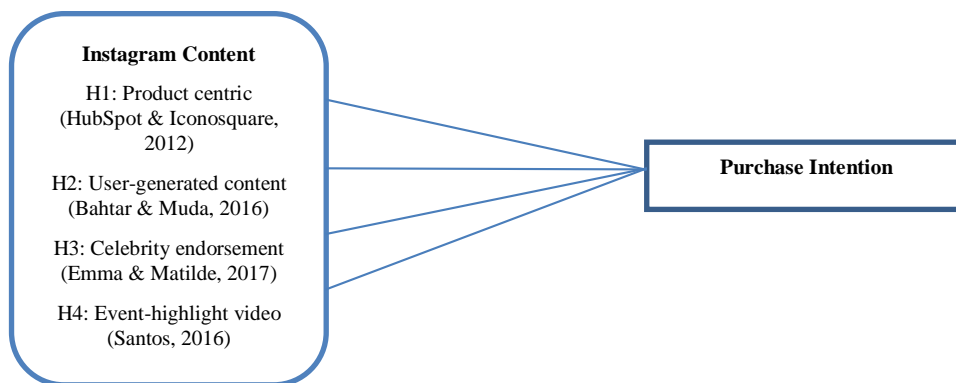
Figure 3 Conceptual Framework
(Source: Survey, 2018)

ICMEM

The figure above show the influence of Instagram content to purchase intention. This research define 4 types of Instagram content that event planner shared on Instagram and it can be impactful to increase purchase intention.

3. Methodology

This research used quantitative approach. To collect the primary data this research uses questionnaire that contains of several questions to certain factors that refers to Instagram content in case of Seperti yang Diimpikan event planner. This research has to collect data with minimum 200 respondents. The most appropriate sample size for the research is between 200 – 500 respondents (Malhotra, 2010). Because this research use non- probability sampling the subject who will fill out the questionnaire need to be fit with some characteristics. Distribute the questionnaire to people who has criteria 17-30 years old, live in Bandung and Jabodetabek, and using Instagram in their daily life.

The questionnaire described how content Instagram of Seperti yang Diimpikan event planner influenced customer purchase intention. There are independent and dependent variable on this research. The independent variable are product centric, user-generated content, celebrities endorsement, event-highlight video, and the dependent variable is customer purchase intention. The questionnaire contains 5 questions to know demographic data of respondents and 19 questions that descibe independent, dependent variable, and it's dimensions. The questions shows the influence of product centric with 4 dimentions they are utility, uniqness, detail, and quality. User-generated content with 3 dimensions they are perceived credibility, perceived usefulness, and perceived risk. Celebrity endorsement and event-highlight video with 3 dimensions they are trustworthiness, expertise, and attractive.

Pilot test used on this research to know the validily and realibility of the data, which used 30 respondents of random samples to measured it. After the data showed valid and realible, we got qualified data from 225 respondents. All of respondent's data were calcullated using SPSS tools with "Multilinnier Regression" method.

4. Data Analysis

This chapter will dicussed about the influence of Instagram content toward purchase intention in case of Seperti yang Diimpikan event planner based on questionnaire result. The data from survey analyzed by SPSS using "Multiple Regression" method. Using T-test and F-test and the data were analyze first using classical assumption test which are normality test, multicollinearity test, autocorrelation test, heteroskedasticity test, and linearity test.

4.1 Questionnaire Test Result

There are 225 respondents who filled out the questionnaire. In the section below the demographic information of the participants from the survey will be explain

Table 1 Respondent Profile

Area	Factors	Respondent Number	Percentage (%)
Gender	Male	79	35.11
	Female	146	64.89
Age	17-30 y.o.	224	99.6
	30 y.o.	1	0.40
Domicile	Bandung	128	56.89
	Jabodetabek	97	43.11
Occupation	Student	209	92.89
	Entrepreneur	7	3.11
	Employee	7	3.11
	Co-assistent	1	0.44
	Consultant	1	0.44

ICMEM

Income permonth	≤ Rp 1.500.000	90	40.00
	Rp 1.500.001 - Rp 3.000.000	103	45.78
	Rp 3.000.001 - Rp 5.000.000	21	9.33
	> Rp 5.000.000	11	4.89

(Source: Survey, 2018)

The table shows respondents data. This survey filled out by female more than male and this research is not limited with the gender factor. The research result shows that the majority who filled out the questionnaire is around age 17-30 years old. This research is limited with the gender factor which targeted people at the age around 17-30 years old. So, almost all respondents fit with criteria. This research is limited with domicile factor which targeted people who live in Jabodetabek and Bandung. Based on figure above 43% (97 of 225 respondents) live in Jabodetabek and 57% (128 of 225 respondents) live in Bandung. Based on figure above the respondents occupation is show by percentage. They are mostly college student with percentage 93% (209 respondents) and the rest is 3.1% of 225 (7 respondents) are employee, 3.1% of 225 (7 respondents) are entrepreneur, 0.4% of 225 (1 respondent) is consultant, and 0.4% of 225 (1 respondent) is co-assistant. This research is not limited with occupation factor. As shown in the figure above people who filled this survey are 46% (103 of 225 respondents) have monthly income around Rp 1.500.001-Rp 3.000.000, 40% (90 of 225 respondents) have monthly income ≤ Rp 1.500.000, 9% (21 of 225 respondents) have monthly income around Rp 3.000.001 - Rp 5.000.000, and 5% (11 of 225 respondents) have monthly income ≥ Rp 5.000.001. The data show the diversity of respondents who filled out the questionnaire.

To ensure the survey result is significant, pilot test conducted on this survey. Validity and reliability are tested on the data.

Table 2 Validity and Reliability

Variable	Indicator		Pearson	Validity	Alpha Cronbach	Reliability
Product Centric	Utility	Suitability	0.819	Valid	0.838	Reliable
		Flexibility	0.681	Valid		
		Clearness	0.765	Valid		
	Uniqness		0.707	Valid		
	Detail		0.777	Valid		
	Quality		0.712	Valid		
User-generated content	Perceived credibility		0.807	Valid	0.682	Reliable
	Perceived usefulness		0.714	Valid		
	Perceived risk		0.826	Valid		
Celebrities endorsement	Trustworthiness		0.902	Valid	0.835	Reliable
	Expertise		0.863	Valid		
	Attractive		0.836	Valid		
Event-highlight video	Trustworthiness		0.815	Valid	0.779	Reliable
	Expertise		0.839	Valid		
	Attractive		0.844	Valid		
Customer purchase intention					0.854	Reliable

(Source: Author's Analysis Using SPSS Tool)

Table 2 showed all the indicators are valid and reliable.

4.2 Finding and Discussion

This research objective is to identify the influence of Instagram content toward customer purchase intention. Content is the source of Instagram experience. That's why hundreds of millions people visit Instagram every day to see beautiful and interesting pictures on their feed and share their own unique photos and videos on Instagram (HubSpot & Iconosquare, 2012).

ICMEM

The model developed for this study is based on four factors, based on Product-Centric Content, User-Generated Content, Celebrity Endorsement Content, and Event-Highlight Video Content that gathered from literature review.

Product-centric content is a content that company creates which concentrated on their product than their customer. The company invests a lot of effort and money to develop new and better product and it will shows the company identities (InsideView, 2013). From this research, the result shows product-centric content ranks second of the most influential factors on purchase intention. Fromthe data analysis the result shows majority of respondents are agree that company needs to share more content about product-centric. Because event planner selling a service, the audience need to be more understands about what kind of service the company sells and what will they get if they buy the service.

Instagram filled by user-generated content (UGC). UGC happens when previous buyer share their opinion or review about the product so it allows the potential buyer read it and knows about the product (Bahtar & Muda, 2016). The user-generated content is one of factors that can influence customer purchase intention, and it can be a consideration before use the company service, and it makes them feel more usefulness of the company services.

Company needs celebrity endorsement to reach it goals. Especially when company wants to be more recognize by market (Rantanen, 2017). Company post celebrity endorsement content on Instagram to get market awareness. From the research result it shows that majority of respondents are agree that the company need to post content that can shows endorser that can be trusted, the endorser also need to be attractive both physically and behaviorally, and who are experts in their field.

Even-highlight video used for marketing purposes. Event-highlights video can be used as an opportunity to display corporate image and convey the vision of a brand that can involve the audience emotionally (Santos, 2016). The highest value of unstandardized coefficient beta owned by event-highlight video, showing this as the most important factor that affecting customer purchase intention. The result shows on table 5.2.4, the majority of respondents are agree Instagram post that showing event-highlight video make them more trust to the company, more interested in using event planner service, and make the company looks more expert in its field. By seeing event-highlight video the audience will be more interested in using its services. It can be said that event-highlight video will makes audience understand what kind of service that company sell by looking directly at a video of an event that was once made by the company. It support by the value of unstandardized coefficient B that shows 0,385.

This research shows the influence of Instagram content to customer purchase intention case study of "Seperti Yang Diimpikan" Event Planner. The sequence of the factors that influence purchase intention is Event-highlight video, Product centric, User-generated content, and Celebrity endorsement. And all of factors are significantly influences the customer purchase intention.

This research has four hypothesis from all of variables are further known to have be supported by the findings from literature review. Those explanations are embodied on the paragraph following below:

Table 3 Summary of The Result for Hypothesis Testing

Hypothesis	Unstandardized Coefficient Beta	t-value	Significant Level	Result
H1: Product-centric content influence customer purchase intention	0,275	,889	,000	Supported
H2: User-generated content influence customer purchase intention	0,219	,850	,005	Supported
H3:Celebrity endorsement content influence customer purchase intention	0,149	,139	,034	Supported

ICMEM

H:4 Event-highlight video content influence customer purchase intention	0,385	,306	,000	Supported

(Source: Author's Analysis Using SPSS Tool)

H1: Product-centric content influence customer purchase intention.

The research finding shows the relationship between product-centric content and customer purchase intention has a positive sentiment. The value of unstandardized coefficient beta is 0,275 with t-value 6,889 and significant level 0,000 which means that the hypothesis is accepted.

H2: User-generated content influence customer purchase intention.

The research finding shows the relationship between user-generated content and customer purchase intention has a positive sentiment. The value of unstandardized coefficient beta is 0,219 with t-value 2,850 and significant level 0,005 which means that the hypothesis is accepted.

H3: Celebrity endorsement content influence customer purchase intention.

The research finding shows the relationship between celebrity endorsement content and customer purchase intention has a positive sentiment. The value of unstandardized coefficient beta is 0,149 with t-value 2,139 and significant level 0,034 which means that the hypothesis is accepted.

H4: Celebrity endorsement content influence customer purchase intention.

The research finding shows the relationship between user-generated content and customer purchase intention has a positive sentiment. The value of unstandardized coefficient beta is 0,219 with t-value 2,850 and significance level 0.000 which means that the hypothesis is accepted.

In this research, we successfully showed the relationship between Instagram content and customer purchase intention. Our analysis shows that Product centric, Event-highlight video, User-generated content, and Celebrity endorsement influence the customer purchase intention. The analysis also show how far the impact of Instagram content on customer purchase intention that is equal to value of R-square shows 0,582. Based on Multiple Regression Test it shows event-highlight video is the most important content that customer considered before they purchase an event planner service. It shown with the value of unstandardized coefficient beta at 0,385.

5. Conclusion and Research Limitation

5.1 Conclusion

"Seperti Yang Diimpikan" is an event planner that uses Instagram to introduce and promote their services. The company already posts some content about their product and customer but it's not significant with the increasing amount of customer and sales. So, this research was conducted to know what is customer perception about Instagram content of an event planner that can influence customer purchase intention. This research is focused on four variable which is reference product-centric, user-generated content, celebrity endorsement, and event-highlight video.

This study examines Instagram content influencing consumer purchase intention case study of "Seperti Yang Diimpikan" Event Planner. Based on research analysis of the data that gathered to 225 participants, the result of this research shows that all of the hypotheses are accepted. There are 4 types of Instagram content determined for this research; they are Product-centric, User-generated content, Celebrity endorsement, and Event-highlight video.

The result of this research shows majority of respondents are agree that product-centric, user-generated content, celebrity endorsement, and event-highlight video are effect customer purchase intention.

The analysis from respondents explains these four variables are significantly influence purchase intention and the result explains the relationship between independent and dependent variable as much as 58, 2%. All hypothesis are accepted and the result can give the company a recommendation to improve their Instagram content.

To conduct a better content that can influence purchase intention this research suggests some recommendation that can be used to increase customer purchase intention toward "Seperti Yang Diimpikan" product. Those are:

[1] Create and posting more content about event-highlight video

ICMEM

[2] Create and posting photo of product that showed product utility, uniqueness, detail, and quality.
[3] Posting more user-generated content
[4] Create celebrity endorsement content
[5] Posting on Intagram regularly

5.2 Research Limitation

This research can only use for event organizer that promote their product by using online marketing strategy (Instagram) for target market at the age 17-30 years old, middle-up income group, and live in Kota Bandung and Jabodetabek. This study can not just be analogous to other companies selling different products, different segments, different geographies, and different times.

References

Arabghalizi, T., & et.al. (2017). Analysis and Knowledge Extraction from Event-related Visual Content on Instagram. Milano: Research Gate.

Bahtar, A. Z., & Muda, M. (2016). The Impact of User-Generated Content (UGC) on Product Reviews toward Online Purchasing - A Conceptual Framework. Procedia Economics and Fiance 37 , 337-342.

Dewing, M. (2010). Social Media: An Introduction. Ottawa, Canada: Library of Liament.

Emma, N., & Matilde, P. (2017). Celebrities of Instagram - What Type of Content Influence's Followers Purchase Intentions and Engagement Rate ? Finland: Aalto University School of Business.

F table for P = 0,05. (n.d.). Retrieved from Math Usask: https://math.usask.ca/~szafron/Stats244/f_table_0_05.pdf

Hansel, B. T., & et.al. (2016). The Effect of Social Media to The Brand Awareness of A Product of A Company. Bina Nusantara University Website.

Hird, C. (2013). Social Media Marketing: A Best Practices Analysis of Selected Destination Magazine. Social Media Marketing.

Hitz, L., & Blackburn, B. (2017). The State of Social Marketing. Simply Method.

HubSpot & Iconosquare. (2012). How to Use Instagram for Business. Cambridge: HubSpot .

InsideView. (2013, February 1). How to Find the Balance Between Product-Centric and Customer-Centric Marketing. Retrieved February 2013, 2013, from blog.InsideView.com: https://blog.insideview.com/2013/02/01/how-to-find-the-balance-between-product-centric-and-customer-centric-marketing/

Instagram. (2012). Instagram for Business Strategy Guide. http://extfiles.etsy.com/worksheets/Instagramstrategyguide.pdf.

Jahn, B., & Kunz, W. (2012). How to transform consumers into fans of your brand. Journal of Service Management Vol. 23 Iss 3, 344 - 361.

Kotler, P., & Armstrong, G. (2011). Principles of Marketing. 14th Edition.

Long-Chuan, L., & et.al. (2014). Consumer attitudes toward blogger's sponsored recommendations and purchase intention: The effect of sponsorship type, product type, and brand awareness. Computers in Human Behavior Vol. 34, 258–266.

Malhotra, N. K. (2010). Marketing Research Sixth Edition An Applied Orientation. Atlanta: PEARSON.

Neti, S. (2011). Social Media and Its Role in Marketing. International Journal of Enterprice Computing and Business System, 1-16.

Nida, S., & Nola, N. (2017). Seperti yang Diimpikan Company Report. Bandung.

Nummila, M. (2015). Successful social media marketing on Instagram in case of Minoshoes. Helsinky: Haaga-Helia University.

Ponomarenko, A. (2018). B2B Digital Marketing Plan for Attracting New International Customers and Building Brand Awareness Globally. Case: AMA Co., Ltd. Russia.

Rantanen, J. (2017). Celebrity Endorsement in Social Media Marketing. Helsinki: Haaga-Helia University of Applied Research.

Sagala, O. B. (2013). INSTAGRAM CONTENT TOWARDS CUSTOMER PURCHASE INTENTION FOR START-UP FOOD COMPANY. Bandung.

Sagala, O. B., & Rachmawati, E. (2013). INSTAGRAM CONTENT TOWARDS CUSTOMER PURCHASE INTENTION FOR START-UP FOOD COMPANY. Bandung.

Santos, D. (2016, August 29). Why Corporate Event Highlight Videos are Worth It. Retrieved August 29, 2016, from Linkedin.com: https://www.linkedin.com/pulse/why-corporate-event-highlight-videos-worth-donna/

T Distribution Table. (n.d.). Retrieved from Simulation-math Web Site: http://simulation-math.com/TDistTable.pdf

Table of Product Moment. (n.d.). Retrieved from Digital Lab of UNILA: http://digilib.unila.ac.id/8588/19/tabel-r%20product%20moment.pdf

Younus, S. (2015). Identifying the Factors Affecting Customer Purchase Intention . Global Journals Inc, 8-14.

Zarella, D. (2009). The Social Media Marketing Book. Canada: Google Books.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Evaluating Sport Sponsorship Model among Soccer Fans In Indonesia "Case Study Of Arema Fc"

Rizky Aditya Maulana[a*],Fitri Aprilianty[b]

[a,b]School of Business and Management, Bandung Institute of Technology, Jl Ganesha No.10, Bandung 40132, Indonesia

Abstract

In order to promote their goods, a company has variety of ways, one of them by sponsorship. In sponsorship each company can choose whether through an event or through sports. Nowadays, companies have globally increased their investment in sport sponsorship. Companies are willing to spend a big enough money to be able to advertise in sports activity or sports teams to raise awareness of its product/services in the public. Among sports, soccer is the most heavily sponsored sport. Seeing the large number of sponsors attached in many of Indonesian soccer club jersey shows that soccer club became one of emerging sponsorship media to advertise products/services. This research examines the effectiveness of sponsorship in soccer club among its fans by test the relationship between key variables of sponsorship influence that include team attachment, corporate image future purchase intentions, and brand loyalty. This research objective are to find out how's the effectiveness of the company to using soccer team as their marketing tools by mapping the sport sponsorship mechanism in Indonesia and test the relationship between variables of sport sponsorship (team attachment, brand awareness, brand loyalty, and purchase intention) in Indonesia. By using both of qualitative and quantitative approach, such as conducted in-depth interviews and a survey to obtain the data assess whether the soccer spectators were aware of the sponsorship of AREMA FC. The result shows that team attachment have positive relathionship with brand awareness, brand loyalty and corporate image, while did not have positive relationship with purchase intention. In addition, brand awareness and corporate image did not have positive relationship with purchase intention, while brand loyalty did.

Keywords: Sport, Sponsorship,Soccer Club, AREMA FC

1. Introduction

1. 1.Background

For many years ago, sponsorship could be regarded has more charitable or philanthropic, but in recent years, sponsorship has become an emerging part of marketing mix. Sponsorship is defined as 'the acquisition of rights to affiliate or directly associate with a product or event for the purpose of deriving benefits related to that affiliation or association. The sponsor then uses this relationship to achieve its promotional objectives or to facilitate and support its broader marketing objectives (Tench & Yeomans, 2006). Due to the indirect effects of the usage of sponsorship for the organization, it has been among the years often confused with other communication tools and mainly advertising. Many companies actively pursuing sponsorship as a communication strategy in an attempt to enhance their marketing communications (Shimp, 2003). Therefore, companies are allocating significant amounts of money to sponsorship (IEG, 2013). In the past, the regular company's communication mix consisted of advertising, sales promotion, and public relations. However, sponsorship is now an additional tool available for companies to communicate with their target customers (Lings & Owen, 2007). Total global sponsorship spending in 2016 reached $60, 1 billion and projected will rise 4, 1 % or about $62, 8 billion dollars (Chipps, 2017). In the 2017 the sponsorship predicted spending

---

* Corresponding author. Tel.: +6281335241307;
 *E-mail address:*rizky. amaulana@sbm-itb.ac.id

ICMEM

will increase around 4, 4 % it higher if we compare with marketing and promotion with expected growth around 3, 0 % (IEG, 2017). Among different kinds of sponsorship (sports, entertainment, cultural affairs, arts, etc.), sport sponsorship has the greatest share of $12.38 billion (62%) in 2011 (IEG, 2012). Conventionally, sponsorship is used most widely in the sport industry (Olson & Thjømøe, 2009). Approximately, sport sector attracts 54–65% of spending on sponsorship (IEG, 2013). Moreover, among various sport events, soccer attracted most of sport sponsorship budget to itself because it is the most popular sport around the world (Deloitte, 2011). According to Football Money Leaguee many soccer clubs' income originated from sponsorship (Deloitte, 2011). In North American soccer total sponsorship spending on 2016 is $333 million dollar and predicted increase 4, 1% to $346, 6 million dollar (IEG, 2017). We can take an example of MLS (major league soccer) that have viewer more than 19.000 people on every game (Anonymous 2, 2017), we can see there are large of number of soccer viewer, it can be a tools for company to gain a lot of people attention and present their product. Sport in Indonesia is similar to other parts of the world and soccer is one of the most favorite and popular sport in Indonesia and there are so many soccer fan groups fanatic. In Indonesia soccer weekend games are watched by 52 million television viewers while about 12 million attend games each year (Quora, 2014). In Indonesia, sponsorship is not a new thing, sponsorship itself has been done by many soccer club in Indonesia. In his own journey at first the Soccer club in Indonesia was funded by The Regional Development Budget (APBD) but after Regional Development Budget (APBD) fund was forbidden to fund the professional soccer club by the government in 2011 many Soccer clubs began to seek their own funding by finding sponsorship to some companies. (www.baliutd.com, 2017).

1. 2.Research Questions

RQ1 : How is the sport sponsorship system in Indonesia?
RQ2 : How is the relationship between variables of sport sponsorship in Indonesia?

1. 3.Research Objective

RQ1 : Identify Sport Sponsorship mechanism in Indonesia
RQ3 : How is the relationship between variables of sport sponsorship (team attachment, brand awareness, brand loyalty, and purchase intention) in Indonesia?

2. Literature Riview

2. 1. Sport Sponsorship

According to (Pham, 1991)Sponsorship is an activity that is used by a company to market goods by utilizing the connection between the institution and its followers by reciprocally providing what the institution needs. Sponsorship has been change for just a generous activity to a popular marketing vehicle (Walraven, 2013). Every company have different purpose when they decide to become sponsor of the event. Based on (Utama, 2017), there are several reason why company decide to become sponsor of the event: To penetrate to market that we want, To show the real product to customer, To introduce new product to customer.Sponsorship event is when you invest some amount of money of some event like concerts or others activity (Stafford, 2014). Every event have a special offer to some sponsor when that company want to be their sponsor and it depends on how much sponsor give to that event (Fisher, 2016). Sport Sponsorship is when you decide to do a sponsorship through sport, whether sponsoring sport associations, teams, athletes, facilities, events, leagues and competitions (Tsiotsou & Alexandris, 2009). In the last decades, sport amateurism has been risen into some professional business and the level of entertaining are increasing too, this development in sport and their entertainment generate huge amount of revenue (Abiodun, 2011). Soccer activity is one of the most sponsored sports by a company, be it in a soccer event or a soccer club. Company usually gives some money or goods or services to the club in return can advertise when the game takes place, the company logo is placed on the team jersey, or also make a certain player in the club to be an artist in the advertisement in the campaign by the company (Chaowick & Thwaites, 2005).

ICMEM

2. 2. Team Attachment

Accoding to (Tsiotsou & Alexandris, 2009) Team attachment is the psycological connection of consumers to a sport team, its is valuable segmenting characteristic to a team because it is shown the phsysical connection of fans to the team, (Eshghi, Kazemi, Aghazadeh, & Hedayatnia, 2013) also added that Fans with high level of team attachment will attend more home game or event away game compared with fans with low team attchment level. Here are several factors that make person support a particular team: Proud of their hometown, Family factor, Achivment, Player. As the one of most popular sport in the world soccer, have a million subscriber and many people love watch soccer and sometimes become a fanatic fans (Naidenova, Parshakov, & Chmykhov, 2014). That huge amount of fanatics fans make many company interested in invest their money to become the sponsor of this club and gain more attention from the fanatics fans of the soccer club (Chaowick & Thwaites, 2005). Relies fanatics fans is a valuable asset for team, soccer club do many things to keep their fanatics fans such as held a meet and greet with the player, or make an open training so they can see their favorite player train and many more. Team attachment show some strong effect on sponsor image and purchase intention of customer to the sponsor brand and highly attach person to the team it will increase possibility to the purchase intention (Ibrahim, 2014). Team attachment show some strong effect on sponsor image and purchase intention of customer to the sponsor brand and highly attach person to the team it will increase possibility to the purchase intention (Ibrahim, 2014).

2. 3. Brand awareness

Brand awareness is ability of the consumer to recall and remember the name of brand (Koo, Quarterman, & Jackson, 2006). When consumer easily remember one particular brand when see a product, which brand gain a high brand awareness (Chi, Yeh, & Yang, 2009). Brand awareness significantly impacts consumer decision making where consumers generally use it as a decision heuristic which benefits the management of customer-based brand equity Indeed, brand awareness has direct effects on brand's equity (Sasmita & Suki, 2015). Brand awareness can be diffrentiatite from depth and width (Koo, Quarterman, & Jackson, 2006) stated that brand awareness have an important role when consumer make a decision to which brands enter the consideration set, and it also influences which brands are selected from the consideration set. sponsorship awareness is ability of the consumer to recall and remember the name of brand that sponsoring particular team according to (Biscaia, Correia, Rosado, Ross, & Maroco, 2013) sponsorship awareness play as an important role in consumers attitued toward sponsor and also sometimes consumers more prefer about the brand because they have seen that brand before from the team campaign. Sponsorship awarness is the first phase in the sequence of sponsorship benefit.

2. 4. Corporate image

Corporate image is what people see and what people think about company either is a good or bad. Corporate image come from what customer feel about company performance about the related organization as the goods producer and evaluation result about that point at once (Naufal, 2015). (Carpenter, 2013) say that corporate image has been used as an equal for concepts such as message, reputation, perception, cognition, attitude, credibility, belief, communication and relationship (Huang, Yen, Liu, & Huang, 2014) also say that corporate image is an abstract that represent what people see about a corporation, (Tran, Nguyen, Melewar, & Bodoh, 2015) also add that corporate image created from personal experience, word-of-mouth, advertising and promotion. Factor forming the corporate image come from corporation behavior and customer perception of corporation and including the company name, company vision, company tradition, and diversity of product they sell, these are all the result of influence of all experience, feeling and idea of customer (Nguyen & Leblanc, 2001). Image of the company is quite important because it's the first criteria that customer think before they make a decision to purchase some product, and also it can be very important to become an image of that company (Carpenter, 2013). In the process of improving corporate image, the company performs various ways one of them through sponsorship method. In the study (Abiodun, 2011) it was explained that one of the purposes of sponsorship is to enhance the corporate image of the company sponsoring this club.

2. 5. Brand Loyalty

Brand loyalty is respond on a previous used brand and shopping experience of a goods or product and it can be measured on the rebuying or repurchase rate on same brand (Chi, Yeh, & Yang, 2009). Integrated marketing communication have an important role in convincing customers of brand loyalty (Sasmita & Suki, 2015), and (Kuikka & Laukkanen, 2012) defines that brand loyalty is the result of interaction between consumers attitude and repeat purchase behaviour. (Chi, Yeh, & Yang, 2009) Measured brand loyalty into two dimension: affective loyalty and action loyalty. affective loyalty is the accumulation of satisfaction when using a particular brand but active loyalty only represent that a repurchase intention but it seems like there is nothing purchase action. (Tokmak & Aksoy, 2016) Described that brand loyalty in two manners: psychological and behavioural. Psychological brand loyalty is self-desire to the brand for doing repurchase behaviour and the Behavioural loyalty means that customer has consistent for purchase particular brand and this purchasing behaviour of the consumers gradually reinforce the relationship the customer and the brand itself.

2. 6. Purchase intention

Purchase intention is an individual intention to buy specific goods or brand which they have chosen for them self after some certain process (Laroche, Kim, & Zhou, 1996). (Huang, Yen, Liu, & Huang, 2014) Say that purchase intentions can be used as an indicator to predict customer consumption behavior, representing the subjective consciousness or possibilities of customer purchases and also Purchase intentions can measure the possibilities of consumers purchasing a certain product. From a sponsor's perspective, consumer purchase intention is the most useful indicator of sponsorship effectiveness to see the impact on future sales. Purchase intention is one of most used sponsorship outcomes, sponsorship changes customers reactions to sponsors and develops positives reaction to the sponsors, which then leads increase intention of pepole to buy sponsors porduct (Tsiotsou & Alexandris, Delineating the outcomes Delineating the outcomes Sponsor image, word of mouth, and purchase intentions, 2009). According to (Ibrahim, 2014) the highly attched a fans to a team will develop positive image to the sponsor team and will increase the intention to buy team or sponsor product. According to (Biscaia, Correia, Rosado, Ross, & Maroco, 2013) purchase intention is the final indicator to measure the sponsorship effectiveness.

2. 7. Conseptual Framework
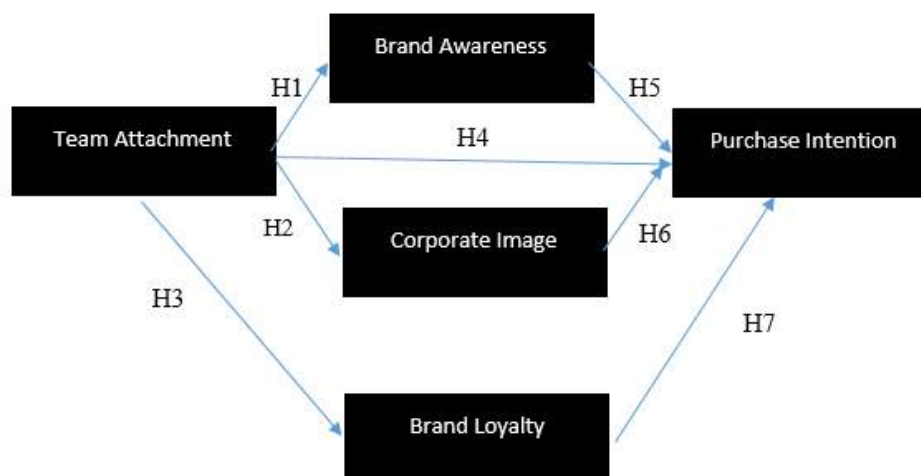
H1: Team Attachment is positively related with Brand Awareness (Ibrahim, 2014)
H2: Team Attachment is positively related with Coorporate Image (Eshghi, Kazemi, Aghazadeh, & Hedayatnia, 2013)
H3: Team Attachment is positively related with Brand Loyalty (Eshghi, Kazemi, Aghazadeh, & Hedayatnia, 2013)
H4: Team Attachment is positively related with Purchase Intention (Tsiotsou & Alexandris, 2009)

ICMEM

H5 : Brand Awareness is positively related with Purchase Intention (Chi, Yeh, & Yang, 2009)
H6 : Corporate Image is positively related with Purchase Intention (Huang, Yen, Liu, & Huang, 2014)
H7 : Brand Loyalty is positively related with Purchase Intention (Chi, Yeh, & Yang, 2009)

3. Methodology

This research will use both quantitative and qualitative. Quantitative approach is used to to know the relatiaonship of Team Attachment to Brand Awareness, Brand Loyalty, Corporate Image Purchase Intention by spreading questionaire to 400 people who love watching AREMA either in the stadium or in the home from their television. Researcher will use judgmental sampling and will analyze using the Partial Least Square (PLS) and ONE-WAY ANOVA.

3.1. Measurement

The questionaire used for the survey cinsisted of socio-demographic and behaivioral to find out the respondent's profile including gender, age, domicile, job.

No.	Label	Indicator	Scale	Source
1	PI1a	When you know that Im3 sponsors Arema do you have intention to try using Im3	Interval Scale	(Ibrahim, 2014)
2	PI1b	When you know that Corsa sponsors Arema do you have intention to try using Corsa	Interval Scale	(Ibrahim, 2014)
3	PI1c	When you know that Ijen Nirwana sponsors Arema do you have intention to try living in Ijen Nirwana	Interval Scale	(Ibrahim, 2014)
4	PI1d	When you know that Specs sponsors Arema do you have intention to try using Specs	Interval Scale	(Ibrahim, 2014)
5	PI1e	When you know that Tora Bika sponsors Arema do you have intention to try Tora Bika	Interval Scale	(Ibrahim, 2014)
6	PI2a	When you know that Tora Bika sponsors Arema do you have intention to consume Tora Bika.	Interval Scale	(Ibrahim, 2014)
7	PI2b	When you know that Im3 sponsors Arema do you have intention to buy Im3 and use it as your provider	Interval Scale	(Ibrahim, 2014)
8	PI2c	When you know that Corsa sponsors Arema do you have intention to buy Corsa and use as your tire	Interval Scale	(Ibrahim, 2014)
9	PI2d	When you know that Ijen Nirwana sponsors Arema do you have intention to buy a house in Ijen Nirwana and live in Ijen Nirwana	Interval Scale	(Ibrahim, 2014)
10	PI2e	When you know that Specs sponsors Arema do you have intention to buy specs	Interval Scale	(Ibrahim, 2014)
No.	Label	Indicator	Scale	Source
1	CI1a	Tora Bika is a brand who support soccer activity	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
2	CI1b	Corsa is a brand who support soccer activity	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
3	CI1c	Im3 is a brand who support soccer activity	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)

ICMEM

No.	Label	Indicator	Scale	Source
4	CI1d	Ijen Nirwana is a brand who support soccer activity	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
5	CI1e	Specs is a brand who support soccer activity	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
6	CI2a	Specs as a sponsor of AREMA FC have a good reputation and credibility	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
7	CI2b	Corsa as a sponsor of AREMA FC have a good reputation and credibility	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
8	CI2c	Im3 as a sponsor of AREMA FC have a good reputation and credibility	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
9	CI2d	Ijen Nirwana as a sponsor of AREMA FC have a good reputation and credibility	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
10	CI2e	Tora Bika as a sponsor of AREMA FC have a good reputation and credibility	Interval Scale	(Minkiewicz, Evans, Bridson, & Mavondo, 2009)
No.	Label	Indicator	Scale	Source
1	BA1	I know the specs brand as a product of Arema FC sponsor	Interval Scale	(Eshghi, Kazemi, Aghazadeh, & Hedayatnia, Evaluating Sport Sponsorship Model among Soccer Fans in Iran, 2013)
2	BA2	I know the Corsa company as a sponsor of Arema FC	Interval Scale	(Eshghi, Kazemi, Aghazadeh, & Hedayatnia, Evaluating Sport Sponsorship Model among Soccer Fans in Iran, 2013)
3	BA3	I know the Ijen Nirwana and hotel company as a sponsor of Arema FC	Interval Scale	(Eshghi, Kazemi, Aghazadeh, & Hedayatnia, Evaluating Sport Sponsorship Model among Soccer Fans in Iran, 2013)
4	BA4	I know the Im3 company as a sponsor of Arema FC	Interval Scale	(Eshghi, Kazemi, Aghazadeh, & Hedayatnia, Evaluating Sport Sponsorship Model among Soccer Fans in Iran, 2013)
5	BA5	I know the tora bika company as a sponsor of Arema FC	Interval Scale	(Eshghi, Kazemi, Aghazadeh, & Hedayatnia, Evaluating Sport Sponsorship Model among Soccer Fans in Iran, 2013)
No.	Label	Indicator	Scale	Source
1	TA1	When there is an AREMA match I always take the time to watch	Interval scale	(Ibrahim, 2014)
2	TA2	When AREMA is playing at home I always take the time to come to the stadium	Interval scale	(Ibrahim, 2014)
3	TA3	I am happy to talk about AREMA FC with my friends	Interval scale	(Ibrahim, 2014)
4	TA4	The news about AREMA FC attract my attention	Interval scale	(Ibrahim, 2014)
5	TA5	I always follow AREMA FC update news	Interval scale	(Ibrahim, 2014)

ICMEM

No.	Label	Indicator	Scale	Source
1	BL1a	I would recommend about specs to my friend	Interval Scale	(Ibrahim, 2014)
2	BL1b	I would recommend about Tora Bika to my friend	Interval Scale	(Ibrahim, 2014)
3	BL1c	I would recommend about Im3 to my friend	Interval Scale	(Ibrahim, 2014)
4	BL1d	I would recommend about Ijen Nirwana to my friend	Interval Scale	(Ibrahim, 2014)
5	BL1e	I would recommend about Corsa to my friend	Interval Scale	(Ibrahim, 2014)
6	BL2a	I am a regular user of Corsa	Interval Scale	(Ibrahim, 2014)
7	BL2b	I am a regular user of specs	Interval Scale	(Ibrahim, 2014)
8	BL2c	I am a regular user of Im3	Interval Scale	(Ibrahim, 2014)
9	BL2d	I am a regular user of Ijen Nirwana	Interval Scale	(Ibrahim, 2014)
10	BL2e	I am a regular consumer of Tora bika	Interval Scale	(Ibrahim, 2014)
11	BL3a	I would repurchase Tora bika	Interval Scale	(Ibrahim, 2014)
12	BL3b	I would repurchase Corsa	Interval Scale	(Ibrahim, 2014)
13	BL3c	I would repurchase Im3	Interval Scale	(Ibrahim, 2014)
14	BL3d	I would repurchase Ijen Nirwana	Interval Scale	(Ibrahim, 2014)
15	BL3e	I would repurchase Specs	Interval Scale	(Ibrahim, 2014)

4. Result and Discussion

4. 1. Partial Least Square (PLS) – SEM Result
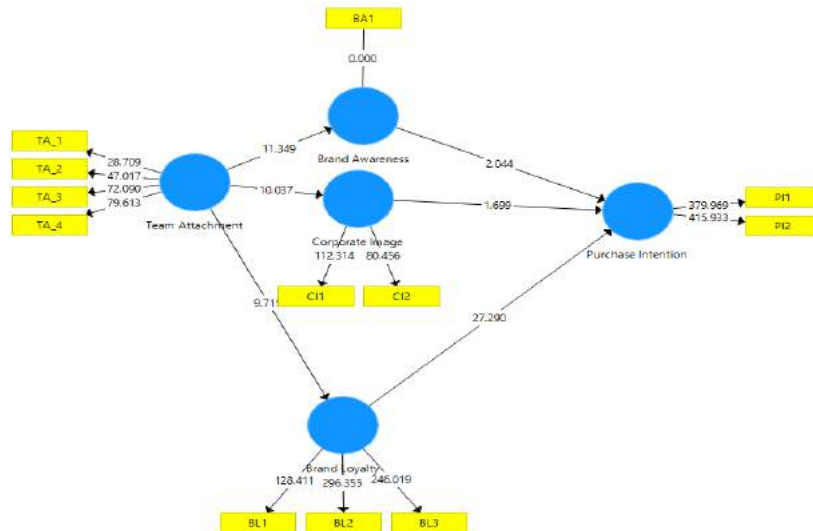
The bootstraping procedure was conducted using 406 cases on 5000 sub-samples.

Structural Path Significant

This model was consist of five construct that measured by seven indicators. Team attachment consist of four indicators, brand awareness two indicators, corporate image two indicators, brand loyalty three indicators and purchase intention two indicators. The data was annalyze using bootstraping procedure in smartPLS to indentify significant between variable. t-values that must be more than ≥ 1.96.

Hypothesis	Structural Path	t-Value	Result
H1	Team Attachment -> Brand Awareness	11,089	Accepted

ICMEM

Hypothesis	Structural Path	t-Value	Result
H2	Team Attachment -> Corporate Image	9,825	Accepted
H3	Team Attachment -> Brand Loyalty	9,728	Accepted
H4	Team Attachment -> Purchase Intention	1,916	Rejected
H5	Brand Awareness -> Purchase Intention	1,286	Rejected
H6	Corporate Image -> Purchase Intention	1,390	Rejected
H7	Brand Loyalty -> Purchase Intention	27,010	Accepted

Result

First researcher will discuss correlation between team attachment to brand loyalty, corporate image, brand awareness and purchase intention. On the first hypothesis proposed that team attachment have positive impact with brand awareness. When a person supports a particular club the person will tend to pay attention to all the activities that are done by the club that they like and this make supporter often see the name of a brand in a club then the person will tend to remember the name of the brand because it is associated with the club and this result. This result also support previous finding by Ibrahim 2011 who say that highly involve supporter make awareness of the product increasing. The second hypothesis is team attachment have positive impact on corporate image. This hypothesis was accepted and this is support previous research done by Ibrahim 2014. Ibrahim say that more highly involved supporter to the team more good image got by company, and when a company sponsorship of a club, the company will save the club's finances and make the club and it is make that company have good image on the fans. The third hypothesis is team attachment have positive relationship with brand loyalty this hypothesis also accepted and it support previous research done by eshgi, kazemi2013. By doing a sponsorship company help financial of the club and if fans highly involved with the team it will increasing their loyalty level to the brand when they provide high quality product and when supporter need to buy some goods product who support the club will come up first. The fourth hypothesis is team attachment have positive relationship with purchase intention. According to the result this hypothesis was rejected. This result support previous result done by Ibrahim 2014. Highly involved fans not directly cause the purchase decision because there are many things to think about when we want to make purchase decision. This result not consistent with eshgi, kazemi 2013 who say that team attachment have positive impact with purchase intention

For the second it will about brand awareness, brand loyalty, corporate image to purchase intention. The fifth hypothesis was brand awareness have positive impact on purchase intention. According to the result this hypothesis was rejected and it same with previous study done by Ibrahim 2014. High aware of product not always direct to purchase intention, it depends on what product that sponsors the club. On arema specs is one of their sponsors even though they aware of specs they will think twice if want to buy that because that's a not important stuff. The sixth hypothesis was corporate image have positive impact on purchase intention. The result that hypothesis six was rejected and this contrast with research conduct with huang, yen 2014. Good corporate image is not enough to make fans make purchase decision, after doing sponsors activity it company will gain good image among the supporters but good image didn't high enough to make people make purchase decision that's because there other consideration such as price, income, competitors and others. The last hypothesis, hypothesis seventh was brand loyalty have positive impact on purchase intention. According to the result this hypothesis was acceptance and it is supported previous result by chi,yeh 2009 loyalty will increase the possibility on repurchase and they will say just on one brand

ICMEM

4. 2. ONE-WAY ANOVA

Statistical Product and Service Solution (SPSS) is a data management and statistical analysis tool which has a very versatile data processing capability. SPSS cas be usefull for Electronically storing questionnaire data, Generating routine descriptive statistical data for question responses, Creating graphical presentations of questionnaire data for reporting, presentations or publications, Exploring relationships between responses to different questions, Collating open question responses.

Post Hoc Test

The Tukey Test (or Tukey procedure), also called Tukey's Honest Significant Difference test, is a post-hoc test based on the studentized range distribution. An ANOVA test can tell you if your results are significant overall, but it won't tell you exactly where those differences lie. After you have run an ANOVA and found significant results, then you can run Tukey's HSD to find out which specific groups's means (compared with each other) are different. The test compares all possible pairs of means.

Purchase Intention

Purchase_intention			
Tukey HSD[a]			
		Subset for alpha = 0.05	
NAMA_BRAND	N	1	2
IN	406	2,7365	
CO	406	2,8596	
ID	406	2,8670	
TB	406		3,4372
SP	406		3,6687
Sig.		0,572	0,064

According to the turkey test the most significant difrent of brand in purchase intention on brand Specs with brand ijen nirwana with 0,93227 and for purchase intention with subset for alpha = 0,05 it devided into 2 subset. Subset 1 contain brand Ijen Nirwana,corsa, and indosat and for subset 2 contain brand Tora Bika and Specs.

Brand Loyalty

Brand_Loyalty					
Tukey HSD[a]					
		Subset for alpha = 0.05			
NAMA_BRAND	N	1	2	3	4
IN	406	2,8271			
ID	406	3,0084	3,0084		
CO	406		3,0729	3,0729	
TB	406			3,2483	3,2483
SP	406				3,4643
Sig.		0,171	0,933	0,199	0,062

According to the table above the significant difrent between brand on brand loyalty was specs with Ijen Nirwana with 0,63719. On the homogeneus subset table between their brand Brand Loyalty devided into 4 subset. First subset

contain brand Ijen Nirwana and indosat, on the second subset contain brand indosat and corsa, on the third subset contain brand corsa and tora bika and for the last subset contain brand tora bika and specs. On this table there are brand who include in 2 subset, this is because the result of that brand is not quite far from the brand above it or below it so that brand can be included in to two subset.

Corporate Image

Corporate_Image					
Tukey HSD[a]					
		Subset for alpha = 0.05			
NAMA_BRAND	N	1	2	3	4
IN	406	3,4938			
ID	406		3,6872		
CO	406		3,7980		
TB	406			4,0480	
SP	406				4,3707
Sig.		1,000	0,389	1,000	1,000

According to the table above the most significant brand on coorporate image is Specs with Ijen Nirwana with 0,87685. On the table the brand devided into 4 subset the first subset contain just brand Ijen Nirwana, the second subset contain brand indosat and corsa, the third subset contain brand Tora bika and the last subset was contain brand Corsa. In this table there are no same brand in two subset because the diffrent between subset was quite far.

Brand Awareness

Brand_Awareness			
Tukey HSD[a]			
		Subset for alpha = 0.05	
NAMA_BRAND	N	1	2
ID	406	4,0148	
IN	406	4,1502	4,1502
CO	406		4,2635
TB	406		4,2882
SP	406		4,2882
Sig.		0,394	0,375

On the table above we can see tahta the biggest diffrent brand on brand awareness was Specs with Indosat and Tora Bika with indosat with 0,27340. On the table above we can see there are 2 subset, for the first subset there are 2 brand indosat and ijen nirwana and for the second subset there are 4 brand ijen nirwana, corsa, tora bika, specs. In this table brand ijen nirwana included in 2 subset because their result is not diffrent with indosat and corsa.

Result

Researcher also conducted one way ANOVA analysis to know the significant difference among 5 brand sponsors with 4 variable that conducted. The result show that in 4 variable (brand awareness, brand loyalty, corporate image, and purchase intention) specs always on the top. That's make sense because specs is soccer apparel who support soccer kits such as shoes, jersey and the others that's make specs always on top on 4 variable. In bottom is different on 3 variable. On variable purchase intention, brand loyalty, corporate image Ijen Nirwana always on the bottom that's

because Ijen Nirwana is name of housing company. Beside is a housing for rich people there are several famous housing company and Ijen Nirwana only just known because owner of Ijen Nirwana is the owner of arema FC. For the variable brand awareness the bottom is indosat because indosat logo is on the top of the jersey and that's make that logo hard to see on TV.

4. 3.   Qualitative Approach

Interview

Interview people is done for understand the the soccer sponsorship mechanism in indonesia. The qualitative data obtain from direct opinion of people who know about sport sponsorship mechanism in Indonesia.

The informant is is media officer of arema FC Mr sudarmadji. First reseracher contact informant by whatsapp aplication to make an appointment to doing an interview. The researcher say greetings to the informant and ask him when he can doing an interview . He replied that he can doing an interview on Friday. interview was held on arema office building in kertanegara street no 7.

Here below is the table of important statement from Mr Sudarmadji as media officer of Arema FC

Table 4. 1 Important statement from Mr Sudarmadji

1. criteria of Sponsors refers to govrenment rules
2. however on 2012-2013 on reality thats a alchohol company but we focus on their foundation who initiative sponsoring Arema.
3. For sponsors that approaching based on their initiative we study their proposal
4. Internal meeting not only with business division but others division too because sponsors not only on business contex,
5. We are talking 2 important thinks things how much is the contribution and what kind of compensation that will be given
6. intertwined communication between club and company, after that we have a meeting and manifested on MoU, we study again contribution and compensation if we think thats enough hand signature will be conducted and sponsorship activity will be be held
7. if the inisiative on us, usually we helad a gathering. Usually we invited previous sponsors and invited potential sponsors that we think can be arema sponsors next season.
8. On the proposal contain product knowledge and next season program. After 1 weeks marketing division confirm to the company about progres after there is answer from company we doing finalization then move to MoU aster MoU actualyzation.
9. surely we offer several packet which GOLD, SILVER, RETAIL.
10. We can't say that on digit but average income sponsorship contribute around 30-40 percent to operational club.
Statement 1-2 according to transcript below: surely there some criterias of sponsors that refers to govrenment rule which forbid alchohol company, cigarete company and gambling company sponsoring sport activity. however on 2012-2013 thats a alchohol company sponsoring arema but we focus on their foundation who initiative sponsoring Arema. Our prinsip forbid ciggarete, alcohol, gambling and protitution company.
Statement 3-8 according to transcript below: So actually two, first company who have initiative by they own and second arema doing approach to company and the step is diffrent. For sponsors approaching on their initiative we study their proposal. We will held an internal meeting not only with business division but others division too because sponsors not only on business contex,

Table 4. 2 Important statement from Mr Sudarmadji (cont)

when we doing a meeting we talking 2 things contribution and compensation how much and what the compensation after we held a meeting about compensation and contribution then come up some price offer, after that we send the price offer to the company, then the company study about our price offer, intertwined communication between club and company, we study again contribution and compensation if we think thats enough hand signature will be conducted and sponsorship activity will be be held. if the inisiative on us, usually we held a gathering. Usually we invited previous sponsors and invited potential sponsors that we think can be arema sponsors next season on that case business division doing an presentation about the picture of competition next season, what arema is about. Then after gathering we spread proposal to all sponsors that attend the gathering. On the proposal contain product knowloedge and next season program. After 1 weeks marketing division confirm to the company about progres, after there is answer from company we doing finalization then move to MoU signed between company and arema.

ICMEM

Statement 9 according to statement below: surely we offer several packet which GOLD, SILVER, RETAIL. For gold package almost 80% of promotional space can be filled, if silver 50% if retail counted on every match

Statement 10 according to statement below: If the actual digit number data We can't say that on digit but average income sponsorship contribute around 30-40 percent to operational club.

After grouping the important statement from mr sudarmaji, on the table 2 the interpret result of the important statement.

Table 4. 2 interpret the important staement from Mr Sudarmadji

1. Arema have restricted criteria to choose and sponsors
2. Arema will study the proposal of company who want to be a sponsors of arema based on contribution and compensation
3. arema held a gathering to show all company that sponsors arema last years and predicted to be an arema sponsors next years
4. business division will keep contact with the company to check about the progress of company
5. arema provide several sponsorship package to company.

On the table 3 below here are the grouping of common subject from the interpret result.

Table 4. 3 grouping of common subject

1. Choosing sponsors
   a) Sponsors selecting system based on govrenment rules
2. Sponsors approach
   a) If company approach to arema they will study and learn about they offer is that appropriate or not and will make decision
   b) If arema approach to company they will helad gathering, explain about arema, spread proposal and waiting the answer from company then they will make the decision
3. Sponsoring package
   a) Arema offers gold, silver and retail as their sponsorship package

Decision

In indonesia there are 2 types of sport sponsorship system first when sponsors approach to the team and when team approach to company. When company approach to the team, the team will examine proposal that propose by company and will see about compensation and contribution then they will have meeting to all aspect on team then they will decide. If team approach to the company they will gather all of company that sponsors team last season and company that potentially sponsors arema next season than they will about arema vison mision and goals next year than give proposal to all that company, than business division will keep contact with that company to maintain about the sponsorship. Then they will make a decision about sponsorship activity.
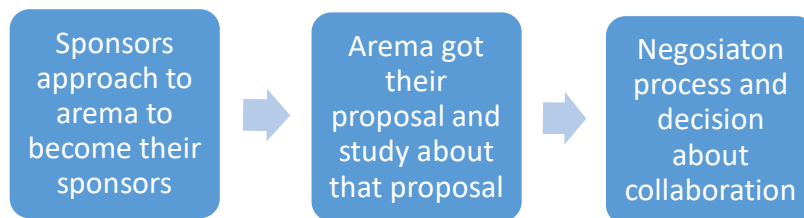
Figure 4. 1 Schematic if sponsors approach arema

ICMEM
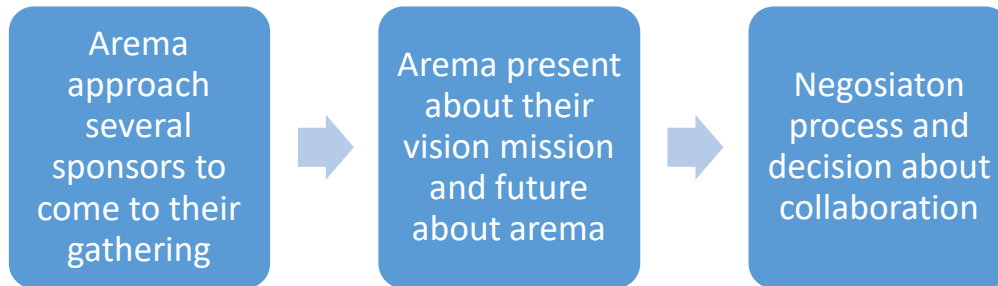
Figure 4. 2 Schematic if arema approach sponsors

5.   conclusion and recomendation

5.1 conclusion

RQ 1: How is the sport sponsorship system in Indonesia?

In sponsorship sports activities usually companies will look for a popular sport and have a lot of mobs, after that they will choose what kind of sport sponsorship they will choose whether clubs, players, or others. After that they will negotiate with the parties who will be ask to cooperate. After both parties agree with the contract memorandum of agreement will sign. Beside that club will usually invite the company to hear the presentation of the club after hearing the presentation of the club the company will have a meeting to see the profit and loss side in sponsorship activities with the club. When the company interested the company will contact the club to negotiate if both of company and club agreed with each other than the contract signature will occur. For club side clubs will usually invite companies that have sponsored last season and some potential sponsors to sponsor club in next season, then the sponsorship division will make a presentation about the vision of the club's mission and targets carried forward club. After that each of them will be given a proposal about the vision of the mission arema and target next season. After that the company will consider about the presentation in this step company and club will doing a negotiation. When company and club agree each other both of them will sign memorandum of understanding about their partnership.

RQ 2: How is the relationship between variables of sport sponsorship in Indonesia?

On this research, researcher use 5 variable with 7 connection between H1 (team attachment-brand awareness), H2 (team atttachment-corporate image), H3(team attchment-brand loyalty), H4 (team attchment-purchase intention), H5 (brand awareness-purchase intention), H6 (corporate image-purchase intention), H7 (brand loyalty-purchase intention).

According to the result the the connection between team attachment with brand awareness, brand loyalty, and corporate image is proven that the greater the team attchment, the greater the brand awareness, brand loyalty and corporate image, thats because when a fans attachment level is high to a soccer club they will follow what club do and they will aware about what everthing that club does and thats make them aware about sponsors company and make them loyal to that club and also image of the sponsors is good but if fans level of attachment is high, is didn't equals with the purchase intention level because to make a purchase decision need a lot of consideration.

For the connection between brand awareness, brand loyalty, corporate image to purchase intention, the connection between 2 variable is rejected. High level of brand awareness and corporate image didn't cause high of purchase intention thats cause when person make a purchase decision, they have another consideration and thats affect them to make a purchase decision, but on hypothesis brand loyalty to purchase intention the hypothesis is accepted thats because when sponsors brand become priority on their mind that will make that brand number one priority and if supported with good quality product repurchase decision will high.

ICMEM

5.2 Recommendation

According to the result of the research, author has some recommendation for company if they want to doing sport sponsorship activity and future research to gain deeper understanding about related things.

Sport sponsorship activity

When doing sport sponsorship activity company must decide what goal that they want to achieve. Researcher has presented of fans point of view regarding sponsorship activity regarding team attachment to brand awareness, brand loyalty, corporate image to purchase intention. It highly recomended to company set their goals before doing sport sponsorship activity. If company want to just increasing their corporate image and brand awareness they can do sport sponsorship activity but if they want increasing purchase intention they need to got they loyalty so company gan get purchase intention from the fans. Also if company want to doing sport sponsorship activity their company image have to match or slighly match with the soccer team for example their brand have to be sports apparel or like indosat who declare want to help indoneisan soccer so they got attention from people who watch soccer

Future Research

Evaluating the effectiveness of sponsorship in indonesia we cannot see just from one side only because suppoter behaviour toward their favorit football team is diffrent from each other. Therefore researcher recommend for future research to take data from sponsor companies so the research results will be comprehensive. The authors also recommended for future research on sponsorship decision making from company point of view. Finally researcher recommend his future research to examine the company sales result after spnsoring the soccer club

Reference

Fachri, F., & Itah, I. (2017, September 11). Retrieved from http://bola.republika.co.id/berita/sepakbola/liga-indonesia/17/09/11/ow3qu4-persija-dan-persib-catatkan-jumlah-penonton-terbesar-di-liga-1/

Abiodun, O. R. (2011). The Significance of Sponsorship as a Marketing Tool in Sport Events.

Anonymous 2. (2017). Retrieved from https://sport.detik.com/aboutthegame/pandit/d-2910893/upaya-mls-merebut-hati-amerika

Biscaia, R., Correia, A., Rosado, A. F., Ross, S. D., & Maroco, J. (2013). Sport Sponsorship: The Relationship Between Team Loyaity, Sponsorship Awareness, Attitude Toward the Sponsor, and Purchase Intentions. *Journal of Sport Management*.

Carpenter, J. E. (2013). THE ROLE OF CORPORATE IMAGE PERCEPTIONS IN SELECTION: TESTING AN IMPRESSION FORMATION MODEL.

Chaowick, S., & Thwaites, D. (2005). Managing Sport Sponsorship Programs: Lessons from a Criticai Assessment of Engiish Soccer. *journal of advertising research*.

Chaowick, S., & Thwaites, D. (2005). Managing Sport Sponsorship Programs: Lessons from a Criticai Assessment of Engiish Soccer. *Advertising Research*.

Chi, H. K., Yeh, H. R., & Yang, Y. T. (2009). The Impact of Brand Awareness on Consumer Purchase Intention: The Mediating Effect of Perceived Quality and Brand Loyalty. *Journal of International Management Studies*.

Chipps, W. (2017). Retrieved from http://www.sponsorship.com/About/Press-Room/Global-Sponsorship-Spending-To-Total-$62-8-Billion.aspx

Deloitte. (2011). The untouchables Football Money League.

Dolphin, R. R. (2003). Sponsorship: perspectives on its strategic role.

Eshghi, K., Kazemi, R. M., Aghazadeh, H., & Hedayatnia, A. (2013). Evaluating Sport Sponsorship Model among Soccer Fans in Iran.

Eshghi, K., Kazemi, R. M., Aghazadeh, H., & Hedayatnia, A. (2013). Evaluating Sport Sponsorship Model among Soccer Fans in Iran. *Business and Management Research*.

Fisher, S. (2016, November 22). *8 Creative Sponsorship Packages for Your Next Event*.

Huang, c. c., Yen, s. w., Liu, c. y., & Huang, p. c. (2014). THE RELATIONSHIP AMONG CORPORATE SOCIAL RESPONSIBILITY, SERVICE QUALITY, CORPORATE IMAGE AND PURCHASE INTENTION. *organizational innovation*.

Ibrahim, L. A.-N. (2014). An Evaluation of the Effectiveness of Sports Sponsorship among Football Fans in Egypt. *journal of sports*.

ICMEM

IEG. (2012, January 3). Retrieved from http://www.sponsorship.com/iegsr/2012/01/03/Economic-Uncertainty-To-Slow-Sponsorship-Growth-In.aspx

IEG. (2013). *2013 Sponsorship Spending Outlook*. Retrieved from http://www.sponsorship.com/Latest-Thinking/Sponsorship-Infographics/2013-Sponsorship-Spending-Outlook.aspx

IEG. (2017, October 16). Retrieved from http://www.sponsorship.com/Report/2017/10/16/Sponsorship-Spending-On-North-American-Soccer-To-G.aspx

Ko, Y. J., Kim, K., Claussen, C. L., & Kim, T. H. (2008). The effects of sport involvement, sponsor awareness and corporate image on intention to purchase sponsors' products. *International Journal of Sports Marketing and Sponsorship*.

Koo, G.-Y., Quarterman, J., & Jackson, E. N. (2006). The effect of perceived image fit on brand awareness: 2002 Korea-Japan World Cup. *Journal of Sports Marketing & Sponsorship*.

Kuikka, A., & Laukkanen, T. (2012). Brand loyalty and the role of hedonic value. *Journal of Product & Brand Management*.

Laroche, M., Kim, C., & Zhou, L. (1996). Brand Familiarity and Confidence as Determinants of Purchase Intention: An Empirical Test in a Multiple Brand Context. *Journal of Business Research*.

Lings, I. N., & Owen, K. M. (2007). BUYING A SPONSOR'S BRAND: THE ROLE OF AFFECTIVE COMMITMENT TO THE SPONSORED TEAM. *journal of marketing mangement*.

Minkiewicz, J., Evans, J., Bridson, K., & Mavondo, F. (2009). Corporate image in the leisure services sector. *service marketing*.

Naidenova, I., Parshakov, P., & Chmykhov, A. (2014). SOCCER SPONSOR: FAN OR BUSINESSMAN ? *Financial Economics*.

Naufal, y. (2015). *effect of PT pertamina (persero) corporate social responsibility programs implementation to corporate image (case study: fuel oil terimnal rewulu pertamina S&D regional II semarang).* bandung.

Nguyen, N., & Leblanc, G. (2001). Corporate image and corporate reputation in customers' retention decisions in services. *Journal of Retailing and consumer services*.

Olson, E. L., & Thjømøe, H. M. (2009). Sponsorship effect metric: assessing the financial value of sponsoring by comparisons to television advertising.

Pham, m. t. (1991). the evaluation of sponsorship effectiveness: a model and some methodological considerations.

Quora. (2014). Retrieved from www.quora.com

Sasmita, J., & Suki, N. M. (2015). Young consumers' insights on brand equity Effects of brand association, brand loyalty,brand awareness, and brand image. *International Journal of Retail & Distribution Management*.

Shimp, T. A. (2003). *Advertising, Promotion & Supplemental Aspects of Integrated Marketing Communications.* Thomson South-Western.

Stafford, A. (2014). *Event Sponsorship*. Retrieved from https://www.marketingbinder.com/glossary/event-sponsorship-definition/

Tench, R., & Yeomans, L. (2006). Exploring Public Relations.

Theofilou, A., Neokosmidi, Z. V., & Neokosmidis, I. (2008). Measuring sponsorship effects on consumer purchasing intention.

Tokmak, G., & Aksoy, R. (2016). FACTORS AFFECTING BRAND LOYALTY IN FOOTBALL: AN APPLICATION ON "THE BIG FOUR" FOOTBALL CLUBS IN TURKISH SUPER LEAGUE. *international review on econimics and management*.

Tran, m. a., Nguyen, b., Melewar, T. C., & Bodoh, j. (2015). Exploring the corporate image formation process. *qualitative market researh*.

Tsiotsou, R., & Alexandris, K. (2009). Delineating the outcomes Delineating the outcomes Sponsor image, word of mouth, and purchase intentions. *International Journal of Retail & Distribution Management*.

Tsiotsou, R., & Alexandris, K. (2009). Delineating the outcomes of sponsorship sponsor image, word of mouth, and purchase intention. *International Journal of Retail & Distribution Management* .

Utama, W. (2017). *Tujuan Sponsorship: Ini Alasannya Perusahaan Mau Menjadi Sponsor Suatu Acara*. Retrieved from http://www.bitebrands.co/2017/05/tujuan-sponsorship-manfaat-pengertian-arti-definisi.html

Walraven, M. (2013). Sports sponsorship effectiveness : Investigating awareness, sponsor equity and efficiency.

www.baliutd.com. (2017, april 13). Retrieved from http://www.baliutd.com/news/media-news/pentingnya-sponsor-untuk-suatu-klub-sepak-bola/

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of Using Indonesian Supermodel on Advertising to Consumer Buying Behavior on Indonesian Fashion Products

Almira Tri Aulia[a*], and Yulianto Suharto[b]

[a,b]*School Of Business and Management, Intitut Teknologi Bandung Jl. Ganesha No.10, Lb. Siliwangi, Coblong, Kota Bandung, Jawa Barat 40132,Indonesia*

Abstract

As the fashion industry in Indonesia is competing, the need of fashion models in Indonesia is increasing rapidly. Using a supermodel in their advertisement becomes one of their strategies to lift customer's awareness to the brand. Moreover, Indonesia's number of regular models exceeds the number of supermodels, resulting in a significant rate gap between supermodel and regular models. This will be the focus of the study to investigate if the presence of a supermodel will helped in influence purchase intention and favourable attitudes toward the advertisement of the consumers. This research identified the impact of using supermodel in advertisement to consumer buying behavior in terms of attitude and purchase intention. The advertisements used are advertisement in scope of Indonesian fashion brand campaign. In this research, 100 women and have the average shopping expenses of minimum Rp.300.000 and above per month were filled the questionnaire. The questionnaire distributed online and then analyzed using multi regression analysis, F-Test, and T-Test. Based on the research, findings show that supermodels have bigger and significant impact than regular models, both on attitude towards the advertisement and to purchase intention. Therefore, using supermodel in fashion product advertisement really should be considered due to the good impact

Keywords: Advertisement; Attitude; Purchase Intention; Supermodel; Regular Model

1. Introduction

Advertising plays an important role in the brands success on the market since it is one of the way to reach a mass of group people in a short time. Marketers tend to use attractive models in advertisement in order to attract women as their target market. They want their products to be seen in appealing way because they believe that consumers have more positive attitude when they see the models that represent the ideal standard of beauty in society. Marketers are starting to invest their marketing campaign in hiring "Supermodels" instead of just a "Model". Supermodels are hired to achieve a specific result providing with the paradigm that Supermodel is exclusive, expensive to hire, and require a certain level of credibility. The gap between the rate of a regular models and supermodels has questioned the marketer that is it really that impactful for the brand to hire a supermodels instead a regular models?. This study focuses on exploring supermodels and regular models impact in the advertising to consumer buying behaviour, to understand which kind of model to use in and fashion product advertisements that will build stronger customer's attitude, to explore which kind of models fashion product advertisements to increase purchase intention, and to know how impactful customer's attitude toward fashion product advertisement is to consumer's purchase intention of product advertised

---

* Corresponding author.

ICMEM

2. Literature Review

Advertising

According to American Marketing Association, Advertising means any paid form of non-personal presentation and promotion of ideas, goods, or services by an identified sponsor. There are three main objectives of advertising: to inform, to persuade and to remind customer

Definition of supermodel and regular model

A 'model' can be referred to person who is hired to publicize, promote any product or brands and advertise any object fashionably. But the term of Supermodel really only refers to a high fashion models who have been known and successful both nationally and internationally.

Consumer Attitude

According to Fill, 2009, Attitude can be used to predict the behavior of individual in terms of whether or not they will buy a product, as attitude has an impact on consumer's decision making process, attitude influence purchase intention and consumer behavior because it has basic psychological function (Chandon Jean-Louis, 2011)

2.4 Purchase Intention

According to Ajzen (1992), Purchase intention is a planned behavior that a consumer willing to buy certain product. Therefore, purchase intention is influenced by attitude, because it affects customers' actual purchase behaviors (Fishbein & Ajzen, 1975)

Conceptual Framework
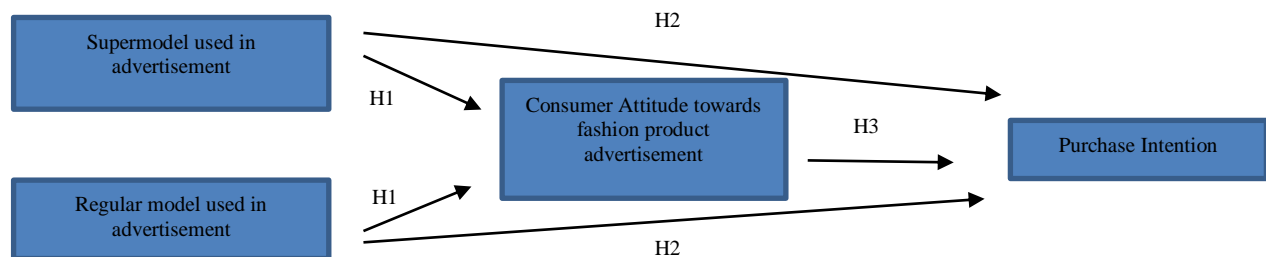
Figure 2.5 Conceptual Framework

H1: Supermodel used in advertisement have a stronger impact on consumer's attitude toward the advertisement than regular model

H2: Supermodel used in advertisement have a stronger impact on consumer's purchase intention of the product advertised than regular model

H3: Consumer's attitude toward advertisement have a significant impact on consumer's purchase intention of product advertised

3. Research Methodology

Author used quantitave method and judgment sampling to distribute questionnaire. By using judgment sampling, each member of population will answer the questionnaire based on their knowledge that has seen a supermodel in an advertisement. To measure the Customer's attitude towards advertisement, author use affect, cognitive, and behavior.

ICMEM

To measure models in the advertisement, author use proximity, similarity, and physical attractiveness. Last, to measure purchase intention, author use the intention to buy, willingness, and recommendation. The questionnaire distributed to respondents that match the requirement. Which are: Women who lives in DKI Jakarta, Have seen advertisement with supermodel featured with are 20 – 29 in age and have average amount of fashion shopping product expense of Rp.300.000 and above. To determine the number of people that will be the respondent, the author using the Slovin formula. This research will use 10% error tolerance, which means the accuracy of the data is 90%. Therefore, minimum 100 respondent are required to fill the questionnaire.

The gathered data are tested first with classical assumption before analyzed with multi linear regression, F test and T test to test the acceptance of hypothesis. Lastly, author use determinant coefficient to measure the ability of the model in explain variation in the variables the determinant coefficient is conducted.

4. Findings and Discussion

4. 1. *Between models in advertisement and consumer's attitude toward advertisement*

The multi linear regression test shows the equation of:

$X3 = 49,512 + 1,411_{X1} + 0,005_{X2}$

From the equation above, it can be interpreted that variable Supermodel used in advertisement (X1) give a bigger impact than Regular model used in advertisement, because X1 has bigger coefficient score.

The F test shows that it has F_{value} of 11,391 with significance of 0,000. The value of F_{table} for this research with df 1 = 2 df2 = 97 and probability of 0,05 is 3.09

The test shows that $F_{value} > F_{table}$ with significance of < 0,05, so it can be concluded that simultaneously there is a significant relationship between Supermodel Used In Advertisement (X1) & Regular Model Used In Advertisement (X2) and Customer's Attitude Towards Advertisement (X3)

The T test for Supermodel used in Advertisement shows that it has T_{value} of 3,570 and for Regular Model Used In Advertisement it has T_{value} of 0,020. The value of T_{table} for this research is with probability of 0,05 and df = 97 is 1,985

So it can be concluded that, Supermodel used in advertisement (X1) has significant impact to Consumer Attitude Towards Advertisement (X3) (t_{value} 3,570 > t_{table} 1,985). And Regular Model Used In Advertisement (X2) doesn't have significant impact to Consumer Attitude Towards Advertisement (X3) (t_{table} 0,020 < t_{value} 1,985).

In Addition, the value of R^2 is 0,190 meaning that the variable Supermodel Used In Advertisement dan Regular Model Used In Advertisement has impact 19% to the Variable Customer's Attitude Towards Advertisement. While the 81% impacted by the other factors than models in the advertisement

Therefore,

H1: Supermodel used in advertisement have a stronger impact on consumer's attitude toward the advertisement than regular model

Is Accepted

4. 2. *Between models in advertisement and purchase intention*

The multi linear regression test shows the equation of:

$Y = 14,760 + 0,656_{X1} + 0,217_{X2}$

From the equation above, it can be interpreted that variable Supermodel used in advertisement (X1) give a bigger impact than Regular model used in advertisement (X2), because X1 has bigger coefficient score

The F test shows that it has F_{value} of 20,327 with significance of 0,000. The value of F_{table} for this research with df 1 = 2 df2 = 97 and probability of 0,05 is 3.09

The test shows that $F_{value} > F_{table}$ with significance of < 0,05, so it can be concluded that Simultaneously there is a significant relationship between Supermodel Used In Advertisement (X1) & Regular Model Used In Advertisement (X2) and Consumer Purchase Intention (Y).

The T test for Supermodel used in Advertisement shows that it has T_{value} of 3,538 and for Regular Model Used In Advertisement it has T_{value} of 1,644. The value of T_{table} for this research is with probability of 0,05 and df = 97 is 1,985

ICMEM

So it can be concluded that, Supermodel used in advertisement (X1) has significant impact to Consumer Purchase Intention (Y) (t_{value} 3,538 > t_{table} 1,985). Regular Model Used In Advertisement (X2) doesn't have significant impact to Consumer Purchase Intention (Y) (t_{value} 1,644 < t_{table} 1,985).

In addition, it showed that value of R^2 is 0,295 meaning that the variable Supermodel Used In Advertisement dan Regular Model Used In Advertisement has impact 28.1% to Purchase Intention. While the 70.5% are impacted by the other factors than models in the advertisement

Therefore,

H2: Supermodel used in advertisement have a stronger impact on consumer's purchase intention than regular model

Is Accepted

4. 3.   Between Consumer's Attitude Towards Advertisement and Purchase Intention

The multi linear regression test shows the equation of:

$$Y = 3.029 + 0.313_{X1}$$

The T test shows a value of 7,877 with significance of 0,000. Therefore, value of t_{value} (7,877) > t_{table} (1,985) with significance of 0,000 < 0,05, we can conclude that Customer's Attitude Towards Advertisement has significant relationship to Consumer Purchase Intention.

In addition, it showed that value of R^2 is 0,388 meaning that the variable Customer's Attitude Towards Advertisement has impact 38.8% to Purchase Intention. While the 61.2% are impacted by the other factors than models in the advertisement

Therefore,

H3: Consumer's attitude toward advertisement have a significant impact on consumer's purchase intention of product advertised

Is accepted

5.   Conclusion

After doing several tests and analyzing the data in the last chapter, author can conclude that:

[1] Supermodel used in advertisement have a stronger impact and significant impact on consumer's attitude toward the advertisement than regular model

[2] Supermodel used in advertisement have a stronger impact and significant impact on purchase intention than regular model

[3] Consumer's attitude toward advertisement have a significant impact on consumer's purchase intention of product advertised

Based on the findings, Supermodel are able to attract more attention to the advertisement in fashion product advertisement. The results of this study prove that using supermodels in advertisement have a significant impact to consumer attitude and purchase intention. This study provides some of this information that might be useful for marketing and advertising indonesian fashion products for women in Indonesia. After conducting a test to 100 millennials in Jakarta, It can be obtained that supermodel has a stronger and significant impact both to the consumer attitude towards the advertisement and to purchase intention. This result is aligned with a study by Verbecke & Vackier (2005) that If consumers have a positive attitude toward the advertisement, they are more likely to intend to purchase it; conversely, if they have a negative attitude toward the advertisement, they are less likely to have the intention to purchase it.

Reference

Hinrich. (2015 ,June 25). *Indonesia's fashion industry continues to be top contributor among the country's creative sectors*. Retrieved November 7, 2017, from GlobalSources: http://www.globalsources.com/NEWS/ODCSS-Indonesias-fashion-industry-continues-to-be-top-contributor-among-the-countrys-creative-sectors.HTML

ICMEM

KataData. (2017, Januari 27). *Penduduk DKI Jakarta Didominasi Usia Produktif*. Retrieved December 1, 2017, From KataData: https://databoks.katadata.co.id/datapublish/2017/01/27/penduduk-dki-jakarta-didominasi-umur-25-34-tahun

Beall, George. (2017, November 6). *8 Key Differences between Gen Z and Millennials*. Retrieved December 1, 2017, From The Huffington Post: https://www.huffingtonpost.com/george-beall/8-key-differences-between_b_12814200.html

Xinhua. (2016, Ocotober 26). *Fashion industry becomes major driver in Indonesia's creative economy*. retrieved November 7, 2017, retrieved November 7 2017, From News Adia&Pacific Edition: http://news.xinhuanet.com/english/2016-10/26/c_135782826.html

UKEssays (2017). *The Impact of Advertising on Fashion*, retrieved November 15, 2017, From UKessays: https://www.ukessays.com/dissertation/examples/marketing/the-impact-of-advertising-on-fashion.php

Melvin Prince (1998, March), *How super are supermodels as advertising spokeswomen?*, retrieved Novemver 15, 2017, from Quirks Media : https://www.quirks.com/articles/how-super-are-supermodels-as-advertising-spokeswomen

Weiss, Dyanne (2017). *How does advertising affects wants & needs*. Retrieved November 17, 2017, From Chron: http://smallbusiness.chron.com/advertising-affect-wants-needs-69071.html

DifferenceBetween. (2017) *Difference Between model and supermodel*. Retrieved November 15, 2017 From Difference between: http://www.differencebetween.info/difference-between-model-and-supermodel

McCormick, Karla. (2016). *Celebrity endorsements: Influence of a product endorser match on Millennials attitudes and purchase intentions*. Journal of Retailing and Consumer Services

Perrier, Angela. (2008). *Influence of model body size on consumer attitudes and purchase intention*. Iowa State University.

Sheila, Audina. (2017). *Women's Attitude towards advertisement and purchase intention of product advertised using fashion and commercial models*. Institut Teknologi Bandung

ICMEM

The 3rd International Conference on Management in Emerging Markets

Consumer Behaviour of Indonesian Specialty Coffee Drinkers

Faris Izzi Hibaturrahman[ab]

[a]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No.10, Lb. Siliwangi, Coblong, Kota Bandung, Jawa Barat 40132, Indonesia*
[b]*University of Hull Business School, Cottingham Rd, Hull HU6 7RX, United Kingdom*

Abstract

The trend of consuming specialty coffee has been increasing due the changing behaviour of coffee drinker in Indonesia. And, that can be indicated from significant growth between 1990 and 2018 for coffee consumption in Indonesia with percentage of 73%. Also, the coffee preference has change from consuming instant coffee to consume specialty coffee, especially due the massive growth of specialty coffee shop or café in metropolitan city such as Jakarta and Bandung. Indeed, there are several aspects that shaping behaviour of Indonesian coffee drinkers in this modern era.

Keywords: Emerging Market; Specialty Coffee; Agriculture; Consumer Behaviour; Coffee Market

1. Introduction

Trend of consuming coffee amongst Indonesian people tend to increase significantly rather than in the past. From 1990 to 2018 the level of coffee consumption by coffee exporting countries increasing approximately around 60%, meanwhile, Indonesian domestic consumption has been increasing almost 72% from the same time period (International Coffee Organisation, 2018a). Moroever in the 21st centuries, coffee not always seen as commodities product, but rather agrculture product that have more value than before, indeed some of the coffee consumers associated it with *specialty coffee*. According to Van der Merwe & Tania (2016) that defined specialty coffee as "… *gourmet of coffee that is 'made' from execptional beans grown only in ideal coffee-producing climates…"*.

Furthermore, the trend of specialty coffee generates the changing of behaviour of coffee drinkers and increasing demand of bettter coffee quality (Carlvalho, et al., 2016; Alvarez, et al., 2010). Perviously, the trend of specialty coffee can be tracked from the influence of chain coffee shop such as Starbucks in the several countries that also make specialty coffee more globalise currently (Thompson & Arsel, 2004). Indeed, based on the Friend (2016) the specialty coffee shop growth between 2014 and 2015 for 9.1%, meanwhile, the fast food chain industry only reached 5.7%. Also, specialty coffee shop business projected will be more promising in the developing market especially in Asia region with value of US$ 3.7 billion from 2016 to 2020. However, for U.S the value of this business projected would be around US$ 3.3 billion, while lesser value would come to the European market with US$ 1.7 billion from the same period. Indeed, understanding about current behaviour in the coffee industry is very crucial due the changing trend and massive growth (Wang & Yu, 2016). However, there are only few research that focus on the consumer behaviour within coffee industry, especially in specialty coffee market.

2. Literature Review

There are only few journals that discuss about specialty coffee in the consumers behaviour studies, although some researchers already researched about the consumers behaviour for canned coffee (Wang, et al., 2005), repurchase intentsion on ready-to-drink coffee (Wang & Yu, 2016), and engagement factors for consuming organic coffee (Lee, et al., 2015). Moreover, studies about coffee in Indonesia are just limited to the packaging and brand image (Fransesca,

ICMEM

et al., 2016), and repurchase intention of Strabucks products (Farida & Ardyan, 2015). Therefore, due the massive trend of specialty coffee in Indonesia, the research about consumer behaviour is needed.

2. 1.Specialty Coffee

Nowadays, coffee has been evolving from just normal daily drink or needed for to boost up someone energy to become something that more valuable to drink and have stories behind every cup that we consume, and this particular agriculture product always getting better either in farming, harvesting, and roasting process (Hoffmann, 2014). Also, to reach this current level of quality and development of the coffee beans, the factors that possibly influence are mostly coming from species of planted coffee tree, climates, altitude, types of soil, air temperature, harvesting, moisture reduction, and process of ripping of coffee beans from the skin (Poltronieri & Rossi, 2016; Torz & Macatonia, 2016). Indeed, specialty coffee itself was coming from the coffee beans that has high quality product either in the forms of green bean, roasted bean, or coffee beverages that producing 'relishing' feeling for the customers that dispatched from focus within cultivation and preparation (Rhinehart, 2017). Moreover, the specialty coffee mostly coming from *Arabica* coffee that have high quality and more valuable in the market (Van der Merwe & Tania, 2016), however, Hoffmann (2014) argued that the high quality coffee not always associated with *Arabica* coffee, but there are some *Robusta* coffee that also have high quality although it rarely happened.

Furthermore, the trend movement within coffee industry can be associated as "*wave*", and that transformed the coffee market charactheristics in modern era (Van der Merwe & Tania, 2016; Torz & Macatonia, 2016). The first wave began in the early 1900s, when the coffee produced in massive number without considering the quality of the product (Maestre, 2013). In the second wave that happened in the 1960s, the trend started to acknowledge the artisan coffee roaster, and the behaviour of coffee drinkers change to likely consume more high-quality coffee (Torz & Macatonia, 2016; Ponte, 2002). Nowadays, we are in the third wave coffee trend, where "*coffee geeks*" are searching for the best quality and unique flavours that they can get in the specialty coffee products, also within this phase peopple are more appreciate the artisan roaster and specialty coffee shop, and more concern about the sustainibility of coffee plantation and harvesting process (Torz & Macatonia, 2016; Maestre, 2013), thus could happen because of the demand of coffee beans that put attention to the sustainable environment which is specialty coffee gradually increasing and more preferable than the 'conventional' coffee (kolk, 2013).

2. 2.Consumers Behaviour

Consumer behaviour can be described as behaviour of the customers for the certain products that shown in finding, purchasing, consuming, evaluating, and disposing of products or services in order to fulfil their needs (Schiffman & Kanuk, 2010; Solomon, 2017; Blackwell, et al., 2001). Moreover, to understand about the consumers behaviour, we can refer to "Buyer's Black Box" that introduced by Kotler & Armstrong (2016) that shown process of buying based on the customers preferences [see appendix 1]. The stimuli factors of buyer's black box in this concept are involving the marketing mix (4P: Price, Product, Place, Promotion), and PESTEL analysis (Political, Economical, Social, Technology, Ecology & Law). However, Sethna & Blythe (2016) recommended to approach with 7P for the marketing mix with additional of People, Process, and Pyshical Evidence from the pervious 4P marketing mix. Therefore, the output of the buyer's black box is to determine the responses of customers while consuming certain product.

Segmentation

To understand more in behaviour of the consumers, we can analyse in the most fundamental element, which is segmentation. And within this complex phase consumers' expectation and preference are processed (Maričić & Đorđević, 2015). Also, the consumers behaviour will be strongly related to the way particular market is segmented, and find out which potential buyers that might favourably behave to the organisation and determine what is the differentiate with the others should be very essentials (Sethna & Blythe, 2016; Solomon, 2017; Wedel & Kamakura, 1999). However, due the changing of the consumers' behaviour from several years ago to the current pattern that affected by inflow of new information through the consumers, the re-segmenting of the market is very crucial to find out the new variable and adjusting or changing the old variables, indeed the newest variables would impact significantly in further time to the market situation (Ma, et al., 2015). Moreover, there are many different factors that

ICMEM

might apart from new information, also to adequate segmentation in the long-run, periodic evaluation and changing strategic marketing are needed regarding to the follow the current market (Maričić & Đorđević, 2015). Also, the impact of new information inflow as a part of globalisation, could shaping the behaviour of consumers changing, and more prefer local value approach or having local philosophy with globalise alternative (Cleveland & Laroche, 2007).Indeed, this kind of behaviour could possibly the reason of many local coffee shop in Indonesia with the globalise touch in their products.

Moreover, according to (Sethna & Blythe, 2016) we can divided the segmentation into several types *Geographic segmentation* analyse the market based on the location in which area that might potential customers live or usually consume the products, *Demographic segmentation* is to find insight of the consumers based on their personal backgrounds such as personal income, age, gender, education, or other personal factors that might be influence the behavioural of consuming the product. Arguably, people that having the high income tend to buy products that have better quality in terms of raw material or branding (Mooij, 2004). Also, age can be can be considered as factor that create behaviour of the customers, while youngster more prefer products that have innovation and the old generation more elect to taking less risk in consuming products (Cleveland, et al., 2011; Mooij, 2004). Moreover, education also contribute to shaping of consumers' behaviour, and arguably the high education people would become more globalise in way of consuming rather than adhere behaviour of local value (Keillor, et al., 2001). Differentiation of gender also contribute to their diversity of shopping pattern and behaviour (Cleveland, et al., 2003). *Psychographic segmentation* analyse the direct connection to the consumers' characteristics and behaviour and this segmentation foundation are coming from thought and attitude of the consumers, finally the *Behavioural segmentation* is basically analyse what people usually do such as what is their daily habits, where they usually get their beverages, or what hobbies they are into.

Influence Factors of Consumers Behaviour

There are several aspects that shapping the behaviour of consumers such as *culture, social, personal, psychological* (Kotler & Armstrong, 2016). However, Sethna & Blythe (2016) argued that several aspects should be included within this aspects such as *economic, anthropology,* and *neuroscience*.

Culture has been playing a significant role in influencing consumers behaviour (Chung & Pysarchik, 2000). Therefore, the consumers behaviour in consuming a product might be different because of cultural influence, and if we looked at the cultural side (Western & Eastern) the product might be the same, but the approach based on certain culture possibly different (Mooij, 2004). Moreover, people that coming from collectivism culture tend to have more social approach, create interpersonal atmosphere, and preserve the relationship with other people (Suh, 2002). And regarding to the Hofstede (1980), Indonesia people can be classified as collectivism society, which means that this people liked to socialise and having high level of dependency for other persons.

Consumers behaviour also affected by the social factors, and within social factor itself can be elaborate more into Groups and social networks, Family, Social roles and status (Kotler & Armstrong, 2016). The affection of social factors in someone consuming behaviour would be different, that depends on the approach of the social preference or what is the acceptable within the society. Indeed the participation from the environment has been affecting someone consuming behaviour, thus happen because human are likely to follow the crowd (Jobber & Fahy, 2009).

The personal involvement in determining consumers behaviour would come from internal environment of someone. It could be coming from age, occupation, current lifestyle, personality, self-concept, and economic condition (Kotler & Armstrong, 2016; Rani, 2014), and these personal aspect have massive impact to the behavioural on buying activities (Khaniwale, 2015).

Psychological become the one of the factors that build consumers behaviour, because this factor makes people think about the product or services that they are consume (Sethna & Blythe, 2016). Moreover, psychological factors are generated from motivation, perception, learning, beliefs, and attitudes (Kotler & Armstrong, 2016).

ICMEM

Behaviour of Coffee Consumers in Indonesia

Nowadays, consumers become more prefer the food products that have higher quality than before, thus it makes the related industry to examine the consumers behaviour in that area and implementing the result to the sensory and non- sensory gain the acceptance (Hoppert, et al., 2012). In Indonesia, the specialty coffee shop become more famous especially in metropolitan city that most of the citizen are influence by the global trends, hence drinking coffee in Indonesia representing modern lifestyle society (Fransesca, et al., 2016). Moreover, lifestyle itself can be affected by several factors such as culture, law, resources, and value, therefore these factors will determine the behaviour of the consumers (Kotler & Armstrong, 2016; Sethna & Blythe, 2016). Indeed, the Indonesian customers can be divided in two categories while consuming coffee either for getting acknowledgement from society for his/her social status or just for connoisseur. Consumers that want to gain popularity by visiting the popular name-brand coffee shop, also they desire to create their image as westernised, stylish, and successful image (Babin, et al., 2006). Meanwhile for the connoisseur customers, they more consider about their consumers generational, health, and taste. Hence, it can happen when the some products meet the taste and desire of the consumers (Quintão & Brito, 2016).

3. Research Methodology

3.1. Research Design

In order to getting the new information about the specialty coffee market condition in Indonesia, exploratory research is needed. Thus, could be happen because there are still lack of data or only few of research about the current problems in that particular industry. Moreover, to find out the certain characteristics about specialty coffee and answering research questions, flexibility also required because within there are some possibilities that might be change the output of this research (Ghauri & Grønhaug, 2010; Saunders, et al., 2016). Indeed, purpose of the exploratory research is to find out the current pattern, correlation, ideas, and theme in specific area of research. Also, the ability to observe, collecting data, and building explanation become essentials points in this type of research (Ghauri & Grønhaug, 2010). Furthermore, for the exploratory research mostly use a qualitative techniques approach, however there is possibilities that this kind of research can used a quantitative approach (Saunders, et al., 2016; Hair Jr, et al., 2011).

3.2. Research Hypothesis

- H1: There is independency between personal income and frequency of visiting coffee shop
- H2: There is independency between age and coffee choices as consumer's preference
- H3: There is independency between interpretation about specialty coffee concept and experience of having specialty coffee for Indonesian coffee drinkers
- H4: There is independency between money that coffee consumer willing to spend specialty coffee with motive of consuming

3.3. Conceptual Framework

To illustrates the process and simplified the research of consumer behaviour in specialty coffee market, Figure 1 will interpret the process of this research surveys about the specialty coffee consumers behaviour in Indonesia. In the first phase, researcher will find out about the respondent's preference about beverages and personal information that will generates segmentation data based on age, income, gender, and education. Moreover, in second phase the consumers will be asked about the choices of coffee that they prefer and their habit while consuming coffee, indeed,

ICMEM

it will generate some insights for a researcher about the behaviour of coffee consumers in Indonesia. In the final phase, the respondent asked about the factors that might have engaged them to visit café or specialty coffee shop.

Figure 1: Research Framework

3.4. Data Collection

This research underwent by questionnaires in two metropolitan city in Indonesia, Including Jakarta and Bandung as research area. To improve the quality of decisions making process, questionnaires would helpful for the researcher, and the feedback that give by the respondents can be used as source of primary data or the research ; Hair Jr, et al., 2011). And, data measurement that researcher using were nominal data. The aim of using nominal data was to make the process of analysing data become easier by classifying the data input with number or symbol (Ghauri & Grønhaug, 2010). Moreover, questionnaires were distributed randomly that involved 384 respondents with age range between 16-30 years old, also, in this research level of confidence set to 95%. And, for determine the sample size, researcher referred to Lameshow, et al., (1990) method.

$$n = \frac{(Z)^2 \, p \, (1-p)}{d^2}$$

- n = Sample Size
- z = Level of confidence according to standard normal distribution (for 95% confidence, the z value is 1.96)
- p = Estimated proportion of from total population that match with the research characteristics. If the population is unknown, we can value p = 0.5)
- d = tolerated margin of error. If the level of confidence 95%, d value = 5%

3.5. Data Analysis

Within this research, the data analysis will be presented in the descriptive analysis methods. Moreover, the statistical description approach is used as to get the value of data that occurs most regularly by using mode analysis (Saunders, et al., 2016; Hair Jr, et al., 2011). And to analysing the nominal data in this research, researcher is using Chi square analysis in order to examine the independency of two variable or the relationship between variables (Hair Jr, et al., 2011). However, this method does not shown level of important or how significant for this relationship variable are. Meanwhile, Cramer's V analysis is used for gaining insight about the level of significance of the relationship between variables that involve more than 2x2 tables of variables (Saunders, et al., 2016).

Chi-square formula:

$$x_{df}^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

df	=	Degree of freedom
O	=	Observed value
E	=	Expected value

Degree of Freedom formula:

$$df = (r - 1)(C - 1)$$

df   = Degree of freedom

r   = Row in contingency table

c   = Column in contingency table

Cramer's V formula:

$$V = \sqrt{\left(\frac{x^2}{n(k-1)}\right)}$$

V   = Denotes Creamer's V formula

$\chi 2$ = Result of Chi square statistics test

n   = Samples that involve within the test

k   = the lesser the number of categories of each variable

4. Analysis of Statistics

There are 384 people that agreed to fulfil the questionnaires, meanwhile there are 6 people that did not want to agree to terms and condition and counted as invalid data and 48 respondents did not drink coffee. So, total valid data based on the respondents that consuming coffee was only 336 valid data that can be analysed.

4. 1. *Demographic Segmentation Analysis*

Most of the respondents dominated from the age group of 19-22 years old (64%). Also, in age of group of 16-18 years old (18%), meanwhile, the rest of age groups (23-25; 26-28; 28-30) just generated less than 9% for each of those group. And, For the gender, there were slightly difference between male and female respondents, the proportion of gender for male was (50.3%) meanwhile female proportion slightly difference with (49.7%). Furthermore, occupation of the respondents came from several background such as high school student, entrepreneur, and office workers, but the most frequent respondents came from university students that dominate almost (67%) of total respondents. And, with (15%) of respondents came from senior high school student, also (11%) came from office workers. And, at the very niche proportion for occupation came from entrepreneur (6%) and other (1%). Furthermore, respondents' income or monthly allowance that they get, shown that most of them received IDR 500,000.00 – IDR 1,500,000.00 (approximately £27 - £83) with proportion of (38.4%) of total respondents. Moreover, in the second biggest proportion come from people that have income more than IDR 5,000,000.00 (approximately more than £277) with percentage of (21.8%). The third place followed by income of IDR 1,600,000,00 - IDR 2,500,000,00 (Approximately £88 - £138). And in the fourth place with (12.8%) of proportion, this came from respondents that have income of IDR 2,600,000,00 - IDR 3,500,000,00 (Approximately £144 - £194). At the least percentage with (7.6%) and from income of IDR

ICMEM

3,600,000,00 - IDR 5,000,000,00 (Approx. £200 - £277). However, not all respondents filled the personal income question since it was not mandatory question that need to be answered and considered personal privacy. But in this question, all of the respondents that stated their self as coffee drinkers provided their personal income information.

Moreover, to test research hypothesis "*H1: There is independency between personal income and frequency of visiting coffee shop*", Chi-square analysis and Cramer's V test had been conducted. The result, shown there are independency between those variables. Moreover, the analysis from *Chi-square score (45.302)*, and the score greater than *Chi-square characteristics (26.29)* with *(16) degree of freedom* and *P-value (0.05)*. Within this situation, H1 must be rejected. Since there are no independency between analysed variables. Indeed, the relationship between income level of respondents and frequency of visiting coffee shops are exist. Hence, the H1 alternative should be developed, within this condition "*There is correlation between personal income and frequency of visiting coffee shop*". Furthermore, to know about the degree of independency, Cramer's V test had held within this research, and, the result was (0.1835 or 18.35%). Therefore, result from Cramer's V test showed existence of moderate independency between those variables.

Table 1: Chi-square Independency Analysis Between level of Personal Income and Frequency of Visiting Coffee Shop or Cafe

Chi-square analysis	
Chi-square score	45.302
α	0.05
df	16

Table 2: Cramer's V Test for Chi-square Independency Analysis between Level of Personal Income and Frequency of Visiting Coffee Shop or Café

Cramer's V test	
Chi-square score	45.302
n	336
k	5
Result	**0.1835 or ±18%**

4. 2. *Preference in Coffee for Indonesian Coffee Drinkers Analysis*

Based on the respondents within this research, most of them prefer *Latte* as their type of coffee beverages with 33% of total proportion, while *Filter coffee* placed second for 25.20%, and the others are less than these two (*Cappuccino 18%; Ice coffee 11%; Espresso 6.80%; Black coffee 6%*). Also the data supported with the other question that asked them about what kind of coffee in specific type, and the result shown, they likely to consume coffee beverages that sold in café or coffee shop (51%) rather than in the other form such as canned coffee (19%), instant coffee (30.40%), ground coffee (21.40%). For the frequency of consuming coffee, most of the respondent consume coffee every day (36.6%). Also, consumers that consume coffee once within two days became the second place (14.3%). Moreover, there are two group that have same proportion, and they came from the respondents that usually consume coffee once in three days and once in a week, and the other percentage belongs to infrequent coffee consumer (19%). Furthermore, each day most of the respondent prefer to drink about 1-2 cups of coffee per-serving (88%), and only small respondent that consume more than 2 cups per-serving (12%).

To test the Hypothesis "*H2: There is independency between age and coffee choices as consumer's preference*". Chi-square analysis has been done in orders to find out the independency between variable of group age of respondent and respondents' coffee choices while visiting coffee shop or café. Moreover, the result from this analysis generated *Chi-square score of (33.298)*, which was more than the *Chi-square characteristics table (31.410)* with for *degree of freedom of (20)* and *P- value (0.05)*. Thus, in this case of Chi-square score more than Chi-square characteristics table, turns out the rejection of H2 of this research. Therefore, H2 alternative should be develop, with the condition of "*H2

ICMEM

alternative: There is correlation between age and coffee choices as consumers' preference". Furthermore, in order to know about the percentage of interplay amongst variables, Cramer's V test has been conducted. And, the result shown that there was ±18% interplay of those H2 alternative variables, which means the moderate relationship between age group and coffee choices were exist.

Table 3: Chi-square Analysis between Age Group and Coffee Choices

Chi-square analysis	
Chi-square score	33.298
α	0.05
df	20

Table 4: Cramer's V Test for Chi-square Analysis between Age Group and Coffee Choices

Cramer's V test	
Chi-square score	33.298
n	336
k	5
Result	**0.1574 or ±15%**

4. 3.   *Awareness of Specialty Coffee Amongst Indonesian People*

Respondents' feedback about specialty coffee had recorded to reflect the behaviour of coffee drinkers in Indonesia and their awareness for specialty coffee. The data that collected from questionnaires showed that the majority of respondents were consuming specialty coffee before (49.70%), meanwhile, another group of respondents stated that they "maybe" had consume specialty coffee (30.95%), and the rest of respondents group stated they had not consume specialty coffee (19.35%). Moreover, in the questionnaires they also asked about their interpretation about specialty coffee, and there are three choices that can be chose by the respondents, which were "*Coffee that have better quality* (Manzo, 2010; Torz & Macatonia, 2016)(32.14%), *"Coffee that coming from certain area* (Hoffmann, 2014)*"* (37.50%), and "*Coffee that grown properly with certain treatment* (Van der Merwe & Tania, 2016)*"* (30.36%).

In order to get an insight about hypothesis "*H3: There is independency between interpretation about specialty coffee concept and experience of having specialty coffee for Indonesian coffee drinkers"*, this research conducted Chi-Square analysis with two variables. The two variables were experience of consuming specialty coffee and their thought about it, indeed, this analysis held not just to get some ideas about those variables, but also find out the independency between those two. The result from analysis shown the *Chi-square score (12.747)* and more than the *Chi-square criteria (9.488)* with *the degree of freedom for 4* and *P-value (0.05)*. Hence, in this condition the H3 should be rejected, and developing H3 alternative are required. The alternative of H3 can defined as "*H3 alternative: There is correlation between interpretation about specialty coffee and experience of having specialty coffee for Indonesian coffee drinkers"*. Moreover, the level of independency was on the weak level between experiences of having specialty coffee with the interpretation of specialty coffee. Based on Cramer's V test, the result indicate there are ±8% of independency for those variables.

Table 5: Chi-square Analysis between Consuming Specialty Experience and Consumer's Interpretation

Chi-square analysis	
Chi-square score	12.747
α	0.05
df	4

ICMEM

Table 6: Cramer's V Test for Chi-square Analysis between Consuming Specialty Experience and Consumer's Interpretation

Cramer's V test	
Chi-square score	12.747
n	336
k	3
Result	**0.1377 or ±13%**

4. 4.   *Motives in Consuming Specialty Coffee Analysis*

Based on the respondents' feedback, it showed that most of them consumed specialty coffee because the taste of specialty coffee (64.28%). Indeed, this kind of consumers can be classified as connoisseur customers, also, they are more concern about the products characteristics such as taste in specialty coffee that can fulfil their desire to have good quality coffee (Quintão & Brito, 2016; Van der Merwe & Tania, 2016). Moreover, the rest of respondents stated that the reasons of consuming coffee because of the enthusiasm of making specialty coffee (15.80%), moreover, the enthusiasm of making specialty coffee was have influence to the consuming motives of specialty coffee. Indeed, this kind of motives also can be classified as connoisseurship (Quintão & Brito, 2016). Following current social trend, try to giving good impression to others, and friend influence can be defined as motives of consuming that came from social factors (Kotler & Armstrong, 2016; Jobber & Fahy, 2009). Since specialty coffee is becoming more famous in the metropolitan city, many of Indonesian people think that drinking specialty coffee would increase their social status (Fransesca, et al., 2016), moreover, there is also reasons to consume specialty coffee in famous coffee shop, that is to generate personal image of stylish, westernised, and successful (Babin, et al., 2006). However, reflect to respondents' feedback, there were only in the small percentage that Indonesian people consume specialty coffee because of following current social trend (6.84%), friend influence (9.82%), and giving good impression (3.28%).

Furthermore, feedback from respondents about their willingness to expense some money to buy specialty coffee also divers. But, majority of them prefer to spend around IDR 26,000,00 - IDR 35,000,00 (Approx. £1.6 - £2) (41.4%). And, respondents whose want to spend between IDR 15,000,00 - IDR. 25,000,00 (Approx. £0.80 - £1.5) is on the second place (23.8%). Moreover, to spend around IDR 36,000,00 - IDR 45,000,00(Approx. £2.2 - £2.7), even smaller respondents (21.4%.) At the least percentage (12.5%), people want to pay about >IDR 45,000,00 (Approx. > £2.7) for a cup of specialty coffee.

Chi-square analysis was conducted, with purpose of getting insight about H4 testing *"H4: There is independency between money that coffee consumer willing to spend specialty coffee with motive of consuming"*. Furthermore, the analysis showed that the Chi-square score (22.818) which was greater than the Chi-square criteria (21.026), indeed, within this condition the H4 should be rejected. And, the H4 alternative can be developed, moreover, the alternative hypothesis can be defined as *"H4 alternative: There is correlation between money that coffee consumer willing to spend with motive of consuming.",* moreover, based on Cramer's V test analysis, the Chi-square score indicated there are ±15% of interplay from both variables. Arguably, if the Cramer's V test showed between 10% - 30%, that means the variables had moderate correlation.

Table 7: Chi-square Analysis between Motives of Consuming Specialty Coffee and Consumer's Willingness to Spend

Chi-square analysis	
Chi-square score	22.818
α	0.05
df	12

ICMEM

Table 8: Cramer's V Test for Chi-square Analysis between Motives of Consuming Specialty Coffee and Consumer's Willingness to Spend

Cramer's V test	
Chi-square score	22.818
n	336
k	4
Result	**0.1504 or ±15%**

5.   Conclusion

Overall, this research provides the new insight about specialty coffee market especially in Indonesia, specifically the behaviour of the coffee consumers in the metropolitan city in Indonesia. By finished this research, some finding can be useful to develop new insight about specialty coffee market in Indonesia within current time situation and providing data for further research. Moreover, level of dependency between variables that arguably influence consumers' behaviour can be known based on Chi-square analysis and Cramer's V test. However, the finding shown that the dependency level amongst variables was on the moderate stage, and variables that might be produced high dependency still unknown. Therefore, further researches are needed to get deeper analysis within specialty coffee market in Indonesia.

5. 1.   Discussion

The purpose of this research is find out the consumers' behaviour in the specialty coffee market with the scope of Indonesia, also to get new insight about current condition about specialty coffee consumers and analysing the independency between several variables that shaping their behaviours in terms of consuming specialty coffee. And, in the first place this research begun, several hypothesis had been develop in order to find out independency of variables of data. Indeed, during the process all of the hypotheses have been rejected, and, generated the alternative hypotheses for this research as we can see below:

- H1 alternative:Thereiscorrelationbetweenpersonalincomeandfrequencyof visiting coffee shop
- H2 alternative: There is correlation between age and coffee choices as consumers' preference
- H3 alternative: There is correlation between interpretation about specialty coffee and experience of having specialty coffee for Indonesian coffee drinkers"
- H4 alternative: There is correlation between money that coffee consumer willing to spend with motive of consuming."

At the first place, Chi-square analysis purpose is to find out the independency of two variables. And based on the analysis process of independency of variables in this research shown that the indication of relationship or correlation, thus, make the independency amongst variables was not exist.

5. 2.   Suggestion

Within this research, some skills are needed in orders to help analysing and writing this research. Planning and providing back up ideas were very important, since researcher cannot predict what might happen in the future situation. Also, network for sharing the questionnaires is important in orders to gaining the amount of respondent, since to get primary data with quantitative approach needs big number of respondent that matching with criteria of the research. Also, advance analysis is needed due the basic within this research are has been covered.

Appendix

Appendix 1: *Model of consumer Behaviour*. Retrieved from: Kotler, P. & Amstrong, G., 2016. *Principles of Marketing*. 16th ed. Essex: Pearson Education.

ICMEM
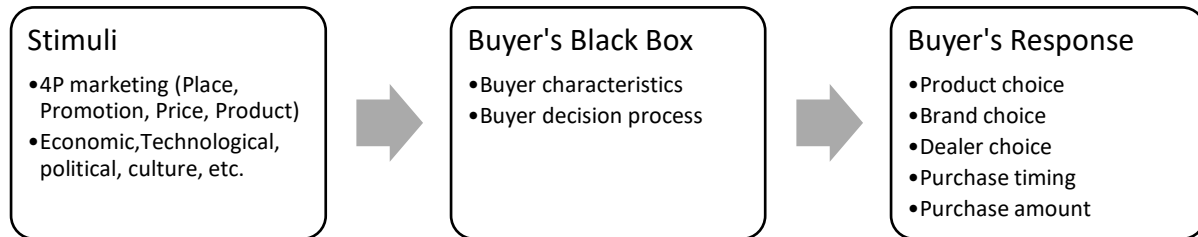
References

Alvarez, G., Pilbeam, C. & Wilding, R., 2010. Nestlé Nespresso AAA sustainable quality program: an investigation into the governance dynamics in a multi-stakeholder supply chain network. *Supply Chain Management: An International Journal,* 15(2), pp. 165 - 182.

Babin, B. J., Chebat, J. C. & Robicheaux, R., 2006. Introduction to the special section on retailing research: the mind and emotion of the 21st century shopper. *Journal of Business Research,* 59(12), p. 1279–1280.

Blackwell, R. D., Miniard, P. W. & Engel, J. F., 2001. *Consumer Behaviour.* 9th ed. Mason, OH: Southwestern.

Cailleba, P. & Casteran, H., 2009. A Quantitative Study on The Fair Trade Coffee Consumer. *Journal of Applied Business Research ,* 13(3), pp. 31- 46.

Carlvalho, J. M., Paiva, E. L. & Vieira, L. M., 2016. Quality attributes of a high specification product: Evidences from the speciality coffee business. *British Food Journal,* 118(1), pp. 132 - 149.

Chung, J.-E. & Pysarchik, D. T., 2000. A model of behavioral intention to buydomestic versus imported products in a Confucian culture. *Marketing Intelligence&Planning,* 18(5), pp. 281-291.

Cleveland, M. et al., 2003. Information search patterns for gift-purchases: a cross-national examination of gender differences. *Journal of Consumer Behavior,* 3(1), pp. 20-47.

Cleveland, M. & Laroche, M., 2007. Acculturation to the global consumer culture: scale development and research paradigm. *Development and Research Paradigm,* 60(3), pp. 249-59.

Cleveland, M., Papadopoulos, N. & Laroche, M., 2011. Identity, demographics, and consumer behaviors: International market segmentation across product categories. *International Marketing Review,* 28(3), pp. 244-266.

De Mooij, M., 2004. *Consumer Behavior and Culture: Consequences for Global Marketing and Advertising.* Thousand Oaks, California: Sage.

Farida, N. & Ardyan, E., 2015. REPEAT PURCHASE INTENTION OF STARBUCKS CONSUMERS IN INDONESIA: A GREEN BRAND APPROACH/NAMJERA PONOVLJENE KUPOVINE POTROSACA STARBUCKSA U INDONEZIJI: PRISTUP ZELENE MARKE. *Trziste = Market,* 27(2), pp. 189 - 202.

Fransesca, B. A. S., Primiana, I., Effendi, N. & Herwany, A., 2016. IMPACT OF COFFEE PRODUCT LABELING AND PACKAGING ON PURCHASE BEHAVIOR WITH MEDIATING OF BRAND IMAGE AND BRAND TRUST. *Academy of Strategic Management Journal,* 15(3), pp. 49 - 53.

Friend, E., 2016. *offee Shops Around the World: Three Key Insights for 2016,* s.l.: Euromonitor International.

Ghauri, P. & Grønhaug, K., 2010. *Research Method in Business Studies.* 4th ed. Essex: Pearson Education.

Hair Jr, J. F., Money, M. W. C. A. H. & Philip, S. &. P. M. J., 2011. *Essentials of Business Reserach.* 2nd ed. New York: Sharpe Inc..

Hoffmann, J., 2014. *The World Atlas of Coffee.* London: Mitchell Beazley.

Hofstede, G., 1980. *Culture's Consequences: International Differences in Work Related Value.* California: SAGE Publication.

Hoopert, K. et al., 2012. Integrating sensory evaluation in adaptive conjoint analysis to elaborate the conflicting influence of intrinsic and extrinsic attributes on food choice. *Appetite,* 59(3), pp. 949-955.

International Coffee Organisation, 2018. *Domestic consumption by all exporting countries,* London: International Coffee Organisation.

International Coffee Organisation, 2018. *Total Production by All Exporting Countries ,* London: International Coffee Organisation.

Jobber, D. & Fahy, J., 2009. *Foundations of Marketing.* 3rd ed. Berkshire: McGraw-Hill Education.

Jolliffe, L., 2010. *Coffee Culture, Destination and Tourism.* Bristol: Channel View Books.

ICMEM

Keillor, B., D'Amico, M. & Horton, V., 2001. Global consumer tendencies. *Psychology and Marketing,* 18(1), pp. 1-19.

Khaniwale, M., 2015. Consumer buying behavior. *International Journal of Innovation and Scientific,* 14(2), pp. 278-286.

Kim, J. O., Forsythe, S., Gu, Q. & Moon, S. J., 2002. Cross-cultural consumervalues, needs and purchase behavior. *Journal of Consumer Marketing,* 19(6), pp. 481-502.

Kolk, A., 2013. Mainstreaming Sustainable Coffee. *Sustainable Development,* 21(5), pp. 324 - 337.

Kotler, P. & Amstrong, G., 2016. *Principles of Marketing.* 16th ed. Essex: Pearson Education.

Kotler, P. & Keller, K., 2011. *Marketing Management.* 14th ed. New Jersey: Pearson International Edition.

Ko, W. & Chiu, C., 2008. The relationship between brand attitude, customers, satisfaction and revisiting intent of the university students- a case study of coffee chain stores in Taiwan. *Journal of Foodservice Business Research,* 11(1), pp. 79-95.

Lameshow, S. et al., 1990. *Adequacy of Sample Size in Health Studies,* West Sussex: John Wiley & Sons Ltd..

Lee, K. H., Bonn, M. A. & Cho, M., 2015. Consumer motives for purchasing organic coffee: The moderating effects of ethical concern and price sensitivity. *International Journal of Contemporary Hospitality Management,* 27(6), pp. 1157 - 1180.

Ma, B., Zhang, L., Wang, G. & Lee, F., 2015. The Impact of Product-harm Crisis on Customer Perceived Value. *International Journal of Market Research,* 56(3), pp. 341-355. Maestre, M., 2013. *Food with Miguel Maestre.* [Online] Available at: http://www.stali.com.au/ [Accessed 08 03 2018].

Manzo, J., 2010. Coffee, Connoisseurship, and an Ethnomethodologically-Informed Sociology of Taste. *Human Studies,* 33(2), pp. 141-155.

Maričić, B. & Đorđević, A., 2012. *Kreiranje iisporučivanje vrednosti potrošačima.* Beograd: CID Ekonomski.

Maričić, B. R. & Đorđević, A., 2015. Strategic Market Segmentation. *Marketing,* 46(4), pp. 243-251.

Mooij, M. K. d., 2004. *Consumer Behavior and Culture: Consequences for Global Marketing and Advertising.* California: SAGE publications.

Poltronieri, P. & Rossi, F., 2016. Challenges in Specialty Coffee Processing and. *Challanges,* 7(2), p. 19.

Ponte, S., 2002. The 'Latte Revolution'? Regulation, Markets, and Consumption in The Global Coffee Chain. *World Development,* 30(7), p. 1099–1122.

Quintão, R. T. & Brito, E. P. Z., 2016. CONNOISSEURSHIP CONSUMPTION AND MARKET EVOLUTION: AN INSTITUTIONAL THEORY PERSPECTIVE ON THE GROWTH OF SPECIALTY COFFEE CONSUMPTION IN THE USA. *Brazilian Journal of Marketing,* 15(1), pp. 1-15.

Rani, P., 2014. Factors influencing consumer behaviour. *International Journal of Current Research,* 2(9), pp. 52-61.

Rhinehart, R., 2017. *What is specialty coffee.* [Online] Available at: http://www.scanews.coffee/2017/03/17/what-is-specialty-coffee/ [Accessed 07 03 2018].

Saunders, M., Lewis, P. & Thornhill, A., 2016. *Research Methods for Business Students.* 7th ed. Essex: Pearson Education.

Schiffman, L. G. & Kanuk, L. L., 2010. *Consumer Behavior.* 10th ed. New Jersey: Pearson Education Inc..

Sethna, Z. & Blythe, J., 2016. *Consumer Behaviour.* 3rd ed. London: SAGE Publication :td.

Shenkar, O., Luo, Y. & Chi, T., 2015. *International Business.* New York: Routledge.

Solomon, M. R., 2017. *Consumer Behavior Buying, Having, and Being.* 12th ed. Essex: Pearson Education Limited.

Suh, E. M., 2002. Culture, identity consistency, and subjective well-being. *Journal of Personality and Social Psychology,* 83(6), p. 1378–1391.

Thompson, C. J. & Arsel, Z., 2004. The Starbucks Brandscape and Consumers' (Anticorpote) Experience of Glocalization. *Journal of Consumer Research,* 31(3), pp. 631 - 642.

Torz, J. & Macatonia, S., 2016. *Real Fresh Coffee.* London: Pavilion.

Van der Merwe, K. & Tania, M., 2016. The Behavioral Intentions of Specialty Coffee Consumer in South Africa. *International Journal of Consumer Studies,* 40(4), pp. 501 - 508.

Wang, E. S. t. & Yu, J.-R., 2016. Effect of Product Attribute Beliefs of Ready-to-Drink Coffee Beverages on Consumer-percieved VAlue and Repurchase Intension. *British Food Journal,* 118(12), pp. 2963 - 2980.

Wang, I.-M., Hsiao, J. & Shieh, C.-J., 2005. Study of Consumers' Purchase Behaviors for Canned Coffee. *Journal of Information and Optimization Sciences,* 26(2), pp. 385 - 400.

Wedel, M. & Kamakura, W., 1999. *Market Segmentation: Conceptual and Methodological Foundations.* Boston : Kluwer Academic Publishers.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Factors Affecting Customer Loyalty in Business-to-Business Sector (Case Study: CV. Restu Jaya Sejati)

Lydia Christie[a*], Atik Aprianingsih[b]

[a,b]School of Business and Management, Institut Teknologi Bandung, Indonesia

Abstract

In a tight competition in the distribution industry these days, it is getting harder to retain existing customers. Loyalty has a significant influence on the existence of a company, including for a Business-to-Business (B2B) company such as Restu Jaya Sejati. Restu Jaya Sejati is a distribution company which supply various of daily necessities to society in Tangerang area. The purpose of this study is to investigate factors that affect the loyalty of Restu Jaya Sejati's customers. Respondents for this study are business consumers of Restu Jaya Sejati and selected using convenience sampling. The number of respondent in this research is 264 respondents. The method that the researcher use is the quantitative method. The questionnaire was a self-administered questionnaire and distributed to the business consumers of Restu Jaya Sejati. Further, the data were analyzed using multiple linear regression. The result shows that INDSERV has a significant relationship with loyalty toward CV. Restu Jaya Sejati.

Keywords: Business-to-Business; Loyalty; INDSERV.

1. Introduction

The loyalty of customer is a strongly held belief or a committed action of repurchase certain product from a certain supplier that one customer really trust. Even though there are situational influence and other sales or marketing effort from other suppliers, they tend to stay loyal to their trusted supplier (Susanta, Alhabsji, Idrus, & Nimran, 2013).In the customer-supplier relationship, customers who are loyal tend to focus on their long-term relationship, and the outcome is the benefits of the relationship itself. Also, loyal customers showing a supportive and cooperative attitude towards supplier rather than the disloyal customers (Lam, Shankar, Erramili & Murthy, 2004).

Service quality is the crucial factor in the business to business marketing in service industry, it affects the service that given to the customers. The differences between customer and industrial products are in their buying behavior, the evaluation criteria in order to appraise alternative suppliers, and the presence of buying centers. As a result, the marketing work and priorities of the producers diverse accordingly (Gounaris, 2005). Instead of using SERVQUAL, on the Business-to-Business sector, factors affecting customer loyalty are measured using industrial service quality (INDSERV), trust, commitment, and satisfaction. Previous research on INDSERV have been conducted in a chemical distributor (Subianto & Hamsal, 2013). Meanwhile, previous research on trust and commitment with loyalty have been conducted in advertising agencies (Caceres & Paparoidamis, 2007). Previous research on satisfaction and loyalty have been conducted in courier service provider (Lam et al., 2004). Thus, there is no research on how service quality in B2B sector (i.e INDSERV) affecting the loyalty in fast moving consumer good Industry in Indonesia.

Restu Jaya Sejati act as the intermediaries for the manufacturers. Intermediaries or middlemen, are independent business that assist producers and manufacturers (and final users) in the performing of negotiatory functions and other distribution tasks (Rosenbloom, 2013). Producing and manufacturing firms often face high average costs for distribution tasks when they attempt to perform them by themselves (Rosenbloom, 2013). Therefore, distribution company is needed in order to distribute the manufacturers products. Manufacturers need a reliable distributor that

---

* Corresponding author.

ICMEM

meets their basic requirements for their business, such as understanding the needs of their business, have a reliable information technology, qualified labor, and capable to distribute their products.

B2B, or business-to-business, a type of commerce transaction that is based on the exchange of products and services from business to business, rather than business to consumer (Saha et al., 2014). These are the characteristics of B2B (Saha et al., 2014): B2B sales volume is larger than business to consumer sales, buying process of B2B products is riskier than B2C products purchase, B2B companies behave differently when buying, committee usually makes purchases, and decisions are specification-driven, and B2B companies avoid mass media when promoting their brand.

The loyalty of customer has a powerful influence on firms' performance and is considered by many companies an important source of competitive advantage (Lam et al., 2004). In the customer-supplier relationship, customers who are loyal tend to focus on their long-term relationship, and the outcome is the benefits of the relationship itself. Also, loyal customers showing a supportive and cooperative attitude towards supplier rather than the disloyal customers (Lam et al., 2004).

According to Parasuraman et al. (1985), service quality is a result of a comparison between what customers consider should be in the service and their perceptions about the actual performance outcome that was offered by the provider. The better the service provided, the higher the loyalty of the customer.

2. Literature Review

Gounaris (2005) developed a measurement scale to evaluate firm's service performance known as INDSERV. This is widely accepted for the evaluation of service performance in the B2B context. INDSERV method is used for the industrial sector rather than using SERVQUAL. INDSERV is comprised of five dimensions: Potential, Hard, Soft, Immediate Output, and Final Output Quality. Gounaris's empirical finding showed that Immediate Output and Final Output Quality can be combined into a single dimension of Output Quality (Gounaris, 2005; Subianto & Hamsal, 2013).

Potential quality is the quality that shows an important aspect of perceived quality because its related to corresponds to search attributes that industrial consumers need to evaluate and consider in advance of the provision of the service provided (Gounaris, 2005). Hard process quality explains the customer's concerns about the processes, about how the service is actually delivered and the evaluation of the suitability of these processes to generate a solution according to the customer's requirements (Gounaris, 2005).

Soft process quality is the quality that interprets the customer's evaluation about the interaction and communication with the first line personnel from the service provider or from the firm with whom an interaction is developed as a result of the serving effort (Gounaris, 2005). Output quality explains the customer's interest and attention regarding the actual offering or services that was delivered and offered, as well as the affect that the service was delivered eventually give value added for the customer (Gounaris, 2005).

H1a: There is a significant relationship between potential quality and loyalty.
H1b: There is a significant relationship between the hard process quality and loyalty.
H1c: There is a significant relationship between the soft process quality and loyalty.
H1d: There is a significant relationship between the output quality and loyalty.

3. Methodology

The research uses a quantitative approach. The target of the population in this study is the business consumer of Restu Jaya Sejati. The sample for this research is 264 respondents. Researcher uses non-random convenience sampling, where population is first divided into meaningful segments; thereafter subjects are drawn in proportion to their original numbers in the population (Sekaran and Bougie, 2013).

The questionnaire is a self-administered questionnaire which has two main parts. Part A consists of question about shop name, address, job position, number of employee, and frequency of shopping from Restu Jaya Sejati. Part B use Likert scale 1-7 (strongly disagree, disagree, somewhat disagree, neutral, somewhat agree, agree, and strongly agree) about INDSERV and loyalty.

ICMEM

INDSERV questions which consists of potential quality comprises of 5 questions adapted, hard process quality comprises of 5 questions. Soft process quality comprises of 7 questions, and output quality comprises of 3 questions are adapted from Gounaris (2005) and Subianto and Hamsal (2013). The last is questions about loyalty consists 4 questions from Lam et al. (2004) and Caceres & Paparoidamis (2007).

4. Findings and Discussion

All questions in part B of the questionnaire have been tested for validity. To test the validity of the questions, first step is to test the validity of 30 respondents. With the n=30, the df=N-2= 28, and α = 5%, so the value of r-table is 0.3610. Then it is found that the corrected item-total correlation is higher than the r-table (Sarwono, 2012).

Table 1. Validity Test Result of Potential Quality from INDSERV Variable

Variable	Item	Corrected Item-Total Correlation	Status
PQ1	Ease of contact	.740	Valid
PQ2	Ease of obtaining product pricing	.737	Valid
PQ3	Ease of obtaining product information	.839	Valid
PQ4	Restu Jaya Sejati can help on misprinted invoice.	.803	Valid
PQ5	Restu Jaya Sejati can help on delivery mistake.	.775	Valid

Table 2. Validity Test Result of Hard Process Quality from INDSERV Variable

Variable	Item	Corrected Item-Total Correlation	Status
HP1	Restu Jaya Sejati can fulfill special request (delivery on Sundays or holidays).	.573	Valid
HP2	Restu Jaya Sejati can fulfill special request (delivery outside operational hours).	.489	Valid
HP3	Ability to deliver the order in full	.705	Valid
HP4	Ability to deliver the order on time	.605	Valid
HP5	Completeness and accuracy of documents	.434	Valid

Table 3. Validity Test Result of Soft Process Quality from INDSERV Variable

Variable	Item	Corrected Item-Total Correlation	Status
SP1	Enthusiasm of salesmen (1)	.645	Valid
SP2	Enthusiasm of salesmen (2): Salesmen are friendly with customers.	.777	Valid
SP3	Handling complaints	.794	Valid
SP4	Responsiveness to queries	.720	Valid
SP5	Professionalism and courtesy of	.710	Valid

ICMEM

		salesmen (1)		
SP6	Professionalism and courtesy of salesmen (2)		.802	Valid
SP7	Visit frequency of salesmen		.438	Valid

Table 4. Validity Test Result of Output Quality from INDSERV Variable

Variable	Item	Corrected Item-Total Correlation	Status
OP1	Actually delivering benefit for customer	.724	Valid
OP2	Contributes to customer's sales/image	.730	Valid
OP3	Can accommodate customer's strategy	.708	Valid

Table 5. Validity Test Result of Loyalty

Variable	Item	Corrected Item-Total Correlation	Status
LOY1	I would continue doing business with my supplier	.611	Valid
LOY2	I would definitely recommend my supplier to a partner	.736	Valid
LOY3	I have encouraged other companies to do business with RJS	.781	Valid
LOY4	My company consider RJS as its first choice for distribution company	.770	Valid

Table 6. Reliability Data

Variable	Cronbach's Alpha	Category
Potential Quality	0.913	Reliable
Hard Process Quality	0.781	Reliable
Soft Process Quality	0.894	Reliable
Output Quality	0.851	Reliable

The reliability is tested based on the Cronbach Alpha value on each variable. If the Cronbach Alpha > 0.70, then the variable is reliable (Ghozali, 2012). Table 6 shows the Cronbach Alpha's score for each variable.

The first part of the questionnaire is the respondent profile. Table 7 shows the respondent profile. From the 264 respondents, the majority respondent served individual customers 103 respondents (39%), 87 respondents served store customers (33%), and 74 respondents served both individual and store customers (28%). From the 264 respondents, the majority respondent shop to Restu Jaya Sejati 1-2 times a week is 215 respondents (82%). The respondents who shop 3-4 times a week to Restu Jaya Sejati are 48 respondents (18%). And only one respondent shop more than 4 times a week to Restu Jaya Sejati. From 264 respondents, the majority of respondent who got visited by salesmen 1-2 times a week are 233 respondents (88%).

The respondent who got visited by salesmen 3-4 times a week are 31 respondents (12%). And only one respondent who got visited by salesmen more than 4 times a week. From the majority of 264 respondents, respondents who have the average amount of shopping per transaction Rp 500.000-Rp 2.000.000 are 88 respondents (33%). Average amount of shopping per transaction 0 - Rp 500.000 are 87 respondents (33%). Average amount of shopping per transaction Rp 2.000.000 - Rp 5.000.000 are 64 respondents (24%). And average amount of shopping per transaction above Rp 5.000.000 are 25 respondents (10%).

ICMEM

Table 7. Respondent Profile

Variables	Description	Frequency	In %
Type of customer served	Individual	103	39%
	Store	87	33%
	Individual and Store	74	28%
Frequency of shopping in a week	0 times	0	0%
	1-2 times	215	82%
	3-4 times	48	18%
	>4 times	1	0%
Frequency of salesmen visit in a week	0 times	0	0%
	1-2 times	233	88%
	3-4 times	31	12%
	>4 times	0	0%
Average amount of shopping per transaction	0-Rp 500.000	87	33%
	Rp 500.000 - Rp 2.000.000	88	33%
	Rp 2.000.000 - Rp 5.000.000	64	24%
	>Rp 5.000.000	25	10%

The second part questions about INDSERV which is industrial service, consist of potential quality, hard process quality, Soft process quality, and output quality. Also other variables such as trust, commitment, satisfaction, and loyalty. The total of customers from the database is 1834 shops, but the customers that still active is 837 shops. Table 8 shows the result of descriptive statistics of variables used in this research, potential quality, hard process quality, soft process quality, output quality, and loyalty for the customer categories.

Table 8. Descriptive Statistic

	Variable	Mean score of respondents
INDSERV	Potential Quality	5.39105
	Hard Process Quality	5.2203
	Soft Process Quality	5.23535
	Output Quality	5.07795
Loyalty		5.2319

Table 8 shows all variable used in the research. Mean score of potential quality is 5.39105. Mean score of hard process quality is 5.2203. Mean score of soft process quality is 5.23535. Mean score of output quality is 5.07795. The mean score of loyalty is 5.2319. The lowest mean score is commitment, and the highest mean score is potential quality.

Table 9. Hypothesis Test Result

Hypothesis	Standardized Regression Weights	Probability	Status
H1a: There is a significant relationship between potential quality and loyalty.	.245	.000**	Hypothesis is supported
H1b: There is a significant relationship between the hard process quality and loyalty.	.155	.004**	Hypothesis is supported
H1c: There is a significant relationship between the soft	.269	.000**	Hypothesis is supported

ICMEM

process quality and loyalty.			
H1d: **There is a significant relationship between the output quality and loyalty.**	.269	.000**	Hypothesis is supported

Table 9 shows the hypothess results. There is one hypothesis for this study, which is INDSERV (potential, hard process, soft process, and output quality) has significant impact on loyalty. The hypothesis states that there is a significant relatioship between industrial service quality and loyalty. All of the hypothesis has significant impact on loyalty. It is consistent with Caceres and Paparodamis (2004), who found that service quality has significant relationship with loyalty. If companies offer good service quality, it will keep the customer loyal to the company, they will not want to switch to others knowing that they were served really well and satisfied with their services.

5. Conclusion

The purpose of this research is to investigate the factors affecting loyalty, with the variable consist of INDSERV, trust, commitment, and satisfaction. Based on the analysis, all of the variables that has significant relationship with loyalty. The potential quality in Restu Jaya Sejati was found in the ease of obtaining product information and their technical service was helpful for the customers. The hard process quality in Restu Jaya Sejati ws found in their ability to deliver order on time and the completeness and accuracy of documents. The soft process quality in Restu Jaya Sejati was found in the friendliness and the professionalism of their salesmen to the customers. The output quality of Restu Jaya Sejati was found in the delivering of benefit to the customers, Restu Jaya Sejati care about the benefits for the customers. The company need to hire more salesmen to cover area and maintain relationship with customers and promote more. For further research, there is some recommendation that could be done to create a better analysis. To get a more accurate result, it is recommended to do it in by combining qualitative and quantitative study to gain more information about the potential customer's perspective. Furthermore, other researchers may add other variables such as relationship satisfaction, product quality, and switching cost.

References

Caceres, R. C. & Paparoidamis, N. G. (2004). Service quality and marketing performance in business-to-business markets: exploring the mediating role of client satisfaction, Emerald Group Publishing Limited, 14, 235-248.

Caceres, R. C. & Paparoidamis, N. G. (2007). Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty, European Journal of Marketing, 41 (7/8), 836-867.

Gounaris, S., (2005). Measuring service quality in B2B services: an evaluation of the SERVQUAL scale vis-à-vis, Journal of Services Marketing, 19 (6), 421 – 435.

Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Cost: An Illustration from a Business to Business Service Context, Journal of the Academy of Marketing Science, 32(3), 293-311.

Morgan, R.M. and Hunt, S.D. (1994), The commitment-trust theory of relationship marketing, Journal of Marketing, 58 (3), 20-38

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985). A conceptual model of service quality and implications for future research, Journal of Marketing, 49, 41-50.

Rosenbloom, B. (2013). Marketing channels: a management view. 8th edition. USA: Cengage Learning.

Saha, S.K., Aman. A, Hossain. M, Islam. A., Rodela. R.S. (2014). A Comparative Study on B2B vs B2C Based on Asia Pacific Region. International Journal of Scientific & Technology Research, 3(9).

Sekaran, U. & Bougie. R. (2013). Research Method for Business. 6th edition. United Kingdom: John Wiley & Sons Ltd.

Subianto, E. I. & Hamsal, M. (2013). Service quality assessment in PT. Indokemika Jayatama using INDSERV scale and importance-performance analysis, The Indonesian Journal of Business Administration, 2 (5), 543-553

Susanta, Alhabsji. T., Idrus. M.S., & Nimran. U. (2013). The effect of relationship quality on customer advocacy: the mediating role of loyalty. IORS Journal of Business and Management, 10, 41-52.

ICMEM

Ulaga, W. & Eggert, A. (2006). Relationship value and relationship quality: Broadening the nomological network of business-to-business relationships, European Journal of Marketing, 40 (3/4), 311-327.

Yang, Z. & Peterson, R. T. (2004). Customer Perceived Value, Satisfaction, and Loyalty: The Role of Switching Costs, Psychology & Marketing, 21(10), 799–822.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Analytical Hierarchy Process for Consumer Preference of Café Interior Design

Ricky Rahmadyansah Husni[a*], Dina Dellyana[b]

[a]Magister of Business Administration, Institut Teknologi Bandung (ITB), Jl. Ganesha No.10, Lb. Siliwangi,
Coblong, Kota Bandung, Jawa Barat 40132
[b]School of Business Management, Institut Teknologi Bandung

Abstract

Indonesia's economy has been experiencing rapid growth recently, following with the emerging population of middle class and affluent consumer. The current vibe among Indonesian society, opening up restaurants or cafes is profitable business venture for local or foreign investors. According to global data, the global business opportunities of interior design reached Rp 8.1 trillion. Interestingly, every year the interior design business even uphill about 24%. Not without reason, Interior design has become one of the important things in the property. Commonly, most business owners waste more money without results because the design is unable to reach the market tastes. The growth of the café and restaurant business affects most of the economy and development in Indonesia, especially in Jakarta and Bandung. It needs an awareness of the people who invest or have a café to design with a proper design that can contribute to the beauty of the city. Interior designer is becoming more needed than before therefore we need to understand the current customer preferences on store interior design. This study demonstrates the interior design type selection for café, the applicability of Analytic Hierarchy Process (AHP) in solving such a problem. AHP is a multicriteria decision making (MCDM) approach, which is based on the pairwise comparison of elements of a given set with respect to multiple criteria. Even though there are applications of the AHP to interior design type selection, using the Expert Choice software. We report our findings and our insights, together with the results of a sensitivity analysis. In order to conduct an AHP approach, this study need to determine what criteria and alternatives that will be included. From the previous research, consumer perception of store image and servicecape personality and design used to find the 6 criteria that affect interior design which are layout, lighting, furniture, color, ornamentation and texture. 5 holistic type design used to determine the alternatives.

Keywords: Analytic Hierarchy Process (AHP); Multicriteria Decision Making (MCDM); Consumer Preference; Servicecape; Café Interior Design; Expert Choice

1. Introduction

Indonesia's economy has been experiencing rapid growth recently, following with the emerging population of middle class and affluent consumers (MAC). According to Boston Consulting Group report in 2013, there are currently about 74 million MACs in Indonesia, and it will double by 2020 up to 141 million people. The current vibe among Indonesian society, opening up restaurants or cafes is profitable business venture for local or foreign investors. In 2013, the hotels and restaurants industry contributed 14.33% of Gross Domestic Product (GDP) for Indonesia. It was the third largest contributor after manufacturing and agriculture. The industry is very diverse, ranges from high-end hotels and restaurants that serve international cuisine to local low-end restaurant and café (Global Business Guide Indonesia, 2014).

According to global data, the global business opportunities of interior design reached Rp 8.1 trillion. Interestingly, every year the interior design business even uphill about 24%. Not without reason, Interior design has become one of the important things in the property. Influence the mood for at home or office for example, or attract customer attention

---

*Corresponding author.
 E-mail address: ricky.husni@sbm-itb.ac.id

ICMEM

in the cafe and restaurant business. Even according to An Interior Contractor named Gita Safitri, the interior has a portion of about 70% to 80% in an effort to attract the attention of visitors. Even so, to make a beautiful interior design is not an easy job. Commonly, most business owners waste more money without results because the design is unable to reach the market tastes (Fatichatun Nadhiroh, 2016).

Visual appeal is an important consideration in the design of interior service environments because attractiveness influences consumer behavior. Attractive interiors have several positive outcomes: They capture attention, evoke excitement and a desire to stay, generate liking, trigger approach behaviors, enhance the visitor experience, support positioning, strengthen consumer attachment and, perhaps most important, positively influence consumer purchase decisions and loyalty (Orth, Heinrich, & Malkewitz, 2012).

The objective of this research is to identify what are the customer preferences towards café interior design. Therefore, it need to analyze what factor affect those preferences, which alternatives is preferred, determine the root cause of the business issue and develop a proposed strategy for interior design consultant to improve consumer experience in café interior design.

2. Theoretical Foundation

There are two main theory and previous research that used on this paper. The first one is about consumer perception. Perception is the sequence of consumer exposure and attention which is stimulated and interpreted individually in marketing process. The study explain that the whole perception process is made up by three stages, the exposure stage, the attention stage and the interpretation stage. The brain takes in the stimuli in the attention stage and interprets the stimuli, according to our previous experiences and desires, in the interpretation stage. Ultimately, these three stages form our perceptions. (Hawkins & Mothersbaugh, 2010).

After evaluating the customer perception, Servicecape personality and design is also included on this study. Servicescapes is a model developed by Booms and Bitner to emphasize the impact of the physical environment in which a service process takes place. The aim of the servicescapes model is to explain behavior of people within the service environment with a view to designing environments that accomplish organizational goals in terms of achieving desired behavioral responses. For consumers visiting a service or retail store, the service environment is the first aspect of the service that is perceived by the customer and it is at this stage that consumers are likely to form impressions of the level of service they will receive (Bitner, 1992). Design practice supports holistic types as interior designers choose 6 factor that affect most of the interiors element. Which are layout, lighting, color schemes, furniture, ornamentation, textures. The study performed by Orth, Heinrich, & Malkewitz (2012) resulted five holistic types of interiors. The five holistic type and factor which affect them are Minimal-shell design, Complex-shell design, Moderate-shell design, Low-content design, and High-content design. Taken together these findings indicate that certain types of interiors consistently define distinct sets of personality impressions in personality dimensions (enthusiasm, sophistication, unpleasantness, genuineness, solidity).

3. Methodology

AHP can pairwise compare a set of attributes and distinguish in general the more important factors from the less important factors. The pairwise comparison judgments were made with respect to the attributes of one level of hierarchy given the attribute of the next higher level of hierarchy from the main criteria. AHP is also able to solicit consistent subjective expert judgment via the consistency test. The stage AHP set out by Saaty (1980).

The hierarchies created to define the attributes for selecting preferred design type. The top level was the selection goal which is consumer preference for café interior design. The second level comprised the selection criteria is the sixth factor that affect most of the interiors element which are layout, lighting, color schemes, furniture, ornamentations, texture. The third level are the alternatives of design type which are minimal-shell design, complex-shell design, moderate-shell design, low-content design, and high-content design.

ICMEM
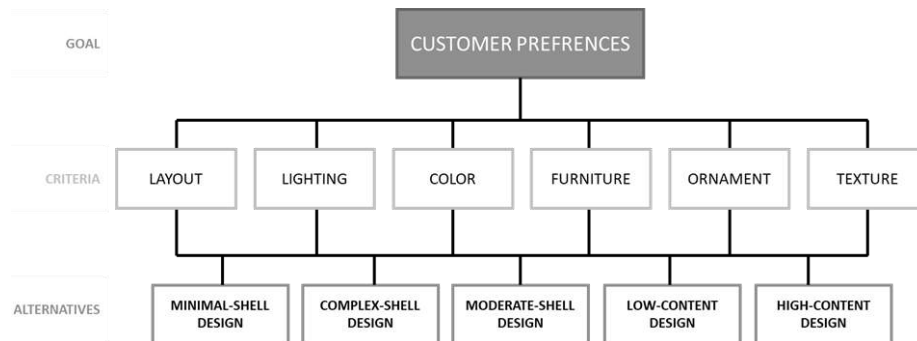
Fig. 1. Decision hierarchies for selecting preferred design

The relative importance of the criteria were rated by the nine point scale proposed by Thomas Saaty (1980), as shown in Table 1, which indicated that the level of relative importance from equal, moderate, strong, very strong, to extreme level by 1, 3, 5, 7, and 9, respectively. The intermediate values between two adjacent arguments are represented by 2, 4, 6, and 8.

Table 1. The AHP Pairwise comparison scale

Given Values (1-9)		Explanation
1	Equal	Both alternatives have equal importance
3	Moderate	One of the alternatives is slightly more important than the other
5	Strong	One of the alternatives is judged as strongly more important than the other
7	Very Strong	One of the alternatives is judged as very strongly important compared to the other.
9	Extreme Importance	One alternative is strictly superior to the other one.
2,4,6,8	Intermediate values	Used for compromised judgments when necessary.

A questionnaire was designed for data collection, and the format was synthesized with reference to AHP matrix. Since the assignment of the weight requires logical and analytical thinking, only the relevant experienced customer providing penetrating insights were highly valuable to an empirical inquiry. In order to select the suitable respondents, a question on the preceding general survey asked the respondents if they were frequently visit a café and interested in interior design. A total of 40 respondent is eligible and have a consistent result that can be further calculated into AHP calculation.

4. Finding & Analysis

To analyses the survey findings, the judgment matrices were pairwise compared and computed via the use of commercial software packages (ExpertChoice TM). The local priority weights of all criteria were first calculated, and then combined with all successive hierarchical levels in each matrix to obtain a global priority vector.

The evaluation of the consistency level of the collected questionnaires appeared to have acceptable consistency (Table 2) and would enter into analysis. This AHP survey further confirms the significance of all crucial selection criteria by the experienced customer who have a high frequency visit to café and interested in interior design.

ICMEM

Table 2. Weight for Criteria

Design Types	Layout 0.275	Lighting 0.258	Furniture 0.163	Color 0.138	Ornament 0.091	Texture 0.075	Total
Minimal-Shell Design	1.000	0.990	1.000	1.000	0.812	0.735	5.537
Complex-Shell Design	0.738	0.835	0.815	0.942	1.000	1.000	5.330
Moderate-Shell Design	0.477	0.697	0.555	0.682	0.449	0.413	3.273
Low-Content Design	0.642	1.000	0.817	0.983	0.548	0.562	4.552
High-Content Design	0.171	0.232	0.154	0.192	0.161	0.136	1.046

After calculating the total weight for every design types by AHP, the consistency ratio for all criteria were calculated as shown in Table 3 respectively. It is clearly that all consistency ratios are less than 0.1 (or 10%).

Table 3. Inconsistency Ratio

	Goal	Layout	Lighting	Furniture	Color	Ornament	Texture
Inconsistency Ratio	0.08	0.09	0.07	0.03	0.04	0.05	0.06

Findings relating to relative importance of selection criteria summarized below: From the figure above the total weight for Minimal-Shell Design is highest relating to 6 criteria of interior design. Normally, one of the most concerned factors for interior design is layout the purpose of interior design is to create an aesthetically design within the space. By this reason, if layout criteria are best concerned, Minimal-Shell Design would be the most appropriate for this analysis.

However, if a layout criterion is solely considered, it lacks of reasonable for applications because there are some important criteria omitted such as lighting, furniture, color, ornament and texture. The Figure 3.3 shows that Minimal-Shell Design is the most preferred to all criteria except texture and color. Complex-Shell Design is the best appropriate for ornament and texture, Low-Content Design is almost the same appropriate for lighting and color with Minimal-Shell Design. From Table 3.1 and Figure 3.3, Minimal-Shell Design was most appropriate followed by all criteria. It is concluded that Minimal-Shell Design is the best choice for further analysis. Although, we may consider Complex-Shell Design and Low-Content Design for the second and third alternative preference.

ICMEM
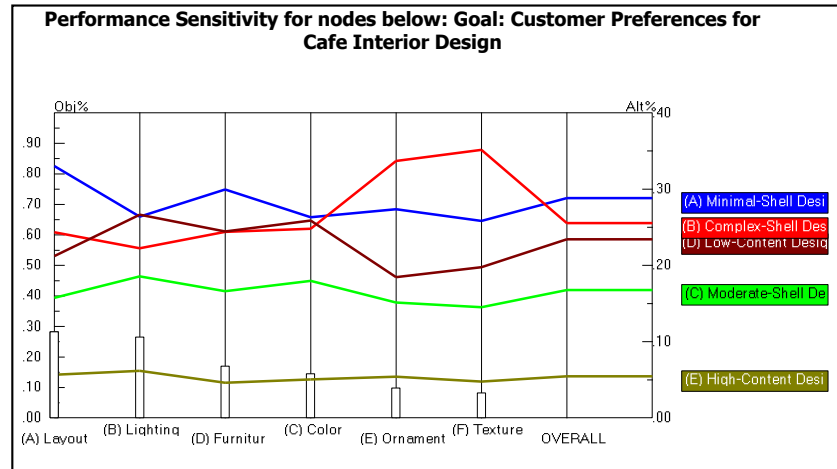
Fig. 2. Decision hierarchies for selecting preferred design

Findings relating to relative importance of selection criteria is summarized on the performance sensitivity graph (Fig. 2). From the figure above the total weight for Minimal-Shell Design is highest relating to 6 criteria of interior design. Normally, one of the most concerned factors for interior design is layout the purpose of interior design is to create an aesthetically design within the space. By this reason, if layout criteria are best concerned, Minimal-Shell Design would be the most appropriate for this analysis.

However, if a layout criterion is solely considered, it lacks of reasonable for applications because there are some important criteria omitted such as lighting, furniture, color, ornament and texture. The Figure 2 shows that Minimal-Shell Design is the most preferred to all criteria except texture and color. Complex-Shell Design is the best appropriate for ornament and texture, Low-Content Design is almost the same appropriate for lighting and color with Minimal-Shell Design. From Table 2 and Figure 2, Minimal-Shell Design was most appropriate followed by all criteria. It is concluded that Minimal-Shell Design is the best choice for further analysis.

5. Conclusion

From all the analysis of every alternatives above, the researcher is came to a conclusion that Minimal-shell design is the most preferred among the other design types. The AHP matrix resulted that minimal-shell design is appropriate for further analysis and could be applied to the proposed solution. However, there is second and third alternative that we could also considered into the proposed solution. The second alternative is Complex-shell design and the third is Low-content design.

The researcher consider these two design type as an alternatives solution or result which support the main result. Because, there is some criteria on complex-shell design and low-content design that is more likely have the same score with the minimal-shell design. In order to formulate a business strategy the main result and the two alternatives are needed.

Based on this research, Analytic Hierarchy Process (AHP) was applied to select the appropriate customer preference design types. Minimal-Shell Design was most appropriate followed by all criteria, especially Layout criterion. However, Minimal-Shell Design needs to be improved in term of lighting criterion. This research was limited only interior design type. The developed AHP guideline can well apply for other type of interior design beyond café but concerning on layout criterion.

ICMEM

References

Bitner, M. J. (1992). Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *Journal of Marketing*, *56*(2), 57. https://doi.org/10.2307/1252042

Fatichatun Nadhiroh. (2016). Masyarakat Mulai Sadar Pentingnya Desain Interior. Retrieved from https://news.detik.com/jawatimur/3340150/masyarakat-mulai-sadar-pentingnya-desain-interior

Global Business Guide Indonesia. (2014). Indonesia's Retail Boom is Far From Over. Retrieved from http://www.gbgindonesia.com/en/services/article/2014/indonesia_s_retail_boom_is_far_from_over.php

Hawkins, D. I., & Mothersbaugh, D. L. (2010). *Consumer Behavior: Building Marketing Strategy*. *Publish*. Retrieved from http://www.amazon.com/dp/0072416882

Orth, U. R., Heinrich, F., & Malkewitz, K. (2012). Servicescape interior design and consumers' personality impressions. *Journal of Services Marketing*, *26*(3), 194–203. https://doi.org/10.1108/08876041211223997

ICMEM

The 3rd International Conference on Management in Emerging Markets

User Experience and User Interface Evaluation for Chat Bot Kiwari to Improve User Traffic in BUMN Environment in Indonesia

Bella Dwi Jayanti[a*], Maya Ariyanti[b]

[a,b]Telkom University, Bandung 15412, Indonesia

Abstract

The development of chat bot is growing rapidly around the world, including Indonesia. There is Kiwari, application of chat bot for state-owned employees to fulfill their work needs with more natural and smarter conversations. However, despite the breakthrough of messaging app by using chat bot, many state-owned employees in Indonesia still find it difficult to use Kiwari as their messaging app This paper build on existing theoretical and empirical studies about usability in order to examine how user experience and user interface that suitable for Kiwari chat bot to attract users, especially state-owned employees in Indonesia. Researcher using qualitative method in order to obtain deep data and information. Researcher conducted in-depth interview by interviewing four different sector, which are business, consumer, government and user experience expert. Besides, Researcher also conducted usability test by observing and watching user using Kiwari apps in order to get which aspects are problematic and which work well. The location of research taken in Jakarta and Bandung where many head office of state-employees located.

Keywords: Chatbot; User Experience; User Interface; Usability.

1. Introduction

The development of messaging app is growing rapidly around the world and so is artificial intelligence. Because of that, chat bot has become favourite applications all over the world. Chat bot is software application that engages in a dialog with a human using natural language Dale (2016). By 2017, there are already 30,000 bots around the world that make it easier for humans to meet their needs with more natural and smarter conversations Kamleitner (2016). Facebook messenger is currently the most successful chat bot app because of its significant number of users and is able to create more solid relationship between business people and the subscribers. Chat bot makes great business opportunities for companies especially in Indonesia by adding it as their customer service.

There are few startups in Indonesia that develop chat bot as their service, for example kata.ai and BJTech. Kata.ai developed a Telkomsel chat bot named Veronika that serves the questions and complaints from Telkomsel customers through LINE account, Telegram and Facebook Messenger.

Beside Kata.ai and BJTech, there is a local startup named Qiscus which also develops a chat bot named Kiwari. Kiwari is a messaging apps and chat bot developed by PT Telkom Indonesia with Qiscus to meet the work needs of state-owned employees called BUMN in Indonesia. Currently the chat bot that has been developed is Kinews which is a bot containing information search required by employees. Besides Kinews, there is Kipay which is a bot to make payments, such as paying credit, bank transfer, and so forth. Kiwari can now be downloaded in AppStore, PlayStore and access website web.kiwari.id.

However, despite the breakthrough of messaging app by using chat bot, many state-owned employees in Indonesia

---

*Corresponding author.
E-mail address: bella.jayanti@telkom.co.id

ICMEM

still find it difficult to use Kiwari as their messaging app. The lack of public trust about local products and lack of understanding of Bots, makes Kiwari difficult to accept. There are several factors in usability that need to be improved by Kiwari on the use of Bot, among others: Learnability, Error, Memorability, Satisfaction and Efficiency. One way to increase user usability is by increasing the user experience and user interface of the product. Good User Experience meets the needs and expectations of consumers simply without interruption Norman (2012). User interface is also important for chat bot apps to attract attention to use. *A user interface is* simply set of interface elements with which the user interacts Abrams, Marc et al. (1999). If the display is unattractive and difficult to user, the user does not hesitate to leave the application. Therefore, to increase learnability and satisfaction of user by using Kiwari chat bot, this research will evaluate user experience and user interface of Kiwari and give the recommendation about them.

2. Literature Review

2. 1. E-Marketing

Strauss (2014) defines that e-marketing is the result of information technology applied to traditional marketing. E-marketing can be viewed as a new philosophy and modern business practice that deals with goods, services, information and ideas via the Internet and other electronic devices Setiyaningrum et al. (2015). In marketing, the company needs to know how to communicate the company's products to its customers well. Therefore it takes a mature strategy to achieve marketing targets. This strategy is called a marketing mix. According to Kotler and Keller (2016), Marketing mix is set of tactical marketing tools-product, price, place, and promotion-that the firm blends to produce the response it wants in the target market.

2. 2. Consumer Behaviour

Consumer behavior is a direct action involved in obtaining, consuming and depleting products or services, including the process of decisions that precede and overcome these actions" Setiadi (2008). Then according to Sunyoto (2015), consumer behavior in Indonesia can be categorized as technological stuttering (most of the consumers are not so high-tech master, limited to ordinary users and use only common features), and context-oriented (tend to judge and choose something from the outward appearance).

2. 3. User Experience

User Experience covers every aspect of every end-user interaction with company, company services and company products. The first requirement for a good User Experience is to meet the needs and expectations of consumers simply without interruption (Norman, 2012). User Experience design is a concept that is difficult to define specifically, since it's often a case of 'you'll know it when you see it' Stokes (2013).

The user interface is part of the user experience. The user interface is more to the look and everything that the user sees based on the user experience. According to Stokes (2013), User Interface is user-facing part of the tool or platform - the actual website, application, hardware or tool with which the user interacts. Meanwhile, Bank (2014) concludes that User interface (UI) is the design, presentation and execution of the elements that make up a page of the web or application.

In order to evaluate how good is user experience and user interface from application, usability is needed. According to Nielsen (2012), Usability is a quality attribute that assesses how easy User Experience and user interface are used. The word "usability" refers to methods to improve ease of use during the design process. Usability consists of five components, among others: learnability (How easy it is for the user to complete basic tasks the first time they find the design, efficiency (Once the user has learned the design, how fast they can perform the task), memorability (When the user returns to the website after not using it, how easy can they use the website again), errors (How many errors users make, how severe these errors are, and how easily they recover from errors), satisfaction (How fun to use it).

From a variety of literature and research that have been done previously, this finds emerging various variables of usability as well as the aspects of it as presented in Table 1.

ICMEM

Table 1. Sources of previous Research References on usability.

Variables/References	Don Norman,2012)	Schrepp, Hinderks, & Thomaschewski, 2011)	Hedegaard & Grue Simonsen, 2013)	Bevan, Carter , & Harker , 2015)
Attractiveness		v		
Perspicuity		v		
Efficiency	v	v	v	v
Dependability		v		
Stimulation		v		
Novelty		v		
Effectiveness			v	v
Satisfaction	v		v	v
Regular use				v
Errors	v		v	v
Accessibility				v
Maintainability				v
Learnability	v		v	v
memorability	v		v	

2. 4. Chat bot

The term 'Chat bot' refers to any software application that engages in a dialogue with a human using natural language Dale (2016). A chat bot is a computer program that mimics conversations with people by using artificial intelligence. Chat bot can be functional or fun, and can be built to answer questions and perform specific actions like offering to reset a password Inbenta (2017)

3.   Chat Bot Kiwari Features

3.1. Official Account Menu

This menu contains the bots in Kiwari, the menu consists of Cuti Bot (Bot that apply for work leave that is currently still in development stage), Kinews, Kipay, and meeting room booking (For reservations room meeting which is still in the development stage).

3.2. Kinews

Kinews is a bot containing news provided by Telkom for its user. Users can search for any related information and news by typing only keyword. Kinews also provides a selection of popular news lifestyle and special news about Technology.

3.3. Kipay

Kipay is a transaction bot that can help users perform financial transactions online from T-Money account (E-money made by Telkom Indonesia). Kipay can help online transaction to buy credit, money transfer (to other TMoney account and other banks), add balance and see TMoney account profile.

ICMEM
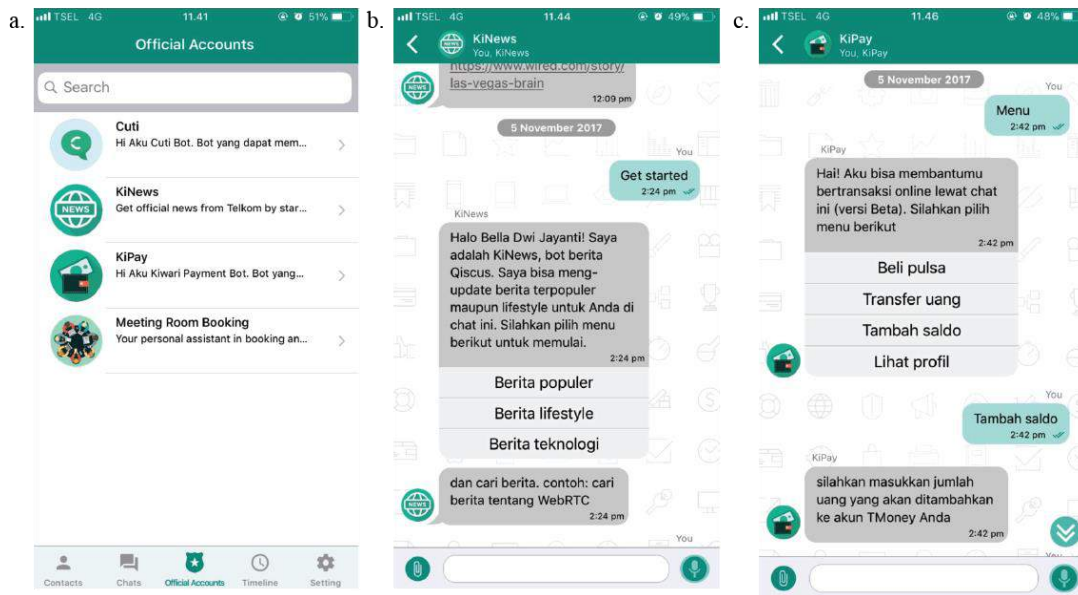
Fig. 1. (a) Official Account Menu; (b) Kinews Menu; (c) Kipay Menu.

4. Conceptual Model

Researcher will follow the stages research form from Sugiyono (2012). Research stages are divided into 3 stages, among others: Determining the problem of research, data collection, and analysis and presentation of data. From the theory, Researcher designed the conceptual model as follows:
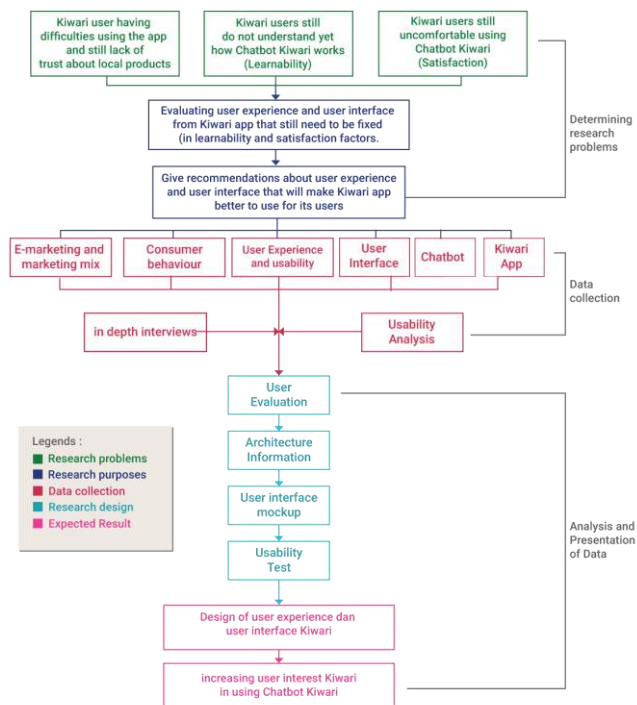
Fig. 2. Conceptual Model Research

ICMEM

5. Methodology

The research methodology was qualitative research with studies on a particular focus, so that researcher hopes to obtain in-depth data and information. This research used inductive data analysis because can built deep relationship between researcher and respondents in order to obtain more explicit, recognizable and accountable facts. By using descriptive concept, data that collected are in the form of words and more images. The data can come from interviews, photos, videotapes, personal documents, and so on.

The research used two methods to obtain facts and information, the methods are in depth interview and observations. In depth interviews method is used to obtain certain answers by receiving a statement or opinion directly from qualified person. Researcher conducted unstructured interview, because the interview guidelines only contain the outline of the question list. With this interview, the creativity of the interviewer is necessary because the outcome of the interview depends on how the interviewer extracts the information from the resource person. Respondents who will be the source of information is determined by using purposive sampling.

In observation, researcher using usability test method. Usability test method is observing and watching a user try to accomplish the task on a website or application that has been created to uncover usability problems. By doing that, researcher can observe user struggling with specific user experience and user interface elements and infer which design aspects are problematic and which work well.

The research analyzed the usability of the User Experience on chat bot. Operational qualitative variables that will be used as the object of observation of researchers determined from the theoretical basis used as a reference in this study, which is about usability analysis (usefulness) in the user experience. There are five research variables, those are: learnability, efficiency, memorability, errors and satisfaction. While for Indicator, Researcher take indicator from Usability Analysis Nielsen (2012). Researchers will emphasize the factors of Learnability and Efficiency as the main focus of this research.

Table 2. Operational Qualitative Variables.

Variable	Definition	Dimension	Elements	Indicator
Learnability	How easy it is for the user to complete the basic task at the first time.	Visibility of System Status	Status Bar	Status on every page
			Loading Page	Percentage on loading page
		Match between System and Real Word	Icon and Symbol	Icon and symbol that familiar
			Language	Familiar language for user (English and Indonesian)
Efficiency	Once the user has learned the design, how fast can they perform the task	Consistency and Standards	Shape	Consistent icon and symbol shape
			Colors	Consistent colors (3 colors)
		Flexibility and Efficiency of Use	Steps	The stages of completing the task a maximum of 3 levels
Memorability	When the user returns to the website after not using, how easily can they use the website again	Recognition rather than Recall	Search	Recommendation on search
		Help User Recognize, Diagnose and Recover from Errors	Error and Notification	The error message displayed in simple words so it's easy for users to understand
Errors	How many mistakes the user made	User Control and Freedom	Back button	The freedom of the user to return to the previous stage
		Error Prevention	Warning	There is a warning to the user before an error occurs
		Help and Documentation	FAQ and Help	Frequently Ask Questions (FAQ) to give instructions to the user

ICMEM

			Contact Us	There is a feature "Contact Us" so that users can call service center
Satisfaction	How fun to use	Aesthetic and Minimalist Design	Look and Feel	Aesthetic interface and easy to understand

To get valid primary data by in depth interview, this research has to interview 8 respondents from various sources, among others: governments, business players, chat bot users and User experience experts. This method is called quadro helix interview method. The table below describes about the criteria of respondents:

Table 3. Selection and Criteria of Respondents

No.	Category	Respondent	Criteria	Reason
1	Government	Kementerian Kominfo (Communication Ministry)	Understanding the communication system and behavior of Indonesian people in communicating.	Governmental institutions in the field of communication in Indonesia
2		Kementerian BUMN (Ministry of SOEs)	Handling directly about the rules of employment of state-owned enterprises and clearly recognize the behavior of state-owned employees	Special government agency that manage the SOE (Employees of state-owned enterprises)
3	Business Player	Irzan Raditya (CEO Kata.ai)	Having experience and working in the chat bot business world	Has a popular chat bot company (Bang Joni LINE)
4		Delta Purna P (CEO Qiscus – Kiwari)	Having experience and working in the chat bot business world and understanding Kiwari	Own and develop Kiwari
5	User	Riztama Prawita (Telkom employee, 23 years old, mobile Bandung-Jakarta)	Using chat bot daily, Working as a mobile employee, often buy products online, Aware on technology and artificial intelligence (early adopter)	Using Google Allo to meet daily needs, user Kiwari
6		Utari Dwiyani (Siri Apple user)	Using chat bot to meet daily needs, technological updates, working as a BUMN employee	Using Siri to meet daily needs, User Kiwari
7	Expert	Hopy familianto (user experience expertise in Telkom)	Mastering the science of user experience, update about user experience in Indonesia, often provide training about user experience	User experience certified on Nielsen Norman Group
8		Kata.ai (CDO)	Understands about chat bot and user experience chat bot	Develop and research User Experience chat bot

And for usability test, the researcher will take 5 users. Researcher will divide users into 2 categories, 2 users who have and often use Kiwari applications and 3 users who have never used Kiwari at all. In addition Researchers also divide users by age which are genes Y, X genes and baby boomers. It aims to get more valid data about what should be evaluated from Chat bot Kiwari.

This study was undertaken to evaluate the usability of user experience and user interface in learning ability and satisfaction factor from previous Kiwari Chat bot. By using in depth interview and usability test, this research will give the result of recommendation about next user experience and user interface for Kiwari Chat bot in order to increasing user interest using Kiwari apps.

6. Conclusion and Future Research

In strengthen the conceptual model, this research requires measurements, structural models and scientific work directions for the future. It is hoped that by adopting from this research, it can be further used by using usability

ICMEM

analytics in quantitative research in order to provide more accurate validation. The results of this study are also expected to be used in the field of e-marketing, especially insights about User Experience and a good user interface and its impact on consumer performance, especially Chat bot. Researchers with this research can also provide developers, designers and businesses primarily in terms of user interface and user experience in developing Chat bot-related applications in Indonesia.

References

Abrams, Marc., Phanouriou, Constantinos., Batongbaca, Alan L., Williams, Stephen M., Jonathan E., and Shuster. (1999). UIML: an appliance-independent XML user interface language. *Elsevier Science B.V, 617-630.*

Bank, Chris. (2014). Web User Interface Desain Best Practices. California, USA : UXPin.

Inbenta Technologies Inc. (2017). *Chat bots for Business Guide,* [online]. Retrieved from: www.inbenta.com [December 23th 2017]

Kamleitner, Michael. (2016). Chat bots Conversational User Interface and the Future of Online Interaction. Vienna, Austria: Swat.io.

Kotler, Philip., Keller, Kevin L. (2016). Marketing Management (15th ed). Harlow, England : Pearson Education Limited.

Nielsen, Jakob. (2012). Usability 101 Introduction to Usability. Nielsen Norman Group [online]. Retrieved: https://www.nngroup.com/articles/usability-101-introduction-to-usability/ [29 Desember 2017]

Norman, D. A. (2002). Emotion and design: Attractive things work better. *Interactions Magazine*, *ix* (4), 36-42.

Norman, D., & Nielsen, J. (2012). *The Definition of User Experience (UX)*. Nielsen Norman Group [online]. Retrieved from : www.nngroup.com: https://www.nngroup.com/articles/definition-user-experience/ [29 Desember 2017]

Setiadi, Nugroho J. (2008). Perilaku Konsumen, Konsep dan Implikasi untuk Strategi dan Penelitian Pemasaran. Jakarta: Kencana Prenada Media Group.

Setiyaningrum, Adi., Udaya, Jusuf., Effendi. (2015). Prinsip-prinsip Pemasaran. Yogyakarta : Andi.

Stokes, Rob. (2013). eMarketing: The Essential Guide to Marketing in a Digital World (5th Ed). Cape Town, South Africa : Quirk eMarketing (Pty) Ltd.

Strauss, Judy., Frost, Raymond. (2014). E-Marketing (7th ed). New Jersey, England : Pearson Education Limited.

Sunyoto, Danang. (2015). Perilaku Konsumen dan Pemasaran. Jakarta: Buku Seru.

ICMEM

The 3rd International Conference on Management in Emerging Markets

An Analysis of the Influence of Service Quality Dimensions on Customer Satisfaction and Customer Loyalty in Skin Care Clinic Industry

Syanita Febrianti[a]*, Annisa Rahmani Qastharin[b], Prawira Fajarindra Belgiawan[c]

[a,b,c]*School of Business and Management, Institut Teknologi Bandung, Jalan Ganesha No. 10, Kota Bandung, 40132, Indonesia*

Abstract

The purpose of this research is to analyze the influence of service quality dimensions toward customer satisfaction and customer loyalty in skin care clinic industry. Five service quality (SERVQUAL) dimensions which consist of reliability, responsiveness, assurance, empathy, and tangibles are used in this research. To collect the data, the quantitative method by conducting survey through questionnaire is applied. PLS-SEM is performed to analyze the empirical data and validate the model. The findings of this study reveal that: (1) reliability, assurance, and tangibles positively and significantly influence customer satisfaction; (2) empathy positively and significantly influence customer loyalty in direct link; (3) customer satisfaction positively and significantly influence customer loyalty; and (4) customer satisfaction fully mediates the influence of reliability, assurance, and tangibles on customer loyalty. The findings of this research may help skin care clinic industry to understand the role of various service quality dimensions for enhancing both customer satisfaction and loyalty.

Keywords: Service Quality Dimensions; Customer Satisfaction; Customer Loyalty; Skin Care Clinic Industry

1. Introduction

Skin care industry in Indonesia nowadays has been growing rapidly. Based on the data of Euromonitor International entitled *The Future of Skin Care: Game-changing Trends and Influencers* (2015 as cited in Marketeers, 2016), Indonesia will be the second largest contributor to the growth of skin care in the world replacing U.S. in third place, while China is in the first position. Furthermore, developing countries contributed 51% in the global beauty industry, including Indonesia which has a dynamic market in South-East Asia. As a part of skin care industry, skin care clinic is also increasing. In Indonesia currently the number of skin care clinic is more than 400 branches which consisted of 16 skin care clinic companies and is increasing compared to 2016. Obviously, the increase of skin care clinics gives rise to the competition among skin care clinics. As a result, skin care clinics have to find a way to deliver better service quality compared with competitors and improve customer satisfaction therefore customer can distinguish their offerings (Jamal & Anastasiadou, 2009).

Skin care clinic admittedly cannot be separated with service since it is categorized as professional services. The reason skin care clinic is categorized as professional services because the main core business of skin care clinics is offered by professional, specifically dermatologist (Fitzsimmons & Sullivan, 1982; Sasser, Olsen, & Wyckoff, 1978). As part of health care sector, the customers' perception of service quality has high influence on the choice of skin care clinic companies (Woodside, Lisa, & Robert, 1989). To achieve service excellence, skin care clinics must endeavor "zero defections" in the service provided as it leads to customers retention which can be profitable for them by serving those customers (Reichheld & Sasser, 1990).

Furthermore, service quality along with customer satisfaction and customer loyalty has been well known as the most important factors for service providers to succeed in business competition (Rust et al., 1995; Zeithaml, et al.,

---

* Corresponding author.

E-mail address: syanita.febrianti@sbm-itb.ac.id

ICMEM

1996). Many researches had established the link between service quality and customer satisfaction, service quality and customer loyalty, also customer satisfaction and customer loyalty (e.g. Bloemer et al., 1999; Caruana, 2002; Bakti & Sumaedi, 2013; Alnsour et al., 2014). Accordingly, it is greatly important for the service providers which in this case is skin care clinics to understand the customers' perceptions of service quality in skin care clinics towards customer satisfaction and customer loyalty. Even though, so far there is no study discuss the influence of service quality dimensions towards both customer satisfaction and customer loyalty in skin care clinic industry. In conclusion, further study is needed to analyze customers' perception of service quality dimensions on customer satisfaction and customer loyalty.

This paper is organized into five sections: starting with the introduction of this study; section two provides a precise and comprehensive insight of literature review; section three explains the research methodology; section four demonstrates the findings and implications; and last section ends the article with conclusion of this study and the shortcomings also suggestions for further research.

2. Literature reviews

2. 1. Service quality

According to Yusoff et al. (2010), service quality is a crucial element for the services business. Many researches defined service quality is a customer attitude form which depends on disparity between service expectation and real performance also related to a focused evaluation which reflects customers' assessment towards service's element (Grönroos, 1984; Parasuraman et al., 1985, 1988, 1991; Cronin and Taylor, 1992; Clemes et al., 2008). The attitudes itself encompasses the quality of outcome and process (Kassim & Abdullah, 2010). Grönroos (1990) explained further the term quality of outcome and process in which quality of outcome means what the customers actually received and quality of process means how the service is provided. Service quality cannot depend solely on one quality as quality of outcome is difficult to be assessed for any service as services are likely to have more involvement and trustworthiness qualities therefore customers also need to assess the quality of process (Rushton and Carson, 1989; Swartz and Brown, 1989).

Service quality has many dimensions (Sumaedi et al., 2012; Sumaedi and Bakti, 2011; Clemes et al., 2008). The dimensions proposed by Grönroos (1984) encompasses three variables which are technical quality, functional quality, and image. Meanwhile, Parasuraman et al. (1985) proposed the Gap Model which was refined for measuring customers' perception of service quality which known as SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988). The five dimensions of SERVQUAL by Parasuraman et al. (1988) are shown in Table 9.
The SERVQUAL model by Parasuraman et al. (1988) has been the most popular and accepted service quality dimensions, also successfully utilized service quality measurement in the twenty-first century (Markovic and Raspor, 2010; Landrum et al., 2009; Tsoukatos and Rand, 2006). Moreover, Babakus and Mangold (1992) had demonstrated the SERVQUAL instrument in hospital industry which is relative close to skin care clinic industry. Based on those arguments, this research is going to use SERVQUAL dimensions by Parasuraman et al. (1988).

Table 9. Five dimensions of SERVQUAL

Dimensions	Explanations
Reliability	The ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence
Empathy	Caring, individualized attention the firm provides its customers
Tangibles	Appearance of physical facilities, equipment, personnel, and communication materials

ICMEM

2. 2. *Customer satisfaction*

Customer satisfaction is a feeling or response which is resulted from evaluating process towards the comparison between customer perception of the actual performance and prior expectation of product or service, including the purchase decision itself and the needs and wants associated with the purchase (Tse and Wilton, 1988; Kotler and Armstrong, 1996; Zeithaml, Bitner, & Gremler, 2003). For that reason, customer satisfaction can be interpreted as the summary of both cognitive and affective reaction to a long-term service relationship (Lee, Kim, Ko, & Sagas, 2011). In other words, either customer satisfaction or dissatisfaction is a result of customer experience with service quality encounter and comparison of that encounter with the expectations (Caruana, Money, & Berthon, 1998). Hence, customer satisfaction is accepted to be peculiar since it is the interaction of perceptual interpretation of expectations of the service provided by that service encounter (Ueltschy, Laroche, Eggert, & Bindl, 2007). To achieve customer satisfaction in high level, Cronin et al. (2000) suggested an organization should deliver a high level service quality as service quality creates customer satisfaction. Necessarily, as the service quality is excellent and customers' need are fulfilled, customers will tend to be more satisfied. This finding is the result of service quality which depends on the ability of the service provider to constantly to fulfill customers' needs and wants (Parasuraman, Zeithaml, & Berry, 1988). Lee et al. (2012) inferred that through efficient operations, employee management, and service quality, hospitals can improve customer satisfaction. They also discovered employee reaction and service quality are stimulated by this high performance work system in health-care organizations. Hence, customers may continue to or increase the scope and frequency of relationship with service provider or may recommend the service provider to other potential customers (Kasiri, Cheng, Sambasivan, & Sidin, 2017).

2. 3. *Customer loyalty*

Customer loyalty has several definitions. Jacoby and Kyner (1973) offered the definition of loyalty as "the biased (i.e. non-random), behavioural response (i.e. purchase), expressed over time, by some decision making unit, with respect to one or more alternative brands out of a set of such brands, and is a function of psychological (i.e. decision making, evaluation) processes" which reflects the behavioral and attitudinal aspects of loyalty (Caruana, 2002). Meanwhile, Oliver (1999) defined customer loyalty as strong commitment to keep buying or using product/service which is favored therefore purchasing of same brand will happened regardless of the existence of situational influences and marketing efforts may lead to behavioral changes. Supported by the explanation by Gremler and Brown (1996) which identified as cognitive loyalty aspect, "service loyalty is a degree to which a customer exhibits repeat purchasing behavior from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for this service arises". Reichheld (1996) explained when a company can give added or distinguish value to the customers in comparison with the competitors, they will become loyal and intend to do business more with the company therefore the company can increase marketing savings and higher turnover, eventually lead to greater profit. Reichheld's explanation is also supported by Javed and Cheema (2017), as they concluded that loyalty factors proven are very advantageous for a business as it can reduce marketing cost. Furthermore, the current customers can lead the business to gain more customers if they make the business as their reference or have positive review about the business. Besides, loyal customers are cheaper to serve (Arnott & Bridgewater, 2002) and less likely to switch to other competitors also they are typically less price-sensitive and have important role in contributing of positive word-of-mouth communications about the company (Alnsour, Tayeh, & Alzyadat, 2014). Thus, loyal customers is good basis as it can create a significant entry barrier to competitors (Morgan & Hunt, 1994).

ICMEM

2. 4. *Conceptual model and hypotheses*

The relationship among variables in the conceptual model of the research which is depicted in Fig. 1 generate the research hypotheses. The developments of hypotheses are explained as follows:
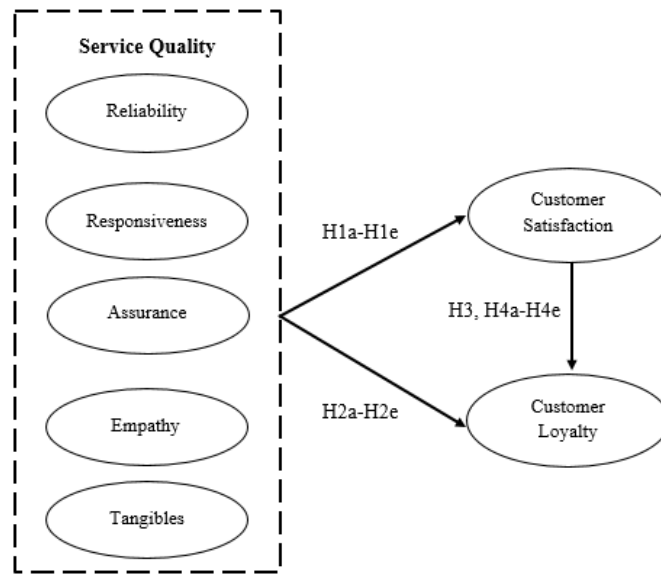
Fig. 1. Conceptual Framework

A substantial amount of research has revealed that service quality positively and significantly influence customer satisfaction in various context and industry. For example, Farooq et al. (2018) and Hussain (2016) examined the relationship between service quality and customer satisfaction in airline industry and they found that service quality positively and significantly influence customer satisfaction. Moreover, Kassim et al. (2010) found that service quality has significant influence on customer satisfaction in e-commerce settings. Another study conducted by Arasli et al. (2005) in banking sector confirmed that service quality, specifically reliability, assurance, empathy, and tangibles, is predictor of customer satisfaction. Meanwhile, Kitapci et al. (2013) who studied the influence of service quality toward customer satisfaction in supermarket sector reported that all SERVQUAL dimensions except reliability are the predictors of customer satisfaction. Thus, the prior hypotheses in this paper are proposed as follows:

H1. Each of following dimension of service quality positively and significantly influence on customer satisfaction in skin care clinics: (a) reliability, (b) responsiveness, (c) assurance, (d) empathy, and (e) tangibles.

Many researchers have confirmed service quality as strong predictor of customer loyalty. Bloemer et al. (1999) discovered for health care service setting empathy is strong predictor of purchase intention and word-of-mouth. They also found assurance positively and significantly influence customer loyalty (i.e. price sensitivity). Furthermore, Wong and Sohal (2003) reported tangibles is the most significant predictor of customer loyalty at the company level while empathy is the most significant predictor of customer loyalty at the interpersonal level. Another study conducted by Alnsour et al. (2014) proved all SERVQUAL dimensions influence positively and significantly customer loyalty except tangibles in telecommunications sector. Based on the findings has been described, the related hypotheses are:

H2. Each of following dimension of service quality positively and significantly influence on customer loyalty in skin care clinics: (a) reliability, (b) responsiveness, (c) assurance, (d) empathy, and (e) tangibles.

ICMEM

Empirical evidence by researches has proven the causal link between customer satisfaction and customer loyalty (e.g. Bei & Chiao, 2001; Caruana, 2002; Yang & Peterson, 2004; Bakti & Sumaedi, 2013; Kasiri et al., 2017). This is relatively because customer satisfaction is considered to have strong influence on repurchase intention (Cronin and Taylor, 1992; Ueltschy et al., 2007; Farooq et al., 2009) and contributes positive and favorable word-of-mouth to firm (Park, Robertson, & Wu, 2005). On the other hand, there is ample evidence in the literature that shows customers satisfaction mediates the relationship between service quality and customer. Cronin et al. (2000) argued customers' decision- making relative to the purchases of their service products is complex and comprehensive process. This means customer evaluate the service only consider the direct effects are tend to generate in not complete assessments of the basis these decisions. Accordingly, the last hypotheses of this study are as follows:

H3. Customer satisfaction has positive and significant influence on customer loyalty in skin care clinics.
H4. Customer satisfaction mediates the relationship between each of following dimension of service quality and customer loyalty in skin care clinics: (a) reliability, (b) responsiveness, (c) assurance, (d) empathy, and (e) tangibles.

3. Research methodology

3.1. Sample design and data collection

To collect the data, this research uses quantitative method by conducting survey with questionnaire as the tool. This method was chosen because it can provide quick, inexpensive, efficient, and accurate way to assess information about a population (Zikmund, Babin, Carr, & Griffin, 2009). The questionnaire is in Bahasa Indonesia and distributed online to 300 respondents who are the former and current customers of skin care clinics in Bandung and Jabodetabek area. The sample size for this research is considered to be 300 referring to the guideline suggested by Malhotra (2010) as the population data of former and current customers of skin care clinics is not available. Furthermore, this research needs specific target groups as the subject to obtain information, specifically the subjects who are in the best position in providing the information required thereby judgement sampling is the best nonprobability sampling design for this research (Sekaran, 2003).

3.2. Research measurement

The question of this research questionnaire adopted the questionnaire from previous researches which are Parasuraman, Zeithaml, and Berry (1988) for service quality which consists of five dimensions: reliability, responsiveness, assurance, empathy, and tangibles; Bitner and Hubbert (1994) for customer satisfaction and Gremler and Brown (1996) for customer loyalty which all those questions will be adjusted to this research context. The questionnaire will use seven-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (7) and with neutral point 'neither agree nor disagree'. A seven-point Likert scale was used as suggested by Farooq (2016) in order to enhance the redundancy and sanctity of this research.

3.3. Analytical methods

To analyze the hypotheses generated from the relationship among variables in the conceptual framework, PLS-SEM analysis is being performed in SmartPLS which consist of 1) explanation endogenous variable variance, 2) inner model path coefficient sizes and significance, 3) outer model loadings and significance, 4) indicator reliability, 5) internal consistency reliability, 6) convergent validity, 7) discriminant validity, and 8) checking structural path significance in bootstrapping (Wong, 2013).

ICMEM

4. Data analysis

4. 1. Reliability and validity ─ measurement model

To examine the reliability and validity of reflective measurement model, internal consistency reliability and convergent validity are assessed by using the value of Cronbach's alpha, composite reliability (CR), average variance extracted (AVE). Based on the result in Table 10, Cronbach's alpha and CR value of all latent variables are greater than 0.7 critical level suggested by Nunnally (1978) and Bagozzi and Yi (1988). Moreover, to complete validity test, discriminant validity is also assessed by using Fornell-Larcker criterion which depicted in Table 10. The square-root AVE which is bold written diagonally in Table 10 demonstrating the discriminant validity of constructs involved in the proposed measurement models as the the square-root AVE is higher than AVE values (Farooq et al., 2018, 2016; Hair et al, 2017). Overall, the result of measurement model fulfilled the requirements for internal consistency reliability, convergent validity, and discriminant validity (Hair, Hult, Ringle, & Sarstedt, 2014).

Table 10. Reliability and validity of the constructs

Latent Variables	RL	RV	AS	EP	TB	CS	CL	Cronbach's Alpha	CR	AVE
Reliability (RL)	**0.817**							0.843	0.889	0.668
Responsiveness (RV)	0.677	**0.845**						0.800	0.882	0.714
Assurance (AS)	0.754	0.792	**0.843**					0.864	0.908	0.711
Empathy (EP)	0.549	0.614	0.665	**0.843**				0.864	0.908	0.711
Tangibles (TB)	0.555	0.547	0.643	0.527	**0.865**			0.888	0.923	0.749
Customer Satisfaction (CS)	0.720	0.560	0.685	0.525	0.583	**0.926**		0.917	0.948	0.858
Customer Loyalty (CL)	0.617	0.462	0.580	0.496	0.426	0.823	**0.836**	0.956	0.962	0.699

*Values in the bold are Square root of AVE

4. 2. Analysis of structural model

According to Farooq et al. (2018), the structural model is assessed for overall explanatory power of constructs through R^2 value, predictive relevance through Q^2 value, and path coefficient β-values. The results indicate five exogenous latent variables of service quality moderately explain 59% of the variance in customer satisfaction with R^2 = 0.590. Furthermore, customer satisfaction, reliability, responsiveness, assurance, empathy, and tangibles together explain 69.4% of the variance of customer loyalty with R^2 = 0.694. The result of structural model are shown in **Error! Reference source not found.**.

ICMEM
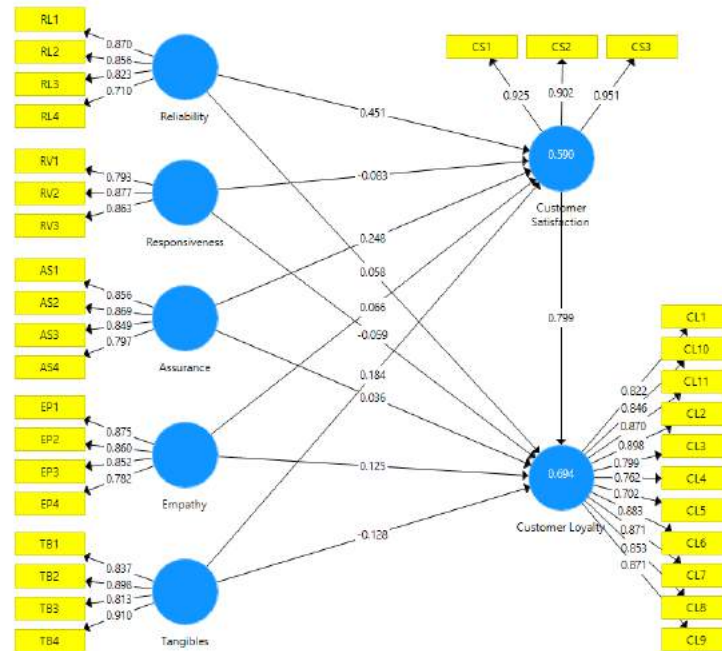
Fig. 2. Results of structural model

To explore more the inner model, predictive relevance (Q^2) can be assessed. Hair et al. (2017) stated that exogenous constructs have relevance over the endogenous constructs if predictive relevance (Q^2) values larger than 0. The predictive relevance (Q2) of customer satisfaction is 0.475 and Q^2 of customer loyalty is 0.449, providing support predictive relevance of the model. Moreover, only eight hypotheses are accepted in this research. This is because those hypotheses have t-value above 1.96 and p-value below than 0.5 at the significance level 5%. The summarized results is presented in Table 11.

Table 11. Hypotheses assessment

	Hypothesized Path	β-value	t-value	p-value	Result
H1a	Reliability ➔ Customer Satisfaction	0.451	6.932	0.000	Accepted
H1b	Responsiveness ➔ Customer Satisfaction	-0.083	1.329	0.184	Rejected
H1c	Assurance ➔ Customer Satisfaction	0.248	2.727	0.006	Accepted
H1d	Empathy ➔ Customer Satisfaction	0.066	0.793	0.428	Rejected
H1e	Tangibles ➔ Customer Satisfaction	0.184	2.869	0.004	Accepted
H2a	Reliability ➔ Customer Loyalty	0.058	1.200	0.230	Rejected
H2b	Responsiveness ➔ Customer Loyalty	-0.059	1.128	0.259	Rejected
H2c	Assurance ➔ Customer Loyalty	0.036	0.523	0.601	Rejected
H2d	Empathy ➔ Customer Loyalty	0.125	2.066	0.039	Accepted
H2e	Tangibles ➔ Customer Loyalty	-0.128	2.334	0.030	Rejected
H3	Customer Satisfaction ➔ Customer Loyalty	0.799	16.635	0.000	Accepted
H4a	Reliability ➔ Customer Satisfaction ➔ Customer Loyalty	0.360	6.323	0.000	Accepted

Hypothesized Path		β-value	t-value	p-value	Result
H4b	Responsiveness ➔ Customer Satisfaction ➔ Customer Loyalty	-0.067	1.313	0.189	Rejected
H4c	Assurance ➔ Customer Satisfaction ➔ Customer Loyalty	0.198	2.678	0.007	Accepted
H4d	Empathy ➔ Customer Satisfaction ➔ Customer Loyalty	0.053	0.790	0.429	Rejected
H4e	Tangibles ➔ Customer Satisfaction ➔ Customer Loyalty	0.147	2.732	0.006	Accepted

5.   Discussion

5. 1.   Theoretical implications

To achieve the research objectives of this study, there are sixteen hypotheses were tested. Findings of this study reveals that only eight hypotheses are accepted. The result suggests that three SERVQUAL dimensions (reliability, assurance, and tangibles) positively and significantly influence customer satisfaction, with reliability appearing as strongest predictor of satisfaction. It means, when skin care clinics provide excellent reliability, assurance, and tangibles to customers, customer will be very satisfied, particularly on the reliability of skin care clinics. However, the correlation between responsiveness and customer loyalty also between empathy and customer loyalty are not confirmed in this study, it may be the consequence of employees of skin care clinics not able to provide prompt service and do not understand the specific needs of customers. Meanwhile, empathy is the only service quality dimension that positively and significantly influences customer loyalty. It means, when employees of skin care clinics can emphatize with customers, customers tend to be more loyal to skin care clinics. Moreover, the result confirms that customer satisfaction influences customer loyalty and it mediates the paths from three SERVQUAL dimensions (reliability, assurance, and tangibles) to customer loyalty. It means, when skin care clinics provide excellent reliability, assurance, and tangibles to customers, customers will be very satisfied and eventually they will be loyal to skin care clinics.

In skin care clinic industry, reliability has highest influence on customer satisfaction ($β=0.451$), which supports the results of previous studies conducted by Arasli et al. (2005), and Zhou (2004) that highlighted reliability to be main predictors of satisfaction. It shows that customers has the perception if the skin care clinics are able to perform well the service dependably and accurately as promised. However, this finding is contrast with the prior research that Kitapci et al. (2013) had done as they found the link from reliability to customer satisfaction was not significant. This might be due to different business sectors as Kitapci et al. (2013) focused on supermarket sectors and it should be acceptable if there is any distinction among different sectors regarding service quality dimensions. Furthermore, the result of this study is also in line with Kassim and Abdullah (2010), who found assurance is SERVQUAL dimension that has positive and significant influence on customer satisfaction to which in this study its path coefficient is 0.248. This implies the employees of the skin care clinics have knowledge, courtesy, and ability to convey trust and confidence to customers. Customer satisfaction is also found positively and significantly influenced by tangibles in this study ($β=0.184$) which backs up the finding revealed by Jamal and Anastasiadou (2009). It makes tangibles is important to be concerned by the skin care clinic industry since it is clear in this data retrieved that customers are interested to physical facilities and materials associated with the service i.e. pamphlets or statements.

An interesting result in this research is empathy is the only SERVQUAL dimension that influence customer loyalty positively and significantly in direct link ($β=0.125$). It is consistent with the finding of the study by Alnsour, Tayeh, and Alzyadat (2014) and Wong & Sohal (2003) which revealed empathy positively and significantly influence customer loyalty in direct link. The possible reason of this result is customers appreciate the caring given by the skin care clinics as the part of health care service, specifically the individualized attention therefore it affects to both of word-of-mouth and purchase intention which indicate the emersion of loyalty (Bloemer, Ruyter, & Wetzels, 1999).

The result also provides evidence for the positive and significant influence of customer satisfaction towards customer loyalty ($β=0.799$) and among all the hypothesized path relationships, this correlation is the most substantial

ICMEM

(t value=16.635). The link from customer satisfaction to customer loyalty is also confirmed by many prior researches (Caruana, 2002; Yang & Peterson, 2004; Bakti & Sumaedi, 2013; Kasiri et al., 2017). The importance of this relationship should be noticed by skin care clinic industry. This industry is suggested to satisfy and delight the customers to increase the degree of loyalty also maintain the satisfaction level since customers might have higher expectations (Jamal & Anastasiadou, 2009). In further, customer satisfaction is proven has full mediating role between reliability and customer loyalty (β=0.360, t-value=6.323), as well as between assurance and customer loyalty (β=0.198, t-value=2.678) and between tangibles and customer loyalty (β=0.147, t-value=2.732). Among three SERVQUAL dimensions, the relationship between reliability and customer loyalty through customer satisfaction is the most potent. Accordingly, the mediating role of customer satisfaction explains enough the reason of customer loyalty which is not influenced positively and significantly in direct path by reliability, assurance, and tangibles. It means, the skin care clinics must understand that they have to satisfy those three SERVQUAL dimensions in order to gain customers' loyalty.

5. 2.   *Managerial implications*

The importance of the findings of this study has managerial implications. First, the study has shown customers of skin care clinics perceive reliability as the most important aspect in service quality. It means skin care clinics must keep their promises, particularly the promises in related to service outcomes and core service attribute, or do not overpromise to customers. Moreover, since skin care clinic industry is part of health and beauty care, customers expect diagnose is proven accurate and every treatment they received, the result is proven as its promise. Second, the study has shown that customers also value assurance and tangibles. Assurance is important for service industry that customers perceive high risk or uncertain about the outcomes. Skin care clinics must ensure all the employees have qualified knowledge and skills also credentials and reputation. The credential and reputation are also must be possessed by the skin care clinic itself as to instill trust and confidence in customers. Hence, skin care clinics can display the certificate of award or qualification to ensure customers. Meanwhile, tangibles are important since those represent the image of the provided service. Skin care clinics should be able to give comfortable atmosphere and clean condition in the waiting room and exam room by providing aroma therapy, air conditioner, free Wi-Fi, TV, also standby cleaning service to clean up. Furthermore, skin care clinics also should provide well-condition and sophisticated equipment for treatment, for example laser that makes customers feel painless. Third, the study has shown that empathy which directly and significantly influence customer loyalty is essential as every customer of skin care clinics has different and specific needs. Skin care clinics should understand this condition by remembering the customers' name, knowing little bit about their activities, or engage them to talk during the examination therefore they will feel acknowledge. The skin care clinics also should listen well to customers and be patient to customers no matter how they complain to them. In addition, skin care clinics can make personalized service, for instance customers are given the schedule for themselves.

6.   Conclusion

This study can become the consideration for skin care clinic industry to retain the customers even increase both customer satisfaction and loyalty. Besides, this study also fulfill the literature gap of the influence of service quality dimensions on customer satisfaction and customer loyalty in skin care clinic industry. Based on the research, it can be concluded that reliability, assurance, and tangibles positively and significantly influence customer satisfaction and reliability has the highest influence on customer satisfaction among of those SERVQUAL dimensions. Moreover, these three SERVQUAL dimensions must be fully mediated by customer satisfaction to influence customer loyalty positively and significantly. On the other hand, empathy has no significant influence on customer satisfaction, but has direct and significant influence towards customer loyalty. The only SERVQUAL dimension which does not influence either customer satisfaction or customer loyalty is responsiveness. Hence, reliability, assurance, empathy, and tangibles become important things to be considered by skin care clinic industry to enhance customer satisfaction and customer loyalty in skin care clinics. This study can become the consideration for skin care clinic industry to retain

ICMEM

the customers even increase both customer satisfaction and loyalty. Besides, this study also fulfill the literature gap of the influence of service quality dimensions on customer satisfaction and customer loyalty in skin care clinic industry.

This study has some shortcomings be considered. First, the conducted research only focuses on skin care clinic industry therefore the findings might be not able to be generalized onto other industries and future researchers can try to explore other industry. Second, this study employed SERVQUAL dimensions by Parasuraman et al. (1988) therefore future studies can explore the influence of service quality by applying other models i.e. Gronröos (1984) or Cronin and Taylor (1992). Third, the sampling method employed in this study is non-probability sampling due to limited resources and time constraints. Thus, future studies can use probability sampling or other method of non-probability sampling to overcome this limitation. Fourth, area coverage of this study only in Bandung and Jabodetabek therefore it might be the best to also cover other regions in order to be more comprehensive or to check other regions' condition as it might not be able to be generalized.

References

Alnsour, M. S., Tayeh, B. A., & Alzyadat, M. A. (2014). Using SERVQUAL to assess the quality of service provided by Jordanian telecommunications Sector. *International Journal of Commerce and Management, 24*(3), 209-218.

Arasli, H., Mehtap-Smadi, S., & Katircioglu, S. (2005). Customer service quality in the Greek Cypriot banking industry. *Managing Service Quality, 15*(1), 41-47.

Arnott, D. C., & Bridgewater, S. (2002). Internet, interaction and implications for marketing. Marketing Intelligence and Planning, 20(2), 86-95.

Babakus, E., & Mangold, W. G. (1992). Adapting the SERVQUAL scale to hospital services: An empirical investigation. *Health Services Research, 26*(6), 767-786.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74–94.

Bakti, I. G., & Sumaedi, S. (2013). An Analysis of Library Customer Loyalty: The Role of Service Quality and Customer Satisfaction, a Case Study in Indonesia. *Library Management*, 397-414.

Bei, L. -T., & Chiao, Y. -C. (2001). An integrated model for the effects of perceived product, perceived service quality, and perceived price fairness on consumer satisfaction and loyalty. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behaviour, 14*, 125-139.

Bitner, M. J., & Hubbert, A. R. (1994). Encounter satisfaction versus overall satisfaction versus quality. In R. T. Rust, & R. L. Oliver (Eds.), *Service Quality: New Directions in Theory and Practice* (pp. 72-94). London: Sage.

Bloemer, J., Ruyter, K. d., & Wetzels, M. (1999). Linking perceived service quality and service loyalty: a multi-dimensional perspective. *European Journal of Marketing, 33*(11/12), 1082-1106.

Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, 811-828.

Caruana, A., Money, A. H., & Berthon, P. R. (1998). Service quality and satisfaction – the moderating role of value. *European Journal of Marketing, 34*(11/12), 1338-1352.

Clemes, M. D., Gan, C., Kao, T. H., & Choong, M. (2008). An empirical analysis of customer satisfaction in international air travel. *Innovative Marketing, 4*, 50-62.

Cronin, J. J., & Taylor, S. A. (1992). Measuring service quality: a re-examination and extension. *Journal of Marketing, 56*, 55-68.

Cronin, J. J., Brady, M. K., & Hult, G. T. (2000). Assessing the Effects of Quality, Value, and Customer Satisfaction on Customer Behavioral Intentions in Service Environments. *Journal of Retailing, 76*(2), 193–218.

Euromonitor International. (2015). *The Future of Skin Care: Game-changing Trends and Influencers.* Retrieved November 3, 2017, from http://www.euromonitor.com/the-future-of-skin-care-game-changing-trends-and-influencers/report

Farooq, M. S., Aslam, H. A., Khan, R. A., & Gillani, F. (2009). Process definition clarity affecting quality of healthcare services in public sector hospitals. *The Second Canadian Quality Congress.* Canada.

Farooq, M. S., Jaafar, N., Ayupp, K., Salam, M., Mughal, Y. H., Azam, F., & Sajid, A. (2016). Impact of entrepreneurial skills and family occupation on entrepreneurial intentions. *Science International-Lahore, 28*, 3145–3148.

Farooq, M. S., Salam, M., Fayolle, A., Jaafar, N., & Ayupp, K. (2018). Impact of service quality on customer satisfaction in Malaysia airlines: A PLS-SEM approach. *Journal of Air Transport Management, 67*, 169–180.

Fitzsimmons, J. A., & Sullivan, R. S. (1982). *Service Operations Management.* New York: McGraw-Hill Book Company.

ICMEM

Gremler, D. D., & Brown, S. W. (1996). Service Loyalty: Its Nature, Importance, and Implications. *Advancing Service Quality: A Global Perspective, 5*, 171-181.

Grönroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing, 18*(4), 36-44.

Grönroos, C. (1990). *Service Management and Marketing*. Toronto: Lexington Books.

Hair, J. F., Hult, G. T., Ringle, C. M., & & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks: Sage.

Hussain, R. (2016). The mediating role of customer satisfaction: evidence from the airline industry. *Asia Pacific Journal of Marketing and Logistics, 28*(2), 234-255.

Jacoby, J., & Kyner, D. B. (1973). Brand Loyalty Vs. Repeat Purchasing Behavior. *Journal of Marketing Research, X*, 1-9.

Jamal, A., & Anastasiadou, K. (2009). Investigating the effects of service quality dimensions and expertise on loyalty. *European Journal of Marketing, 43*(3/4), 398-420.

Javed, F., & Cheema, S. (2017). Customer Satisfaction and Customer Perceived Value and Its Impact on Customer Loyalty: The Mediational Role of Customer Relationship Management. Journal of Internet Banking and Commerce, 22(S8), 1-14.

Kasiri, L. A., Cheng, K. T., Sambasivan, M., & Sidin, S. M. (2017). Integration of standardization and customization: Impact on service quality, customer satisfaction, and loyalty. *Journal of Retailing and Consumer Services, 35*, 91-97.

Kassim, N., & Abdullah, N. A. (2010). The effect of perceived service quality dimensions on customers satisfaction, trust, and loyalty in e-commerce settings: A cross cultural analysis. *Asia Pacific Journal Marketing and Logistics, 22*(3), 351-371.

Kitapci, O., Dortyol, I. t., Yaman, Z., & Gulmez, M. (2013). The paths from service quality dimensions to customer loyalty: An application on supermarket customers. *Management Research Review, 36*(3), 239-255.

Kotler, P., & Armstrong, G. (1996). *Principles of Marketing*. Upper Saddle River: Prentice Hall.

Landrum, H., Prybutok, V., Zang, X., & Peak, D. (2009). Measuring IS system service quality. *with SERVQUAL: users' perceptions of relative importance of the five SERVPERF dimensions, 12*, 17-35.

Lee, J., Kim, H., Ko, Y. J., & Sagas, M. (2011). The influence of service quality on satisfaction and intention: a gender segmentation strategy. Sport Management Review, 14, 54-63.

Lee, S. M., Lee, D., & Kang, C. Y. (2012). The impact of high-performance work systems in the health-care industry: employee reactions, service quality, customer satisfaction, and customer loyalty. Service Industries Journal, 32(1), 17-36.

Malhotra, N. K. (2010). *Marketing Research: An applied Orientation*. Upper Saddle River: Pearson Education.

Marketeers Editor. (2016, May 23). *Indonesia Jadi Pasar Terbesar Produk Skin Care Dunia*. (E. Adiwaluyo, Editor) Retrieved November 2, 2017, from Marketeers: http://marketeers.com/indonesia-jadi-pasar-terbesar-produk-skin-care-dunia/

Markovic, S., & Raspor, S. (2010). Measuring perceived service quality using servqual: a case study of the Croatian hotel industry. *Management, 5*(3), 195-209.

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. *The Journal of Marketing, 58*(3), 20-38.

Nunnally, J. (1978). *Psychometric Theory (2nd ed.)*. New York: McGraw-Hill.

Oliver, R. L. (1999). Whence Consumer Loyalty? *Journal of Marketing, 63*(Special Issue), 33-44.

Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing, 67*(4), 420-450.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A Multiple-Item Scale For Measuring Consumer Perc. *Journal of Retailing*, 12-40.

Parasuraman, A., Zeithaml, V., & Berry, L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing, 49*, 41-50.

Park, J. W., Robertson, R., & Wu, C. L. (2005). Investigating the effects of service quality on airline image and behavioural intentions: findings from australian international air passengers. *Journal of Tourism Studies, 16*, 2-11.

Reichheld, F. F., & Sasser, W. E. (1990). Zero defections: quality comes to services. *Harvard Business Review*, 105-11.

Reichheld, F. F. (1996). *The Loyalty Effect: The Hidden Force Behind Growth, Profits, and Lasting Value*. Boston: Harvard Business School Press.

Rushton, A., & Carson, D. J. (1989). Services – Marketing with a Difference? *Marketing Intelligence & Planning, 7*(5/6), 12-17.

Rust, R. T., Zahorik, A. J., & Keiningham, T. L. (1995). Return on quality: making service quality financially accountable. *Journal of Marketing, 59*, 58-70.

ICMEM

Sasser, W. E., Olsen, R. P., & Wyckoff, D. D. (1978). *Management of Service Operations: Text, Cases, and Readings.* Boston: Allyn and Bacon, Inc.

Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach.* New York: Wiley.

Sumaedi, S., Bakti, I. G., & Metasari, N. (2011). The effect of students' perceived service quality and perceived price on student satisfaction. *Management Science and Engineering, 5*(1), 88-97.

Sumaedi, S., Bakti, I. G., & Metasari, N. (2012). An empirical study of state university students' perceived service quality. *Quality Assurance in Education, 20*(2).

Swartz, T. A., & Brown, S. W. (1989). Consumer and provider expectations and experience in evaluating professional service quality. *Journal of the Academy of Marketing Science, 17*(2), 189–195.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: an extension. *Journal of Marketing research, XVII*, 460-469.

Tsoukatos, E., & Rand, G. K. (2006). Path analysis of perceived service quality, satisfaction and loyalty in Greek insurance. *Managing Service Quality, 16*(5), 501-519.

Ueltschy, L. C., Laroche, M., Eggert, A., & Bindl, U. (2007). Service quality and satisfaction: an international comparison of professional services perceptions. *Journal of Services Marketing, 21/6*, 410-423.

Wong, A., & Sohal, A. (2003). Service Quality and Customer Loyalty Perspectives on Two Levels of Retail Relationships. *Journal of Services Marketing, 17*(5), 495-513.

Wong, K. K. (2013). Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques. *Marketing Bulletin, 24*, 1-32.

Woodside, A. G., Lisa, L. F., & Robert, T. D. (1989). Linking service quality, customer satisfaction, and behavioural intentions. *Journal of Health Care Marketing, 9*, 5-17.

Yang, Z., & Peterson, R. T. (2004). Customer Perceived Value, Satisfaction, and Loyalty:The Role of Switching Costs. *Psychology & Marketing*, 799-822.

Yusoff, W. Z., Ismail, M., & Ali, A. S. (2010). Understanding the service provider perspective towards better service quality in local authorities. *Journal of Facilities Management, 8*(3), 226-230.

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The Behavioral Consequences of Service Quality. *Journal of Marketing, 60*(2), 31-46.

Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2003). *Services Marketing: Integrating Customer Focus across the Firm* (3rd ed.). New York: McGraw-Hill.

Zhou, L. (2004). A dimension-specific analysis of performance-only measurement of service quality and satisfaction in China's retail banking. *The Journal of Services Marketing, 18*(7), 534-546.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2009). *Business Research Methods.* Mason (Ohio): South-Western Cengage Learning.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Creating Purchase Decision through Co-Branding in Creative Industry

Rosa Regina[a*], Rendra Chaerudin[b]

[a,b]*School of Business and Management, Bandung Institute of Technology, Bandung 40132, Indonesia*

Abstract

One of the biggest problems in MSMEs in Indonesia is able to read what the market needs and wants. There are many strategies to scale up and increase sales of MSMEs in Indonesia. Collaboration strategy is one of way to increase companies' value. One of the strategies from collaboration is co-branding. The co-branding strategy could pursue customers' purchase decision in order to increase the company's profit. The purpose of this research is to analyse the influences of co-branding on purchase decision, and to find the factors affecting co-branding. Data analyzing were done using quantitative method, simple linear regression and descriptive analysis. The result showed that co-branding has positive influence to the customer's purchase decision with coefficient of determination score 28,7%. There are 6 factor in co-branding that influence customer's purchase decision, they are; adequate brand awareness, positive customer's judgement, unique association, favorable, duration and target market. According to the ranking and desctriptive analysis, the factor of co-branding that gives biggest influence to customer's purchase decision is favorable with the score of 89% and 424.

Keywords: Co-Branding; Collaboration; Brand; Purchase Decision.

1. Introduction

Increasing business competition is business challenge for every company. Where along with the economic aspect that is keep growing, companies are competing to become market leaders. To increase competitiveness of each company has to win the competition by showing the best product that can fulfill customers' ever changing taste (Kotler, Manajemen Pemasaran, 2002). The existence of customers and a wide range of behavior then each company must be really responsive to observe of what the customers wants.

According to data from Ministry of Cooperatives and Small and Medium Enterprises in Indonesia, the contribution of Micro, Small and Medium Enterprise (MSME) to Gross Domestic Product (GDP) in 2017 has reached 60.34%. However, based on monitoring result from "Asia SME Finance Monitor" that was published by the Asian Development Bank, the contribution of MSMEs to Indonesian export was only 15.7%. It is still lower than other Asian countries such as Thailand, which reached 25.5%, and India that reached 42.4% (Redaksi Kompas, 2017). So far, most of Indonesians MSMEs are active in local market in certain range. Indonesian MSMEs need to be enhanced, in form to reach wider market and contribute more to exporting activities.

Some of the biggest problems faced by MSMEs in Indonesia are limited amount of capital for both working capital & investment and difficulties marketing (Chambers of Commerce and Industry, 2016). Approximately 60-70% MSMEs haven't received access to finance banking (Lembaga Pengembangan Perbankan Indonesia , 2015). The second biggest problem is lack of human resources that are capable to read what the market needs. In the other hand, MSMEs owners couldn't involve more manpower due to limited paying ability. Because of that, they are still often

---

* Corresponding author.
 E-mail address: rosa.regina@sbm-itb.ac.id

ICMEM

involved in technical issues; therefore, many MSMEs owners less thinking about long term strategic plan to enlarge their business.

There are many strategies to scale up and increase sales of MSMEs in Indonesia. The strategy could be use in several sectors such as production, financial, marketing, and human resources. They are all are tangible to each other and are important. Collaboration strategy is one of way to increase companies' value. The concept of a tough competition has been obsolete and replaced with a strategy that creates market space without competitors (Kim & Mauborgne, 2006). (Raharja, 2009) In the future, there will be increase in collaboration strategy compared to the competition strategy efforts to welcome cross-border economic and business relationships. Collaboration is considered as the best concepts of negotiation and resource arbitration of companies' resources in the form of expertise, access and capital (Raharja, 2009)

One of the strategies from collaborating is co-branding. (Dmitrievskiy, 2015) Assumes that co-branding strategy is collaboration amongst at least two marketable brands with the intention of producing new product in marketing perspective. Additionally, this strategy is different from another kind of branding cooperation (Leuthesser, Kohli, & Suri, 2003) For example, cross promotion is different with co-branding since cross promotion is selling separate products in the shared market in order to gain more customers (Anderson, 1999). While co-branding is cooperation between two brands or more with out removing each other existing brands (Susanto & Wijanarko, 2014). Companies use co-branding strategy to pursue customers' purchase decision in order to increase the company's profit (Nurpriyanti & Hurriyati, 2016). (Kotler, 2010) Defined co-branding as two brands or more that are known, combining in offerings where each other reinforces each other and looks forward to the attention of new customers so as to stimulate decision. One example of co-branding is Chevalier, a local brand that sells leather shoes, collaborating with well-known Indonesian Actress, Dian Sastrowardoyo. The special edition of Chevalier X Dian Sastrowardoyo has helped Chevalier to reach its target market—high-class women. Part of the sales profit is donated to Dian's Scholarship program initiated by the actress herself. According to Keel and Nataarajan (2012), The products that are co-branded with celebrity, usually used to expand customer base and increase brand awareness, it also create greater value to the product.

Most of MSMEs in Indonesia have limited capital and lack of resources that could help them scaling up their business. Their human resources have low ability to read what the market needs and want. There are opportunities to do collaboration to increase brands' image and customers' purchase decision, but many MSMEs owners haven't been able to create the right co-branding strategy. According to those problems, author is motivated to examine more deeply into co-branding.

2. Theoritical Foundation

2. 1. Co-branding

Co-branding is one of marketing strategy that recently widely used by several brands; from big brands (e.g. BMW and Louis Vuitton) until start-ups brands (e.g. Yay and Raisa). According to (Lamb, Hair, & Daniel, 2001), co-branding is determination of two or more brands into a product or it's packaging. The fundamental idea of the co-branding strategy is to pair at least two brands in order to exchange the positive affiliation from each partner brand to a newly formed co-brand (Dmitrievskiy, 2015). While (Kotler, Manajemen Pemasaran, 2010) infer that co-branding strategy is where two existing brands from different companies that are collaborating to create the same product. Leuthesser, Kohli, & Suri (2003) said that co-branding is creating new service or product through the collaboration of no less than two organizations. Based on (Susanto & Wijanarko, 2014), co-branding is association between two brands or more with out removing each other existing brands.

The conclusion that the author take is that co-branding is alliance between two brands or more to create a product or service on behalf of those brands. The representation of the brands, the author would refer to (Bengtsson & Servais , 2004) elements such as company name, product designs, logotypes, and celebrity endorsers that over time have established a connection to the brand.

2. 2. Purchase Decision

According to L. L. David and J. D. B. Albert (2002), purchase decision consumer is the decision-making process and

ICMEM

physical activity that is used by customers when valuing, obtaining, using or products or services. Besides that, L. G. Schiffman and L. L. Kanuk (2007) define that purchase decision consumer is behaviors that showed by decision-making units in the buying, usage and disposal of goods and services.

When customers purchasing an item, they actually pass through five stages; (1) Problem or need recognition, this first stage appears when customers recognize the existence of needs that has not been satisfied. (2) Information search and the identification of possible alternatives, where customers would do research about which product that would satisfy their recognized needs. (3) Evaluation of alternatives, in this third stage, the customers process the information they got earlier to arrive at brand choices. (4) Purchase decision, this stage is the result from the evaluation process, generally, in this stage, the customers will to buy the most preferred brand, however there are two factors that could change the decision, unexpected circumstances and what others people think about the product. (5) Post-Purchase satisfaction, in this phase, the customers evaluate the product from the preferred brand that is already purchased, they considered whether the product satisfied them or not (Kotler & Keller, 2006).

3. Research Framework

In this study, the author defines co-branding as the independent variable while purchase

Independent	Dependent
Co-branding • Adequate brand awareness • Positive consumer judgment • Favorable • Unique association	**Purchase Decision** • Subjective factor • Product selection • Brands selection, • Individual demands
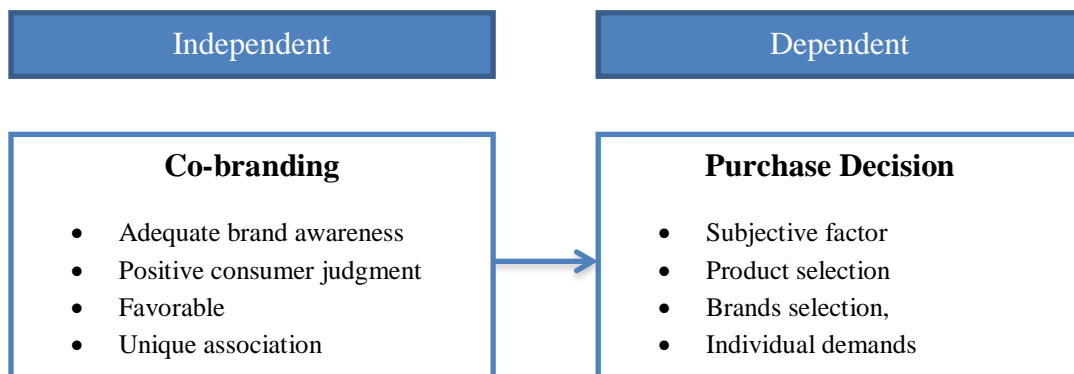
Dimensions of Co-branding and Purchase Decision

Table 12. Dimension of Variables

Authors	Variable	Dimension	Indicators
Kevin L. Keller (2008)	Co-Branding	Adequate brand awareness	Customer's ability to recognize or remember a brand which a member from certain category.
		Positive consumer judgment	Positive consumer judgment is focusing in customer's positive personal opinion and evaluation towards the brands based on the brands' performance and image association that are perceived.
		Favourable	The feeling of supporting and takes side in customer's mind towards co-branding that is done.
		Unique association	How far the customers value the brand as a unique brand and better from any other brands
Russell, D. (1982). T		Duration	Co-branding of greater duration lets consumers observe the partnering brands, acquire greater familiarity with the partnership, and better gauge the performance of the focal brand over time.
Leuthesser, et al., (2003)		Target market	Bring together brands in doing so, offering each brand opportunities to reach new markets.
Alexander (2006)	Purchase Decision	Subjective factor	Customers' decision that are affected by internal and external factors.
Kotler & Keller 2012		Brands Selection	Customers have to decide which brand that they're going to buy.
		Product Selection	Customers are able to make a decision to buy a product or use a

ICMEM

			product for many reasons.
Hawkins (2003)		Individual demands	Demands from customers to make decision

4. Methodology

This research is classified as an applied research that has the aim to analyze the effect co-branding on purchase decision in SMEs Bandung. To conduct this study, the researcher prefers to use the quantitative method. The researcher will use the questionnaire as tool to collect the primer data. This study will conduct in Bandung. The sample will consist of 100 college sudents limit on age 18-24 years old that will select by a judgment sampling with respondents completing a four-point Likert scale close-ended questionnaire. In this research, co-branding defines an independent variable and purchase decision defines as a dependent variable. The simple linear regression method is used to analyze the effect of co-branding on purchase decision. The ranking analysis will be use to determine which factor of co-branding that gives greater value to the purchase decision.

5. Preliminary Study

The researcher does the preliminary study by using secondary data gathered to choose the dimension in this research. Companies that are analyzed for this research are Niion that collaborating with Doraemon, Chevalier that collaborating with Dian Sastro, and Hijacks Sandal that collaborating with Marvel Studio. The researcher choose those company for the preliminary study, because according to respondents' responses on the pilot test (30 respondents), most of them answer that they had bought these products from these three companies.

Niion, Chevalier, and Hijaks are using adequate brand awareness to created special edition product in collaboration with brands that are already popular. Chevalier use Dian Sastrowardoyo's brand that also gives positive consumer's judgment since the public figure is has strong branding as actress and businesswoman. In the favorable and unique association Chevalier launched the Chevalier x Dian Sastro edition that represents the public figure's style to reach the market of people that take sides or supporting and consider the public figure as a unique brand, Hijacks and Niion collaborating with brands that are have loyal customer and fans. In the duration factor, the collaboration series are only available in certain amount of time for instance, the Chevalier X Dian Sastro series are only available in 2017. According to that, this study is going to generate dimension consisting of, (1) Adequate brand awareness, (2) Positive consumer judgment, (3) Favorable, (4) Unique association[1], (5) Duration.

6. Result and Discussion

This simple linear regression method will help researcher to analyze the effect of co-branding on purchase decision.

Table 13. Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.536[a]	.287	.280	.43667

a. Predictors: (Constant), Co_Branding

b. Dependent Variable: Purchase_Decision

The coefficient of correlation explains how the relationship or correlation between independent and dependent variable. Accordingly to the table above, the value of coefficient correlation (R) is 0,536. This value showed that co-branding has positive correlation with purchase decision. This correlation indicated that when the value of co-branding is going to increase so that the purchase decision is going to increase too.

ICMEM

The objective from coefficient of determination is to determine the presentation proportion of dependent variable that can be explained by the independent variable. Accordingly to the table above, the value of table R^2 is 0,287, it means that the dependent variable can be explained by the independent variable with value amount to 28,70 percent. While, there is 71,30 percent of dependent variable may be explained by the other factors that exclude from this research.

Ranking Analysis
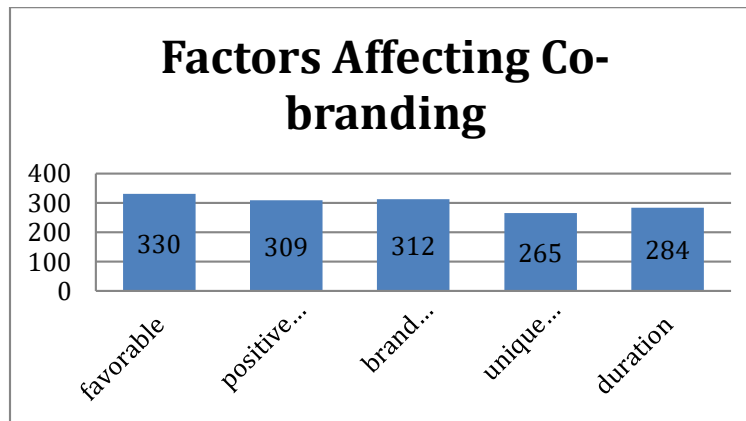
Figure 2. Factors Affecting Co-branding

Based on the data above, the factor that gives the biggest influence to customer on purchase decision is favourable. It means that the customers more likely to buy co-branding product when they have the feeling of supporting and takes side in customer's mind towards co-branding that is done. While the factor that gives the least factor that influence for customer's purchase decision to buy co-branding product is duration.

Descriptive Analysis
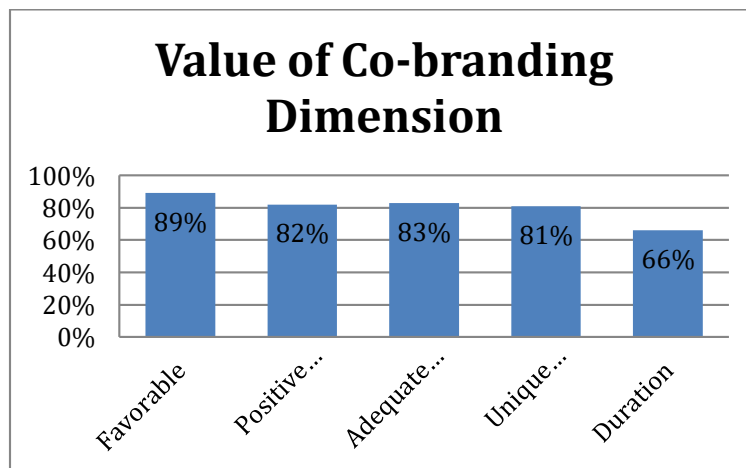
Figure 3. Value of Co-branding Dimension

ICMEM

The diagram below shows that dimension of favourable has the highest score; 89%. It means that the respondents are strongly agreed to buy co-branding product when they have the feeling of supporting and takes side in customer's mind towards co-branding that is done. Respondents are strongly agree to adequate brand awareness (83%) dimension that means they are more likely to buy co-branding product when they are able to recognize a brand which a member from certain category. Positive customers' judgements have the score of 82%, means that they are more likely to buy co-branding product when they have positive opinion and evaluation towards the brands. The unique association scores 81% means that the respondents are agree that they are will to buy co-branding product when they value the brand as a unique brand. Duration dimension scores 66% means that they are agree to buy co-branding when they are able to observe the partnering brands, acquire greater familiarity with the partnership, and better gauge the performance of the focal brand over time.

7. Conclusion

Co-branding has potential to be implemented to start up in creative industry on Bandung, Indonesia to persue customer's purchase decision. According to the result anaysis, co-branding has positive influence to the customer's purchase decision with coefficient of determination score 28,7%. There are 6 factor in co-branding that influence customer's purchase decision, they are; adequate brand awareness, positive customer's judgement, unique association, favorable, duration and target market. According to the ranking and desctriptive analysis, the factor of co-branding that gives biggest influence to customer's purchase decision is favorable with the score of 89% and 424. This research is limited for people age 18 – 24 years old, college students in Bandung.

Bibliography

Kotler, P. (2002). *Manajemen Pemasaran.* Jakarta: PT. Prehalindo.

Redaksi Kompas. (2017, September 16). *Ekonomi.* (A. Ika, Editor) Retrieved January 26, 2018 from Kompas: http://ekonomi.kompas.com/read/2017/09/16/081500826/umkm-jadi-sektor-strategis-untuk-perangi-kemiskinan

Kamar Dagang dan Industri. (2016, 11 21). *Bisnis.* (M. F. Marta, Editor) Retrieved 1 28, 2018 from Kompas: https://ekonomi.kompas.com/read/2016/11/21/154537226/kadin.kinerja.ekspor.umkm.masih.rendah

Lembaga Pengembangan Perbankan Indonesia . (2015). *Profil Bisnis Usaha Mikro, Kecil dan Menengah (UMKM).* Jakarta: Bank Indonesia.

Kim, W. C., & Mauborgne, R. (2006). *Blue Ocean Strategy (Strategi Samudra Biru) : Ciptakan Ruang Pasar tanpa Pesaing dan Biarkan Kompetisi Tak Lagi Relevan.* Jakarta: Penerbit Serambi.

Raharja, S. J. (2009). Kolaborasi Sebagai Strategi Bisnis Masa Depan. *Jurnal Administrasi Bisnis , 5* (1), 40-49.

Raharja, S. J. (2009). Kolaborasi Sebagai Strategi Bisnis Masa Depan. *Jurnal Administrasi Bisnis , 5* (1), 40-49.

Dmitrievskiy, E. (2015, June). Alexander Wang X HnM How Can Co-Branding Strategies Increase Future Purchase Intentions in The Fashion Industry?

Leuthesser, L., Kohli, C., & Suri, R. (2003, September). 2 + 2 = 5? A framework for using co-branding to leverage a brand. *Journal of Brand Management* , 35-47.

Anderson, K. &. (1999 , January 20). Cross-promotions: marketing for today and tomorrow . *The Hindu* .

Susanto, & Wijanarko, H. (2014). *Power Branding, Membangun Merek. Unggul dan Organisasi Pendukungnya.* Bandung: Mizan.

Nurpriyanti, V., & Hurriyati, R. (2016). Pengaruh Kinerja Co-Branding Terhadap Keputusan Pembelian (Survei pada Mini Market Penjual Es Krim Wall's Selection Oreo di Kecamatan Cikajang-Garut). *Journal of Business Management and Enterpreneurship Education , 1* (1), 98-114.

Kotler, P. (2010). *Manajemen Pemasaran.* Jakarta: PT Indeks Kelompok Gramedia.

Keel, A., & Nataraajan, R. (2012). *Celebrity Endorsements and Beyond: New Avenues for Celebrity Branding. Psychology and Marketing.* Retrieved from the Shapiro Library database.

Lamb, C. W., Hair, J. F., & Daniel, C. M. (2001). *Pemasaran (Edisi 1).* Jakarta : Salemba Empat .

Bengtsson , A., & Servais , P. (2004). Co-branding and the impact on inter-organizational relationships. *20th IMP-conference* . Copenhagen, Denmark.

David, L., & Albert, J. (2002). *Cusomer Behavior.* McGraw Hill, New Delhi.

Schiffman, L., & Kanuk, L. (2007). *Cusomer Behavior* (9th ed.). London: Pearson Prentice Hall.

ICMEM

Kotler, P., & Keller, K. (2006). *Marketing Management.* New Jersey: Pearson Prentice Hall.

Keller, K. L. (2013). *Strategic Brand Management Fourth Edition.* Pearson, England (UK).

ICMEM

The 3rd International Conference on Management in Emerging Markets

Implementation of *Customer Integrated Marketing Communication (CIMC)* for Improving Marketing Function (Case Study: *"Manikan"*)

Sang Ayu Made Diah Afsari[a*], Reza Ashari Nasution[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Bandung 40132, Indonesia*

Abstract

The integrated marketing communication (IMC) approaches from a managerial perspective (inside-outside) cannot adapt with the changed conditions on media and communication market and the changed on customer behaviour. IMC has to become customer-centric in that could integrate its customers into its communication. There was a new IMC model with customer-centric approach or known as *Customer Integrated Marketing Communication (CIMC)*. CIMC approach based on customers' real use of communication messages in their own ecosystem for various information-gathering and decision-making reasons (communication-in-use) The CIMC concept is expected to deliver company value proposition and after that could help company to reach sales targets. The current research problem focuses on how to implement the CIMC concept for improving marketing function of brand *"Manikan"*. This study will begin with consumer analysis to see the journey of customers purchase stage, the customers touch points, the promotion channel effectiveness, and the information needed. The result shows the guideline for company to make a new integrated marketing communication strategy that expected can engaged targeted customers by their communication channels and content preferences.

Keywords: Integrated Marketing Communication (IMC); Customer Integrated Marketing Communication (CIMC); Customer Ecosystem; Communication-in-use

1. Introduction

Integrated marketing communication (IMC) is a promising communication concept that is more than simply integration, coordination and unification of communication instrument: It is about strategic positioning; managerial, organizational and personal issues; and relationships (Finne, 2009). IMC was a development of earlier marketing communications approaches from a managerial perspective based on the fact that customers were increasingly exposed to multichannel messages. IMC concepts argue from internal, company-directed perspective and suggest that companies have to structure, consciously plan and gradually implement their communication activities in a unified, consistent and orchestrated way. Shortly, the traditional IMC was inside-outside concept.

The consumer behavior in communication are changing due to emergence and growing importance of social media and user-generated contents. The new forms of media are now based on exchanges and communication platforms, such as social networks (e.g. Facebook, Instagram, Twitter), weblogs, online communities, and mobile media (e.g. Apps, QR codes). Customers can act in social media whenever and wherever they want to. The consequences of these increasing interaction is an unmanageable amount of contents being produced and made by companies and customers in social media. In the era of social, the needs of many customers for social orientation, self-portrayal, personal identity, entertainment, relationships and integration become apparent. IMC faces a difficult challenges as a result of these media and customer-behavior conditions.

---

[*] Corresponding author.
E-mail address: ayu.made@sbm-itb.ac.id

ICMEM

The changed conditions forces IMC to become customer-centric in that a company aligns all its communication activities with its customers and integrates its customers into its communication. There is a new IMC model with customer-centric approach, known as Customer Integrated Marketing Communication (CIMC). CIMC was based on customers' real use of communication messages in their own ecosystem.

The previous research describe the new concept CIMC but did not followed by explanation how to implement it. People need better understanding how customers integrate sense-making process from communication-in use and how the customer ecosystem influences communication-in-use on customers' everyday life. The CIMC concept is expected to deliver company value proposition and after that could help company to reach sales targets. The current research problem focuses on how to help a brand called *"Manikan"* improve their marketing function. The rapid growth of media and communication market pushed small and medium enterprises to follow the marketing trends nowadays. *Manikan* have tried all marketing communication activities and spend a lot of budget but did not get maximum result. Ineffective marketing communication also proved by sales decline from 2015 until 2017. This research aim to identify the factors affecting customer purchase decision and the suitable marketing communication strategy for *Manikan* with CIMC approach.

Most of small and medium enterprises in Indonesia did not plan an integrated marketing communication strategy. They only try all types of promotion without thinking about the integration of each marketing activities and the effectiveness. Small and medium enterprises in Indonesia could get maximum sales result if their marketing communication strategy are well planned. The planned marketing communication strategy also could help the business to minimize the marketing budget. This study will begin with consumer analysis to see the journey of customers purchase stage, the customers touch points, the promotion channel effectiveness, and the information needed. All those result will guide company to make the new marketing communication strategy.

2. Literature Review

2. 1. Traditional IMC Concept

Several researchers defined integrated marketing communication (IMC) in different perspective. American Association of Advertising Agencies (1989) define IMC is a concept of marketing communications planning that recognizes the added of advertising agencies value in a program that integrates a variety of strategic disciplines-e.g. general advertising, direct response, sales promotion and public relations-and combines these disciplines to provide clarity, consistency and maximum communication impact (Kerr, 2008). IMC also define as strategic business process used to plan, develop, execute and evaluate coordinated, measurable, persuasive brand communication programs over time with consumers, customers, prospects and other targeted relevant external and internal audiences (Schultz, 2004).

Moriarty (2014) stated that Integrated Marketing Communication (IMC) is the practice of unifying all marketing communication messages and tools as well as the messages from the marketing mix decisions, so that they send a consistent message promoting the brand strategy. This definition represents a traditional inside-outside company-oriented view. IMC using communication mix to promote the brand strategy. It consist of advertising, sales promotion, events and experiences, public relation and publicity, direct marketing and personal selling.

Traditional IMC concept focusing on what company can do. Company current strategy is using Integrated Marketing Communication. Company use all tools depending on their marketing budget. They did not recognize what consumer really needs. Company did not research about consumer behavior before choose IMC tools. This condition could not compete with current consumer condition. Nowadays consumer could make their own advertisement. Consumer also could easily get information about the brand from social media. Company should concern about consumer behavior before make a marketing communication strategy in order to execute the right marketing communication strategy.

2. 2. CIMC Approach

Along with the development of media and consumer behavior, there was a new IMC model with customer-centric approach or known as Customer-Centric Integrated Marketing Communication (CIMC). CIMC changed the company

ICMEM

to customer oriented into customer to company oriented. CIMC was based on customers' real use of communication messages in their own ecosystem. Different with traditional concept which based on company ecosystem.

CIMC could define communication-in-use, customer ecosystem, and origin of messages. Finne (2017) define communication-in-use as a customer's integration and sense-making of all messages from any source, company driven or stemming from other sources the customer perceives as communication, forming value-in-use for him or her for a specific purpose. Customer ecosystem is located where the position of targeted customer and what are they doing in every segment or channel. This ecosystem will help company to understand customer behavior. The origin of messages divided into four categories which are company communication, competitor communication, societal communication, and customer-to-customer (C2C) communication.

Figure 1 shows the core of CIMC model. The CIMC concept divided into three core activities, which are (Finne, 2017):
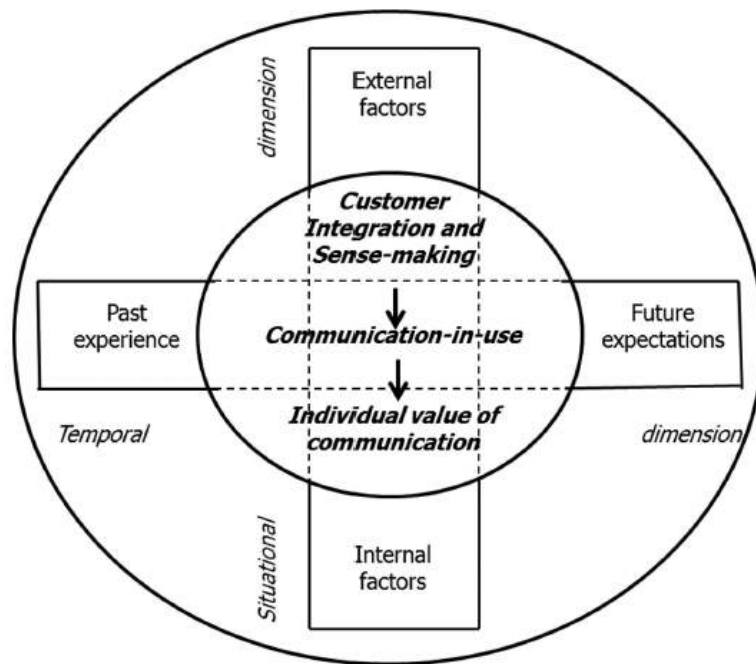
Figure 4. The Core of CIMC Model (Finne, 2017)

First, customer integrate and make sense of a few or numerous messages from one or several sources. The source of messages can be any or all type of senders (company, competitor, societal, customer-to-customer). Second, communication-in-use is what customer makes out of the various messages which he or she is exposed to. The last is value of communication is the importance to the customer of what he or she perceives as communication. Not all messages in communication sent, only the value of communication was captured by customers.

CIMC approach could help company to develop the right marketing strategy to targeted customer. Rather than using all types of marketing communication channels but did not get maximum result. CIMC approach could help company to focus only two or more channels with maximum result. This approach will give maximum result because it starts with consumer analysis. Traditional approach did not analyze more deeply about the consumer. Consumer analysis is an important part before make a marketing communication strategy. The output of consumer analysis will describe the real communication that used by customer. This research will give clear example about CIMC approach to help the company solve their marketing problems. The consumer analysis and theory of CIMC will implied simultaneously to get the best marketing communication strategy.

ICMEM

3. Methodology

This research will use consumer analysis which divided into exploratory research method and conclusive research method. This research will use both exploratory research method and conclusive research method for collect primary data. Based on CIMC approach, explorative and conclusive research will define the communication-in-use, customer ecosystem, and the origin of messages. Respondents will describe where she or he heard about bag advertisement to identify the origin of messages. Respondents will explain with whom they usually talking about bag before purchase it to identify the current customer ecosystem. Respondents also asked about what is the most memorable things when they saw or heard bag advertisement to define the value in communication or communication-in-use. Both explorative and conclusive research are designed to identify the three core value of CIMC model to get the best promotion channel and the most important information. These research methods are designed for women respondents, because the *Manikan's* product are mostly for woman and purchased by woman. The secondary data are collected from firm's internal report and study literature.

The exploratory research that performed is depth interview. Depth Interviews was designed to gain different opinions about factors that affecting customer while purchase a bag and identify brand awareness. Author chosen not to specify the number of respondents that have the different opinions, since we aim to test for quantitative opinions in the surveys. We only perform fifteen respondents from *Manikan's* existing customer and potential customer. Depth interviews questions are based on our theory findings regarding CIMC approach, brand touch points, customer ecosystem, promotion channels, type of messages in every channel and brand awareness. Respondents consist of fifteen women; their ages vary between 17 to 28 years old. Respondent's occupation are various, but most of them are students. All of respondents have already purchased a bag. But, only 26.7% have purchased *Manikan's* bag.

Conclusive research designed to assist the decision maker in determining, evaluating and selecting the best course of action to take in a given situation (Malhotra, 2010). In this research the conclusive research that performed is survey. The surveys is structured questionnaire based on the result of conclusive research. The questionnaire consist of five parts which are: Customer Demography, Customer Attitude, Customer Journey, Channel Effectiveness and Customer Purchase Decision Hierarchy.

Customer demography will guide company to selecting the target audience of marketing communication. Customer attitude part will define the attributes that affecting customer purchase decision. According to the three- stage model of service consumption, consumers go through three major stages when they consume services: the pre- purchase stage, the product encounter stage and the post-encounter stage (Tsiotsou, 2015). Every stage has a process of making decisions. The pre purchase stage is consist of problem recognition and the search for information. Second stage is purchase stage that consist of making judgments and decisions during purchasing a product. The last is post purchase stage where customer making post decision evaluation. Because of that the customer attitude part will divided into pre-purchase attitude, during purchase attitude and post purchase attitude. The post purchase attitude divided into online and offline purchase because the company sell the product using both online and offline channels.

The survey was distributed for 10 days and then stop when the ratio of demography is balanced and fulfill the ideal sample size. The ideal sample sizes used in problem-solving research is 300-500 (Malhotra, 2010). Total number of respondent is 323 people. Most of respondents was categorized in age between 21-25 years old which are 140 people. Followed by respondents between 16-20 and 26-30 years old which are 70 people and 105 people. The ratio of sample is 4 : 3 : 2. There is also 8 people who categorized above 30 years old.

4. Case Study Description (*Manikan*)

Manikan is a fashion brand that produce bag and luggage for woman and man. In the beginning, the founder *Parinatra Candrarka Nugraha* produce a laptop sleeve with traditional Balinese touch. In the process, founder faced many difficulties to follow rapid growth of gadget accessory. By month, the gadget company always launch a new products with different design and size. *Manikan's* first concept as gadget accessory always left behind and could not follow the market demand. In early 2012, founder met a new business partner *Bagus Galih Hastosa* and restart the business model of *Manikan*. After brainstorming about the concept of *Manikan*, both of them changed the business

ICMEM

model into fashion line with the modern ethnic concept therefore they can reach wider market. Founders believe *Manikan* could compete in Indonesia fashion industry with "Modern Ethnic" concept and tagline "Simply Unique".

Manikan produces sling bag, tote bag, clutch, pouch, wallet and scarf for women. All products are handmade and contain ethnic touch which made of traditional fabrics from Indonesia. Company use ikat fabrics, handmade pompom, or rattan materials. Most of the bag material obtained from Bali. Company also produce several bags that can use by men such as backpack and waist bag. The price range is between 150,000 – 375,000 IDR. The price exclude transportation fee for online customers. All the products are ready stock and can order via Line@, company website and visit the offline stores. Sometimes company also provides made to order product depends on the quantity and time availability.

Manikan targeted female and male between 16-30 years old with medium and upper medium class. During company journey for almost six years, they always try to make innovation for the product in order to keep exist in the creative economy industry. Company launched seasonal product and add product category. Direct and indirect competitors were arise all the time both local brand and international brand. *Manikan* try to maintain their point of difference which are unique and ethnic but fit on casual modern style.

The main issue in this business is ineffective marketing communication. Company already doing a lot of marketing communications such as endorsement, Facebook Ads, Instagram Ads and partnership. *Manikan* also already collaborate with public figure and influencer to promote the product on their social media. From 2012 until now, they have been collaborate with *Della Dartyan, Ayu Gani, Luna Maya, Sabai Dieter, Maria Rahajeng, Elizabeth Rahajeng, Agatha Pricilla* and many more. They also collaborate with Indonesian movies for providing official merchandise of the movie. Those marketing communication activities spend a lot of money which is not good to do that frequently. Company feels that their marketing strategy was ineffective.

Ineffective marketing communication proved by sales decline. Company could sold 2520 products in 2015. The following year, the sales was decrease. In 2017 only 692 products were sold. Even though company make big collaboration with Indonesian movie in 2017. The reducing in sales affected company marketing budget. Company wants to choose the right marketing communication strategy which did not issue excessive budget.

Company wants to improve their marketing communication. Company do not want to waste money on unplanned marketing activities. Company wants to integrate their marketing communication which can meet customer needs nowadays. Company realized that they did not planned the marketing communication strategy well because the owner handle everything themselves. They did not research the targeted marketed before promote the brand. This situation bring company into unplanned marketing communication. They did not use integrated marketing communication but they only used all available opportunities.

In the era of digital which consumer usually doing research online first before they purchase a product. Company should be aware of consumer's communication channel because any information can appear on those channels especially in digital platform. Company should put their positive brand images in every potential marketing communication channels. Moreover, the marketing content also should support the brand image in every marketing communication activities. Company should plan a positive content which is related to consumer needs and can stimulate customer purchase intention. Company should use the new CIMC approach which more related to consumer needs nowadays. Traditional IMC cannot be used anymore because this era should focusing on consumer behavior.

5. Findings & Analysis

From explorative research, respondents were explain their experience while making a purchase decision. Respondents are explain their factors or attributes that influence them in every stage. They also tell the experience and the effect after doing all the process. The result shows that the highest attributes in pre-purchase stage are brand, bag shape, and review from influencer. The highest attributes in during purchase stage are material, price, and color. The highest attributes in post offline purchase are perceived value for the money and durability. The highest attributes in post online purchase stage is the suitability of bag color and bag model in ads with the reality.

The promotion channels that came up from interview results are *instagram, magazine, website, offline store, live conversation, online news platform and review from influencers*. The communication content divided into four type

ICMEM

of information which are *the trend of bag, the shape of bag, the brand of bag, and the price of bag*. All the result in depth interview will become the attributes in survey.

Conclusive research (survey) from 323 respondents produce a set of data which analyze more deeply with SPSS. The data will use regression analysis and chi-square analysis. Regression analysis is a way of mathematically sorting out which of those variables does indeed have an impact. In regression analysis, there are dependent variable and independent variables (Gallo, 2015). Dependent variable is consumer attitude which consist of pre purchase, during purchase and post purchase data. Independent variables are divided into two parts which are Promotion Channel and Information in Marketing Communication. This analysis uses multiple regression analysis because want to see if there is a statistically significant relationship between sets of variables. Regression analysis are include F test, t test, simultaneous determination test and partial determination test to measure the actual value. The regression analysis will show the most important promotion channel and its messages content. The first partial determination test will analyze the highest factor that affected promotion channels toward consumer attitudes. The sum of *beta* times *zero order* will equal to the value of *Rsquare.*

Table 14. Partial Determinant Test of Promotion Channels toward Consumer Attitudes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		Part	*Beta*Zero-order*
		B	Std. Error	Beta			Zero-order	Partial		
1	(Constant)	30.147	1.462		20.621	0				
	Instagram	0.087	0.169	0.051	0.513	0.608	0.251	0.029	0.027	1.28
	Website	0.094	0.156	0.057	0.603	0.547	0.229	0.034	0.032	1.31
	Offline Store	-0.116	0.147	-0.068	-0.791	0.429	0.203	-0.045	0.042	1.38
	Magazine	0.325	0.16	0.193	2.032	0.043	0.284	0.114	0.108	5.48
	Online News Platform	-0.091	0.114	-0.059	-0.797	0.426	0.177	-0.045	0.043	1.04
	Live Conversation	0.134	0.109	0.086	1.22	0.223	0.243	0.069	0.065	2.09
	Review from Influencer	0.167	0.107	0.109	1.561	0.12	0.253	0.088	0.083	2.76

From calculation in Table 1, magazine has the highest score which is 5.48%, followed by review from influencer 2.76% and live conversation 2.09. But only magazine has significant less than 0.05. Therefore magazine is the highest factor that affected customer attitudes. The second partial determination test will analyze the highest factor that affected information in marketing communication toward consumer attitudes. The sum of *beta* times *zero order* will equal to the value of *Rsquare*.

Table 15. Partial Determinant Test of Communication Content toward Consumer Attitudes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		Part	*Beta*Zero-order*
		B	Std. Error	Beta			Zero-order	Partial		
	(Constant)	29.736	1.451		20.496	0				
	Trend	-0.076	0.091	-0.073	-0.828	0.408	0.225	-0.046	-0.044	-1.64
	Shape	0.129	0.1	0.123	1.291	0.198	0.281	0.072	0.069	3.46
	Brand	0.274	0.099	0.262	2.759	0.006	0.313	0.153	0.146	8.20
	Price	0.016	0.088	0.015	0.179	0.858	0.241	0.01	0.01	0.38

1.

ICMEM

From calculation in Table 2, bag brand has the highest score which is 8.2%, followed by shape 3.46%. But only bag brand has significant less than 0.05. Therefore bag brand is the highest factor that affected customer attitudes. The conclusion of those regression analysis is the highest factor that affected customer attitude are magazine and bag brand. Respondents are interest with bag advertisement in magazine and concern about the bag brand. These factor influence customer purchase decision while they want to purchase a bag.

After regression analysis, the study was using *cross tabulation (Crosstabs)* analysis and *pearson chi-square test. The Pearson chi-square test* essentially tells us whether the results of a *crosstab* is statistically significant or not (Ghozali, 2016). Basically, the chi-square test is a correlation test for categorical variables. *Chi-square test* will define the correlation between respondent's demography and promotion channel. Respondent's demography consist of Age and Income. The promotion channel in this analysis is magazine, because it has the highest score in regression analysis. Before conducting chi-square test, all data was categorized into several categorical variables. The test use 95% confidence level with level of error is 5%. The degree of freedom (df) is 3 (N-1=4-1). N is the amount of age category.

Table 16. Chi-square test between respondents' age and Magazine

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.112a	3	.375
Likelihood Ratio	3.215	3	.360
Linear-by-Linear Association	.949	1	.330
N of Valid Cases	323		

Based on Table 3, the result obtained pearson chi-square of 3.112 with significance of 0.375, due to the significance of 0.375>0.05 it can be concluded that there is no significant relationship between the age of respondents with magazine. After that, the chi square test use other demography variable which is respondent's income. The goal is to analyze if there is a significant relationship between the respondent's income and magazine. The total of income category (N) is 6.

Table 4. *Chi-square test* between respondents' income and Magazine

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.240 [a]	5	.284
Likelihood Ratio	6.037	5	.303
Linear-by-Linear Association	.261	1	.609
N of Valid Cases	323		

Table 4 shows the result obtained pearson chi-square of 6.240 with significance of 0.284, due to the significance of 0.284>0.05 it can be concluded that there is no significant relationship between the income of respondents with magazine. The conclusion from chi square test is there is no significant relationship between respondents' age variable and magazine as promotion channels. Customer were not choosing their promotion channels because of their age or monthly income.

From statistical analysis, the most affected information while purchasing a bag is the bag brand information. Meanwhile, the most effective communication channels is magazine. The propose IMC strategy begin with identify target audience. After that, company could prepare communication content and communication channels for Integrated Marketing Communication (IMC) strategy. Formulating the communication design to achieve the desired response requires answering three questions: what to say, how to say it and who should say it (Kotler, 2005). All planned messages from company should touching every stage in customer journey.

First, they will choose the bag shape or model, next the bag brand and then review about the bag from previous customers. Company should input the communication messages in every stages. The advertisement should focusing

ICMEM

about the bag shape and its brand identity. For example if company will upload a photo on instagram ads, the photo should focusing first on bag shape and its brand not focusing about the background photo or model in photo. Meanwhile, in purchase process, the customer choose the color first then the material and the last see the bag price. Company should concern about what targeted customers color preference. *Manikan* with its unique material also should provide information about its material. Customer should understand the type of materials clearly. Moreover, the bag price is not the main factor for all potential customers which 43% of them are 21-25 years old. Company still have to give information about the price. The complete information will attract targeted customer. Based on decision hierarchy test, the potential customer are standard type who seek about product information first and then compare with other products and finally buy it. Beside of the planned messages content, the consistency of its content also a crucial things to consider. Keep the consistency of communication messages over the time will produce effective marketing communication.

From quantitative research, Author proposed to use three modes of communication channels. The proposed marketing communication channels are advertisement on printed media, online and social media marketing, and sales promotion.

- Printed Media (magazine)

  Manikan can use display ads that provide editorial image and product attributes information. The advertisement can be advertised during seasonal occasion while *Manikan* launch special product. For example there is local brand bag called *"Meraki goods"* who promote its brand in one of domestic aircraft called *AirAsia*. They targeted national coverage and people who liked to travel to see the advertisement. They choose the budget aircraft because they want to send an implicit messages that their products are affordable. *Manikan* could follow its strategy but also concerning about company's target consumer. Company can choose special bag for 26-30 years old and then put it on *Femina* magazine. Meanwhile company can choose special bag for younger generation and then put it on *GoGirl* magazine who represent the target. Customers usually read the article if the content was fit on their personality or their needs.

- Online and Social Media Marketing

  Manikan should improve the company website that communicate positive messages for customers. The website should deliver clear information about the products. *Manikan* should collaborate with designer who can make a good visual on the website to attract targeted market. Another important channel for customer is instagram. Similar with website, instagram also should well designed. The content of each feed should related with the communication design. Customer can access social media such instagram anywhere and anytime. Company could promote their brand via instagram ads. Company can choose the demography whose can see the ads. *Manikan* also could use accurate hashtag for example *#tasunik #tasetnik #slingbag #clucthmurah #tasmurah*. Accurate hashtag can help people to find information about the product.

- Sales promotion

  Based on questionnaire result, 86% respondents are interest with discount. *Manikan* could implement this sales promotion strategy into special products. Discount could attract customers especially women in 16-30 years old. The discount could launch in specific channel, in example 50% discount on offline store. It could attract customers to visit the store.

All the proposed IMC strategy are flexible depends on company condition. Company could choose those three proposed communication channels or only one of them. IMC should improve the company's ability to reach the right customers with the right messages at the right time and in the right place. The previous marketing communication had no strong consumer behavior therefore they did not achieve the targeted consumer. The new IMC strategy can be implement because already observe with CIMC approach. Consumer analysis is the most important things to make the new IMC strategy.

The new strategy needs more human resources to practice it. Despite of the mobility of the owner, company needs marketing expert who can manage the marketing communication and evaluate it. IMC also needs to follow the marketing and market trend, therefore this recommended strategy only can implement within one year. Due to the rapid growth of marketing trend, marketers should always renew the strategy to be exist in the industry.

Compare with previous research about CIMC, they did not give clear explanation about how to implement CIMC approach. This research produce new marketing strategy based on CIMC approach. The new strategy is different from traditional IMC which use all marketing channels. Based on qualitative and quantitative research, the best promotion

ICMEM

channels is magazine. The research shows that the most important information in marketing communication about bag are bag brand and bag shape. Company could focus on those things to get maximum result. Listen to potential customer first before develop marketing strategy is a new marketing approach. Bring customer to the marketing communication activities will become value added for company because the survey showed that customer also liked to listen opinion from another customer rather than from company itself. The interesting things that came up on this research is price is not the most important factor that affecting customer before purchase a bag. Company should concern about brand image and clear information rather than the price of the product.

Further research will face the new challenges to manage and evaluate CIMC effectiveness. For example company should set the key performance indicator to evaluate the new IMC strategy. Company also can ask consumer who directly exposed by the new strategy. Explore what consumer feel and their feedback are important things to consider for development of marketing communication in the future. Further research can analyze the effect of CIMC approach to company brand strategy. Marketing keeps the brand top-of-mind among the decision-makers, therefore CIMC should in line with branding strategy.

6. Conclusion

For implementing the CIMC concept, company needs to understand the customer touch point, customer ecosystem, and customer react to communication messages by conducting consumer analysis. The result from those analysis shows the guideline for company to make a new integrated marketing communication strategy which expected to attract targeted customers through their communication channels and content preferences. The new IMC strategy focusing on bag brand and bag shape information. Those information will designed to be more casual and clear content to fit with consumer needs. All marketing communication activities will run on magazine, online marketing, and social media. Company also put sales promotion for improve sales. Further research should focusing on how to measure CIMC effectiveness. Evaluate and manage CIMC are important to improve the new IMC strategy. Further research also can explore about the effect of CIMC to branding strategy since current research result said that brand image is the most important factor while purchasing a bag.

References

Finne, Å., & Grönroos, C. (2009). "Rethinking marketing communication; from integrated marketing communication to relationship communication", *Journal of Marketing Communications*, Vol. 15 Nos 2/3, pp. 179-195

Finne, Å., & Grönroos, C. (2017). Communication-in-use: customer-integrated marketing communication. *European Journal of Marketing*, *51*(3), 445–463. https://doi.org/10.1108/EJM-08-2015-0553

Gallo, A. (2015). A Refresher on Regression Analysis. Retrieved May 10, 2018, from https://hbr.org/2015/11/a-refresher-on-regression-analysis

Ghozali, I. (2016). *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23*. Badan Penerbit Universitas Diponegoro.

Kotler, P., & Keller, K. L. (2005). *Marketing Management*.

Moriarty, S., Mitchell, N., Wells, W., Crawford, R., Brennan, L., & Spence-Stone, R. (2014). *Advertising & IMC : Principles and Practice*. Screen.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Perception Difference between Promotional Mix of *Teh Pucuk Harum* and *Frestea*

Herren Calida[a]*, Atik Aprianingsih[b]

[a,b]School of Business and Management, Bandung Institute of Technology

Abstract

Teh Pucuk Harum and Frestea are Indonesian ready to drink tea brands that spent roughly around IDR 300 billion for advertising in 2016. Based on the Top Brand Index (TBI), the two brands resulting in a different outcome since the TBI can be used to measure the performance of a brand based on the purchase intention including the awareness toward the brand and its market share. Teh Pucuk Harum able to perform exceptionally while Frestea came out with unremarkable result. Therefore, this research was intended to resolve the difference between the promotional mix (advertising, sales promotion, public relation) of Teh Pucuk Harum and Frestea. The data for this research was collected using quantitative approach through online questionnaire to 213 Indonesian respondents. This study used paired comparison analysis to find the point difference between the two brands. The eventuality of the study shows that the difference between the two brands' promotional mix was in the sales promotion of their product where Teh Pucuk Harum solely offer the sales promotion under their own brand name while Frestea offer them under the Coca-Cola family brand.

Keywords: Promotional Mix; Paired Comparison; Advertising; Sales Promotion; Public Relation

1. Introduction

The competition between brands in the ready to drink tea industry is becoming tight and harsh more and more brands are entering the industry in term to acquire bigger market share and customers top of mind. One of the approach to do so is through promotional mix that consist of advertising, sales promotion, public relation, personal selling and direct marketing (Kotler et al, 2005). The intensity of the promotional mix can be measured from the spending in advertising and other means of promotion. Teh Pucuk Harum and Frestea are among the top spenders on advertising in 2016 with IDR 381.7 billion and IDR 298.7 billion respectively. In order to measure the performance of a brand in Indonesia, Top Brand Index (TBI) is an independent tool that commonly used since it consists the weighted average of 3 parameters (Top Brand Award, 2018); top of mind awareness (mind share), last used (market share), future intention (commitment share). Teh Pucuk Harum Top Brand Index growth was a whopping 20.7% (from 4.1% to 24.8%) in 2016. Meanwhile, Frestea suffer a loss as much as 8% (from 15.2% to 7.2%) in the same span of time. This means that even though Teh Pucuk Harum spent 27% more money on advertising, they were able to outperformed Frestea by more than three times higher in terms of Top Brand Index. This result is remarkable considering that Teh Pucuk Harum was first introduced in 2011 by Mayora while Frestea already in Indonesian market since its inception in 2002 by the Coca-Cola Company. This research intends to find the difference between the advertising, sales promotion and public relation of Teh Pucuk Harum and Frestea.

---

* Corresponding author.
  E-mail address: herren.calida@sbm-itb.ac.id

ICMEM

2. Literature Review

2.1. Promotional Mix

Modern marketing not only about good products or match pricing strategy for target market, but Company must have good communication skill to communicate their products then in long term; company can build and maintain customer relationship. Also, there are 5 promotional tools: advertising, personal selling, sales promotion, public relation, and direct marketing according to Kotler et al. (2005). This study only focuses on advertising, sales promotion and public since those three are commonly used in ready to drink tea industry.

2.2. Advertising

Advertising is defined as non -personal presentation and promotion ideas by identified sponsor such as broadcast, print, internet (Kotler and Armstrong, 2012). Advertising can be used to attract customer about their product opinion and customers could have good attachment to the ads. There are 3 types of advertising objective which are informative advertising, persuasive advertising, and reminder advertising. Informative advertising is important when the content that communicate with customer is telling about new products or features, inform about price change and explain how to use the product or service. Persuasive advertising is used when the company intent to persuade the customer to buy a product or service that been offered by the company and build a strong brand preference or perception toward a product or service. Reminder advertising is used when the product or service already matured and the company wants to keep remind the customers about their product or service, remind the customer about the availability and places to buy the product or service (Kotler et al, 2005)

2.3. Sales Promotion

Sales promotion is a short-term incentive to increase the intention of purchasing a product or service such as discounts, coupons, displays and demonstration (Kotler and Armstrong, 2012). Three main of target for sales promotion are sales force of company, consumer, and manufacturers or retailers (Thorson and Duffy, 2012). The difference between advertising and sales promotion is that advertising offer the product or service for a long-term purpose while sales promotion giving a short-term reason to buy the product or service in order to increase the sales of a company (Kotler et al., 1999).

2.3. Public relation

Public relation activities aimed to make a good image to public and media in order to overcome the unfavorable rumors or events and try to have a good relation or image towards other stakeholders by utilizing press release, web pages, sponsorship, and special event (Kotler and Armstrong, 2012). Public relation costs cheaper than advertising. However, public relation is more of a support function for all the promotional mix and handle the marketing activities of a company in order to create a good image of the company (Kotler et al.,1999).

3. Methodology

The data is collected using quantitative approach by online questionnaire to 213 Indonesian internet users. The questionnaire consists of 4 parts; advertising, sales promotion, public relation and demographic factors such as gender, age and current domicile. The advertising consists of 18 questions that adapted from Braun-LaTour et al (2004) and Nikhashem et al. (2013). As for the sales promotion adapted from Zgolli (1999) and (HAO, 2011) while the public relation part was derived from Kotler et al. (2005).   Each question of the questionnaire is measured using Likert scale of 1 to 5. The scale meanings are: 1 - strongly disagree; 2 - disagree; 3 - neutral; 4 - agree and 5- strongly agree.

ICMEM

Before the data was distributed to large sample, a pre-test was conducted to 30 people in order to verify the questionnaire's validity and reliability. Validity and reliability test were conducted by using Pearson Correlation's Score and Cronbach Alpha Score respectively. After data collection, the data was analyzed using Paired Comparison analysis in SPSS Application.

4. Findings and Argument

The validity and reliability test of the pre-test to 30 people showed that the data is valid and reliable. All variable has Pearson Correlation's score exceeds 0,3610 and Cronbach Alpha value higher than 0.7. This indicates that all questions from each variable are valid and reliable (Ghozali, 2005; Sekaran, 2003). After the pre-test was passed, the research was continued to collect the data to a large sample. A total of 213 respondents had been gathered as for the sample of the research. The respondents came from quite equivalent gender distribution with 55% women and 45% men. The majority of the respondents were within 21-30 years old (51%) followed by below 21 years old (18%), above 50 years old (11%), 31-40 years old (10%) and 41-50 years old (10%). The respondents mostly come from Bandung (70%), followed Jakarta and Tangerang (17%), and other cities (13%) that varied from Garut, Semarang, Denpasar and Cirebon.

The next step is analyzing the difference between the promotional mix of Teh Pucuk Harum and Frestea by using Paired Comparison analysis. Table 1 presents the result of the paired comparison analysis. The result shows that the mean difference of each variable actually very close between each other.

Table 1: Paired Comparison Analysis Result

Variables	Mean Difference	Sig. (2-tailed)
Advertising Teh Pucuk Harum - Frestea	0.018	0,599
Sales Promotion Teh Pucuk Harum - Frestea	0.099	0,005
Public Relation Teh Pucuk Harum - Frestea	0.068	0,204

Statistically, the significant difference between Teh Pucuk Harum and Frestea lies within the sales promotion variable since the sig. score is 0.05. If the sig. score is 0.05 or below, it means that there is a significant difference between the two brands for the mentioned variable, in this case is sales promotion. This result is considered as the effect of Teh Pucuk Harum's sales promotion that was offered single-handedly under its own brand name, unlike Frestea that provided the sales promotion under its family brand name, Coca-Cola.

5. Conclusion

This research starts with an interesting phenomenon where Teh Pucuk Harum could miraculously in terms of the brand performance, in this case that was measured by Top Brand Index, while Frestea could not come close with Teh Pucuk Harum's performance even though the Frestea advertising and promotion spending was come close with Teh Pucuk Harum. Based on the finding in this research, sales promotion of the two brands become the main difference that potentially could alter the outcome, in this case; Teh Pucuk Harum able to gain market share and awareness, while Frestea was going the other way.

The sales promotion difference can be further supported by the fact that the sales promotion of Frestea is within the umbrella brand or family brand which are the Coca-Cola brand. On the other hand, Teh Pucuk Harum offers the sales promotion solely for Teh Pucuk Harum product. This could be perceived very differently by the consumers because when the sales promotion is offered in the name of the specific brand, it would help to increase the brand awareness

ICMEM

of the brand. Meanwhile, if the sales promotion is offered under the umbrella brand, the consumers will only perceive the bigger name brand, not the specific brand, in this case Coca-Cola rather than Frestea. From this finding, the difference in the brand performance could be explained, ceteris paribus, by the difference in the sales promotion.

References

Braun-LaTour, K. A., LaTour, M. S., Pickrell, J. E., & F.Loftus, E. (2004). How and When Advertising Can Influence Memory for Consumer Experience. *Journal of Advertising*, 7-25.

Ghozali, I. (2005). Aplikasi Multivariate dengan Proses SPSS.

HAO, L. (2011). The Effect Price Discount Promotions on Consumer Reponses. *ProQuest Dissertation Publishing*, 172-175.

Kotler, P., & Armstrong, G. (2012). *Principle of marketing 14th edition* . Harlow: Pearson Education Limited.

Kotler, P., Wong, V., Saunders, J., & Armstrong, G. (1999). *Principle of Marketing : Second European Edition* . New Jersey: Prentice Hall Inc.

Kotler, P., Wong, V., Saunders, J., & Armstrong, G. (2005). *Principle of Marketing 4th edition* . Harlow: Pearson Education Limited.

Malhotra, N. .. (2015). *Essential of Marketing Research: A Hands-On Orientation.* New Jersey: Pearson Education Inc.

Nikhashem, s. r., Paim, L., & Fard, s. s. (2013). The effectiveness of E-Advertisment toward customer purchase intention: Malaysia perspective. *IOSR Journal of Business and management*, 93-104.

Nielsen. (2017). Perang Iklan Minuman Teh Kemasan. Received from: https://databoks.katadata.co.id/datapublish/2017/02/04/perang-iklan-minuman-teh-kemasan [Received Date: 10. 5. 2017]

Sekaran, U. (2003). Research methods for business. Hoboken.

Top Brand Award. (2018) Survey Methodology. Received from: http://www.topbrand-award.com/top-brand-survey/survey_methodology [Received Date: 14. 5. 2017]

Wolfe, H. D., & Twedt, D. W. (1970). *Essentials of the promotional mix*. Appleton-Century-Crofts.

Zgolli, N. (1999). The effect of Acculturation on Consumer Interest toward Sales Promotion Techniques an Empirical Study of French and English Canadians. *Concordia University (Canada)*, 90-92.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of Normative Belief on Customer Satisfaction and Willingness to Pay Premium: The Case of Green Practices in Hotel Industry

Anisa Fathir Ruswandi[a*], Atik Aprianingsih[b]

*a,b*Institut Teknologi Bandung, Jl. Ganeca no. 10, Bandung 40123, Indonesia

Abstract

Tourism sector in Indonesia has been experiencing a constant growth in the past decade making it one of the country's major sources of income. This development however often corresponds with over-consumption of energy and resources which caused an inconsiderable amount of hazardous waste. Since the hotel industry is the main sector of tourism industry, government has pushed hotels to adopt sustainable practices in which created the concept of Green Hotel. Although hoteliers have tried to implement different green strategies in their operational activities, these activities are often done despite the lack of research and understanding on customer's green attitude and behavior. This research is done to investigate customer's attitude towards the eco-friendly practices adopted by hotels and how it affect customer's satisfaction. Furthermore, this research is also done to explore customer's willingness to pay premium for these practices. The results shows that Indonesian customers have a positive attitude towards hotel's eco-friendly practices, moreover they are satisfied and are willing to pay a little more for these hotels.

Keywords: Green Hotel; Customer Attitude; Customer Satisfaction; Willingness to Pay Premium

1. Introduction

Tourism industry in Indonesia has been experiencing a constant growth in the past couple of years and is expected to continue growing in the upcoming years. According to the Travel & Tourism Competitiveness Report 2017 (World Economic Forum, 2017), Indonesia ranked 42nd globally, climbing eight places since 2015. This development, however, often corresponds with over-consumption of energy and water resources. Some of the impact caused by this industry includes carbon dioxide (CO_2) emissions, Chlorofluorocarbons (CFC) emissions, and misuse of natural resources such as freshwater, forests and marine life (Islam, 2013). Based on a report of World Tourism Organization (WTO), World Meteorological Organization (WMO), and United Nations Environment Programme (UNEP) the hospitality industry is responsible for 21% of the total CO_2 emissions associated with tourism (Han et al. 2011). Since hotel is a huge part of hospitality industry, the need for hoteliers to implement eco-friendly practices is essential as a way of showing responsibility over the environment.

Although there is an increase of environmental awareness in the tourism industry (Anderec, 2009), potential travellers don't seem to make an actual effort to stay at a green hotel (Tilikidou, Delistavrou, & Sapountzis, 2013). Past research also found that loss of luxury and high costs have a significant impact on hotel consumer's willingness to pay for the green practices (Verma & Chandra, 2016). Moreover, the concern regarding luxury can also diminish the intention to stay in a green hotel (Baker, Davis & Weaver, 2014). This means that the implementation of green practices has an overall effect to perceived service quality, which is significantly related to customer satisfaction (Malik, 2012).

---

* Corresponding Author. Tel.: +628112390060

*E-mail address:*anisa.fathir@sbm-itb.ac.id

ICMEM

In Indonesia, only a small number of hotels are committed to environmentally-friendly practices due to the lack of understanding on the concept (Supriadi, 2016). This problem was addressed by the Minister of Tourism and Creative Economy at the establishment of National Green Hotel Award in 2011. He stated that many hotels in Indonesia have not feel the urgency of going green which can lead to several environmental issues in the near future. However, over the years, the numbers of green hotels in Indonesia have started to increase. This is seen from the increasing participants in the National Green Hotel Awards from 24 hotels in 2011 to 36 in 2015 (Kemenpar, 2011). In 2018, five of Indonesia's hotel received an award for the green hotel category at the ASEAN Tourism Forum 2018, in which four of them are located in Java. Java is also the most popular tourist destination in the country. In 2016, 48.34% of the total tourists' trips are made to places in Java. With it being the most popular tourist destination and having the most green-hotels in Indonesia, Java is chosen as the subject of this research. Overall, this research is carried out to investigate customers' normative belief and its relation to satisfaction and willingness to pay premium for hotels with eco-friendly practices.

2. Literature Review

2.1. Consumer Behavior

Assael (1992) discussed the concept of consumer behavior using a simple model. The first criterion to start the model is the consumer decision-making process. Three factors influencing this process are individual consumer, environmental influences, and applications of consumer behavior to marketing strategies. Behind these proposed models of behavioral prediction, there are factors affecting the consumer buying behavior, these factors then classified into several categories. Hoyer, Macinnis & Pieters (2012) divided them into situational, personal, social, and cultural factors. Winer (2009) on the other hand, categorized them into psychological, social, and personal factors. Personal factor is unique like gender, race, age, etc. Psychological factor includes motivation, perception, ability and knowledge, attitude, personality, and lifestyle. Meanwhile social factors are influenced by opinion leaders, the person's family, reference group, social class, and culture. In the context of pro-environment, consumer behavior is seen as individual"s belief and the perception of others on what is good for the environment.

2.2. Normative Beliefs

Normative beliefs are beliefs of an individual that are accepted by certain people or groups that dictates whether or not behaving in a particular fashion is appropriate (Ajzen, 2006). Fishbein and Ajzen (1980) proposed "normative belief" as antecedent variables of norms. The value–belief–norm theory by Stern, Dietz, Abel, Guagnano, and Kalof (1999) has revealed that beliefs and norms are related through a continuous process of causality. In addition, this study also indicates that normative beliefs have an effect on subjective norms, attitudes, and behavioral intentions (Ajzen & Fishbein, 1980). Furthermore it explains that while social norms usually refer to a broader range of permissible, but not necessarily required behaviors, normative beliefs refer to a specific behavioral act that is expected or desired under a given circumstances. Lapinski and Rimal (2005) in their study found that the effects of social norms, which include subjective norms, on behavior are mixed in normative influences. In their recent study – A re-explication of social norms, ten years later (2015) – they confirmed that norms are a dynamic phenomenon and individuals, acting on either self-interest or altruistic motives, continuously alter the normative contours.

ICMEM

2.3. Consumer Satisfaction

Consumer satisfaction as described by Westbrook & Reilly (1983) is an emotional response to the experiences provided by or associated with a particular products or services purchased. Schifman & Kanuk (2004) defined consumer satisfaction as an individual perception of the performance of a service or product in relation to his or her expectations. The theory of expectancy disconfirmation proposed that satisfaction level is resulted from the difference between the expected and perceived performance (McQuitty, Finn and Wiley, 2000). When a service is perceived to be better than expected, it will result in positive consumer satisfaction.

2.4. Willingness to Pay

When examining individual's decision-making process, Fishbein and Ajzen (1975) stated that behavioral intention can be used as it is the most accurate predictors of people's behavior. This study of behavioral intentions refers to revisit intention of hotel consumers, willingness to pay more for green hotel, and to be engaged in a positive word-of-mouth behavior. In definition, willingness to pay (WTP) means the amount of money that someone is willing to give-up to acquire goods or services (Lusk & Hudson, 2004). Three basic methods are used to measure consumer's economic value and willingness to pay for preferences, including; personal interviews, mail surveys and experimental auctions (Umberger, Feuz, Calkins & Killinger, 2002). The commonly used technique to obtain WTP estimates is through hypothetical valuation methods, which uses survey responses to elicit consumer's willingness-to pay.

2.5. Green Hotel Practices

The demand to implement sustainable strategies that came from government entities has also pushed more hotels to become green (Kim & Choi, 2013). Green practices in hotels include the usage of products and methods that has minimum effects on the environment and would not damage it through depletion of natural resources or pollution (Smith & Perks, 2013); such as the usage of water-saving devices (Hsieh, 2012), the usage of compact efflorescent light bulbs, energy star-efficient heating, ventilation and air conditioning (Moreo, 2008), implementing waste management program and the purchase of biodegradable product (Timothy & Teye, 2009). These practices are performed by large hotels in different parts of the world, and thus could possibly be implemented in Indonesia to decrease the environmental impacts of local hotels.

2.6. Research Hypothesis

Based on the literature study and research framework, the author develops three hypotheses as follows:

- H1: There is a significant relationship between normative beliefs and consumer satisfaction.

- H2: There is significant relationship between consumer satisfaction and willingness to pay premium.

- H3: There is a significant relationship between normative beliefs and willingness to pay premium.

ICMEM

2.7. Research Framework

To reach the objective of this research it is essential to understand the relation between each variable observed, in this case the impact normative beliefs towards satisfaction, and willingness to pay premium. Fig. 1 shows the framework that would guide this study in analyzing the relationship between each variable.
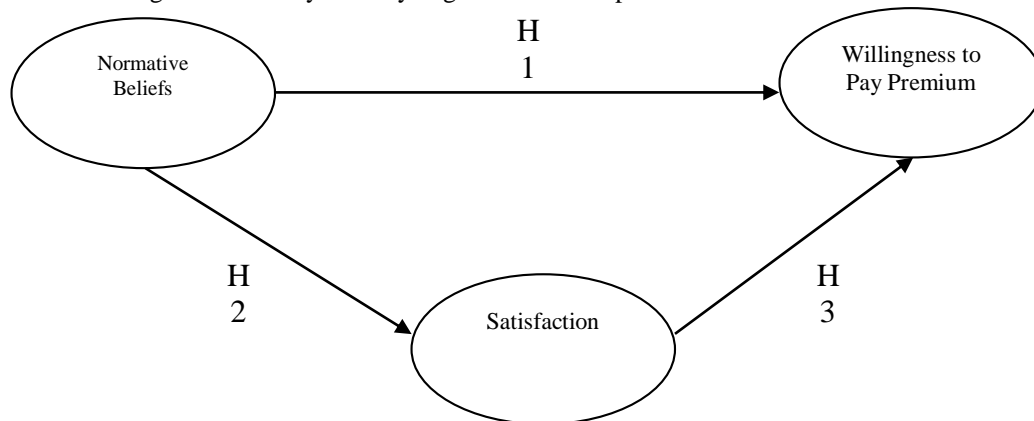
Fig. 1. Research Framework

3. Research Methodology

This research is categorized as an applied research which gathers information from the consumer's point of view to measure their normative beliefs, satisfaction, and willingness to pay premium. Initially, a problem formulation is done to identify underlying problems in a specific business situation, in this case green hotel. Afterwards, the problem is explored furthermore through paper and journal reviews in the literature review stage. The next stage is to develop a conceptual model and research approach. The approach used in this research is quantitative, using a set of questionnaires developed from previous researches.

The targeted respondents for this research are Indonesian, 18 years-old or older, and have visited a green hotel in Java, Indonesia. The sampling technique used in this research is convenience sampling. The questionnaire is distributed via an online platform in order to reach a wider audience. The collected data is analyzed using a three stage analysis by Baron and Kenny (1986) to test a possible mediation effect. This is done using Process which is an OLS regression path analysis modeling tool for SPSS developed by Andrew F. Hayes.

4. Findings and Discussion

4.1. Validity and Reliability

A sample of 30 people is used to measure both the validity and reliability of the questions. The validity test uses Pearson's Correlation score as an indicator to whether or not the question measures what it claims to measure. The instrument is declared valid when the counted value is more than the r-table product moment – in this case 0.361 – otherwise it is invalid. When the research instrument has been declared valid, a reliability test is then performed using the Cronbach's Alpha value. As recommended by Nunnally (1978) a basic research should have a reliability score of 0.7. If the value of Cronbach's Alpha is more than 0.7, the questionnaire is considered reliable, if not, it will be eliminated.

The results show that there are 4 out of 20 items that are invalid, thus should be eliminated. The questionnaire item is now left with 16 items. As for the reliability test, the result shows that all variables including Normative beliefs, Satisfaction and Willingness to Pay Premium has a Cronbach's Alpha value of more than 0.7; thus, considered as reliable. Overall, all indicators are valid and reliable and therefore can be used as the instrument for this research.

ICMEM

4.2. Descriptive Analysis

Normative Beliefs towards green hotel practices

The researcher uses Normative Belief (NB) as a way to measure customer's belief on what hotels should do as part of their action to preserve the planet. The variables in are some of the most adopted green practices by hotels. The result shows respondents mostly support the usage of biodegradable plates, Air conditioning set to an ideal temperature, incorporation of organic food, usage of biodegradable plastic, Recycling bin in guest room and Refillable Shampoo dispenser. Practices such as the low-flow faucets are less supported. Overall, respondents believed hotels have to implement green practices.

Customer satisfaction towards green hotel practices

The researcher included several main green attributes that have the likeliness to affect the customer satisfaction; however, because not all hotels have implemented the same practices, some attributes are left unanswered as the respondent has not experienced it. The result indicated that out of all attributes listed in the questionnaire, 86.2% of the respondents agreed that glass-bottled water is satisfying, and 81.9% said Air conditioning set to an ideal temperature is. Around 71-76% said that they are satisfied with the practices of an integrated toilet and sink, refillable shampoo and soap dispenser, and recycled paper. On the other hand, the usage of biodegradable tableware and low-flow faucets are considered to be less satisfying. Overall, the respondents seem to agree that they are satisfied with the green practices adopted by hotels.

Customer willingness to pay premium for green hotel practices

A premium is used by hoteliers to profit from guests that are selecting their hotel because the hotel is committed to protecting the environment. This research shows that around half of the respondents agreed to pay a higher price for hotels with green initiatives, around 30% gave a neutral response, while the rest disagreed. When it comes to the value to which the customer are willing to pay, 60% are willing to pay 10% above the fair price, 27% are willing to pay 20% above the fair price, and 10.7% are willing to pay more than 20% above the fair price. This is concluded that overall, customers are only willing to pay a little extra for green hotels.

4.3. Path Analysis

First Stage Path Analysis

The first step of Path Analysis is to determine the causal relationship between Normative Beliefs (X_1) and Willingness to Pay Premium variable (Y) variable, which act as the IV and DV. This result provides the conclusion that in the first stage regression, X_1 has a significant effect towards Y. The value of coefficient $X_1 = 0.263$ indicated that with every increase in the IV by one, the DV is expected to increase by 0.263. The value of R2 = 0.042 shows that the contribution of X1 to Y is 4.2% and the remaining 95.8% is the contribution of other variables not included in the research.

Second Stage Path Analysis

This result provides the conclusion that in the second stage regression, X_1 has a significant effect towards X_2. The value of coefficient $X_1 = 0.364$ indicated that with every increase in the IV by one, the DV is expected to increase by 0.364. The value of $R^2 = 0.135$ shows that the contribution of X_1 to X_2 is 13.5% and the remaining 86.5% is the contribution of other variables not included in the research.

ICMEM

Third Stage Path Analysis

The results show that the significance value of the two variables are $X_1 = 0.043$ and $X_2 = 0.374$. $X_1 = 0.043$ is less than 0.05. This result provides the conclusion that in the third stage regression, X_1 has a significant effect towards Y. On the other hand, the significance value of variable $X_2 = 0.374 > 0.05$. This result means that the X_2 has no significant effect towards Y. The overall model has a significant value of 0.028 which is less than 0.05; therefore, it can be concluded that X_1 and X_2 simultaneously affect Y.

The value of coefficient for the two variables are $X_1 = 0.226$ and $X_2 = 0.1$, this indicated that with every increase in the IV by one, holding the other IV constant, the DV is expected to increase by 0.226 or 0.1. The value of $R^2 = 0.047$ shows that the contribution of X_1 and X_2 to Y is 4.7% and the remaining 95.3% is the contribution of other variables not included in the research.
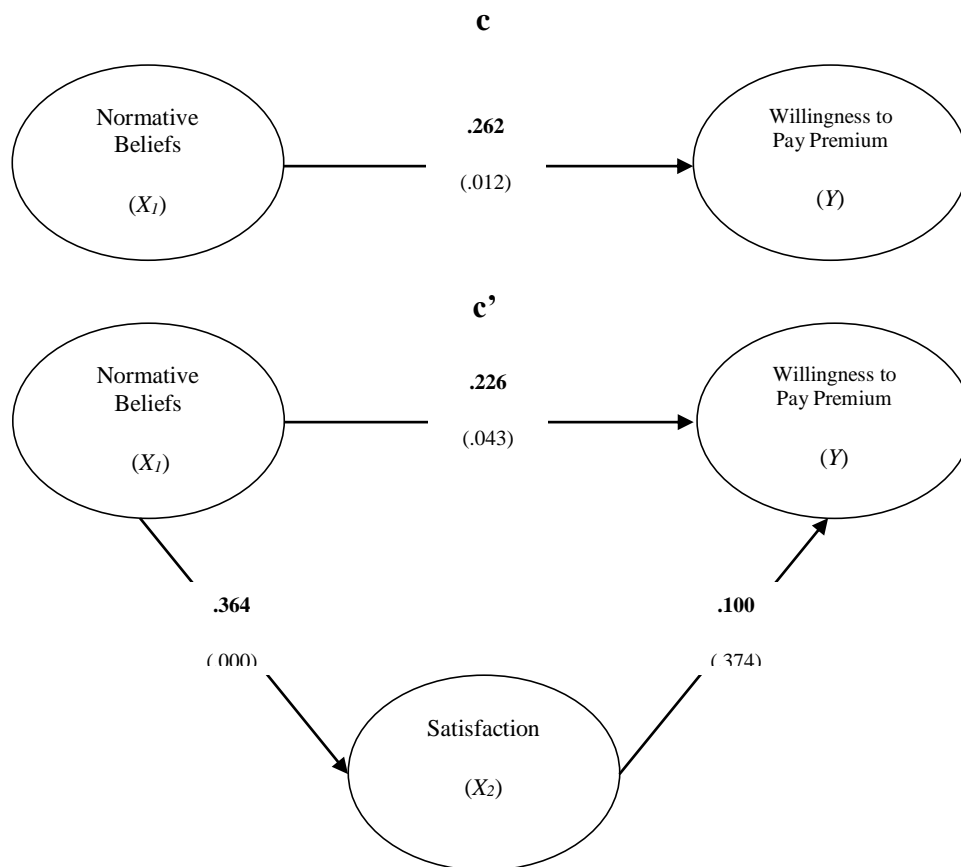
Fig. 2. Path Analysis Model

Fig. 2. demonstrates the results of the three regression analyses, where in Step 1 of the mediation model, the regression of Normative Beliefs on Willingness to Pay Premium, ignoring the mediator, was significant, b = 0.262, t(148) = 2.55, p = <.05. Step 2 showed that the regression of Normative Beliefs on the mediator, Satisfaction, was significant, b = 0.364, t(148) = 4.8, p = <.001. Step 3 of the mediation process showed that the mediator (Satisfaction), controlling for Normative Beliefs, was not significant, b = .1, t(147) = 4.8, p = 0.374. At the same time, controlling for the mediator (Satisfaction), Normative Beliefs scores was a less significant predictor of Willingness to Pay Premium, b = 0.226, t(147) = 0.892, p =0.43. In the model we can see the effect of X_1 on Y in path c' still exists

ICMEM

(coefficient value of 0.262), but in a smaller magnitude compared to that in path c (coefficient value of 0.226). This demonstrates a partial mediation, where Satisfaction partially mediated the relationship between Normative Beliefs and Willingness to Pay Premium.

Total, Direct, and Indirect Effect

This section will discuss the total, direct, and indirect effects X_1 and X_2 have towards the Y. The total effect is demonstrated in path c, Figure 2. The amount of mediation in this model is called the indirect effect – path ab. It is also equals to the reduction of the effect of the causal variable on the outcome. The equation for the total effect is:

$$\text{Total effect (c)} = \text{Direct effect (c')} + \text{Indirect effect (ab)}.$$

ε

Table 1. Total, Direct, and Indirect Effect

	Effect	SE	t	p
Total Effect	.263	.103	2.551	.012
Direct Effect	.226	.111	2.044	.043
Indirect Effect	.036	.051		

Table 1 shows the value of the total, direct, and indirect effect. Note that the Total Effect (0.263) is the effect of X_1 on Y (without X_2). The direct effect (0.226) is the effect of X_1 on Y after taking into account a mediation (indirect) effect of X_2. Finally, the mediation (indirect) effect is the total effect minus the direct effect, which equals to 0.036.

Bootstrapping

To determine whether or not the mediation effect is statistically significant, the researcher used the Bootstrapping method. This method provides confidence intervals to assess the significance or non-significance of a mediation effect. The result found that ab = 0.036, BCa CI [-0.063, 0.146]. Because zero falls between the confidence interval, it is concluded that there is no significant mediation effect of satisfaction on the causal relationship between Normative Beliefs and Willingness to Pay Premium.

4. 3.   Hypothesis Testing

Hypothesis testing is done based on the calculation of path analysis in stage two and three, the second stage of path analysis will test hypothesis 1 and the third stage will test hypotheses 2 and 3. Based on the result of the path analysis results above, the following conclusion is obtained:

- With a significance value of $0.000 < 0.05$, X_1 is found to have a significant effect on X_2; therefore, H1 is accepted.
- With a significance value of $0.374 < 0.05$, X_2 is found to have an insignificant effect on Y; therefore, H2 is rejected.
- With a significance value of $0.043 < 0.05$, X_1 is found to have a significant effect on Y; therefore, H3 is accepted.

4.4.   Discussion on Research Findings

The Impact of Normative Beliefs towards Satisfaction

The path analysis shows that Normative Beliefs has a direct and significant effect towards satisfaction. The statistics result shows a significance value of $0.000 < 0.05$, which indicates that a satisfaction towards hotel's green practices will form when the customers have a positive Normative Beliefs towards it. This result is corresponded with previous researches done by Chan & Chui (2002).

The Impact of Normative Beliefs towards Willingness to Pay Premium

The causal relationship between normative beliefs and willingness to pay premium includes two types of relationships; a direct relationship and indirect relationship. The direct influence of normative beliefs on willingness

ICMEM

to pay premium is shown by a significance value of 0.043 < 0.05, which indicates a significant relationship. This means that customers' positive normative beliefs towards hotel's green practices will increase their willingness to pay premium. This result supported previous researches done by Myung (2017); and Mohammadrezaei1 & Dashti1 (2013).

The indirect effect of normative beliefs on willingness to pay premium shows how satisfaction mediated this model. The mediation process showed that effect of normative beliefs on willingness to pay premium through satisfaction has a β = 0.036. This means when normative beliefs increased by 1 unit, satisfaction will increase by 36% and thus stimulated the increase of willingness to pay premium by 3.6%.

The Impact of Satisfaction towards Willingness to Pay Premium

The path analysis shows that satisfaction has a direct but insignificant effect towards willingness to pay premium. The statistics result shows a significance value of 0.374 > 0.05, which indicates that an increase in satisfaction towards hotel's eco-friendly practices will not significantly affect their willingness to pay premium for those practices. This result is does not corresponded with previous research done by Demirgüneş (2015).

5. Conclusion

From the analysis using PROCESS in SPSS, the researcher concluded that; first, customers' Normative Beliefs towards hotel's eco-friendly practices has a positive and significant relationship with their Willingness to Pay Premium, meaning that customers with a positive environmental beliefs are willing to pay more for hotels that are committed in preserving the environment. Second, customers' normative beliefs towards hotel's eco-friendly practices have a positive and significant relationship with their satisfaction level, meaning that customers with positive beliefs towards these practices tend to be satisfied with the implementation of the practices. Third, there is no significant relationship between customers' satisfaction towards hotel's eco-friendly practices and their willingness to pay premium. This indicates that customers who are satisfied with the present of these green practices are not necessarily willing to pay premium for it. This may occur when customers who have actually experienced the green practices felt like there is no need for a premium because cost savings for hotels outweigh their welfare loss from implementing such practices.

Overall, it is found that the customers believe hotels should implement green policies in their operational activities. Policies such as setting the air conditioning to an ideal temperature, incorporation of organic food, usage of biodegradable plastic, recycling bin in guest room and refillable shampoo dispenser are the most supported ones. The result also indicated that the majority of respondents are satisfied with these practices. On the other hand, practices such as low-flow faucets and biodegradable table-wares are found to be less supported and less satisfying. In terms of customers' willingness to pay for premium, this research found that around half of the respondents agreed to pay a higher price for hotels with green initiatives as long as the price stays in the range of 10% more than normal price.

In order to improve the result and understand the market better, a future research should be done with a larger sample not limited to Java, but also Indonesia as a whole. Moreover, the researcher should compare between a certified and non-certified green hotel as the eco-friendly practices taken by these hotels may differ. To figure out the reason why satisfied customers are not willing to pay for premium, a future study should also be done to evaluate the service quality offer by these green hotels.

References

The Travel & Tourism Competitiveness Report 2017. (2017). Retrieved from World Economic Forum: http://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf

Ajzen, I. (2006). *Constructing a Theory of Planned Behavior Questionnaire.* Retrieved July 2018, from http://people.umass.edu/~aizen/pdf/tpb.measurement.pdf

Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. *J. Exp. Soc. Psychol 22*, 453-474.

ICMEM

Anderec, K. L. (2009). Tourists' perceptions of environmentally responsible innovations at tourism businesses. *Journal of Sustainable Tourism*, 489-499.

Assael, H. (1992). *ConsumerBehavior and Marketing Action.* Boston: PWS-Kent Publishing Company.

Baker, M. A., Davis, E. A. & Weaver, P. A. (2013). Eco-friendly Attitudes, Barriers to Participation, and Differences in Behavior at Green Hotel.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 1173-1182.

Chan, T.-S., & Cui, G. (2002). Consumer Beliefs and Attitudes Toward Marketing: an Emerging Market Perspective. *Asia Pacific Advances in Consumer Research, 5*, 406-412.

Demirgüneş, K. (2015). Relative Importance of Perceived Value, Satisfaction and Perceived Risk on Willingness to Pay More . *International Review of Management and Marketing*, 211-220.

Haghjou, M., Hayati, B., Pishbahar, E., Mohammadrezaei, R., & Dashti, G. (2015). Factors Affecting Consumers' Potential Willingness to Pay for Organic Food Products in Iran: Case Study of Tabriz. *JAST*, 191-202.

Han, H., Lee, J., Hsu, L. & Sheu, C. (2011). Are lodging customers ready to go green? An examination of attitudes, demographics, and eco-friendly intentions. *International Journal of Hospitality Management, 30(2011)*, 345-355.

Hoyer, W.D., Macinnis, D.J. & Pieters, R. (2012). *consumerBehaviour" 6th edition.*

Hsieh, u.-C. (2012). Hotel companies' environmental policies and practices: a content analysis of their web pages. *International Journal of Contemporary Hospitality Management 24(1)*, 97-121.

Kementian Pariwisata. (2011, December 20). Retrieved April 2018, from Kementian Pariwisata Republik Indonesia: http://www.kemenpar.go.id/asp/detil.asp?c=16&id=650

Lapinski, M., & Rimal, R. (2005). An explication of social norms. *Commun. Theory 15*, 127–14.

Lusk, J. L. & Hudson, D. (2004). Willingness-to-Pay Estimates and Their Relevance to Agribusiness Decison Making. *Review of Agricultural Economics 26(2)*, 2-12.

Malik, M. E. (2012). Impact of Brand Image, Service and Price on Customer Satisfaction in Pakistan Telecommunication Sector. *International Journal of Business and Social Science, 3(23)*.

McQuitty, S., Finn, A. & Wiley, J. B. . (2000). Systematically Varying Customer Satisfaction and its Implications for Product Choice. *Academy of Marketing Science Review*.

Myung, E. (2017). Environmental knowledge, attitudes, and willingness to pay for environmentally friendly meetings – An exploratory study. *Journal of Hospitality and Tourism Management*.

Rimal, R., & Lapinski, M. (2015). A re-explication of social norms, ten years later. *Commun. Theory, 25*, 393-409.

Schiffman, L. & Kanuk, L. (2004). *Consumer behavior, 8th International edition. Prentice Hall.*

Smith, E. E. & Perks, S. (2012). A perceptual study of the impact of green practice implementation on the business functions. *Southern African Business Review, 14(3)*.

Stern, P., Dietz, T., Abel, T., Guagnano, G., & Kalof, L. A. (1999). Value-belief-norm theory of support for social movements: The case of environmentalism. *Hum. Ecol. Rev. 6*, 81–97.

Supriadi, B. (2016). Investigasi Green Hotel Sebagai Alternatif Produk Ramah Lingkungan.

Tilikidou, I., Delistavrou, A., & Sapountzis, N. (2013). Customers' Ethical Behaviour towards Hotels. *The Ecnomies of the Balkan and the Eastern European* (pp. 425-432). Elsevier B.V.

Timothy, D. J. & Teye, V. B. (2009). *Tourism and the Lodging Sector.*

Umberger, W., Feuz, D., Calkins, C. & Killinger-Mann, K. (2002). U.S. consumer preference and willingness-to-pay for domestic corn-fed beef versus international grass-fed beef measured through an experimental auction. *Agribusiness, 18(4)*, 491-504.

Westbrook, R. & Reilly, M. D. (1983). Value-Percept Disparity: An Alternative to the Disconfirmation of Expectations Theory of Consumer Satisfaction.

Winer, R. (2009). New Communications Approaches in Marketing: Issues and Research Directions. *Journal of Interactive Marketing, 23 (2)* .

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Influence of Consumer Ethnocentrism and Brand Equity toward Brand Preference of Online Ride-Hailing Service among Millennials in Bandung City

Reza Ashari Nasution[a]*, Richard Harris Wahyudi[b]

[a,b]*School of Business and Management, Bandung Institute of Technology*

Abstract

Within the past three years, there was an innovation that leads to a transformation in transportation and technology known as online ride-hailing. This innovation can integrate transportation and technology simultaneously to fulfill people's needs in commuting. Not surprising that in 2017, around 15 (fifteen) million Indonesia's connected consumers were utilizing this service every week. As a phenomenon that is consistently escalating, it is important to examine factors that are believed to influence the brand preference in online ride-hailing services significantly. Seeing the different origin between Go-Jek as a local-based company (Indonesia) and Grab foreign-based company (Singapore) and brand equity that related with brand appraisal and preference, the two factors that believed as a significant influencer in this service preference are consumer ethnocentrism and overall brand equity. To examine so, this study will use CETSCALE from Shimp and Sharma (1987) and Overall Brand Equity (OBE) from Yoo and Donthu (2001). This study is conducted in generation Y seeing their existence as the primary user of internet and this services as well. The questionnaire is distributed to 400 respondents and measured using statistic and quantitative approach. The finding of this research reveals that only OBE has a significant and positive correlation with the local online ride-hailing brand preference. Whereas, consumer ethnocentrism has a significant negative correlation but OBE has a significant positive correlation with the foreign online ride-hailing brand preference. The millennials with high consumer ethnocentrism tendency also found prefer local-based rather than foreign-based online ride-hailing services. Eventually, the implications and recommendations for future study and the online ride-hailing service provider will be given as well.

Keywords: Brand Preference; Consumer Ethnocentrism; Millennials Generation; Online Ride-hailing; Overall Brand Equity.

1. Introduction

Nowadays, By the existence of the development of technology, including smartphone and internet, most things can be done easily and practically. As Nielsen U.S Social Media Survey (2013) result, they found that millennials have a positive perception toward technology and more than 74% believe that advanced technology able to provide easiness in their lives. They offered with convenience in their activities from interacting with people, shopping, doing business, searching information, and even in commuting.

As all we know, commuting, or commonly known as mobility, is an essential part of human's daily life since it is impossible to accomplish things in just one place. Discussing mobility, in this modern era approximately in 2015, existed an enormous phenomenon that seized people attention which leads to a trend transformation in transportation sector known as online ride-hailing. Online ride-hailing is a service that capable of facilitating customers to hire a driver to deliver them to their desired location by virtually hailing the car or the driver using application (Stephen,

---

* Corresponding author.
  E-mail address: reza@sbm-itb.ac.id

ICMEM

2015). By the existence of this trend, occurred an alteration from conventional transportation to electronic-based transportation.

According to Kartini (2017) from KompasTekno, Go-Jek, which is one of the most prominent ride-hailing services were utilized by around 15 (fifteen) million Indonesia's connected consumers every week and more than 100 (hundred) million transaction occurred every month. No wonder that the young consumers' intention to utilize this service is high. As *PUSKAKOM UI* (2017) research, they found that 56% of active users in online ride-hailing comes from 20 years old. Nowadays, Go-Jek and Grab still contend tightly one another until this day to obtain approximately 270 million Indonesian customers. In fact, Go-Jek is a local-based company from Indonesia and Grab is a foreign-based company from Singapore. By the existence of this condition, hence different background and origin exist.

Previous research from Irsandi (2017), revealed that consumer ethnocentrism is the most significant influencing factor in Go-Jek customer preference. Hsu & Nien (2008) defined consumer ethnocentrism as a belief that could affect consumer preferences of local and foreign products. Aside from that, there is a variable which becomes a former of brand preference called brand equity. Feldwick (1996) stated that brand equity is a belief that possessed by the consumer toward a brand. These two variables which shape a consumer's belief about a brand will be compared each other to figure out which variable that is more significant in online ride-hailing brand preference.

The author found that several researches in online ride-hailing merely limited in several points for example customers perception, competitor, service and satisfaction, etc. Meanwhile, previous research regarding brand equity in online ride-hailing was conducted using Multidimensional Brand Equity (MDE). Whereas, if there is a brand which possesses similar service characteristics such as cost, quality, and brand's attributes, the appropriate measurement is using Overall Brand Equity (OBE) (Yoo & Donthu, 2001). This research is the first research that compare consumer ethnocentrism and overall brand equity in online ride-hailing context. The result of this study is surprising since the consumer ethnocentrism is not significantly correlate with the local online ride-hailing brand preference.

This research has two objectives which are examining the influence of consumer ethnocentrism and overall brand equity toward the brand preference in online ride-hailing service among millennials in Bandung City and determining the most influential factor between the two variables toward the brand preference in online ride-hailing services among millennials in Bandung City.

2. Literature Review

2.1. Online Ride Services

There are two types of online ride service, which are online ride-hailing and online ride-sharing. Online ride-sharing is social and environmental oriented, in other hand online ride-hailing is profit oriented. In Indonesia, online ride-sharing barely exist while on the other hand online ride-hailing has already growth vast and rapidly since the past few years. According to Ben (2017) from Innovation Center for Energy and Transportation, online ride-hailing is an operational business where the transportation owners/drivers offer to transport riders to their desired locations in the metropolis on their vehicle or a rented car.

2.2. Brand Preference

According to Mohan Raj (2016), brand preference is the subjective, conscious, and behavioral tendencies that affect consumer's propensity toward a brand. The brand preference reflects the consumer favorability on a brand among the other brands (Hellier, Geursen, & Rickard, 2003). The previous study by Chen & Chang (2008) revealed that there is a positive and significant association between brand preference and brand equity. This research also supported by Moradi & Zarei (2011) which showed that brand equity affected the customers' brand preference positively.

2.3. Brand Equity

Swai, Erdem, Louviere, & Dubelaar (1993) argued that brand equity is the customers' evident appraisal of the brand in a market with diverse brand towards a market with an identical brand. The measurement from Yoo & Donthu (2001) that cover the whole end of the customer's evaluation called overall brand equity (OBE) is being used for this research. OBE can be used as a measurement in comparing several brands with the brands' competitor which possess similar service characteristics such as cost, quality, and the brands' attributes (Yoo & Donthu, 2001). In this research, both Go-Jek and Grab have similar characteristics in cost, quality, and the brand attributes as well. The previous study from Buil, Martinez, & Chernatony (2013) found that overall brand equity has a positive and significant influence on the brand preference and purchase intention as well. This research is supported by Yasa & Anggrihita (2014) finding which revealed that overall brand equity positively and significantly affects brand preference.

2.3. Consumer Ethnocentrism

Hsu & Nien (2008) argued that consumer ethnocentrism is a belief that could affect consumer preferences of local and foreign products. Besides, Ruyte, van Birgelen, & Wetzels (1998) stated that consumer ethnocentrism is a nationalist assessment of the customers toward local and foreign products and services. Shimp & Sharma (1987) developed a tool to measure consumer ethnocentrism in a person known as Consumer Ethnocentrism Tendency Scale (CETSCALE). In relate with the local product, research conducted in Croatia by Azhar & Sarfarz (2014) revealed that the consumer ethnocentric tendency and local brand preference have a significant correlation. In other hand, regarding the foreign brand preference, Azhar & Sarfarz (2014) revealed that there is a significant negative correlation between consumer ethnocentrism and foreign brand preference. In addition, Monalisa (2015) revealed that the tendency of the consumer to consume local fruit product is high in consumer with high ethnocentric level.

2.4. Millennials Generation

Since Howe & Strauss (2000) theory is more common to be used in several kinds of researches, the author will use this theory. Howe & Strauss (2000) stated that generation Y year of birth was 1982 and the end year of birth for generation Y is 2000. Therefore, based on the literature, individuals who can participate in this research are those who born from 1982 – 2000. Research from *PUSKAKOM UI* (2017) revealed that the users of online ride-hailing in 2017 56% comes from 20 years old and 28% from 30 years old. In addition, Schooler (1971, p. 77) revealed that the younger respondents with high ethnocentric level assessed products from another origin higher than the older respondents. Hence, it is still become problematic to reassure that younger consumer is ethnocentric and more ethnocentric than the older consumer.

3. Research Model

Based on the previous finding from the literature, the research model is constructed below on Figure 1. This research model is adopted and modified from Azhar & Sarfarz (2014) for the consumer ethnocentrism toward the brand preference relationship and Trung & Van (2016) for the overall brand equity toward the brand preference relationship.
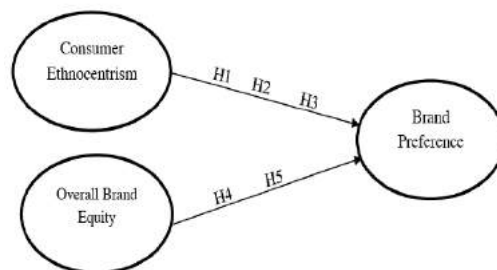
Figure 1. Research Model (Source: Modified from Azhar & Sarfarz, 2014 and Trung & Van, 2016)

ICMEM

3.1 Relationship between Consumer Ethnocentrism and Brand Preference

A research conducted by Azhar & Sarfarz (2014) revealed that the consumer ethnocentric tendency has significant correlations with the local brand preference. While on the other hand, Nguyen (2017) stated that there is a significantly negative association between consumer ethnocentrism and foreign product preference. Regarding the ethnocentric level, the research from Salman & Naeem (2015) revealed that the consumers who have favorable attitudes / high consumer ethnocentrism level are more likely to purchase the local product compared with the foreign one. In addition, according to Monalisa (2015), people with high ethnocentrism level will tend to use the local product.

Based on the research questions and the previous researches above, the hypotheses will be constructed as follow:

H1: The consumer ethnocentrism will significantly influence the preference of local online ride-hailing service among millennial.

H2: The consumer ethnocentrism will significantly influence the preference of foreign online ride-hailing service among millennials.

H3: The millennials with higher consumer ethnocentrism tendency will prefer local based online ride-hailing services rather than the foreign based online ride-hailing services.

3.2 Relationship between Overall Brand Equity and Brand Preference

Yoo & Donthu (2001) developed two brand equity measurements which are Overall Brand Equity (OBE) and Multidimensional Brand Equity (MBE). The author chooses the overall brand equity since it already represents the whole variable and it already tested to become a valid and reliable measurement in measuring the overall customer's evaluation towards a brand. The previous study from Sanjaya (2012) figured out that brand preference level shaped by the brand equity itself. Besides, research from Buil *et al.*, (2013) also found that overall brand equity is a significant variable in the consumers' the consumer's brand preference. This research also supported by Moradi & Zarei (2011) finding which showed that brand equity affected the brand preference positively.

Based on the research questions and the previous researches above, the hypotheses will be constructed as follow:

H4: The overall brand equity will significantly influence the local online ride-hailing service preference among millennials.

H5: The overall brand equity will significantly influence the foreign online ride-hailing service preference among millennials.

4. Methodology

Quantitative approach is selected to distribute the questionnaire towards 400 respondents which are the millennials who have experience with online ride-hailing. The questionnaire divided into 4 main parts which are demographic, consumer ethnocentrism, Go-Jek overall brand equity, and Grab Overall brand equity. The consumer ethnocentrism consists of 14 questions that adapted from Shimp & Sharma (1987). The overall brand equity consists of 3 questions adapted from Yoo & Donthu (2001). Each question regarding the variable is measured by Likert scale from 1 to 5, with the interpretation as: 1 - strongly disagree; 2 - disagree; 3 - neutral; 4 - agree and 5- strongly agree.

Pilot Test was conducted to ensure the data validity and reliability before the questionnaire distributed toward the 400 respondents. The validity and reliability test were conducted by using Pearson Correlation's Score and Cronbach Alpha Score. After the data collected, the data was analyzed descriptively and statistically, by using descriptive analysis, Binary Logistic Regression, and means difference test in SPSS.

5. Findings and Argument

The validity and reliability test toward 40 respondents showed that the measurement and each item is valid and reliable. All variable tested has Pearson Correlation's more than 0.304 (Sig. 0,05) and Cronbach Alpha score higher

ICMEM

than 0.7. This result indicates that all the variables are valid and reliable. Afterwards, the questionnaire was distributed to the 400 respondents. The result revealed that the millennials respondents' year of birth mostly comes from 1997 (24%), 1999 (18%), 1998 (16%), 2000 (14%) and the remaining year of birth is below 10%. It is similar with *PUSKAKOM UI (2017)* survey which revealed that more than 50% of active user in online ride-hailing is 20 years old. The respondents came from 66% women and 34% men. The result also revealed that Go-Jek is preferred by 280 respondents while Grab is preferred by 120 respondents.

The analysis consists of several steps. The first analysis is examining the influence of consumer ethnocentrism and overall brand equity influence in local online ride hailing service. The analysis result is presented in Table 1.

Table 1. The influence of consumer ethnocentrism and overall brand equity influence in local online ride hailing service

	B	S.E.	Wald	Df	Sig.	Exp(B)
CET	-.439	.265	2.738	1	.098	.645
OBEGOJEK	.820	.199	16.947	1	.000	.440
Constant	2.697	.616	19.146	1	.000	14833

a. Variable(s) entered on step1: CET, OBEGOJEK

Based on the table above, since the variable with Sig. score below 0.05 is only overall brand equity, hence only this variable is significant. For the overall brand equity, tt is consistent with the previous finding from Buil et al. (2013) which revealed that overall brand equity has a significant and positive correlation with the consumers' brand preference. Because the Coefficient for the constant / intercept (B) of Go-Jek's OBE variable is positive, therefore it influences the local online ride-hailing preference positively. For the consumer ethnocentrism, this finding is inconsistent with the previous finding from Azhar & Sarfarz (2014) which revealed that consumer ethnocentrism and local band preference have a significant positive correlation. The consumer ethnocentrism insignificant might happened because of several factors. It might have happened because the millennials respondent emphasizes their value on the overall brand equity rather than the ethnocentrism aspect; hence the ethnocentrism variable is less significant than the overall brand equity. It might as well have happened consistently with Schooler (1971) scenario. He revealed that the younger consumer could not be assured as an ethnocentric individual. In addition, several factors such as the economic development, social culture in the country, and also the sample of the study also influence this bias and error of consumer ethnocentrism scenario (Guo & Zhou, 2017).

The second analysis is examining the influence of consumer ethnocentrism and overall brand equity influence in foreign online ride hailing service. The analysis result presented in Table 2.

Table 2. The influence of consumer ethnocentrism and overall brand equity influence in foreign online ride hailing service

	B	S.E.	Wald	Df	Sig.	Exp(B)
CET	-1.540	.255	36.474	1	.000	.214
OBEGRAB	.906	.177	26.281	1	.000	2.473
Constant	.265	.630	.177	1	.674	1.303

a. Variable(s) entered on step1: CET, OBEGRAB

Based on the table above, since both variables have Sig. lower than 0.05, therefore both variables which are consumer ethnocentrism and overall brand equity have significant influence toward the foreign online ride-hailing service preference. Because the Coefficient for the constant / intercept (B) of Grab's OBE variable is positive, therefore it positively influences the foreign online ride-hailing preference. This finding is consistent with previous finding from Buil et al. (2013) which revealed that overall brand equity has a significant positive correlation with the consumers' brand preference. In other hand, since the consumer ethnocentrism Coefficient for the constant / intercept (B) is negative, it will negatively influence the preference in foreign online ride-hailing preference. This finding is consistent with the previous finding from Azhar & Sarfarz (2014) which revealed that consumer ethnocentrism has a significant negative correlation with the foreign brand preference.

ICMEM

The third analysis is examining if the consumer with high ethnocentric tendency tend to use local online ride-hailing services. The analysis result presented in Table 3.

Table 3. Level of ethnocentricity and tendency to use local online ride-hailing services

No. Average CETSCALE (41.8)	Number of Respondents	Prefer Go-Jek	Prefer Grab
High CETSCALE Score (>41.8)	189	153	36
Low CETSCALE Score (<41.8)	211	127	84

The tendency level is the average score of each respondent's answer in consumer ethnocentrism questions (CETSCALE). The lowest score is 33, and the highest score is 70, while the average score from 400 respondents is 41.8, so the range of high CETSCALE score is from 41.8 to 70, while on the other hand, the low CETSCALE score is from 33 to 41.8. Based on the data gathered, descriptively millennials with higher ethnocentrism tendency score who prefer Go-Jek is 153, while millennials with lower ethnocentrism tendency score who prefer Go-Jek is 127. On the other hand, millennials with higher ethnocentrism tendency score who prefer Grab is 36, while millennials with lower ethnocentrism tendency score who prefer Grab is 84. It can be concluded that the higher level of consumer ethnocentrism tendency will result to the higher amount of local service preference and the lower level of consumer ethnocentrism tendency will lead to the lower amount of local service preference.

Furthermore, Table 4 below shows the independent sample t – test result. Based on the table above, statistically there is a significant difference between the respondents' ethnocentric means who prefer Go-Jek and respondents' ethnocentric means who prefer Grab. Briefly, there is a significant difference between the respondent's ethnocentric level means who choose Go-Jek and Grab

Table 1.4 Mean Difference Test of Ethnocentricity between Gojek Users and Grab Users

		Levene Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
CET	Equal variances assumed	.093	.761	5.482	398	.000	.34019	.06206
	Equal variances not assumed			5.380	216.033	.000	.34019	.06323

Table 1.5 Mean Difference Test of Overall Brand Equity between Preferable Brand and Less Preferable Brand

	Levene Test for Equality of Variances			t-test for Equality of Means			

	Paired Differences			95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	Df	Sig. (2-tailed)
OBEGOJEK – OBEGRAB	.08895	1.03320	.05166	-.01261	.19051	1.722	399	.086

The last analysis is examining if the preferable brand has significantly higher overall brand equity rather than the less preferable brand. The analysis result is presented in Table 5. Based on the table, there is no significant difference

ICMEM

between Go-Jek's overall brand equity and Grab's overall brand equity. Hence, the author will try to illustrate descriptively on the Table 6.

Table 6

No.	Label	Mean Score for Each Item	Mean Score	Total Preferred
		Go-Jek		
1.	*OBEGOJEK1*	*3.4375*	*3.43*	*280 Respondents*
2.	*OBEGOJEK2*	*3.435*		
3.	*OBEGOJEK3*	*3.42*		
		Grab		
4.	*OBEGRAB1*	*3.005*	*2.89*	*120 Respondents*
5.	OBEGRAB2	2.8475		
6.	OBEGRAB3	2.84		

Descriptively, Table 6 indicates that Go-Jek has mean score of overall brand equity with the amount of 3.43 and preferred by 280 respondents. While on the other hand, Grab has the mean score of overall brand equity with the amount of 2.89 and preferred by 120 respondents. Statistically, there is no significant difference in overall brand equity between the two. However, when further analysis with brand preference is conducted, there is a mean difference in the means score and the amount of the respondents who prefer the brand as well.

6. Conclusion

This research begins with an enormous phenomenon in online ride-hailing between Go-Jek as the local-based and Grab as the foreign-based Transportation Network Company in terms of consumer ethnocentrism and overall brand equity. Based on the findings of this research, consumer ethnocentrism does not have a significant positive correlation with the brand preference in local online ride-hailing service among millennials. This finding becomes a challenge for future research since the previous research from Azhar & Sarfarz (2014) revealed that the consumer ethnocentric tendency has significant correlations with the local brand preference. In another hand, it has a significant negative correlation with the brand preference in online ride-hailing service among millennials. Whereas, it is found that overall brand equity variable has significant and positive correlation towards the brand preference in local and foreign ride-hailing among millennials.

Go-Jek is also found as a preferred service provider by the millennials with higher ethnocentric level compared with Grab. While between Go-Jek and Grab overall brand equity, there is no significant difference between the two. Instead, descriptively there is a difference in terms of means score and the number of the brand preference.

The result in local ride-hailing exemplifies that only overall brand equity has a significant correlation with the brand preference, hence the company should focus on enhancing and maintaining their brand equity. While in the foreign ride-hailing, the result exemplifies that the consumer ethnocentrism has higher influence rather than overall brand equity, hence it should become the primary consideration for the foreign online ride-hailing services and from this research, the correlation between the variable and the most influencing factors in online ride-hailing brand preference able to be explained.

This research has a contribution in theoretical implication by using overall brand equity from Yoo & Donthu (2001) and find out that the variable is significantly affecting the brand preference. The previous research mostly used Aaker and Keller in measuring the brand equity, while this research measures the brand equity in the whole using OBE. This research also constructed a new framework which combines and modify the overall brand equity and the brand preference framework from Trung & Van (2016) and consumer ethnocentrism and brand preference framework from Azhar & Sarfarz (2014). Moreover, this research also revealed that the consumer ethnocentrism variable was not significantly affect the brand preference in local online ride-hailing service among millennials. It becomes a challenge for future research since the previous research from Azhar & Sarfarz (2014) and Irsandi (2017) revealed that the consumer ethnocentrism has significant correlations with the local brand preference.

ICMEM

References

Azhar, K. & Sarfarz, N. (2014). Consumer's Ethnocentricity in Respect to Local and Foreign Brand Preference: An Empirical Research Study in Islamabad, Pakistan. Journal of Marketing and Consumer Research, Vol. 4, 2014.

Ben, M. (2017). Innovation Center for Energy and Transportation Online Ride-hailing Network and Fuel Consumption: A Driver's Perspective.

Buil, I., Martínez, E., & de Chernatony, L. (2013). The influence of brand equity on consumer responses. The Journal of Consumer Marketing, 30(1), 62-74.

Chen, C. & Chang, Y. (2008). Airline Brand Equity, Brand Preference, and Purchase Intention: The Moderating Effects of Switching Costs. Journal of Air Transport Management, 14, 40-42.

Feldwick, P. (1996) Do we really need "brand equity?". The Journal of Brand Management, 4 (1), 9-28.

Ghozali, I. (2006). Aplikasi Analisis Multivariate dengan Program SPSS (Edisi Ke 4). Badan Penerbit Universitas Diponegoro, Semarang.

Guo, G. & Zhou, X. (2017). Consumer Ethnocentrism on Product Judgment and Willingness to Buy: A Meta - Analysis.

Hellier, P.K., Geursen, G.M., Carr, R.A., & Rickard, J.A. (2003). Customer repurchase intention: A general structural equation model. European Journal of Marketing, 37(11/12), 1763.

Howe, N. & Strauss, W. (2000). Millennials Generation Rising: The Next Great Generation. Neq York: Vintage Books.

Irsandi, D (2017) Factors influencing Consumer Preferences toward Online Transportation (Go-Jek).

Kartini, F. (2017) Berapa Jumlah Pengguna dan Pengemudi Go-Jek? Retrieved from: https://tekno.kompas.com/read/2017/12/18/07092867/berapa-jumlah-pengguna-dan-pengemudi-go-jek [Received Date: 4. 12. 2017]

Millennials: Technology = Social Connection. (2014, February 26). Retrieved from: http://www.nielsen.com/us/en/insights/news/2014/millennials-technology-social-connection.html [Received Date: 21. 11. 2017]

Mohan Raj, P. (2016). Brand Preferences of Newspapers-Factor Analysis Approach. Research Journal of Economics and Business Studies, 5(11).

Monalisa, T. (2015). Pengaruh Etnosentrisme Konsumen Kota Malang terhadap niat Beli Buah Lokal. Parsimonia. 23-33.

Moradi, H. & Zarei, A. (2011). The Impact of Brand Equity on Purchase Intention and Brand Preference - The Moderating Effects of Country of Origin Image. Australian Journal of Basic and Applied Sciences, 5(3), 539-545.

Pusat Kajian Komunikasi Universitas Indonesia. (2017). Hasil Riset Manfaat Aplikasi On Demand: Studi Kasus Gojek - Indonesia. http://puskakom.ui.ac.id/publikasi/hasil-riset-manfaat-sosial-aplikasi-on-demand-studi-kasus-gojek-indonesia.html [Received Date: 5. 1. 2018]

Ruyter, K., van Birgelen, M. and Wetzels, M. (1998). Consumer ethnocentrism in international services marketing. International Business Review, Vol. 7 No. 2, pp. 185-202.

Schooler, R.D. (1971). Bias phenomena attendant to the marketing of foreign goods in the US. Journal of International Business Studies, Vol 2, No 1, pp 71-81.

Shimp, T.A. & Sharma, S. (1987). Consumer ethnocentrism: construction and validation of the CETSCALE. Journal of Marketing Research, 24, 280-289.

Stephen, J. (2015). Common Ride-hailing & Ride - Sharing Terms. Retrieved from: http://www.intransitionmag.org/spring2015/ride_hailing_terminology aspx [Received Date: 14. 3. 2018]

Swait, J., Erdem, T., Louviere, J., and Dubelaar, C. (1993). The equalization price: A measure of consumer-perceived brand equity. International Journal of Research in Marketing, 10 (1), 23-45.

Yoo, B., Donthu, N. (2001). Developing and validating a multidimensional consumer-based brand equity scale. Journal of Business Research, Vol. 52, No. 1, pp. 1-14.

ICMEM

The 3rd International Conference on Management in Emerging Markets

What Factors that Influence Coffee Flavor: A Case of Coffee Industry in Indonesia

Kartika Sarirahayu[a], Mustika Sufiati Purwanegara[b], and Fitri Aprilianty[c*]

[a,b,c]*School of Business and Management, Bandung Institute of Technology, Jl. Ganesha No.10, Bandung 40132, Indonesia*

Abstract

To increase the coffee consumption in Indonesia, we need to know the pivotal element in coffee that can motivate them to buy coffee products. Quality and uniqueness of the taste become one of the choices of coffee drinkers. Then find out factors that can affect the taste and quality of coffee products become very important for coffee actors. This study using a qualitative approach to know the factors that influence coffee product. There are six coffee shops that participate in this study. The result of this study confirms most factors stated in the literature study to be the factors that influence coffee flavor. Additionally, the researchers found that origin, processing, and level of roasting are the most pivotal element on the taste of coffee products. There are several studies discussing about coffee, but limited paper discuss about coffee beans product.

Keywords: Coffee; Beans; Origin; Post Harvesting; Roasting

1.   Introduction

Coffee is one of the important agricultural commodities which has strategic role in the economy in Indonesia. Indonesian coffee is a high quality coffee that can compete in International coffee trade. The coffee industry is increasingly showing its contribution to Indonesian exports. In 2016, the sector recorded export figures of USD 427.89 million, an increase of 19% from 2015 (Ministry of Trade Indonesia, 2017). The development of the coffee industry still needs to be improved considering it is only able to absorb about 35% of coffee production in the country and the rest of 65% is exported in the form of beans. Moreover, Indonesia's average coffee consumption only reached 1.1 kg per capita per year, far below coffee importing countries such as USA 4.3 kg, Japan 3.4 kg, Austria 7.6 kg, Belgium 8.0 kg, Norway 10.6 kg and Finland 11.4 kg per capita per year (Kemenperin, 2016). International Coffee Organization data shows that coffee consumption in Indonesia has increased in the period 2000-2016. In 2016 Indonesia's coffee consumption has reached 4.6 million bags @60 kg and is expected to continue to increase, compared with the year 2000 which only reached 1.68 million bags (package) @60 kg (International Coffee Organization, 2017).

The increasing coffee consumption in Indonesia makes the coffee shop industry is growing quite rapidly. Jakarta, Bandung and other major cities in Indonesia have plenty of coffee shops and cafes that provide various types of coffee from various regions in Indonesia. This trend then becomes a great opportunity for coffee shops to expand their business. With the growing market and their knowledge of coffee, consumers developing their love for coffee, evidenced by most of Indonesian coffee drinkers have moved from instant coffee to fresh coffee (Mintel, 2017). Therefore, it is important to know that the quality and taste are two things that should receive extra attention by the coffee producers to compete with their competitors.

Different types of coffee have different flavors, knowing the reason behind the "different flavors" may help coffee actors to formulating product development strategies and marketing strategies. From the literature it is known that in each cup of delicious coffee, there are varieties, locations, processing methods, altitude, climate, roasting levels,

---

* Corresponding author. Tel.: 085715794122
  E-mail address: fitri.aprilianty@sbm-itb.ac.id

ICMEM

brewing methods, and others (Ospina, 2017). Types of coffee can be one of consideration of customers in choosing coffee like the result of research have been conducted by Arif (2017). The curiosity to know and explore the process of how a bean from cherry to cup, what makes the difference in taste in each coffee bean is what inspired this paper and my original research agenda. Therefore, the aims of this study is to know the pivotal elements of coffee product.

2. Literature Review

2.1 Coffee in Indonesia

Indonesia is endowed with a great geographical location and a suitable land for growing coffee. There are many varieties of coffee scattered in various regions of Indonesia, with the unique taste of each region. However, there are only two of the most famous main varieties which are Arabica and Robusta. The difference between the both varieties mainly lies on the taste and level of caffeine (GAEKI, 2017). Several Indonesian Specialty Arabica coffee productions is already well known world wide, some of them are Aceh Gayo, Papua Baliem Wamena, Toraja Kalosi, Mandheling Samosir, Java Preanger, and Bali Kintamani. Specialty coffee is high quality coffee that has distinct flavor and characteristic (specialty) with the category of origin (Lewin *et al*., 2004). The taste of coffee is different in each region, it may be influenced by several factors like climate, soil, cultivation technique and post harvesting (Wahyudi *et. al.,* 2012). The flavor which contributes to the quality of the coffee is described in terms of winey, spicy and fragrant. Unpleasant flavor which reduce coffee quality such as grassy, onion, musty, and earthy (Wintgens, 2004).

2.2 Origin

Each origin of coffee beans produce different flavors, the coffee growing region helps to provide coffee characteristics that enhance the flavor profile. When the coffee beans are roasted, the smell and taste reflected the identity of the beans, and how the environment conditions where it grows. For example, Indonesian coffee is thick with the scent of freshly ground rain water, but there is also a herbal fragrance. This is determined by natural factor and the circumstances surrounding environment, climate, soil conditions, and altitude. Plants planted around coffee plants are also believed to affect the aroma. Kintamani Bali coffee is full of citrus aroma because the coffee plant is surrounded by citrus plantation (Purnama, 2016). The character reflected in the taste affirms coffee as a product that is so sensitive to the environment where it grows. Anything planted around a coffee plant can affect the aroma.

2.3 Coffee Processing

The goal of coffee processing is to lower fresh cherry water content (about 11-12%), removing all the covering around the beans and preparing the beans according to market demand (Wintgens, 2004). Style and method of coffee processing may have different purposes depending on the by tradition and general preferences of coffee buyer as well as the availability and cost of labor. Over the last few years, coffee processor in several Latin American countries have tried several concept with natural and hybrid methods, where most of the mucilage is left on the beans after being washed (Brando, 2004). Many coffee buyers prefer the washed method which is they prefer a pure, clean, and transparent flavor profile. Other buyers have different interest in the flavor profile of natural and honey processing styles.

2.4 Roasting

Coffee beans naturally contain quite a lot of organic compounds of flavor-forming and typical coffee. Roasting is a highly complex process that depending on the time and temperature marked by significant chemical changes. At the roasting process there is a loss of dry weight, especially CO_2 gas and other volatile pyrolysis products. Most pyrolysis products determine coffee flavor (De Azeredo *et al.,* 2011; Dmowski *et al*., 2014). There are many level of roasting in the coffee world, from light roasts (light city, half city, cinnamon), medium roasts (city, American, breakfast),

ICMEM

medium dark roasts (full city), to dark roasts (high, continental, espresso, New Orleans, European, Viennese, Italian, French) (National Coffee Association USA, 2017).

3. Methodology

3.1 Research Design

The interview using semi-structured interviews, a popular method in qualitative approach. This method offers a balance between the flexibility of an open-ended interview and the focus of structured ethnographic survey. With this technique the interview start with simpler topics and move to more complex things. There is an interview guideline but still be able to improvise the question if it found information that needs to be explored in more depth. The semi-structured interview used to explore the pivotal elements and the most influential characteristics in coffee product.

3.2 Data Collection

Data were gathered primarily through face-to-face interviews. This research conducted in six coffee shops in Jakarta and Bandung. To represent big cities in Indonesia, this study used coffee shops in Jakarta and Bandung as sample. This two cities is assume to have many coffee outlets that can be easily found. Research participant obtained by using purposive sampling, which is a technique of determining the subjects based on the criteria and objectives of the study. In these interviews, the interviewees are considered to have a deep knowledge of the coffee industry in Indonesia. The author chose two roasters from Contrast and Caffetto to explore roasting process; barista from Coffindo, manager hall from Coffee and John, and owner of Contrast to find out the flavors preferred by consumers; Brach manager of Opal Coffee and founder of Kadatuan Coffee who can provide information about the most influential characteristics that influenced coffee flavor.

By interviewing those respondents, the researchers hopes to obtain first-hand information from various perspective. Each of the interviews lasted between thirty minutes to one hour. The researcher also contacted the interviewees after the interviews when additional information and clarifications were needed. The information received by the researcher from all the interviews was supported by additional information obtained from several articles about coffee on papers, books, and website from around the globe, also several papers covering the topic.

3.3 Data Analysis

The interviews were conducted in Bahasa, the native language of the participants. After conducting the interview, the information obtained from the interviews were transcribed, examined and classified into several common themes manually (Saldana, 2012). To transcribe the audio-recorded interviews, the researcher first listens carefully to the interviews, then listens to it again and transcribes it. This research uses coding system as data analysis process. There are three steps of coding process: Open Coding, Axial Coding, and Selective Coding (Straus & Corbin, 1990).

4. Result and Decision

The purpose of this interview is to identify the factors influence coffee product. To get in depth information about the characteristics that makes taste of some coffee is "different", author used six interviews. The interviewees is considered to have a deep knowledge of the coffee industry in Indonesia. The author chose roaster to explore roasting process, barista to find out the flavors preferred by consumers, and people in the coffee industry who can provide information about the pivotal elements and the most influential characteristics that influenced coffee flavor. In accordance with the existing literature, the results of the interview mentioned that all variables are very important, ranging from farmers, harvesting, seed selection, climate, post-harvest process to barista. From the **Table I Findings**

ICMEM

Summary we can see that origin, processing, and level of roasting are the most pivotal element on the taste of coffee products.

Table I Findings Summary

No.	Factors Influence Coffee Flavor	Literature Reviews	Our Findings
1	Origin	Yes	Yes
2	Process:		
	Natural Process	Yes	Yes
	Honey Process	Yes	Yes
	Wash Process	Yes	Yes
	Semi-Wash Process	No	Yes
3	Roasting:		
	Light Roast	Yes	Yes
	Light to Medium Roast	Yes	Yes
	Medium Roast	Yes	Yes
	Medium to Dark Roast	Yes	Yes
	Dark Roast	Yes	Yes

The study found that almost all coffee shops claim that the best-selling coffee beans in their store are Arabica coffee, only one coffee shop stating Robusta as the most sold coffee in their store. The biggest coffee production in Indonesia is Robusta, consequently, for many years the Indonesian people are accustomed to drink Robusta coffee. This forms the mindset in society that coffee must be bitter and strong. Mostly, older generations assume that Arabica coffee tastes more acidic and can cause stomach problems, despite the fact that the perception is wrong, the acidity of Arabica is quite low (Triananda, 2014).

Interestingly, the proliferation of coffee shops in Indonesia dominated by young consumers or commonly we call the millennial became one of the causes of consumer shifts from Robusta to Arabica. Obvious, we cannot generalize all Indonesian consumers begin to shit from Robusta to Arabica, but we still have hope if one day a higher quality coffee can be enjoyed by many people. Especially now that Arabica consumption in Indonesia is rising. The most widely purchased coffee beans in Bandung and Jakarta coffee shops are, Flores, Aceh Gayo, Toraja, Java Preanger, Bali Kintamani, Mandheling, Lintong, and Papua Wamena. There are many origin of coffee in Indonesia, other than the eighth origin in the picture above. From the interview, the researchers found some other origin such as Jave Ijen, Zuria, Kerici, Dolok Sanggul, Sidikalang, Lampung, and many more.

It is common knowledge for farmers and coffee producers that post harvesting process is one of the stages that determines the taste of coffee beans. There are many literature reviews that support this idea, the interview results are also in line with the existing review literature. Interestingly, there is another process known generally by the coffee farmers in Indonesia, but it is very difficult to find in scientific literature. That process is a semi-wash process, a process known only among Indonesian farmers. The process is sometimes not exactly the same between one farmer with another farmer, but the outline of the sequence is the same. Apparently this process arises from the laziness of Indonesian farmers, to shorten the drying time then this method was created.

There are many level of roasting, but in general, most coffee shops provide four categories: light, medium, medium to dark and dark. Coffee beans can be roasted at all roasting levels, but forcing roasting levels can cause flavor failure in coffee. Roasting failure occurs mostly at the level of light roasting, since at this level the development of the flavor just begun so that forcing the beans to roast at this level can cause the underdeveloped taste. To determine the level of roasting suitable for a coffee bean, the roaster must first know the geographical and environmental conditions in which the coffee is grown, the post-harvest processing, the last moisture content, and the density of the coffee beans.

ICMEM

References

Arif, Ghanny Shidqy. (2017). The Preference Analysis of Coffee Shops and Its Customers Towards Coffee Beans in Jakarta. Unpublished Undergraduate Thesis, School of Business and Management Institut Teknologi Bandung.

Brando, Carlos H. J. (2004). Harvesting and Green Coffee Processing. WILEY-VCH: Germany.

De Azeredo, Alberto Monteiro. (2011). Coffee Roasting: Color and Aroma-Active Sulfur Compounds. A dissertation presented to the graduate school of the University of Florida in partial fulfillment of the requirements for the degree of Doctor of Philosophy, University of Florida.

Dmowski, Przemyslaw., and Dqbrowska, Joanna. Comparative Study of Sensory Properties and Color in Differebt Coffee Samples Depending on the Degree of Roasting. Gdynia Maritime University. Poland.

GAEKI. (2017). Areal and Production Coffee Indonesia.

International Coffee Organization. (2017). Trade Statistics. http://www.ico.org/trade_statistics.asp?section=Statistics

Kemenperin. (2016). Menperin: Gaya Hidup Dorong Industri Kopi Tumbuh. http://www.kemenperin.go.id/artikel/15421/Menperin:-Gaya-Hidup-Dorong-Industri-Kopi-Tumbuh

Mintel. (2017). Coffee Brews Up Success in Asia: Indonesia, Indoa and Vietnam among the Fastest Growing Coffee Market Globally. http://www.mintel.com/press-centre/food-and-drink/coffee-brews-up-success-in-asia

Ministry of Trade Indonesia. (2017). Rayakan Hari Kopi, Kemenperin Terus Tingkatkan Ekspor Kopi Nasional. http://www.depkes.go.id/article/print/17100200009/rayakan-hari-kopi-kemenperin-terus-tingkatkan-ekspor-kopi-nasional-.html

Ospina, Angie Molina. (2017). Toraja: The Origin That Will Make You Rethink Indonesian Coffee.

Purnama, Siti. (2016). Karakteristik Kopi Arabika Berdasarkan DaerahAsal dan Tingkatan Roasting. Disbun Jabar.

Saldana, J. (2012). The coding manual for qualitative researchers. Sage.

Taveira *et al.* (2015). Post-harvest effects on beverage quality and physiological performance of coffee beans. African Journal of Agricultural Research Vol. 10(12), pp.1457-1466.

Taylor, A. J., & Roozen, J. P. (1996). Volatile flavor release from foods during eating. Critical Reviews in Food Science and Nutrition, 36(8), 765–784.

Triananda, Kharina. (2014). Alasan Masyarakat ndonesia Hindari Kopi Arabika. http://www.beritasatu.com/kuliner/179910-alasan-masyarakat-indonesia-hindari-kopi-arabika.html

Wintgens, Jean Nicolas. (2004). Coffee: Growing, Processing, Sustainable Production. A Guidebook for Growers, Processors, Traders, and Researchers. WILEY-VCH: Germany.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The New Brand Positioning and Marketing Communication of Brawijaya Clinic Buah Batu Bandung as Part Of The Improvement Of Its Brand Relevance

Aninditya Christa Maharani[a*], Reza Ashari Nasution[b]

[a,b] *School of Business and Management, Institut Teknologi Bandung, Bandung 40132, Indonesia*

Abstract

There is tight competition in the healthcare industry, the private-owned healthcare is facing the challenge of the existence of private-owned or government-owned hospitals and clinics. The new strategy is needed to overcome this challenges. This research aimed to propose the new positioning strategy and effective marketing communication by identifying factors and attributes that useful for Brawijaya clinic. The brand audit is a tool to discover customer-based brand equity, it is consist of brand inventory and brand exploratory. Brand audit is very useful to generate a new strategy in improving brand relevance and reaching the sales target. From this research, Brawijaya was more focusing in promotion of USG 4D in their marketing communication and was not delivering messages in building expected positioning to be one-stop healthcare specialized women and children. The proposing strategy in positioning is by laddering the expected points-of-differences (PODs) and reacting by adding reassurance on the points-of-difference (PODs) and points-of-parity (POPs). The content information should be appropriate to build the brand relevance in the mind of customers and should be delivered with the suitable channels

Keyword: Brawijaya clinic Brand audit; Customer-based Brand Equity; Positioning; Marketing communication

1. Introduction

Healthcare Industry in Indonesia is snowballing and bringing lucrative and promising investments opportunity for local and global investors. The number of Hospitals and Clinics are rapidly increasing. They continue to experience significant growth despite the slowing down of an economy. In early 2014 Indonesian Government implemented a *Sistem Jaminan Sosial Nasional* (SJSN) and operated *Badan Penyelenggara Jaminan Sosial* (BPJS), which is aimed to meet the decent health needs of Indonesia citizen. The existence of BPJS's collaborative hospital, that gives free of charge service and medication based on the reference system, makes private clinic (those who are not in collaboration with BPJS) should generates strategy to compete in this health industry. Brawijaya Women and Children Hospital is located in Jakarta and have 5-storey building with over 7,000 sqm of floor space. It provides 70 inpatient beds (and expanding) with 300 outpatient capacity per day and visited by over 40,000 patients annualy over 5 different nationalities. Trusted by Ministry of Health and achieving hospital operatorship permanent license and achieving the operational cash breakeven in July 2007 (10 months after opening). In 2010, Brawijaya Women and Children Hospital Jakarta received the National highest award Hospital "Ibu Sayang Anak" (The Highest Careness Award to specialized on Maternity Provider Hospital). There are more than twenty Obstetricians and Pediatricians in Brawijaya Women and Children Hospital. Brawijaya clinic is a satellite clinic of Brawijaya Women and Children Hospital opened in 2015. This clinic is a private owned clinic and including as the category of *Klinik Utama* that has specialty in providing medical health services for women and children as their main services but also accompanied their operation with

---

* Corresponding author.

E-mail address: christa.maharani@sbm-itb.ac.id

ICMEM

supporting services like; general practice, children growth and development center, medical rehabilitation, psychology, medical check-up and dental care . Since opened in 2015, the sales and number of visitor in Brawijaya Clinic Buah Batu Bandung was not as it was expected. In the mid 2017, in order to increase the sales and the number of visitors, Brawijaya launched USG 4D as a competitive feature. Moreover, Brawijaya offered USG 4D in affordable price through their promotional campaign. This following feature was proved in increasing sales but as result the revenue stream from other outpatient clinic were volatile, also for the clinic visit was spread uneven. In the beginning, Brawijaya was using radio, magazines, and various medical events. Then in the mid of 2017, Brawijaya Clinic started to use social media that managed by their internal team and since August 2017, the social media is managed by digital marketing vendor. Moreover, because of their marketing communications are more emphasizing the promotional campaign about USG 4D, Brawijaya became only known as USG 4D clinic rather than one stop healthcare specialized in women and children health. There were a high spending in brand communication activities during these three years but in spite of getting the expecting sales, the company faced the uneven spread of sales and narrow image of the brand Brawijaya Clinic. In conclusion, ineffective positioning of Brawijaya clinic and the low brand awareness of Brawijaya clinic are problems that should immediately overcome by generating strategy in positioning and marketing communications. This problem should also be overcame because of the challenge of the growing number of clinic in Bandung and the existence of BPJS system.

2. Literature Review

Strategic Brand Management Process
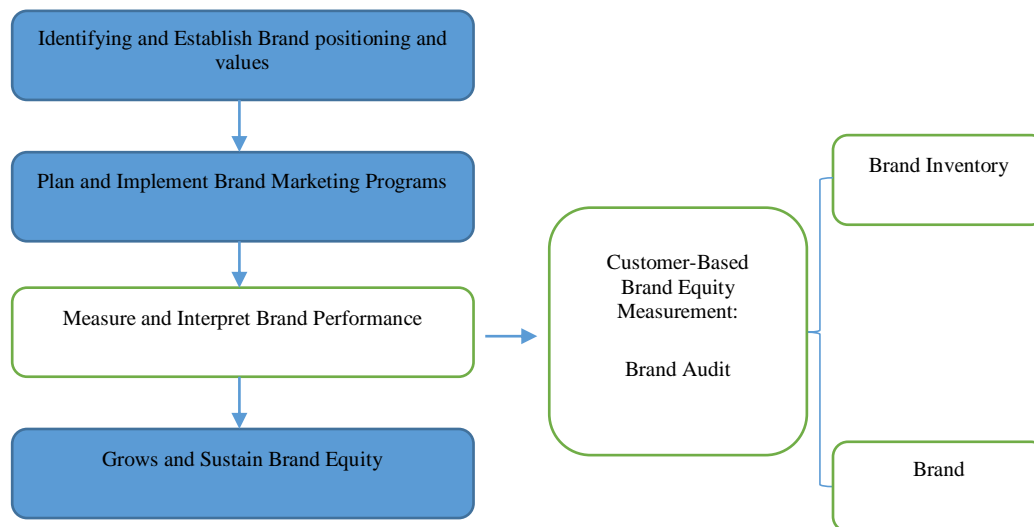
Fig 1. Strategic Brand Management Process & Conceptual Framework

2.1 Customer-based brand equity

Keller (2013) stated that brand equity is one of the most popular and potentially important marketing concepts in 1980. Fundamentally, branding is all about endowing products and services with the power of brand equity. Most of observers agree that brand equity consists of the marketing effect uniquely attributable to a brand. The basic principle of brand equity is it provides a common denominator for interpreting marketing strategies and assessing the value of a brand. Brand equity has elevated the importance of the brand in marketing strategy and provided focus for managerial interest and research activity. There is a strategic brand management process that involves the design and implementation of marketing programs and activities to build, measure, and manage brand equity. Furthermore, Keller

ICMEM

(2013) developed the customer-based brand equity (CBBE) framework, it is recognizing the general importance of consumers and customers as the source to build, measure, and manage the brand equity. Based on CBBE concept, a brand has positive customer-based brand equity if customers react more favorably to a product and the way it is marketed when the brand is identified, than when the product carries a fictitious name or no name. The basic premise of CBBE concept is that power of a brand lies in what customers have learned, felt, seen, and heard about the brand as a result of their experiences over time. CBBE concept also can be defined as the differential effect that consumers brand knowledge has on their response to the marketing of that brand. The brand knowledge is described a brand as a node in memory with a variety of different types of associations linked to it. Brand knowledge has two components: brand awareness and brand image. The concept of building customer-based brand equity consists of the following process;

Brand building tools and objectives ⟶ Consumer knowledge effect ⟶ Branding Benefit
The complete concept of building Customer-Based Brand Equity is can be seen in Figure 2
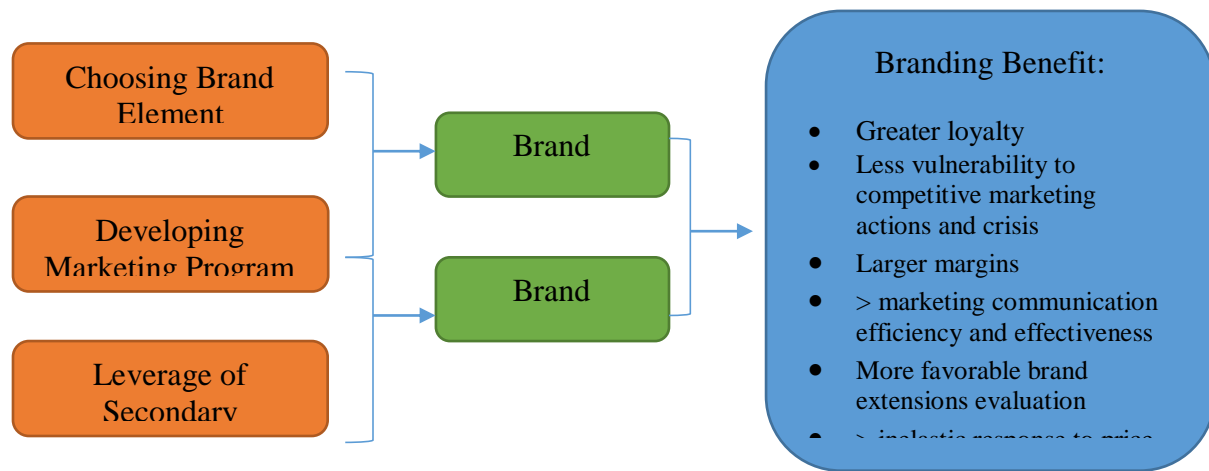
Fig 2. Building Customer-Based Brand Equity

2.2 Brand Audit

Brand audit is including as the third step in strategic brand management process, it is a comprehensive examination of a brand to discover its sources of brand equity. A brand audit is a consumer-focused exercise to assess the health of the brand, uncover its sources of brand equity, and suggest ways to improve and leverage its equity. It is requires understanding the sources of brand equity from the perspective of both the firm and the consumer. It can set strategic direction for the brand, and management should conduct one whenever important shifts in strategic direction are likely. The brand audit consists of two steps: the brand inventory and the brand exploratory (Keller, 2013).

2.3 Brand Inventory

Brand inventory is aimed to provide a current, comprehensive profile of how all the products and services sold by the company are marketed and branded. Profiling each product or services requires marketers to catalogue the following in both visual and written form for each product or service sold: the names, logos, symbols, characters, packaging, slogans, or other trademarks used; the inherent product attributes or characteristics of the brand; the pricing, communications, and distribution policies; and any other relevant marketing activity related to the brand (Keller, 2013).

ICMEM

2.4 Brand Exploratory

In brand exploratory, the company should find detailed information about consumer' mind. The brand exploratory is research directed to understanding that consumers think and feel about the brand. In result there will be action toward the consumer's mind. Brand exploratory is helping marketers to get better understanding about sources of brand equity as well as any possible barriers. The brand exploratory often employs qualitative research techniques as a first step then followed by more focused and definitive survey-based quantitative research (Keller, 2013).

3. Research Methods

This research is using brand audit that consist of brand inventory and brand exploratory. In generating and exploring the brand inventory, the primary data collection through interview with the *Badan Pelaksana Harian* of Brawijaya clinic. The primary data also gathered from internal data of company profile, business plan, and brand guidelines in Brawijaya. The data from the Brawijaya internal data is mainly used in brand inventory to find information about brand architecture, vision and mission, brand image and promise, brand elements, and communications activities. The interview was supporting the internal data to prepare brand inventory of Brawijaya clinic Buah Batu Bandung. The information about brand positioning including with the target market were coming from the interview. The exploratory part of this research was done by having In-depth interview with thirty Brawijaya' existing customer, The interview was aimed to explore all the associations, touch-points, and the brand communication channel and content related to both; Brawijaya Clinic and Women and Children Clinic in general. The attributes that have been explored in exploratory stage research are further used to prepare conclusive research. In conclusive research there are eleven variables are used including; Customer Demography, Awareness, Customer Preference, Importance of the attribute, Touchpoints, Brand communication channel and content, Channel of Brand Element, Customer Review, Customer Loyalty, Comparing Attributes with competitors, and Brand Associations Ratings. All findings of conclusive research are analyzed using SPSS 23 software to support descriptive approach by finding the mean value and frequency of each attributes. Furthermore, Chi-test is used to find the significant relationship between each variables used in conclusive stage. The survey is designed for women because the type of clinic was women and children clinic. The data collection is held from May 2018 until June 2018. The sampling method in this research is using non probability sampling. The total number of respondent is 300 people, The ideal sample sizes used in problem-solving research is 300-500 (Malhotra, 2010).

4. Findings and Analysis

4. 1. Brand Inventory findings

Based from the internal data of Brawijaya Clinic, Brawijaya clinic Buah Batu Bandung is one of the satellite clinic of Brawijaya Hospital that have a positioning to be one stop healthcare in Bandung specialized in women and children health and targeting women aged 18-45 years old, with socio-economic status B to A, this following position is refer to the vision and mission from the Brawijaya healthcare as the umbrella company of Brawijaya clinic. The logo, as one of the brand elements, consists of the core of Brawijaya logo that is followed by the name of each business unit. It has visual element of 4 flowers petals using two different colours as a symbol of balance and harmony, purple colors represent luxury and tenderness and the dark grey is used as symbol of balance. The typography, that is simple and easy to read, is using Quenda Medium typeface. Furthermore, the round edges shows friendliness and the capital font with the same height represent neat and simple. There are 7 types of services provided in Brawijaya clinic Buah Batu Bandung including the main services (obstetrics and gynecology clinic and pediatrics clinic) and supporting services (children growth and development centre and paediatric clinic) and supporting services (children growth and development centre, general practice, dental care, children psychology, medical check-up).

ICMEM

4. 2.   *The marketing communication channel and content*

The marketing communication channels used in Brawijaya are event and experience (charity in conjunction with other company and health talk-show in some companies), radio (interview). Through different channels, Brawijaya tries to deliver different messages. Before utilizing social media as channel since June 2017, Brawijaya use magazine to deliver the advantages of USG 4D and other facilities and services in Brawijaya. In radio, Brawijaya provide information about women and children health issue. Through events, Brawijaya tried to deliver their positioning as one stop healthcare, but most of the event is not deliver their positioning as one stop healthcare, but most of the event is not delivered their specialty in women and children clinic. After June 2017, Brawijaya tried to utilize social media (Instagram and Facebook) but managed by internal team and then the social media managed by digital marketing vendor. In exploratory research, the author finds that there are a gap between company's marketing communication in the way they delivered the content and utilizing the channel. Company was not delivering the positioning in their channel based on customer's need. Moreover, instead of builds brand awareness of their company positioning, Brawijaya more communicating the brand with promotion of USG 4D. In fact, other information needed to customer are very rarely appear in their marketing communication channel.

4. 3.   *Exploratory research findings*

There are three variables asked to the respondents. First variable is about attribute and range of value, 13 attributes that depicts brand attribute, benefit, and images. Those attribute then divided to be range of value and there are 26 value in sum. Furthermore, second variable is touchpoints for both women and children clinic in general and Brawijaya clinic Buah Batu Bandung. The touchpoints of women and children clinic are consisted of pre visit (review of friend/family and information related to women and children clinic), visit (medical staff's service, doctor's performance, queuing condition), and post visit (good experience with doctor and positive impact to the health condition). Meanwhile, touchpoints of Brawijaya clinic are pre visit (review from friend/family), visit (room amenities, staff services, doctor performances, queuing condition), and post visit (good experience with doctor, positive impact to the health condition). The third variable is variable about brand communication channel and content. In women and children clinic, the channel used to find information about it are word-of-mouth (friend's recommendation) and internet. The content information needed to find women and children clinic in general are name of doctors, price, doctor's performance, customer review, clinic environment, coverage of insurance, medical service's menu, and facilities. The channel used to find information about Brawijaya are word-of-mouth (friend's recommendation) and social media. The content information are about name the doctor, promo, USG 4D, price, customer review, medical service menu, clinic's environment, and doctor's performance. All the exploratory result variables and attributes are used in the conclusive stage research.

The summary of conclusive stage research, the most respondents are women that married, aged 23-35 years old, living in Bandung city, work as private employee (*pegawai swasta*), and have income more than 5,000,000 IDR.

Table 1 Consumer Demography

Consumer Demography	Result
Marriage Status	Married
Age	23 – 35 years old
Domicile	Bandung city
Income	>5.000.000 IDR

In variable of recall, most of respondent are recalling Limijati (40%) as women and children clinic and most of them are not recognizing the name of Brawijaya clinic (60%) and only 120 respondents are knowing the brand of Brawijaya clinic. The most respondent stated that they were never visited Brawijaya before (267 respondents). The channel most used in finding information about women and children clinic and Brawijaya clinic is social media. The content information needed to find the women and children clinic are clinic environment, insurance coverage, and menu of medical services. Meanwhile, the content information needed to know about Brawijaya clinic are price,

ICMEM

promo, customer review, clinic environment doctor's performance. The channel that mostly used in finding the brand element of women and children clinic is social media. Meanwhile, brand element of Brawijaya are mostly be found in social media as well. In the preferences of value on each attributes shows result that the value preferred are routine pregnancy examination, a personally-known doctor, homey and cozy atmosphere, friendly medical staff, modern design, not queued administration, BPJS insurance, café facility, available USG 4D, available parking lot, normal labor facility, available children growth and development facility, and children psychology. The author also make comparison of each attribute with competitors such as Hermina and Limijati, the results of the comparison are Brawijaya has the higher mean value than the total mean value in the attributes of variation of pregnancy examination, clinic atmosphere, service of medical staffs, clinic design, queuing administration, and USG 4D. Meanwhile, if the mean value of each attribute of Brawijaya is compared to each clinic, Brawijaya is superior in the attributes of USG 4D and queuing administration.

Table 2. Summary of comparison of the attributes

	Mean score		
Attributes	**Brawijaya**	**Limijati**	**Hermina**
Variation of pregnancy examination	4.36	4.36	4.00
Doctor's popularity	3.91	4.73	4.18
Clinic Atmosphere	4.36	4.45	3.64
Service of medical staffs	4.72	4.72	3.82
Clinic Design	4.09	4.45	3.55
Queue Administration	4.36	3.64	3.45
Coverage of Insurance	3.09	4.18	4.00
Dining Facility	2.55	3.73	4.18
USG 4D	4.55	3.82	3.64
Maternity Facility	2.36	4.36	4.00
Parking	3.00	3.64	3.73
Children growth and development	3.91	3.91	4.00
Children psychology	3.82	3.91	4.00
Average	**3.77**	**4.15**	**3.86**
Grand Total Average		**3.93**	

In the descriptive analysis of customer review, Brawijaya has advantages in convenient place, good and excellent services, doctor's hospitality, not queuing up, and young doctor. In contrary, the disadvantages are lack of parking area, unavailability of maternity facility, changing of doctor's schedule, doctor's delay, expensive, and less spacious space. Brawijaya is highly associated with routine pregnancy and post-labor examination, cozy and homey atmosphere, friendly and informative medical staff, modern and minimalist design, USG 4D, but the most association is on USG 4D. In women and children clinic, touchpoints during pre-visit is in the factor of information about women and children clinic, clinic staff's service hospitality is the most factor affecting during visit, and factor during post visit is good experience with the doctor. Meanwhile, Brawijaya touchpoints factor in pre visit is information about Brawijaya clinic, during visit is doctor's performance, and post visit is good experience with doctor. Furthermore, there are significant correlation between channel of brand element with brand awareness of Brawijaya clinic and there is significant correlation between channel of Brawijaya clinic with respondent demographic (age, domicile, occupation, income, and, marital status). There is also strong correlation between customer loyalty with touchpoints of Brawijaya clinic.

Table 3. Pearson Chi-Square Correlation between Brand Element of Brawijaya and Brand Awareness

An example of a column heading	Value	df	Asymp. Sig (2-sided)
Pearson Chi-Square	18.820[a]	2	.000
Likelihood Ratio	20.648	2	.000
Linear-by-Linear Association	18.749	1	.000
N of Valid Cases	300		

ICMEM

The Pearson chi square test is essentially tells us the significant value of crosstabs result (Ghozali, 2016). The Pearson Chi-square has value of 18,820 and significance level of 0,000. This number indicated that there was significance correlation between brand element and brand awareness of Brawijaya Clinic.

Table 4. Pearson Chi-Square Correlation between Brand communication channel of women and children clinic with respondent demographic (Marital status, Age, Domicile)

Chi-Square Tests											
Marital status				**Age**				**Domicile**			
	Value	**df**	**Asymp. Sig. (2-sided)**		**Value**	**df**	**Asymp. Sig. (2-sided)**		**Value**	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	18.088a	6	.006	Pearson Chi-Square	41.019a	18	.002	Pearson Chi-Square	204.135a	36	.000
Likelihood Ratio	23.034	6	.001	Likelihood Ratio	41.275	18	.001	Likelihood Ratio	78.988	36	.000
Linear-by-Linear Association	2.502	1	.114	Linear-by-Linear Association	2.364	1	.124	Linear-by-Linear Association	2.463	1	.117
N of Valid Cases	300			N of Valid Cases	300			N of Valid Cases	300		

From the chi-square test of Marital Status, Age, and Domicile were presented on the table above, it may concluded that there are a significant correlation (0.030) between marital status and brand communication channel in women and children clinic, significant correlation (0.020) between age and brand communication channel in women and children clinic, significant correlation (0.000) between domicile and brand communication channel in women and children clinic.

Table 5. Pearson Chi-Square Correlation between Brand communication channel of women and children clinic with respondent demographic (Occupation, Income)

Chi-Square Tests							
Occupation				**Income**			
	Value	**df**	**Asymp. Sig. (2-sided)**		**Value**	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	397.073[a]	60	.000	Pearson Chi-Square	72.379[a]	30	.000
Likelihood Ratio	124.438	60	.000	Likelihood Ratio	59.380	30	.001
Linear-by-Linear Association	2.163	1	.141	Linear-by-Linear Association	.000	1	.988
N of Valid Cases	300			N of Valid Cases	300		

Table 6. Pearson Correlation between Customer Loyalty and Touchpoints of Brawijaya

Correlations		Customer Loyalty	Brand touchpoints
Customer Loyalty	Pearson Correlation	1	.945[**]
	Sig. (2-tailed)		.000
	N	300	300
Brand Touchpoints	Pearson Correlation	.945[**]	1
	Sig. (2-tailed)	.000	
	N	300	300

The correlation result between two variables is 0.945, that indicated the result is in the criteria of strong correlation with significance level about 0.0000 (0.000<0.05). The result might concluded as there is strong correlation and significance relationship between customer loyalty and touch-points of Brawijaya.

ICMEM

4. 4.   Alternative(s) of Business Solution

Brand Positioning

The proposed alternatives are: laddering, reacting, and straddling. In Laddering, the attributes are progressing to benefit to more abstract values or motivations. Laddering repeatedly asks what the implication of an attribute or benefit is for the consumer (Keller, 2013). Brawijaya should utilized the attributes that considered as the points-of-difference to create benefit and value associations. For Brawijaya, the points-of-difference that should be deepen are comprehensive variation of pregnancy examination, cozy clinic atmosphere, friendliness of the medical staff's services, modern clinic design, and providing USG 4D. Meanwhile, the points-of-parities are including maternity facility, parking facility, and the insurance coverage.

In Reacting, there are three options for Brawijaya; Do nothing, Go on the defensive, Go on the offensive and the last alternative was straddle position.

In Reacting, there are three options for Brawijaya; Do nothing, Go on the defensive, Go on the offensive.

- **Do nothing.** When there are no competitive action possibly done to recapture a PODs or create a new PODs, the best reaction for Brawijaya clinic is to stay the course and continue brand-building efforts.
- **Go on the defensive.** When there is opportunity in disrupting the market some, then it may be necessary to take a defensive stance. One way to defend the positioning is to add some reassurance in the product or advertising to strengthen POPs and PODs. In defensive mode, Brawijaya should develops an effective marketing communication program in order to strengthen its POPs and PODs or by improving the current PODs and POPs. In order to strengthen the PODs of Brawijaya, company should improve all the PODs attributes in Brawijaya Clinic, the table below shows how should Brawijaya act in order to go defensive against the competition.

Table 7. Proposed PODs and POPs of Brawijaya Clinic

PODs	POPs
Variation of pregnancy examination: Routine pregnancy examination	Maternity Facility
Cozy clinic Atmosphere	Parking Facility
Friendliness of medical staffs	Insurance coverage
Modern clinic design	
USG 4D	

- **Go on the offensive.** The offensive approach is taken once the competitive actions seem potentially damaging the brand, in this condition an offensive step should be taken and maybe Brawijaya clinic should reposition the brand to address the threat. One approach might be to launch a product expansion or ad campaign that fundamentally changes the meaning of the brand (Keller, 2013). In the offensive approach Brawijaya might be totally change their position from clinic that has speciality in women and children health to expand their service become more general. Brawijaya might introduce itself as a healthcare that providing comprehensive health services and women and children clinic is including inside but no longer become the speciality . In example, Brawijaya may expand their services to include internal medicine, surgery, ENT clinic (ear, nose, and throat), neurology clinic, clinical nutrition, et cetera.

In straddle position, Brawijaya should be able to straddle in two categories of image from PODs and POPs. In example, Brawijaya might straddle with images of modern women and children clinic from PODs and comprehensive pregnancy examination from POPs. The marketing communication will support this position to be accepted in the mind of customers

ICMEM

Brand communication content and channel

Based on Kotler (2009), In developing effective communications, there are steps to develop it. Those steps are including: Identify target audience, determine objectives, design communications, select channel, establish budget, decide media mix, measure result, and manage integrated marketing communication.

- ● *Massage strategy*

In determining message strategy, management searches for appeals, themes, or ideas that will tie into the brand positioning and help to establish points-of-parity or points-of-differences. In message strategy, Brawijaya may implements the result from the descriptive analysis about the content information needed in women and children clinic and Brawijaya clinic. The following information are clinic environment, insurance coverage, menu of medical services, price, promo, doctor's performance, customer review.

- ● *Massage source*

In determining message source strategy, company should has attention to the credibility. The credibility must contain three underlying factors: expertise, trustworthiness, and likability. In doing so, Brawijaya might choose these following alternatives spoke-persons: well-known celebrity doctor (likeability and trustworthiness), Brawijaya's resident doctors (expertise and trustworthiness), micro-influencer (likeability).

- ● *Channels*

There are four major marketing communication options: advertising and promotion, interactive marketing, events and experiences, and mobile marketing (Keller, 2013). Advertising that suitable to Brawijaya are including: Radio, Internet, and Billboards. Brawijaya clinic might implements the advertising approach through local radio that personify Brawijaya's target audience. In internet, Brawijaya should include their existence through google business and using search engine optimization (SEO) and by using direct email from the customer database. Advertising in Billboards might be implemented by Brawijaya clinic, for instance Brawijaya should advertise billboards not only in one place but in the moving media by make a partnership with vehicle advertising vendors like StickEarn, Ubiklan, Sticar, Karta or Promogo.

Promotion is going hand-in-hand with the advertising approach. In doing promotion, Brawijaya may give the promotion such as Welcoming Promo for attracting the prospective buyer so they will buy the brand for the very first time or provides membership features so there are special discount or benefit for customer that apply as a member of Brawijaya Clinic.

In interactive marketing, the suitable channel is using social media. By utilizing social media, Brawijaya can allows the customers to share text, images, audio, and video online with each other and they possibly allow themselves to become representatives for the companies. As social media is an effective way to change health behavior and doctors can reinforce good content delivery through social media (Evans, 2006). In using social media, Brawijaya should combining Instagram, Facebook, and YouTube. In event and experience, Brawijaya should held a women health talk-show, children growth and health talk-show and other talk-show that leveraging the Points-of-Parity and Points-of-difference of Brawijaya Clinic then combined them with promotional approach related to their services so the event and experience will be resulted as positive input in the mind of the customers. Based on the research study in the number of internet users in Indonesia from 2011 to 2022 are growing rapidly (Statista.com, 2018) and in 2017, the number of smartphone users in Indonesia is estimated to reach 62,69 million (Statista.com, 2018). So, In Mobile Marketing, Brawijaya may collaborated with iAd mobile network or Google's Android operating system. Furthermore, Brawijaya may developed an Apps to support its service

4. 5.   Proposed Business Solution

Proposed positioning for Brawijaya.

Brawijaya might combines the laddering with defensive approach and further start to straddle its position. Brawijaya should laddering the expected image with structural steps to deliver all the attributes of PODs to leads as benefit for the customer and finally perceived as a value for the customers. The defensive approach in reacting to the current competition might be chosen, because to compete with the well-known healthcare facilities like Limijati or Hermina,

ICMEM

Brawijaya need quite long time, process, and budget. So, the best way is by going defensive by adding some reassurance in services and advertising to strengthen the points-of-differences (PODs) and points-of-parity (POPs). The following PODs and POPs are seen in the table 6. The actions are proposed to be done in order to go defensive are seen in the following table;

Table 8. Defensive action plan

PODs	Action plan
Variation of pregnancy examination: Routine pregnancy examination	1.Improving comfortability in examination room
	2.Improving variance in routine pregnancy examination
	3.Improving medical device used in pregnancy examination
	4.Improving doctor's communication quality to the patient
Cozy clinic Atmosphere	1.Improve comfortability by providing special essence that authentic for Brawijaya Clinic.
	2.Provide warm ambience by using orange lamp 3.In the waiting room, might be provided with comfortable couch for pregnant women.
	4.Provided with Free Wifi
	5.Provide lactation and nursery room
Friendliness of medical staffs	1.The friendliness is start from non-medical staff (security guard, Office Boy, administration staff and all management staff) to all medical staffs (from apothecary staff , nurses and doctors). Brawijaya should have special greetings to welcome the customers
Modern clinic design	1.Clinic decoration should be modern
USG 4D	1.USG 4D gas various type of machines, Brawijaya should survey on improvement of USG 4D technology then provided it in the clinic

Proposed Integrated Marketing Communication for Brawijaya Clinic.

Based on the research result, the most frequently used channel in finding information and finding the brand element about women and children clinic is social media and the information content needed related to women and children clinic combined with Brawijaya Clinic are; clinic environment, insurance coverage, menu of medical services, price, promo, doctor's performance, customer review. There is creative strategy to deliver those message, Brawijaya should combined both of the informational and transformational appeals. the informational appeals should delivered the brand positioning. In example by making service demonstration ads that showing the audience about how each services provided are delivered from beginning to the end. In transformational appeals, Brawijaya may utilizing a person that depict its positioning. In doing so, Brawijaya may choose micro-celebrity spoke-persons, Brawijaya should also make their resident doctors as the spoke-person as well. The resident doctor might be provides information not only about the benefit of Brawijaya but cover those benefit with health issues. The channels chosen in marketing communication are advertisement on social media, sales promotion, online and social media marketing (YouTube, Facebook, and Instagram), and event and experiences. By utilizing paid advertising platform on social media can generate thousands of website visits, an uptick in new patient visit and leverage the brand awareness (Marbury, 2015). The sales promotion should be delivered in combination with the paid advertisement on social media. In the interactive marketing using YouTube, the viral YouTube videos are sought. Breedlove (2017) stated from Berger that there are six key drivers determine a video's virality: social currency, triggers (things that are top-of-mind), emotion, the public (imitating what we see others do), practical value and stories. On Facebook, Cho (2013) stated that Facebook has a great platform to carry out WOM, Facebook users can add friends send messages, and update their personal profiles to notify friends

ICMEM

about themselves. So, Brawijaya should using Facebook as the social media platform that shares their services information in valuable and interesting way that satisfies their intrinsic motivation such as information self-efficacy and enjoyment. Increasing the Facebook likes (FBLs) are also drive traffic and increase sales (Lee, 2015). In Instagram, Brawijaya should utilized the trend of micro-influencer, Based on HASHOFF (2017), consumers continuing to trust word-of-mouth and influencer marketing is proving to be a powerful channel for targeted marketing. Moreover, Micro influencers are emerging as a critical marketing channel for brands large and small, enabling brands to grow awareness and drive sales. In event and experience marketing channel, Brawijaya may do the experience marketing by utilizing the touchpoints. Holistic view of touchpoints is particularly important as media fragmentation sees brand managers increasingly allocate their budgets to what are still often described as "unmeasured media" such as news media coverage and in-store communication (Ailawadi, 2009). The touchpoints positivity adds explanatory power to the prediction of change in consideration as compared with touchpoint frequency alone (Baxendale, 2015). By putting all the channels together to delivering those intended message, the problem happened in Brawijaya should be overcame and should be valuable to build and improve the brand relevance.

Implementation Plan

A service brand is a promise of future satisfaction, and service companies build strong brands through distinctiveness, performance, message consistency and by appealing to consumers emotionally (Kemp, 2006). This implementation plan is designed for one year which divided into 4 quarter The proposed timeline consist of marketing activities including: The communication content design, Advertisement, Social media marketing, and event and experience. In designing communication content, Brawijaya need to hire freelance graphic designer, freelance videographer, social media specialist. Advertising in social media like Facebook and Instagram through the paid advertising. Furthermore, Brawijaya should make an endorsement to micro-influencer in social media and support those marketing communication with event and experience marketing. The plan is flexible and should be adjusted with the company's available budget.

5. Conclusions

In generating new positioning strategy as well as the marketing communication, company should performed brand audit to discover the customer-based brand equity. The results from brand audit are ranging from brand inventory that is company-based and brand exploratory that gathered from customer's mind. The most frequently used channel in finding information and finding the brand element about women and children clinic is social media and the information content needed related to women and children clinic combined with Brawijaya Clinic are; clinic environment, insurance coverage, menu of medical services, price, promo, doctor's performance, customer review. In further research, In further research, The ethnography study of customer in determining women and children clinic should be performed to discover the emotional intention in visiting the clinic and how they perceived the role of doctor in their daily life. The brand audit might be performed in government-owned healthcare and not limited to the clinic types but also for hospital. Furthermore, the implementation effect of customer-based brand equity whether for positioning the brand and marketing communications in healthcare industry could be performed.

References

Ailawadi, K.L., Beauchamp, J.P., Donthu, N., Gauri, D.K & Shankar, V. (2009). Communication and promotion decisions in retailing: A review and directions for future research. Journal of Retailing, 85 (1), 42-45

Baxendale, S., Macdonald, K. E., Wilson, N. H. (2015). The impact of Different Touchpoints on Brand Consideration. Journal of Retailing, 91(2), 235-253.

Breedlove, E. (2017). Go So Viral, It'll Be Sick: How to create YouTube content with ultimate impact. Investor Digest

Cho, I., Park, H., Kim, K. J. (2014). The relationship between motivation and information sharing about products and services on Facebook. Behaviour & Information Technology 34(9), 858-868.

Evans, W. D. (2006). How social marketing works in health care. *BMJ*, *332*(7551), 1207.2-1210. https://doi.org/10.1136/bmj.332.7551.1207-a

ICMEM

Keller, K. L. (2013). *Strategic brand management: building, measuring, and managing brand equity* (4th ed). Boston: Pearson

Kotler.P,Keller.K.L,Ang S.H,Leong S.M,Tan C.T,2009, *Marketing Management An Asian Perspective 5th edition*, Pearson Education South Asia

Kemp, E., Jillapalli, R., & Becerra, E. (2014). Healthcare branding: developing emotionally based consumer brand relationships. *Journal of Services Marketing*, *28*(2), 126–137. https://doi.org/10.1108/JSM-08-2012-0157

Lee, K., Lee, B., Oh, W. (2016). Thumbs Up, Sales Up? The Contingent Effect of Facebook Likes on Sales Performance in Social Commerce. Journal of Management Information Systems, 32(4), 109-143.

Ghozali, I. (2016). *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23*. Badan Penerbit Universitas Diponegoro.

HASHOFF (2017). Influencer Marketer: A #HASHOFF State of Union Report. Available at: hashoff.com, accessed on 4 July 2018.

Marbury, D. (2015). Creativity is key to more robust social media. Managed Healthcare Executive, 25(11), 16-17. Retrieved from https://search.proquest.com/docview/1803414021?accountid=31562

Malhotra, N.K (2010). Marketing Research, New Jersey, USA: Pearson Education ,Inc

Statista.com (2018). Number of internet users in Indonesia from 2015 to 2022(in million), available at: https://www.statista.com/statistics/254456/number-of-internet-users-in-indonesia/. Accessed on June 27, 2018

Statista.com (2018). Number of smartphone users in Indonesia from 2011 to 2022(in million), available at: https://www.statista.com/statistics/266729/smartphone-users-in-indonesia/. Accessed on June 27, 2018.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Role of Celebrity Credibility on Purchase Intention of Local Fashion Brand in Instagram

Dewa Gede Dawan Adi Bagaskara[a*], Prawira Fajarindra Belgiawan[b]

[a,b]*School of Business and Management Institut Teknologi Bandung, Bandung, 40132, Indonesia*

Abstract

According to a survey by Jakpat (2015), a local fashion brand in Indonesia has been growing rapidly as can be seen by the enthusiasm of Indonesian young adult consumer aged between 16-35 years old in searching for a local fashion brand. The growth of local fashion brand cannot be separated by the contribution of social media. One of the social media platforms favored by the Indonesian is Instagram. It has attracted local fashion brands to use Instagram as their channel to advertise their brand. Local fashion brands face challenges as well as opportunities. The opportunity is there are about 40% of potential target markets to reach. Yet, there is also a fact that these days people tend to ignore the advertisement in both an online and offline platform (Alsmadi, 2006). Therefore, celebrity endorsement practice is deemed as one of the solutions in advertising strategy on Instagram. Celebrity is perceived as more attractive and persuasive. However, choosing the right celebrity to endorse local fashion brands which may lead to purchase intention remains questionable. This research investigated the role of celebrity credibility on purchase intention and attitude toward the advertisement of a local fashion brand in Instagram. The role of celebrity credibility was measured by using a source of credibility model which consist of expertise, trustworthiness, and attractiveness. The data was collected by spreading an online questionnaire. There were 300 valid respondents. To analyze the data, this research used PLS-SEM. The finding showed that attractiveness significantly affected attitude toward advertisement and purchase intention of a local fashion brand. Meanwhile, purchase intention was not influenced by expertise and trustworthiness. Instead, expertise, trustworthiness, and attractiveness of celebrity were able to create a positive attitude toward the advertisement of a local fashion brand.

Keywords: Local fashion; Celebrity endorsement; Instagram; Credibility; Attractiveness; Purchase Intention; Attitude toward advertisement

1. Introduction

Nowadays, a local fashion brand in Indonesia is on the rise. The rise of local fashion brand is reflected by the enthusiasm of the society. According to a survey by Jakpat (2015), 59.6% of respondents are fascinated with local fashion brand by following the latest trends of local fashion. They perceive that local fashion brand offers a stylish design, good quality, and more affordable price compared to a non-local fashion brand. Moreover, 98.5% of respondents stated that they will purchase local fashion brand in the future (JakPat, 2015). Therefore, it is seen as a promising business since it has a large number of potential consumers.

The growth of local fashion brand cannot be separated from the contribution of social media. Counted that 53.72% of business owners including local fashion brand promote their brand online through social media. It becomes the leading channel that contributes a lot to the growth of local fashion brand. Compared with another online source, social media (i.e. Instagram, Facebook, and others social media) is frequently used by many respondents in searching for local fashion brands (JakPat, 2015; BEKRAF, 2015; BPS, 2017).

Indonesia has a large number of active social media users. Counted in the early of 2018, there are 130 million of Indonesian active social media users or about 49% of Indonesia's total population (We Are Social, 2018). It becomes

---

* Corresponding author. Tel.:+628113890988
E-mail address: Adi.bagaskara@sbm-itb.ac.id

a daily needs of today's era because of the perceived benefits in almost all aspects in the modern life. Social media can be used for multipurpose, including for business term. The ease of social media usage enables marketers or business owners with limited technical expertise and resources to use it in order to build their business online (Amelina & Zhu, 2016). In social media, the result of marketing strategy is measurable, cheap, and there are several media available for the consumer to interact with the company (Chung & Cho, 2014).

One of the most popular social media in Indonesia is Instagram. In the beginning year of 2018, it became the fourth most active social media platform in Indonesia with 53 million of active users (We Are Social, 2018). Instagram enables its user to take a photo, videos and share them to a public area, image and video editing, filters, location and/or other account tagging, direct messaging, like and comment tab, explore tab, and follow others. In term of business use, Instagram provides a feature named Instagram business profile which enables its users to get an analytics data about their posts and followers and utilizes a post as an advertisement through Instagram ads feature. So by that, business owners can easily evaluate the performance of their advertisements or posts in Instagram. Furthermore, it opens new opportunities for businesses to promote their brands online and causes many new brands to emerge.

Based on the survey by Jakpat that cited from eMarketer (2016) of Indonesia Social Media Trend in 2016, the most often activity do by Indonesian active Instagram users aged between 16-25 years old was exploring online shopping account with percentage 53%. Revealed that 56% of Indonesian active Instagram users aged between 18-35 years old follow digital retailers where clothes and fashion accessories were the most followed online shopping account. Corresponding to the target market of local fashion brand which mostly aged between 16-25 years old (Jakpat, 2015), Paul Webster a Brand Development of Instagram mentioned that 89% of Indonesian Instagram users in 2016 aged between 18-34 years old (Amelina & Zhu, 2016). Thus, indicates that Instagram is a compatible social media platform to promote local fashion brand since its target market fits with most of Indonesian Instagram users. These opportunities resulted to numbers of local fashion brands existed in Instagram and predicted to grow continuously (Freemagz, 2015).

Local fashion brands are indeed facing challenges as well as big opportunities at the same time to attract the potential target markets, especially on Instagram. As mentioned before, 59.6% of respondents follow the latest trends of local fashion brands, which means that there are still 40.4% of respondents who have yet to follow the latest trend of a local fashion brand. Moreover, these days, people tend to ignore the advertisement in both offline and online platform easily (Malik & Qureshi, 2016). This problem might be caused by the less attention of consumers about the advertisement of a local fashion brand and even more the existence of a local fashion brand. (JakPat, 2015).

To raise consumers' attention toward local fashion brand, celebrity endorsement practice is considered as one of a proper advertising strategy as it can make the advertisement of the brand becomes more prominent (Erdogan B. Z., 1999). Celebrity (i.e. artists, actors, singer, athletes, and politicians) defined as a figure who is recognized by the public because of his or her successes in areas outside the product class endorsed (Friedman & Friedman, 1979). It is widely used as an endorser because of his or her capability in enhancing more attention toward advertisement which can affect purchase intention (Belch & Belch, 2003). Celebrity endorsement is perceived important because it can gain more attention and make a good recall from consumers (Sertoglu, Catli, & Korkmaz, 2014). Moreover, a huge amount of consumers are willing to imitate the lifestyle and even the product of the brand used by their favorite celebrity. In today's era, celebrity endorser in Instagram is not only coming from the celebrity that is usually seen in the television, but an ordinary people who have a big amount of followers in Instagram can also being endorsed. Thus, provides a wider choice for business owners or advertisers to hire the celebrity endorser

With regard to the wider choice of celebrity endorser available in Instagram, many local fashion brands in Instagram have to keep in mind that not all celebrities can endorse any types of product. They have to consider whether the character of a particular celebrity fits with their brand and target market or not (Pornpitakpan, 2003). Despite the high popularity of celebrity endorser, seeking the right type of celebrity endorser that can enhance consumer attitude toward local fashion brand's advertisement which can lead to purchase intention remains questionable. In the previous researches, there are several models used regarding to the criteria in selecting celebrity endorsement. The implementation of celebrity endorsement in a different industry and demographical attributes may bring to a different result. It is proven by the contrast result of the research conducted by Sertoglu, Catli, and Korkmaz (2014) with another research conducted by Ong & Ong (2015). Since the phenomenon of celebrity endorsement practice in Instagram is

ICMEM

happening and there is no previous research discussed about celebrity endorsement of local fashion brand in Instagram, therefore this research is important to be conducted.

2. Literature Review

2.1 Source of Credibility

Source of credibility is the most common model used in the research discussing celebrity endorser (Pornpitakpan, 2003). It was formed by two factors expertise and trustworthiness (Munnukka, Uusitalo, & Toivonen, 2016). It is considered important when consumers have little or even have no information toward the advertised brand, therefore they only depend on the presented advertising message and celebrity claims (Jain & Posavac, 2001). Below explained about expertise and trustworthiness factors.

- Expertise

Expertise is defined as "the extent to which a communicator is perceived to be a source of valid assertions" (Hovland et.al, 1953). The expertise possessed by endorser can drive consumers into a particular perception (Ohanian, 1990). Consumers will easily believe in a person who is having sufficient knowledge, quality, and skill in endorsing a product that is related to their expertise (Shimp, 2003). Expertise is only considered essential if consumers think it to be so (Erdogan B. Z., 1999). In general, expertise becomes the key determinant of success upon celebrity endorsement practice (Daneshvary & Schewer, 2000).

- Trustworthiness

Trustworthiness refers to "listener's degree of confidence in, and level of acceptance of, the speaker and the message" (Sallam & Wahid, 2012). Whether a speaker is considered as an expert or not, the trusted speaker is also perceived as persuasive (Ohanian, 1990). Furthermore, a speaker with highly trustworthy has impact on changing the attitude of consumers compared with the less trustworthy speaker (Pornpitakpan, 2003).

2.2 Source of Attractiveness

In term of advertising, the source of credibility is also influenced by the source of attractiveness (Umeogu, 2012). Attractiveness in here refers to the physical appearance possessed by celebrity. Basically, physical attractiveness becomes an individual's initial judgment of another person (Homer & Kahle, 1985). The more attractive he or she looks like, the more possible that consumer will purchase the product of the brand. According to Shimp (2000), attractiveness encompasses intellectual skills, personalities, characteristics, and lifestyles. Besides that, attractiveness is constructed by three factors, familiarity, likeability, and similarity (McGuire, 1985). Familiarity means to which extent the object is known by the audiences. Likeability is strongly related with physical appearance and behavior (McGuire, 1985). Belch and Belch (2009) defined similarity as a degree to which the audience perceives similar with the source. Audiences perceive to have similarity in taste, lifestyle, and demographic aspect (Shimp, 2000). Prior research found that people tend to favor others who have similarity with them (Lynch & Schuler, 1994).

2.3 Attitude toward Advertisement

Attitude is an evaluation action of an individual toward a particular object. Attitude is defined as an overall appraisal of objects, people, and behaviors (Hoyer & MacInnis, 1997). It leads an individual acting in a certain manner (Fishbein & Ajzen, 1975). Someone's attitude toward an object may influence his or her attitude toward another object in which both objects are correlated with each other (Hoyer, MacInnis, & Pieters, 1997). This concept has been widely used in marketing research in order to analyze the consumer's behavioral intention (Sallam & Wahid, 2012). The use of celebrity endorsement on advertising held a positive impact on purchase intention (Erdogan, Baker, & Tagg, 2001). Consumer's attitude toward advertisement mediates the relationship between celebrity endorsement and behavioral intention. Moreover, a research by Sallam & Wahid (2012) supported that purchase intention can be influenced by the effective advertisement.

2.4 Purchase Intention

Purchase intention refers to the consumer's willingness to purchase a certain product or service in the future (Wu, Yeh, & Hsiao, 2011). It is usually correlated with behaviors, perceptions, and attitudes of consumers, therefore it is used to predict the buying process (Mirabi, Akbariyeh, & Tahmasebifard, 2015). Consumers' buying process may

affect by internal and external factors (Gogoi, 2013). There are six stages of consumer buying decision. It encompasses awareness, knowledge, interest, preference, persuasion, and purchase (Kotler & Armstrong, 2010; Kawa, et al. 2013).

2.5 Celebrity Endorsement

Celebrity endorsers are widely used in advertising to escalate the credibility and message effectiveness (Munnukka, Uusitalo, & Toivonen, 2016). Endorsement practice in advertising usually uses someone who has popularity and recognition in a public area which is called celebrity (Udo & Nwulu, 2015). Friedman and Friedman (1979) defined celebrity as a person who is known to the public because of his or her achievement in fields other than the product class endorsed. In regard to the definition of celebrity by Friedman & Friedman (1979), it encompasses models, singer, actors, athletes politicians, company presidents, and newscasters. Consumers adore and perceived celebrity as a credible source in many terms. They imitate the lifestyle, behavior, dress, and the brand of product used by their favorite celebrity (Alsmadi, 2006). Thus, companies are willing to spend a lot of money in order to hire a celebrity to advertise their brand (Udo & Nwulu, 2015). In this competitive market, celebrity endorsement usage is beneficial for companies to promote their brand (Popescu, 2014). Celebrity endorsement is considered can catch the attention of the audiences, make a good recall in the mind of the audiences, and distinguish a brand from its rival (Sertoglu, Catli, & Korkmaz, 2014). Moreover, it is not only used to attract consumers' attention but also to escalate the persuasiveness of a message that will result to the advertising effectiveness (Erdogan B. Z., 1999).

2.6 Local Fashion Brand

There are several goods that can be categorized as a fashion product. Those are apparel, jewelry, handbag, and shoes. Local fashion brands encompass fashion brands that are distributed locally in a specific region or country, originally made by local people (CNN Indonesia Student, 2017). There are four types of fashion manufacturing process, industry, traditional, made-to-order, and ready to wear (BoF, 2013). Local fashion brands on Instagram are dominated by the ready to wear product which is produced with limited stock due to the competitive market and fast changing fashion style that urge them to produce another style rapidly. It is usually produced in their fashion product by themselves and labeled it under their brand name.

2.7 Conceptual Framework

In conducting the conceptual framework for this research, this study refers to prior researches as a guide to further measurement and analysis. The conceptual framework adopts from Ong & Ong (2015). Their research aims to investigate the credibility of celebrity on purchase intention on the footwear industry in Malaysia through the role of attitude toward advertisement as the mediating variable. There are five variables which consist of expertise, trustworthiness, attractiveness, attitude toward advertisement, and purchase intention. The result shows that Malaysian consumers' purchase intention did not significantly affect by celebrity credibility (i.e. expertise, trustworthiness, and attractiveness). Meanwhile, attitude toward advertisement is having a significant impact on purchase intention. This study adopted the conceptual framework by (Ong & Ong, 2015) since the aims of this research is also to investigate the role of celebrity credibility on purchase intention of a specific industry (which is local fashion brand).

ICMEM
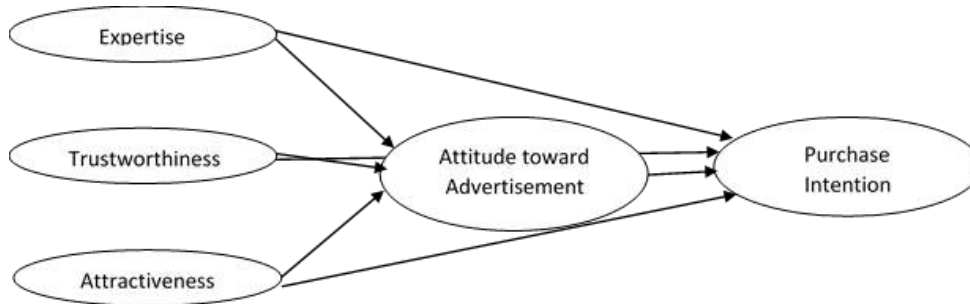
Figure 5 Conceptual Framework

2.8 Hypothesis Development

First, this research investigated the role of celebrity credibility on attitude toward advertisement. Source of credibility consists of expertise and trustworthiness. In this research to explore the role of celebrity's expertise on attitude toward advertisement of a local fashion brand in Indonesia, there will be three sub-variables (i.e. knowledge, qualified, and skill) adopted from Sertoglu, Catli, and Korkmaz (2014). As for trustworthiness, there are three sub-variables (i.e. trustworthy, honest, and reliable). Meanwhile, attractiveness is deemed to be included to the source of credibility which correlated with three sub-variables, familiarity, likeability, and similarity (McGuire, 1985). The attractiveness of celebrity will affect advertising credibility if the product has a close relationship with physical appearance (Munnukka, Uusitalo, & Toivonen, 2016). Therefore, it is suitable to add attractiveness as a variable since this research's object is a local fashion brand which valued visually. Generally, Source of credibility was found to directly impact on attitude toward advertisement (Ong & Ong, 2015). Therefore, the following hypothesis is proposed:

H1. Celebrity endorser's expertise has a significant relationship with consumer attitude toward the advertisement

H2. Celebrity endorser's trustworthiness has a significant relationship with consumer attitude toward the advertisement

H3. Celebrity endorser's attractiveness has a significant relationship with consumer attitude toward the advertisement

Second, this research investigated the role of celebrity credibility (i.e. expertise, trustworthiness, and attractiveness). Previous research conducted by Sertoglu, Catli, and Korkmaz (2014), Pornpitakpan (2003), and Yoon, Kim, & Kim (1998) discovered that these three celebrity credibilities hold a significant impact on purchase intention. Therefore, the following hypotheses are developed:

H4. Celebrity endorser's expertise has a significant relationship with purchase intention

H5. Celebrity endorser's trustworthiness has a significant relationship with purchase intention

H6. Celebrity endorser's attractiveness has a significant relationship with purchase intention

Third, this research investigated the role of attitude toward advertisement on purchase intention. Consumer's brand choice depends on their attitude toward the presented advertisement. When they valued that advertisement positively it may influence consumer brand selection (Biehal, Stephens, & Curlo , 1992). This research focuses on an advertisement that is advertised on the online platform which is Instagram. That matter makes consumers have limited access to explore the advertised product other than evaluating the whole things within that advertisement (i.e. image's quality and how well the advertised product is presented). Furthermore, attitude toward advertisement directly affects attitude toward the brand and both directly or indirectly affects purchase intention (Sallam & Wahid, 2012). Previous research conducted by Ong & Ong (2015) found that attitude toward advertisement significantly affects purchase intention. Therefore, the following hypothesis is developed:

H7. Attitude toward advertisement has a significant relationship with purchase intention

ICMEM

3. Methodology

This research used the table of sample size in marketing research studies conducted by (Malhotra, 2010) in order to determine the sample of this study with 95% confidence level and 5% of error tolerance. The type of this research can be categorized as an advertising research since celebrity endorsement practice is one of the advertising strategy (Munnukka, Uusitalo, & Toivonen, 2016). Therefore, this research requires sample size ranged between 150-300 sample size. In order to gain a more representative result, this research collected 300 respondents.

The sampling technique used in this research is judgment sampling, which is included in non-probability sampling technique. It means that not all members of the population have the same probability to be selected as a respondent. The only respondent who meets the criteria is allowed to fill out the questionnaire (Malhotra, 2010). The criteria are as following below. This research targeted Indonesian Instagram users in age between 16-35 years old. The chosen of that age range was in line with most of the target markets of a local fashion brand and Indonesian Instagram users. Besides, the respondents should have an experience of seeing celebrity endorsement practice on local fashion brand in Instagram. In collecting the data, the online questionnaire was distributed to 300 respondents through social media (i.e. Line and Instagram). The questionnaire consisted of 16 indicators on a 7-point Likert scale. Each score has its own meaning as follow, 1 for "Strongly disagree"; 2 for "Disagree" 3 for "Slightly disagree"; 4 for "Neutral"; 5 for "Slightly agree"; 6 for" Agree"; 7 for" Strongly agree". There will be five variables used in this research. The collected data will be analyzed by PLS-SEM. Expertise and trustworthiness were adopted from (Munnukka, Uusitalo, and Toivonen (2016), attractiveness was adopted from McGuire (1985), attitude toward advertisement was adopted from Holbrook and Batra (1987), and purchase intention was adopted from Sertoglu, Catli, and Korkmaz (2014). The table below presented the detailed information about the variables and indicators applied in this research.

Table 17 Research Measurement

Variable	Sub-variable	Scale	Source
Expertise	Knowledge	7 items of Likert scale	(Munnukka, Uusitalo, & Toivonen, 2016)
	Qualified	7 items of Likert scale	
	Skill	7 items of Likert scale	
Trustworthiness	Trustworthy	7 items of Likert scale	(Munnukka, Uusitalo, & Toivonen, 2016)
	Honest	7 items of Likert scale	
	Reliable	7 items of Likert scale	
Attractiveness	Familiarity	7 items of Likert scale	(McGuire, 1985)
	Likeability	7 items of Likert scale	
	Similarity	7 items of Likert scale	
Attitude toward advertisement	Likeability	7 items of Likert scale	(Holbrook & Batra, 1987)
	Favourability	7 items of Likert scale	
	Feeling	7 items of Likert scale	
	Good	7 items of Likert scale	
Purchase Intention	Willingness	7 items of Likert scale	(Sertoglu, Catli, & Korkmaz, 2014)
	Intention	7 items of Likert scale	
	Recommendation	7 items of Likert scale	

4. Result

4.1 Analysis of Reflective Measurement Model

Since the construction of latent variables is a reflective measurement model, hence there are several topics that need to be calculated in order to ensure the fitness of the measurement. Those will cover internal consistency reliability, indicator reliability, convergent validity, and discriminant validity. To be considered acceptable, the value

ICMEM

of indicator reliability should be 0.7 or higher, but in exploratory research 0.4 or higher is acceptable (Wong, 2013). The value of indicator reliability can be seen in outer loading result in SmartPLS. In testing the internal consistency reliability, there are two required measurements, Cronbach's Alpha (α) and composite reliability. The value of composite reliability should be 0.7 or higher (Bagozzi & Y., 1998; Wong, 2013). The value of internal consistency reliability is presented in construct reliability and validity result. Then, the value of AVE is acceptable when it is greater than 0.5 (Wong, 2013) According to Fornell and Larcker (1981) and Wong (2013) stated that the discriminant validity can be formed if the value of the square root in each latent variable is larger than other correlation values among latent variables.

Table 2 Validity and Reliability of latent construct

Latent Variable	Indicator	Outer Loading	Composite Reliability	Cronbach's Alpha	AVE
Expertise	Knowledge	0.713	0.853	0.748	0.661
	Qualified	0.887			
	Skill	0.829			
Trustworthiness	Trustworthy	0.858	0.879	0.796	0.708
	Honest	0.804			
	Reliable	0.861			
Attractiveness	Familiarity	0.754	0.838	0.714	0.634
	Attractive	0.802			
	Similarity	0.832			
Attitude toward advertisement	Likeability	0.833	0.921	0.886	0.744
	Favorability	0.906			
	Feeling	0.840			
	Good	0.870			
Purchase intention	Willingness	0.908	0.948	0.918	0.859
	Intention to buy	0.948			
	Recommendation	0.923			

Based on the outer loading result, the value of all indicators is higher than 0.7. It indicates that all indicators are reliable and can be processed further. The result of internal consistency reliability revealed that the value of Cronbach Alpha (α) and composite reliability of all variables are exceeded 0.7. It means that all variables are reliable. The convergent validity of this research is acceptable since all of AVE values are greater than 0.5. It indicates that all variables are valid.

Table 3 Discriminant validity (Fornell-Larcker criterion)

	AAD	AR	EP	PI	TR
AAD (Attitude toward Advertisement)	**0.863**				
AR (Attractiveness)	0.412	**0.796**			
EP (Expertise)	0.483	0.546	**0.813**		
PI (Purchase Intention)	0.579	0.455	0.417	**0.927**	

TR (Trustworthiness)	0.510	0.448	0.680	0.436	**0.842**

The bold written diagonally in Table 4.5 below, shows that the discriminant variable in this research is well-formed since the value of the square root is larger than the correlation in each latent variables row and column. It is concluded that all variables fulfilled the criteria of discriminant validity test.

4.2 Analysis of Structural Model

After the algorithm calculation was done, then researchers started to run the bootstrapping calculation. SmartPLS can operate the bootstrapping procedure in order to yield T-statistics for the significance testing of both inner and outer model. This calculation's output will be used in determining whether the hypothesis is accepted or rejected.

Table 4 Hypothesis Testing

Hypothesis	Structural Path	Path Coefficient	t-Values (bootstrap)	Result
H1	Expertise →Attitude toward Advertisement	0.174	2.652	Accepted
H2	Trustworthiness → Attitude toward Advertisement	0.313	4.551	Accepted
H3	Attractiveness → Attitude toward Advertisement	0.177	2.774	Accepted
H4	Expertise → Purchase Intention	0.016	0.210	Rejected
H5	Trustworthiness →Purchase Intention	0.109	1.395	Rejected
H6	Attractiveness → Purchase Intention	0.223	3.866	Accepted
H7	Attitude toward Advertisement → Purchase Intention	0.424	6.835	Accepted

As depicted from the table above, expertise, trustworthiness, and attractiveness have a significant effect on attitude toward advertisement (T-statistics > 1.96). Hence, H1, H2, H3 are accepted. This findings (i.e. expertise and attractiveness) are in line with the previous research conducted by Sallam and Wahid (2012), yet trustworthiness insignificantly affects attitude toward advertisement. Regarding the relationship between source credibility model and purchase intention, the researcher found that only attractiveness which significantly affects purchase intention. This finding is consistent with a previous study (Sertoglu, Catli, & Korkmaz, 2014). Meanwhile, expertise and trustworthiness do not have significant effect on purchase intention. These insignificant effects were also found in prior research conducted by Ong and Ong (2015). Thus H4 and H5 are rejected, whereas H6 is accepted. Attitude toward advertisement is found to have a significant effect on purchase intention that also was supported by finding from previous research (Sallam & Wahid, 2012). Hence, H7 is accepted.

ICMEM

Table 5 Total Effect Result of Independent to Dependent

Variable	T-Statistic	P Value
Expertise → Purchase Intention	1.089	0.276
Trustworthiness → Purchase Intention	2.856	0.004
Attractiveness → Purchase Intention	4.738	0.000

The first procedure aims to check the effect of the independent variable (expertise, trustworthiness, and attractiveness) and the dependent variable (purchase intention). The result shows that two independent variables (trustworthiness and attractiveness) significantly affect the dependent variable (purchase intention). Yet, expertise variable insignificantly affects purchase intention.

Table 6 Total Effect Result Independent and Mediating Variables

Variable	T-Statistic	P Value
Expertise → Attitude toward Advertisement	2.592	0.010
Trustworthiness → Attitude toward Advertisement	4.540	0.000
Attractiveness → Attitude toward Advertisement	2.736	0.006

The second procedure aims to check the effect of the independent variable (i.e. expertise, trustworthiness, and attractiveness) and mediating variable (attitude toward advertisement). Apparently, all of the independent variables have a significant effect on the mediating variable since their t-statistics are all above 1.96 and p values are all below 0.05.

Table 7 Total Effect Result of all variables

Variable	T-Statistic	P Value
Expertise →Purchase Intention	0.210	0.835
Expertise → Attitude toward Advertisement	2.652	0.008
Trustworthiness → Purchase Intention	1.395	0.153
Trustworthiness → Attitude toward Advertisement	4.551	0.000
Attractiveness → Purchase Intention	3.866	0.000

Attractiveness → Attitude toward Advertisement	2.774	0.005
Attitude toward Advertisement → Purchase Intention	6.835	0.000

The last procedure is to test the significant effect between thindependent and mediating variable toward the dependent variable. It is expected to not have a significant effect on the relationship between the independent and mediating variable. On the other hand, the result for mediating variable should be significant. Based on the result, the relationship between mediating and the dependent variable is significant with t-statistic is 6.835 > 1.96. Meanwhile, none of the independent variables (expertise, trustworthiness, and attractiveness) are insignificantly affected the mediating variable (attitude toward advertisement). Hence, this mediating test does not pass the third procedure which results in the conclusion that this research has no mediating variable.

4.4 Discussion

The first discussion reviewed the relationship between the source of credibility model and attitude toward advertisement with three hypotheses tested. Based on the result, H1 (expertise on attitude toward advertisement), H2 (trustworthiness on attitude toward advertisement), and H3 (attractiveness on attitude toward advertisement) are accepted. Attitude toward advertisement has a significant relationship with expertise, trustworthiness, and attractiveness. These findings was supported by prior researches which also found a significant and positive relationship between the source of credibility and attitude toward advertisement (Sallam & Wahid, 2012). When consumers perceived the expertise, trustworthiness, and attractiveness of the celebrity endorser, it could enhance their attitude toward local fashion brands' advertisement. It means that the more credible celebrity endorser appeared in the local fashion brands' advertisement in Instagram will result in consumer's positive attitude toward those advertisements.

The second discussion explained the relationship between the source of credibility model and attitude toward advertisement on purchase intention. This part of the discussion consisted of four hypotheses. Based on the result, H4 (expertise on purchase intention) has no significant relationship with purchase intention. The expertise of celebrity endorser will be more useful in high involvement product such as a luxury product, whereas consumer has some considerations before purchasing that product. Meanwhile, most of the product sold through Instagram platform is low involvement, including fashion product. Fashion product is widely seen as an impulsive buying because consumers usually buy a product simply because they want it or are attracted by the attributes of that fashion product's advertisement when they are just exploring on their Instagram. Then, H5 (trustworthiness on purchase intention is also found to have an insignificant effect on purchase intention. It might be caused by the fact that celebrity who appears in a particular advertisement is already paid by the brand that he or she endorsed. For that reason, consumers will perceive that the review given by the celebrity is not genuinely based on their perceived benefits and product experience (Munnukka, Uusitalo, & Toivonen, 2016).

Meanwhile, H6 (attractiveness on purchase intention) and H7 (attitude toward advertisement) are accepted. In this research, attractiveness covers familiarity, likeability, and similarity. It implies that purchase intention is driven by the attractiveness of the celebrity. Fashion is a product that is generally judged by its look. In the context of a fashion product, the good physical appearance of celebrity seems to be transferred to the fashion brand that he or she endorsed. A celebrity who is good looking is perceived can represent fashion product really well. Besides, considering the celebrity who possesses similarity (taste of fashion, ideological aspect, and demographic background) with the target market of a particular local fashion brand is necessary. It is supported by which stated that people favor the ones who have similarity with them (Lynch & Schuler, 1994).

As for the relationship between attitude toward advertisement and purchase intention is also found significant. Advertisement becomes ones of marketing tools that enable audiences or consumers to know and get the knowledge about the advertised brand. Consumer's brand choice is considered the consequent of a favorable attitude toward advertisement. This is corresponding with the previous study that was done by Ong & Ong (2015) which found that the relationship between attitude toward advertisement and purchase intention is significant.

ICMEM

In this research, all elements of the source of credibility have a significant and positive effect on attitude toward advertisement, but only one variable which significantly affects purchase intention (i.e. attractiveness). For instance, when the celebrity with his or her expertise in fashion (knowledge about fashion and the product endorsed, and presenting a good quality of post in Instagram) chosen to endorse a fashion product, then it may create a consumer's positive attitude toward the advertisement, but does not trigger them to purchase the product. It may be caused because consumers do not include the expertise of celebrity as their consideration to buy a local fashion brand.

In conclusion, not all findings of this research are in line with the prior researches. It means that the effectiveness of celebrity endorsement in a different respondents and industry may lead to the different result as this research was adopted from a research on footwear industry in Malaysian consumer.

5. Conclusion

Celebrity endorsement is known as a means of advertising strategy in Instagram that can effectively influence purchase intention. The findings of this research showed that attractiveness is the only one attribute which significantly affect attitude toward advertisement and purchase intention. It may become a recommendation for local fashion brand business owner in looking for the right celebrity endorser to put more focus on the attractive celebrity.

According to the result of R2, the variables used in this research can only explain 40.2% of their effect on purchase intention. Three latent variables such as expertise, trustworthiness, and attractiveness explain 31.6% of the variance of attitude toward advertisement. It implies that there will be another variables that can influence purchase intention. For the example, the implementation of the product match-up theory which can also be used in testing the effectiveness of celebrity endorsement. This research only covers the use of celebrity in endorsement practice in Instagram without mention another figures that may impact on attitude toward advertisement and purchase intention such as created spokesperson, non-celebrity, and comedy account.

Acknowledgement

References

Ahmed, N., Farooq, O., & Iqbal, J. (2014). Credibility of Celebrity Endorsement and Buying Intentions an Evidence from Students of Islamabad,. International Letters of Social and Humanistic Sciences, 1-13.

Ahmed, R. R., Seedani, S. K., Ahuja, M. K., & Paryani, S. K. (2015). Impact of Celebrity Endorsement on Consumer Buying Behavior. Journal of Marketing and Consumer Research , 12-20.

Alsmadi, S. (2006). The Power of Celebrity Endorsement in Brand Choice Behavioral: An Emprical Study of Consumer Attitudes in Jordan. Journal of Accounting - Business & Management, 69-84.

Amelina, D., & Zhu, Y.-Q. (2016). Investigating Effectiveness of Source Credibility Elements on Social Commerce Endorsement: The Case of Instagram in Indonesia. Pacific Asia Conference on Information System.

APJII. (2016). Hasil Survey Pengguna Internet Indonesia. Retrieved from www.apjii.or.id: https://www.apjii.or.id/survei2016.

Bagozzi , R., & Y.Yi. (1998). On the evaluation of structural equation models. Journal of the Academy of Marketing Science, 74-94.

Bailey, L., & Seock, Y.-K. (2010). The relationships of fashion leadership, fashion magazine content and loyalty tendency. Journal of Fashion Marketing and Management, 39-57.

BEKRAF; BPS. (2017). Data Statistik dan Hasil Survei.

Belch, G. E., & Belch, M. A. (2003). Advertising and Promotion: An integrated Marketing Communication Perspective. McGraw-Hill/Irwin, 2003.

Bhatt, N., Jaswal, R. M., & Patel, J. D. (2013). Impact of Celebrity Endorser's Source Credibility on Attitude towards Advertisements and Brands. South Asian Journal of Management, 74-96.

Biehal, G., Stephens, D., & Curlo , E. (1992). Attitude toward the Ad and Brand Choice. Journal of Advertising, 19-36.

ICMEM

BoF. (2013, April 2). The Basics Part 7 Production. Retrieved from Business of fashion: https://www.businessoffashion.com/articles/basics/the-basics-part-7-production

Bowman, J. (2002, July 26). Facing Advetising Reality. Media: Asias's Media & Marketing Newspaper, pp. 14-15.

Chaicken , S., & Stangor, C. (1987). Attitudes and attitude change. Annual Review of Psychology, 576-630.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (1966). A partial least square latent variable modelling approach for measuring interaction effects: Result from a Monte Carlo simulation study and voice mail emotion/adoption study. International Conference on Information Systems. Cleveland, OH.

Chung, S., & Cho, H. (2014). Parasocial relationship via reality TV and social media: its implications for celebrity endorsement. ACM International Conference on Interative Experiences for TV and Online Video (pp. 47-54). United Kingdom: Association for Computing Machinery.

CNN Indonesia Student. (2017, April 4). Mengenal Distro dan Clothing. Retrieved from student.cnnindonesia.com: https://student.cnnindonesia.com/edukasi/20170403111055-445-204501/mengenal-distro-dan-clothing/

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. New York: Lawrence Erlbaum Associates.

Cosmo Girl Indonesia. (2017, 1 24). Fenomena Seleb dan Endorsement. Retrieved from www.cosmogirl.co.id: http://www.cosmogirl.co.id/artikel/read/9626/Fenomena-Seleb-dan-Endorsement

Daneshvary, R., & Schewer, R. K. (2000). The association endorsement and consumers' intention to purchase. Journal of Consumer Marketing, 203-213.

Dzisah, W. E., & Ocloo, C. E. (2013). Celebrity Endorsement and Consumer Buying Behaviour:Enhancing the Promotion Function of Marketing in the Central Business Area of Accra, Ghana. European Journal of Business and Management, 197-208.

Erdogan, B. Z. (1999). Celebrity Endorsement: A Literature Review. Journal of Marketing Management, 291-314.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 39-50.

Freemagz. (2015, June 30). The Most Favorite Local Brand That Understand What You Need! Retrieved from www.freemagz.com: https://www.freemagz.com/outloud/top-15-local-brand-you-should-know-today-10422

Friedman, H. H., & Friedman, L. (1979). Endorser Effectiveness By Product Type. Journal of Advertising Research, 63-71.

Global Business Indonesia Guide. (2018). Indonesia's Creative Industry: Set to Become the Next Economic Powerhouse. Retrieved from www.gbgindonesia.com:
http://www.gbgindonesia.com/en/manufacturing/article/2018/indonesia_s_creative_industry_set_to_become_the_next_economic_powerhouse_11835.php

Gogoi, B. (2013). Study of antecedents of purchase intention and its effect on brand loyalty of private label brand of apparel. International Journal of Sales & Marketing, 73-86.

Goldberg, M., & Hartwick, J. (1990). The effects of advertiser reputation and extremity of advertising claim on advertising effectiveness. Journal of Consumer Research, 172-179.

Goldsmith, R. E., & Lafferty, B. A. (1999). Corporate credibility's in consumers' attitudes and purchase intentions when a high versus low credibility endoser is used in the Ad . Journal of Business Research, 109-116.

Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. Journal of Advertising, 43-54.

Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. (2002). The dual credibility: the influence of corporate and endorser credibility on attitudes and purchase intentions. Journal of Marketing Theory and Practice, 1-6.

Gresham, L. G., & Shimp, T. A. (1985). Attitude toward the Advertisement and Brand Attitude: A Classical Conditioning Perspective. Journal of Advertising, 10-49.

Hair, J. F., Hult, G., Ringle, C. M., & Sarstedt, M. (2013). A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM). Thousand Oaks: Sage.

Hassan, S. R., & Jamil, R. A. (2014). Influence of Celebrity Endorsement on Consumer Purchase Intention for Existing Products: A Comparative Study. Journal of Management Info, 1-23.

Holbrook, M. B., & Batra, R. (1987). Assessing the Role of Emotions as Mediators of Consumer Responses to Advertising. Journal of Consumer Research, 404-420.

Homer, P. M., & Kahle, L. R. (1985). Physical Attractiveness of the Celebrity Endorser: A Social Adaptation Perspective. Journal of Consumer Research, 954-961.

ICMEM

Hovland, Iver, C., Janis, Irving, L., Kelley, & Harold, H. (1966). Communication and Persuasion: Psychological Studies of Opinion Change. Yale University Press, USA.

Hoyer, W. D., Maclnnis, D. J., & Pieters, R. (1997). Consumer Behavior.

Hulland, J. (1999). Use of Partial Least Squares (PLS) in strategic management research: a review of four recent studies. Strategic Management Journal , 195-204.

Hussein, A. S. (2015). Penelitian Bisnis dan Manajemen Menggunakan Partial Least Square (PLS) dengan SmartPLS 3.0.

Jain, S., & Posavac, S. (2001). Pre-purchase attribute verifiability, source credibility and persuasion. Journal of Consumer Psychology, 169-180.

JakPat. (2015, April 8). Indonesia Local Fashion Brands Survey Report. Retrieved from www.blog.jakpat.net: https://blog.jakpat.net/indonesia-local-fashion-brands-survey/

Jogiyanto , & Abdillah , W. (2014). Konsep dan Aplikasi PLS (Partial Least Squares) untuk Penelitian Empiris. Yogyakarta: BPFE-Yogyakarta.

Kaikati, J. G. (1987). Celebrity Advertising: A Review and Synthesis. International Journal of Advertising, 93-105.

Kamins, M. A. (1990). An Investigation Into The ―Match-Up‖ Hypothesis In Celebrity Advertising: When Beauty May Be Only Skin Deep. Journal of Advertising, 4-13.

Kamins, M. A., & Gupta, K. (1994). Congruence between spokesperson and product type: A matchup hypothesis perspective. Psychology & Marketing , 569-586.

Kelman, H. C. (1961). Processes of Opinion Change. Public Opinion Quarterly, 57-78.

Kelman, H. C. (2006). Interests, Relationships, Identities: Three Central Issues for Individuals and Groups in Negotiating Their Social Environment. Peer Reviewed Journal, 1-26.

Kirmani, A., & Shiv, B. (1998). Effects of source congruity on brand attitudes and beliefs: The moderating role of issue-relevant elaboration. Journal of Consumer Psychology, 25-47.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement, 607-610.

Lynch, J., & Schuler, D. (1994). The matchup effect of spokesperson and product congruency: A schema theory interpretation. Psychology & Marketing, 417-445.

Mackenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The Role of Attitude toward the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations. Journal of Marketing Research, 130-143.

Malhotra, N. (2010). Marketing Research An Applied Orientation Sixth Edition.

Malik, H. M., & Qureshi, M. M. (2016). The Impact of Celebrity Endorsement on Consumer Buying. Journal of Marketing and Consumer Research.

McCracken, G. (1986). Culture ad consumption: a theoretical account of the structure and movement of the cultural meaning of consumer goods. Journal of Consumer Research, 71-84.

McGuire, W. (1985). Attitudes and attitude change. In G. Lindzey, & E. Aronson, Handbook of Social (pp. 233-346). New York.

Mirabi, V., Akbariyeh, H., & Tahmasebifard, H. (2015). A Study of Factors Affecting on Customers Purchase Intention Case Study: the Agencies of Bono Brand Tile in Tehran. Journal of Multidisciplinary Engineering Science and Technology (JMEST).

Munnukka, J., Uusitalo, O., & Toivonen, H. (2016). Credibility of a peer endorser and advertising effectiveness. Journal of Consumer Marketing, 182-192.

Muralidharan, S., & Xue, F. (2015). Influence of TV endorser types on advertising attitudes and purchase intention among Indian rural women: an exploratory study. Asian Journal of Communication, 213-231.

Newan, B., & Newan, P. (2014). Development through Life: A Psychosocial Approach.

Ohanian, R. (1990). Construction and Validation of a Scale to Measure Celebrity Endorsers' Perceived Expertise, Trustworthiness, and Attractiveness. Journal of Advertising, 39-52.

O'Mahony, S., & Meenaghan, T. (1998). The Impact of Celebrity Endorsement on Consumer. Irish Marketing Review, 15-24.

Ong, Z. Q., & Ong, D. L. (2015). The impact of celebrity on consumer's purchase intention toward the footwear industry in malaysia: The mediating effect of attitude toward advertisement. Information Management and Business Review, 55-63.

Popescu, G. H. (2014). The Economic Value of Celebrity Endorsement: A Literature Review. Economics, Management and Financial Markets, 119-124.

Pornpitakpan, C. (2003). Validation of the Celebrity Endorser's Credibility Scale: Evidence from Asians. Journal of Marketing Management, 179-1955.

Rossiter, J. R., & Smidts, A. (2012). Print Advertising: Celebrity Presenters. Journal of Business Research, 874-879.

Roy, R., & Chau, R. (2011). Consumer-based brand equity and status-seeking motivation for a global brand versus local brand. Asia Pacific Journal of Marketing and Logistics, 270-284.

ICMEM

Sallam, M., & Wahid, N. A. (2012). Endorser Credibility Effects on Yemeni Male Consumer's Attitudes towards Advertising, Brand Attitude and Purchase Intention: The Mediating Role of Attitude toward Brand. International Business Research, 55-66.

Sertoglu, A. E., Catli, O., & Korkmaz, S. (2014). Examining the Effect of Endorser Credibility on the Consumers' Buying. International Review of Management and Marketing , 66-77.

Sherman, S. P. (1985). When You Wish Upon a Star. Fortune.

Shimp, T. A. (2000). Advertising Promotion. San Diego, CA: Harcourt College Publisher.

Sprotles, G., & Kendall, E. (1986). A Methodology for Profiling Consumers' Decision - Making Styles. Journal of Consumer Affairs, 267-280.

Statista. (2018, April). Leading countries based on number of Instagram users as of April 2018 (in millions). Retrieved from www.statista.com: https://www.statista.com/statistics/578364/countries-with-most-instagram-users/#0

Till, B. D. (1998). Using Celebrity endorsers effectively: lessons from associative learning. Journal of Product & Brand Management, 400-409.

Tripp, C., Jensen, T. D., & Carlson, L. (1994). The effects of multiple product endorsements by celebrities on consumers' attitudes and intentions. Journal of Consumer Research, 535-547.

Udo, M. I., & Nwulu, C. S. (2015). A theoretical reflection of celebrity endorsement in Nigeria. Internation Journal of Business and Economic Development.

Ul Hassan, S. R., & Jamil, R. A. (2014). Influence of Celebrity Endorsement on Consumer Purchase Intention for Existing Products: A Comparative Study. Journal of Management Information , 1-23.

Umeogu, B. (2012). Source Credibility: A Philosophical Analaysis. Journal of Philosophy, 112-115.

Urbach, N., & Ahleman, F. (2010). Structural Equation Modelling in Information Systems Research Using Partial Least Squares. Journal of Information Theory and Application , 5-40.

Valentine, D., & Powers, T. (2013). Generation Y values and lifestyle segments. Journal of Consumer Marketing, 597-606.

Viswanathan, V., & Jain, V. (2013). A dual-system approach to understanding "generation Y" decision making. Journal of Consumer Marketing, 484-492.

We Are Social. (2018, January 29). Digital in 2018 in Southeast Asia Part 2 - South-East. Retrieved from www.digitalreport.wearesocial.com: https://www.slideshare.net/wearesocial/digital-in-2018-in-southeast-asia-part-2-southeast-86866464

Wong, K.-K. (2013). Partial Least Squares Structural Equation Modelling (PLS-SEM) Techniques Using SmartPLS.

Wu, P., Yeh, G., & Hsiao, C. R. (2011). The effect of store image and service quality on brand image and purchase intention for private label brands. Australasian Marketing Journal, 30-39.

Yoon, K., Kim, C. H., & Kim, M. S. (1998). A Cross-Cultural Comparison of the Effects of Source Credibility on Attitudes and Behavioral Intentions. Mass Communication and Society, 153-173.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Affecting Factors of Customer Value Proposition toward Purchase Intention on Bag and Scarf Product: *Hijaber* Perspective

Puspita Seruni[a*], Leo Aldianto[b]

[a,b]School of Business and Management Institut Teknologi Bandung, Bandung, 40132, Indonesia

Abstract

Hijab has been an enormous phenomenon in Indonesia for several years, which around 10 percent of the population in Indonesia are *hijabers*. Muslim market becomes a huge opportunity for some businesses, especially for fashion businesses. However, as hijab has been a primary needs for *hijabers*, their attitude towards hijab has distinctively different compared to other fashion items. Therefore, this research is conducted to acknowledge which factors affect *hijaber*'s purchase intention towards two different kind of things. This research examines the impact of Customer Value Proposition factors on *hijaber*'s Purchase Intention. Data obtained by purposive sampling method with requirements for women that are using hijab in daily basis, 15 years old and above, and currently living in Jabodatabek and Bandung area. Multiple Linear Regression Analysis is also used to process the data. As a result, the overall Customer Value Proposition influences *hijaber*'s Purchase Intention simultaneously, with economical and emotional value of product have a significant impact on customer's purchase intention.

Keywords: Hijaber; Bag; Scarf; Customer Value Proposition; Purchase Intention

1. Introduction

Creative Economics in Indonesia is one of the sectors that has been undertaken seriously by President of Indonesia, Joko Widodo. In 2015, through Peraturan Presiden Republik Indonesia Nomor 6 Tahun 2015 Tentang Badan Ekonomi Kreatif, he established a special caretaker of creative economics of Indonesia called BEKRAF. BEKRAF is responsible to the growth of creative economics of Indonesia and is assigned to help the President in formulating, setting, coordinating, and synchronizing the policy of creative economics of Indonesia. BEKRAF has 16 subsectors to divide creative economics sectors into smaller and concentrated parts, there are (1) cuisine, (2) crafts, (3) fashion, (4) application and game development, (5) architecture, (6) interior design, (7) visual communication design, (8) product design, (9) film and video animation, (10) photography, (11) television and radio, (12) music, (13) performing arts, (14) publishing, (15) fine arts, and (16) advertising (Badan Ekonomi Kreatif, 2017).

Fashion is one of the most promising subsector in creative economics sector in Indonesia for its enormous contribution to the economic growth of Indonesia. From the contribution of creative economic sector in total Gross Domestic Product (GDP) of 2015, fashion was one of the biggest contributors to GDP of creative economics sector amongst other subsectors.

Table 18. Five biggest contributors to GDP of Creative Economic in 2015

Subject	Contribution to GDP of Creative Economic (2015)
Cuisine	41.69%
Fashion	18.15%
Craft	15.70%

---

* Corresponding author.

ICMEM

Television and Radio	7.78%
Publishing	6.29%

According to Wawan Rusiawan, BPS creative economy research and development director, fashion had been contributing 56.27% to Indonesian creative economy from 2010 until 2015, followed by crafts and culinary with contribution 37.52% and 6.09% respectively (The Jakarta Post, 2016). From the data above, it shows that fashion has a big potential to grow even bigger from time to time in Indonesia.

The rapid growth of Muslim Fashion in Indonesia showed by the increasing of activities within the industry, and also the varieties of it, such as *Hijaber* community, Muslim fashion bazaar, until Muslim fashion show. It also showed by the enormous number of businesses from Muslim Fashion in which it takes a significant proportion of Small and Medium Enterprises (SMEs) in Indonesia concentrating in clothing, around 30 percent of the total SMEs in Indonesia's clothing business (Kementerian Perindustrian, n.d.). There are approximately 225 thousand SMEs in clothing are from Muslim Fashion. It is unquestionably a prospective market with around 10 percent of total population wear hijab for daily basis in Indonesia. Thus, by acknowledging the facts about Muslim Fashion, the government of Indonesia sets up a target that in 2020, Indonesia would be the center of Muslim Fashion Industry in the world (Kementerian Perindustrian, n.d.).

According to Voicu (2013), it is important for a business to assess their customers' preferences on account that it could lead the company to perceive a better information about the tendency of the choices their customers would make, when they would choose an offer over another, and even when they determine to prolong the relationship to the specific business. The researcher will assess customer's preferences using four dimensions of Customer Value Proposition, they are Functional Value, Economic Value, Emotional Value, and Symbolic Value (Rantämaki, 2007).

This research has a purpose to explore customer's preferences of Customer Value Proposition for bag and scarf product. Moreover, its impact to their Purchase Intention towards bag and scarf product.

2. Theoretical Foundation

2.1 Customer Value Propositions

According to journal "Identifying competitive customer value proposition in retailing" by Rantämaki (2007), assessing customer value propositions is essential because the company could capture the important aspects to offer based on the customers' perspective. It is stated in the journal that customer value propositions consist of four dimensions, they are;

- Functional value : intrinsic value of the product, such as function, performance, and physical which is valued by the customers to fulfill their needs or "focus on solutions".
- Economic value : related with price as one of the strongest point as customer's consideration, this value shows the sensitivity of the customers to the price in relation with quality of the offering in order to get the best bargain.
- Emotional value : how the offer made by the company could create such an experience that attached to customer's feeling and/or affection. It could be delivered through visual, auditory, olfactory, sensory, and even gustatory clues.
- Symbolic value : the positive attitude from the customer towards the differentiation and/or uniqueness of a product/brand that has been set by the company.

2.2 Purchase Intention

Purchase intention comes from a set of leaning and thinking processes that form a perception towards a product or service, and it creates a cause a desire to buy a product or service (Putra & Harijanto, 2015). A higher desire to buy a product or service means a higher purchase intention (Schiffman & Kanuk, 1997). Purchase intention is highly related to experiences, thoughts, feelings, and other external factors that influence the consideration before making purchase

ICMEM

decision over a product or service (Fishbein & Ajzen, 1975). According to Ferdinand (2006), purchase intention could be described into four factors, those are transactional interest (person's tendency to purchase), referential interest (person's tendency to recommend the product to others), preferential interest (person's primary preference towards a product or service), and exploratory interest (person's tendency to seek for further information about the desirable product or service). The valuation of purchase intention mostly created after the customers using the product or service, and is related to the satisfaction of using it (Rosser, 2015).

2.3 Relationship between Concepts

Functional Value and Purchase Intention

Functional value is a perceived utility acquired for practical, physical performance (Sheth, et al., 1991), experiential value (Choo, et al., 2012), saving time, effort, and subjective cost of decision making. It should lead the customer to the right product and service that they need (Rintama¨ki, 2016). Based on the previous studies, functional value has significant influence to purchase intention on Chesa Cup instant noodle in Surabaya (Putra & Harijanto, 2015) and hybrid car in Malaysia (Wen & Noor, 2015). Therefore, the following hypothesis is as follows.
H1a: Functional Value will have significant influence on Purchase Intention of bag product
H1b: Functional Value will have significant influence on Purchase Intention of scarf product

Economical Value and Purchase Intention

Economical value on customer's perspective is related to the price of product or service offered to them. Along with that, price is the focus on economical value. It could also be defined as the lowest price or great resolution between price and quality (Gale, 1994; Zeithaml, 1988). There are customers who do not want sacrifice the monetary advantage for pursuing higher quality. However, for the customers who emphasize a product or service from the quality, they will pay for more expensive product to receive a high quality one (Rintama¨ki, 2016). From previous study of Chesa Cup instant noodle in Surabaya, economical value has significant influence to purchase intention (Putra & Harijanto, 2015). Hence, the hypothesis development is as follows.
H2a: Economical Value will have positive effect on Purchase Intention of bag product
H2b: Economical Value will have positive effect on Purchase Intention of scarf product

Emotional Value and Purchase Intention

Emotional value is about the feelings or affective states that attached to the product or service offered (Sheth, et al., 1991), and it could come from physical benefits that transforms to a good feeling by using the product or service (Rintama¨ki, 2016). People is associated with emotional responses in their daily life, so that emotional value could be an underlying cause of the customers' decision upon a product or service. Putra (2015) concluded in his study that emotional value did not significantly influence the purchase intention of Chesa Cup instant noodle. However, Wen & Noor (2015) found that emotional value has significant influence to purchase intention of hybrid car. To find out the relationship between emotional value and purchase intention, the researcher develops a hypothesis as follows.
H3a: Emotional Value will have positive effect on Purchase Intention of bag product
H3b: Emotional Value will have positive effect on Purchase Intention of scarf product

Symbolic Value and Purchase Intention

Symbolic value is a social value that emphasizes on reflecting self-expressive of someone's belief (Choo, et al., 2012) and meanings-related that product or service represents. It usually represents a positive attitude of the customers towards the product or service that is being offered (Rintama¨ki, 2016). According to Putra (2015), symbolic value did not have significant influence to purchase intention of Chesa Cup instant noodle in Surabaya. However, Oliver and Lee (2010) found that social value has distinctive relationship to purchase intention of hybrid car in cause of cultures. Hence, the researcher develops the hypothesis as follows.
H4a: Symbolic Value will have positive effect on Purchase Intention of bag product
H4b: Symbolic Value will have positive effect on Purchase Intention of scarf product

ICMEM
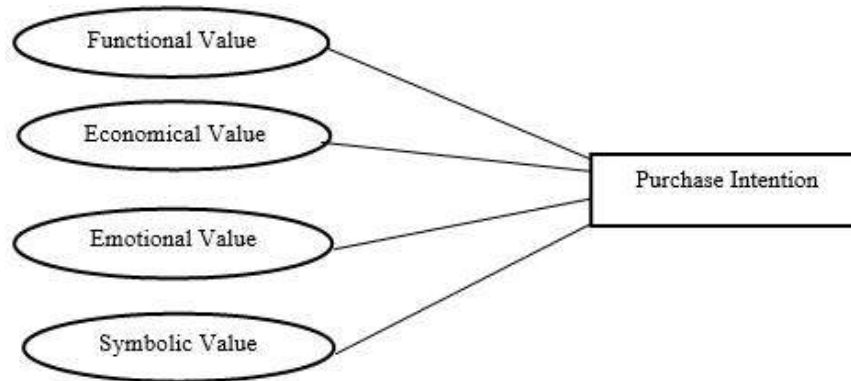
3. Methodology
Population

The population data was obtained from secondary data of Indonesian population conducted by World Bank. According to arah.com (2016), the population of hijaber in Indonesia is approximately 10% of the whole population of Indonesia. Total population being used in this research is the 10% of total population of Indonesia.

According to data.worldbank.org, total population of Indonesia in 2017 has reached 263,991,379 people. If we calculate the total population of hijaber in Indonesia, it would be;

$$N = 263,991,379 \times 0.1 = 26,399,137.9$$

Therefore, total number of population that will be used in this research is 26,399,138 people.

Sample Size

Sample size of the research is measured using *Slovin Formula* as shown below (Simamora, 2004):

n   = Total Sample
N   = Total Population

$$n = N / (1 +$$

e   = Margin of Error

The calculation to get the sample size of this research with 5% Margin of Error can be seen as follow;

n   = 26,399,138 / {1 + (26,399,138) (0.05)^2}
         = 399.994

Therefore, the sample size required for this research is 400 respondents.

Validity Test

Validity test is being used to find out whether the instruments of the research tool could explain the things that will be measured by the tool (Waseso, 2013). In this research, this test is performed to find out whether the statements in the questionnaire is valid to use. According to Ghozali (2005), a statement or question of the questionnaire is valid when the value of r-test (Pearson's Correlation) greater than the t-table, and have positive value. For the number of 400 respondents, this research is valid if the Pearson's Correlation exceeded 0.098 for 5% level of significance or 0.128 for 10% level of significance.

Reliability Test

Reliability test is a tool to measure the questionnaire as the indicators of the variables. A questionnaire is reliable if the answers from each respondent is consistent from time to time (Waseso, 2013). The realibility in SPSS Software could be seen through the Cronbach Alpha (α). A variable is reliable when the value of Cronbach Alpha is at least 0.6 (Ghozali, 2005).

ICMEM

Normality Test

Normality test is a tool to find out whether the data obtained for a research is normally distributed. In this research, the researcher measured the normality of the data using Kolmogorov-Smirnov Z value. The data is normally distributed if the Kolmogorov-Smirnov Z value is greater than 0.05

Multicollinearity Test

A questionnaire of the research has to be free from multicollinearity. Multicollinearity test is measured through the Variable Inflation Factor (VIF) or Tolerance value of a regression model. A regression model is free from multicollinearity if the VIF value is less than 10, or the Tolerance value is greater than 0.1.

Autocorrelation Test

Autocorrelation test is performed to find out whether there are correlations between the independent variables in a regression model. A good regression model does not have autocorrelation between the independent variables (Binus, 2015). The autocorrelation test is measured through the Durbin-Watson value in SPSS. If the Durbin-Watson valued in between the critical value, 1.5 until 2.5.

Heteroscedasticity Test

Heteroscedasticity test is performed to find out whether there are differences in residuals in a regression model (Ghozali, 2005). A good regression model does not have heteroscedasticity in it. In this research, the model used to test the heteroscedasticity is Spearman Rank, and measured through the Sig. value of each variable. If the Sig. value is more than 0.05, then there is no heteroscedasticity in the data.

Linearity Test

Linearity test is performed to find out whether the specification of the model used in the research is correct (Ghozali, 2005). The linearity of the variables could be seen in the Sig. value of ANOVA table or R-square of each variable. If the Sig. or R-square value of the variable is greater than 0.05, then the model is linear.

Multiple Linear Regression Analysis

Multiple Linear Regression Analysis will show the relationship between the independent variables to the dependent variable. The formula of this analysis can be seen as below.

$$Y = a + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + e$$

Y = dependent variable

a = constant value

β = regression coefficient of independent variable

X = independent variable

e = error

F-Test

In performing multiple linear regression analysis, F-test is supposed to inform us whether all the independent variables have significant influence simultaneously to the dependent variable (Ghozali, 2005). All the independent variables will be significantly influencing the dependent variable if the Sig. value of ANOVA table for the model is below 0.05.

T-Test

T-test in multiple linear regression analysis is supposed to show us how big the influence of one independent variable in explaining the dependent variable (Ghozali, 2005). The influence of one independent variable is significant if the Sig. value of the variable is below 0.05.

Determination Coefficient (R^2)

Determinant coefficient has a value in between 0 to 1. This value will explain the contribution of all independent variables towards the dependent variable. If the R^2 value is closer to 1, then the independent variables have proper information to predict the variations of dependent variable (Ghozali, 2005).

4. Findings and Argument

Respondent Profile

This survey must be fulfilled by women who wear hijab in their daily basis and are 15 years old and above. From the survey, the researcher got 429 valid respondents to be involved in the research. The respondents who filled the questionnaire are grouped, based on age, occupation, and living area.

ICMEM

Based on age grouping, 75.29% of the respondents are women in between 20 until 24 years old. Followed by the respondents in between 15 until 19 years old and in between 25 until 29 years old, taking proportion as much as 15.85% and 6.76% respectively. Then, respondents in the range 35 until 39 years old and above 39 years old taking proportion as much as 0.93% each.

Based on occupation grouping, 86.71% of the respondents are high school or college students. Then, 8.39%, 3.03%, and 1.04% of the respondents work as civil servant/private employee, entrepreneur, and housewife respectively. Meanwhile, 0.23% each of the respondent are retiree and having other occupation besides stated in the questionnaire.

Based on living area grouping, most of the respondents are living in Jabodetabek area and Bandung, with the percentage of 48.25% and 45.45% respectively. There also other respondents who live in another area in Indonesia, and they were as much as 6.29% from the total sample of the research.

Validity Test

From data analysis, it is proven that all the statements of the questionnaire have Pearson's Correlation value exceeded r-table = 0.128 for 0.01 level of significance (r-table value for n=400). Thus, all of the statements are valid to use.

Reliability Test

From data analysis, it could be concluded that all the variables used in the questionnaire have passed the minimum requirement of Cronbach Alpha for reliability analysis, more than 0.6. Therefore, all of the variables in the questionnaire are reliable.

Normality Test

From data analysis, both of the Kolmogorov-Smirnov Z value of the subjects are exceeding 0.05. It means that the data that is being used in the research in normally distributed.

Multicollinearity Test

Data of a research should be free from multicollinearity, and it could be seen from the VIF or Tolerance value in the data analysis. Based on data analysis, all of the independent variables have VIF value less than 10, and Tolerance value more than 0.1. It could be concluded that the variables are free from multicollinearity.

Autocorrelation Test

Autocorrelation test is assessed through the Durbin-Watson value in SPSS. Data of this research is free from autocorrelation if it has the value in between the critical value, 1.5 until 2.5. Based on data analysis, it is found that all of the subjects has Durbin-Watson value in between the critical value. Therefore, it is free from autocorrelation.

Heteroscedasticity Test

From the data analysis, it is known that the Sig. value of Spearman Rank of each statement have exceeded 0.05. Thus, all of the statements of this research is free from heteroscedasticity.

Linearity Test

Based on the data analysis, it is found that all of the independent variables have passed the linearity test, but the economical value of bag product. Therefore, the economical value of bag product cannot be included in the multiple linear regression analysis.

Multiple Linear Regression Analysis

Regression Model of Bag Product

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

	B	Std. Error	Beta		
1 (Constant)	1.567	1.333		1.175	.241
Functional	.152	.037	.143	4.064	.000
Symbolic	.310	.060	.179	5.164	.000
Emotional	.833	.053	.593	15.784	.000

a. Dependent Variable: Purchase Intention

Regression Model of Scarf Product

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.477	1.486		.321	.748
Functional	.087	.041	.074	2.135	.033
Symbolic	.285	.065	.138	4.367	.000
Economical	-.177	.056	.-092	-3.159	.002
Emotional	1.217	.059	.735	20.783	.000

a. Dependent Variable: Purchase Intention

F-Test

- Bag Product
  From the statistical calculation of SPSS, data of bag product has F-value as much as 190.615 with Sig. value of 0.000[a]. The data could pass the F-test if it has Sig. value of ANOVA[b] table less than 0.05. From table 5.25, it could be concluded that the data passed the F-test with Sig. value less than 0.05. It means that functional, symbolic, and emotional value have significantly influence purchase intention simultaneously.

- Scarf Product
  From the statistical calculation of SPSS, data of scarf product has F-value as much as 245.060 with Sig. value of 0.000[a]. The data could pass the F-test if it has Sig. value of ANOVA[b] table less than 0.05. From table 5.28, it could be concluded that the data passed the F-test with Sig. value less than 0.05. It means that functional, symbolic, economical and emotional value have significantly influence purchase intention simultaneously.

T-Test

- Bag Product
  In this research, t-test has been conducted to check whether each of independent variable has significant influence to the dependent variable individually. It could be checked through the Sig. value below 0.05. From table 5.26, all of the Sig. value of variables are below 0.05. Consequently, H0 for functional, symbolic, and emotional value is rejected since the significance value of the factors are below 0.05 which means all of the independent variables included in the analysis have significant influence to hijaber's purchase intention towards bag product. They also have positive value of coefficient regression that indicates the independent variables have positive significant influence towards the dependent variable.

  However, H0 of economical value is failed to be rejected since the variable did not pass the classical assumption test. It means that economical value does not have proof to indicate it has significantly influenced the hijaber's purchase intention towards bag product.

  It could also be stated from the coefficient regression that the formula of the regression is as follows.

$$Y = 1.567 + 0.152X1 + 0.310X2 + 0.833X3$$

  Y = Purchase Intention
  X1 = Functional Value
  X2 = Symbolic Value
  X3 = Emotional Value

- Scarf Product

In this research, t-test has been conducted to check whether each of independent variable has significant influence to the dependent variable individually. It could be checked through the Sig. value below 0.05. From table 5.29, all of the Sig. value of variables are below 0.05. Consequently, H0 for functional, symbolic, economical and emotional value is rejected since the significance value of the factors are below 0.05 which means all of the independent variables included in the analysis have significant influence to hijaber's purchase intention towards scarf product. They also have positive value of coefficient regression that indicates the independent variables have positive significant influence towards the dependent variable.

It could also be stated from the coefficient regression that the formula of the regression is as follows.

$$Y = 0.477 + 0.087X1 + 0.285X2 - 0.177X3 + 1.217X4$$

$$Y \quad = \text{Purchase Intention}$$
$$X1 \quad = \text{Functional Value}$$
$$X2 \quad = \text{Symbolic Value}$$
$$X3 \quad = \text{Economical Value}$$
$$X4 \quad = \text{Emotional Value}$$

Determination Coefficient (R^2)

- Bag Product

Determinant Coefficient of a multiple linear regression analysis shows how big the contribution of all independent variables to dependent variables simultaneously. From table 5.27, the value of R^2 in the data of bag product is 0.574. It means that functional, symbolic, and emotional value could explain 57.4% of hijaber's purchase intention of bag product, while the remaining 42.6% could be explained by other factors besides customer value propositions factors.

- Scarf Product

Determinant Coefficient of a multiple linear regression analysis shows how big the contribution of all independent variables to dependent variables simultaneously. From table 5.30, the value of R^2 in the data of bag product is 0.698. It means that functional, symbolic, and emotional value could explain 69.8% of hijaber's purchase intention of bag product, while the remaining 30.2% could be explained by other factors besides customer value propositions factors.

5. Conclusion and Recommendation

5. 1. Conclusion

According to data analysis, the results found out that customer value propositions have significant value towards hijaber's purchase intention, both for bag and scarf products. Unfortunately, economical value of bag product is failed to be analyzed with multiple linear regression analysis because it did not pass the linearity test.

In conclusion, H0 of all independent variables included in the multiple linear regression analysis, both of bag and scarf product, are rejected since the significance value of the independent variables did not exceed 0.05. It indicates that all of the independent variables are feasible to be focus on when other people are striving to attract hijabers with their bag and scarf product.

However, economical value of scarf product has negative significant influence to hijabers purchase intention. It indicates that hijabers do not pay too much attention of equal relationship between price and quality, as stated on the questionnaire. It could also be one of the consideration when developing scarf product for hijabers.

5. 2. Recommendation

Based on the findings, this research contributes in adding information about the factors that influencing customers' purchase intention. Therefore, the researcher gives several suggestions, either for CORRA Accessories or other businesses who want to develop their product into bag and scarf product to increase purchase intention of hijaber as the target market. The suggestions are;

- Conduct a thorough market research about the functional value of the product

ICMEM

Functional value could be a subjective perspective of each customers. Consequently, it might give different result from every customer. However, by conducting a thorough market research about basic functional values, such as size and packaging, would lead the brands to launch more favorable product for hijabers.

- Create a specific social value of the product
  According to the findings, hijabers tend to put attention to symbolic value towards bag and scarf product. Symbolic value in this research is associated to their lifestyle as hijaber, and several price range that symbolize prestige value of purchasing the product. To reach such a specific social value could be done with cooperating with influencers that bring peculiar characteristics that the brand wants to achieve. Align with that, the price range could also increase as the result of social values that the influencer gives to the product and brand.

- Maintain the quality control of the product
  As stated on conclusion of this research, hijabers tend to be more focused on other aspects rather than equality of price and quality of product. It could give a benefit to the brands because they do not have to provide a superior product to attract the market, but do not let the customers' satisfaction slipped from our hands by neglecting the quality control. Thus, maintaining the product to be in a good condition could be a critical point. It does not have to be superior, but always in a good condition.

- Emphasize on creating added value that drives to unique experiences
  This research reveals that emotional value has positively influenced the purchase intention of bag and scarf product. Emotional values such as providing unique experiences and creating happiness are essentials to hijabers. Therefore, developing unique added value might lead to happiness of using the product. It could be developed by the features of the product itself or additional activities by purchasing the product, such as social events.

References

Badan Ekonomi Kreatif, 2016. *Infografis Data Statistik dan Hasil Survei Khusus Ekonomi Kreatif.* [Online] Available at: http://www.bekraf.go.id/berita/page/17/infografis-data-statistik-dan-hasil-survei-khusus-ekonomi-kreatif [Accessed February 2018].

Badan Ekonomi Kreatif, 2017. [Online] Available at: http://www.bekraf.go.id/profil [Accessed 2018].

Choo, J. H., Moon, H., Kim, H. & Yoon, N., 2012. Luxury customer value. *Journal of Fashion Marketing and Management: An International Journal,* pp. 81-101.

Desilver, D. & Masci, D., 2017. *World's Muslim population more widespread than you might think.* [Online] Available at: http://www.pewresearch.org/fact-tank/2017/01/31/worlds-muslim-population-more-widespread-than-you-might-think/ [Accessed February 2018].

Ferdinand, A., 2006. *Metode Penelitian Manajemen.* Semarang: BP Undip.

Fishbein, M. & Ajzen, I., 1975. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research.* s.l.:Addison-Wesley.

Kementerian Perindustrian, n.d. *Kemenperin Targetkan Indonesia Jadi Pusat Fashion Muslim Dunia Pada 2020.* [Online] Available at: www.kemenperin.go.id/artikel/15562/ [Accessed February 2018].

Kementerian Perindustrian, n.d. *Mimpi Indonesia: Kiblat Fashion Muslim Dunia.* [Online] Available at: www.kemenperin.go.id/artikel/4051/ [Accessed February 2018].

Oliver, J. D. &. L. S. H., 2010. Hybrid car purchase intentions: A cross-cultural analysis. *Journal of Consumer Marketing,* pp. 96-103.

Putra, G. T. K. & Harijanto, R., 2015. The Impact of Customer Value Proposition towards Purchase Intention of Chesa Cup. *iBuss Management,* pp. 241-251.

Rintama̧ki, T., 2016. *Managing Customer Value in Retailing: An Integrative Perspective,* Tampere: Tampere University Press.

Rosser, R., 2015. *The Reality of Advertising.* s.l.:Wildener Classics.

Schiffman, L. G. & Kanuk, L. L., 1997. *Consumer Behaviour.* s.l.:NJ: Prentice-Hall.

Sheth, J., Newman, B. & Gross, B., 1991. Why we buy what we buy: a theory of consumption values. *Journal of Business Research,* pp. 159-170.

ICMEM

The Jakarta Post, 2016. *Creative economic sector grows 62 percent in five years.* [Online] Available at: http://www.thejakartapost.com/news/2016/12/08/creative-economic-sector-grows-62-percent-in-five-years.html [Accessed February 2018].

Voicu, M., 2013. *Characteristics of The Consumer Preferences.* [Online] Available at: http://www.globeco.ro/wp-content/uploads/vol/split/vol_1_no_1/geo_2013_vol1_art_015.pdf [Accessed February 2018].

Warta Kota, 2016. *Masyarakat Indonesia Semakin Sadar Mode dan Siap Terjun ke Industri Fashion.* [Online] Available at: http://wartakota.tribunnews.com/2017/11/13/masyarakat-indonesia-semakin-sadar-mode-dan-siap-terjun-ke-industri-fashion [Accessed February 2018].

Wen, C. T. & Noor, N. A. M., 2015. What Affects Malaysian Consumers' Intention to Purchase Hybrid Car?. *Canadian Center of Science and Education ,* XI(26).

ICMEM

The 3rd International Conference on Management in Emerging Markets

Assessing Service Quality Using Combination of Servperf and Importance-Performance Analysis: A Research Study at Skin Care Unit Klinik Satelit 3 Bontang

Yustinus Heri Hermawan[a*], Herry Hudrasyah[b]

[a,b]*Institut Teknologi Bandung, Jalan Ganesha No 10, Bandung 4132, Indonesia*

Abstract

Skin Care Unit (SCU) of Klinik Satelit 3 is one of skin care services exist in Bontang. It was established as a new strategic breakthrough in expanding healthcare business in the late of 2014. At the beginning, it was intended by the founders to create a general clinic in one location with several health care services provided such as: general dentistry service, vaccine service, midwifery and birth examination service, Medical Check Up (MCU) service and aesthetic (skin care) service. After three years of operation, revenue from SCU was experiencing a downward trend and accompanied by the decreasing of patient visit during 2015 - 2017. The focus of the research is to assess service quality of SCU by means of SERVPERF method developed by Cronin & Taylor (1992) combined with Importance-Performance Analysis (IPA) developed by Martilla & James (1977). It was found that the average service quality given by SCU is 2.68 out of 4.00, which indicates lack of capability to provide best service for its customers. The result also shows that total of five item statements are located in Quadrant I: Concentrate Here, which low in performance but have high importance level, and are considered as top priority for improving service quality by management of SCU.

Keywords: Importance-Performance Analysis; service quality; SERVPERF; skincare

1. Introduction

Nowadays, many people in Indonesia pay more attention to their skin health and beauty in order to improve overall appearance and grooming. In line with technology and product development, skin care treatments have already changed from want into necessity. This change of behaviour has an impact on industry that related with beauty products and services. Lucrative market in cosmetic industry has triggered many companies to establish various kind of beauty care services such as spa, salon and skin care clinic. One of the popular and competitive service is skin care clinic business. Skin care clinic is a place that provides body and facial skin treatment service. A lot of skin care clinics offered various kind of products and services with competitive price, various quality, easiness level and emotional factor to its consumers. This competitive atmosphere forced every clinic to offer its best service through creating a product concept.

Skin Care Unit (SCU) Klinik Satelit 3 is one of skin care clinic exist in Bontang. SCU utilizes safe cosmetic product and supported with proven electro medical equipment since 2014. The skin care or aesthetic service is a new strategic breakthrough by PT KMU in expanding its healthcare services. The services offered by SCU are face and eye treatment, acne treatment, wrinkle and anti-aging treatment, brightening treatment, slimming treatment, and scar treatment.

After three years running, SCU encountered a new challenge. The numbers of patients' visit had been declining until 2017. It decreased about 7.6% in 2016 and 8.1% in 2017. This decreasing number of patient visit caused a

---

ICMEM

declining in revenue. It was recorded about 2.4% in 2016 and 1.5% decreasing of revenue in 2017. The growth of total revenue of KS3 was 84% in 2016 and 12% in 2017. There were some additional services introduced in KS3 which made the total revenue of KS3 increased. The trend of skin care treatment which has been a necessity for Bontang society would be a good opportunity for SCU to gain more market share.
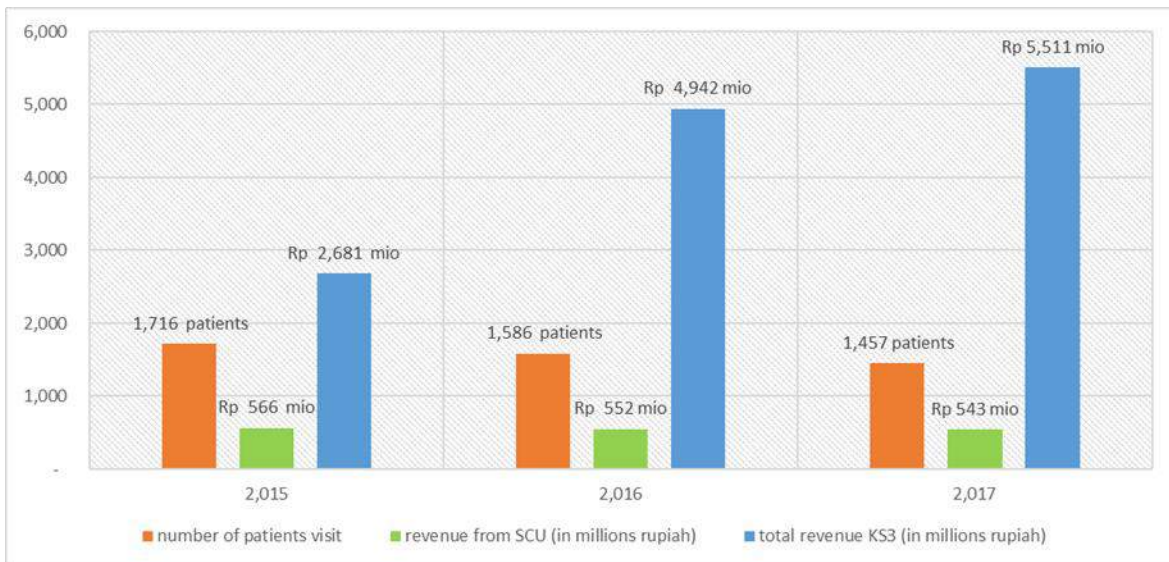
Fig. 1. Number of Patients Visit, SCU Revenue and Total Revenue (2015 – 2017)

The research questions are: 1) what is the service quality level of SCU? and 2) what is the priority improvement to increase service quality of SCU?

The objective of this research are twofold. The first is to assess the performance of service quality given to customers using SERVPERF model. The second is to prioritize the improvement of service quality using Importance-Performance Analysis (IPA).

2. Literature Review

2. 1. SERVPERF (Service Performance)

SERVPERF method consist of five service dimensions known as RERAT: Reliability, Empathy, Responsiveness, Assurance, and Tangibles with two sets of 22 item statements for perception and importance sections of the questionnaire. Reliability is the ability to provide reliable service. Empathy relates with ease of relationships, caring, and attention given to customers. Responsiveness relates with providing prompt service and desire to help customers. Assurance is employee's knowledge, courtesy, trust-worthiness of the employees. While tangible relates with aspect which visible physically.

Service quality, SQi is measured by by multiplying the weight with the perception scores:

$$SQ_{ij} = W_{ij} \cdot P_{ij} \qquad\qquad (1)$$

where SQ_{ij} is the service quality of item statement j and P_{ij} is the perception of individual i with respect to the performance on item statement j.

The weighting factors is the normalized importance score and calculated using following formula:

ICMEM

$$W_{ij} = \frac{I_{ij} - Min}{Max - Min} \qquad\qquad (2)$$

where *Iij* is the importance score obtained from the questionnaire, *Min* is the minimum score and *Max* is the maximum score of importance score.

Importance-Performance Analysis (IPA)

Importance – Performance Analysis technique is two-dimensional state space with importance of selection attributes as vertical axis and service performance of firm as horizontal axis (Martilla & James, 1977). IPA is a tool to determine which service attributes should be the company's focus in improving customer satisfaction (Matzler, Fuchs, & Schubert, 2004). The average value of importance and performance for every items statement are computed for all respondents then plotted to a scatter graph. The graph is categorized into four quadrants: 1) Quadrant I (Concentrate Here), 2) Quadrant II (Keep up the Good Work), 3) Quadrant III (Low Priority), and 4) Quadrant IV (Possible Overkill.

3. Methods

The research began by distributing questionnaire to SCU customers. The questionnaire consists of service quality perception and importance. All item statement were measured on a 5-point Likert-type scale, ranging from 1 which indicate strongly disagree to 5 for strongly agree. The value of population size is determined by average patient visit throughout 2015 and 2017. The population size is 1,586 patients while margin of error of 10%. A hundred of participants who are SCU customers were randomly picked.

The reliability test was conducted to check whether the score from respondent related with the score on the others. The Cronbach's alpha for each dimension are computed using Statistical Package for the Social Science (SPSS) version 24. To be considered reliable the Cronbach's alpha value should higher than 0.6.

After all data are gathered, the service quality are calculated using Equation (1) and the weighting factors are calculated using Equation (2). The average value are calculated for all respondents.

For IPA, the average value of perception and importance are plotted into scattered chart with perception as Y axis and importance as X axis. Median value is used as a reference line to divide graph into four quadrants.

4. Finding and Result

The data collected from all respondents are tested first for its reliability. The Cronbach's alpha for each dimensions are shown in Table 1.

Table 1. Cronbach's Alpha for Each Dimension of SERVPERF

Dimensions	Cronbach's Alpha
Tangible	0.750
Reliability	0.644
Responsiveness	0.621
Assurance	0.684
Empathy	0.794

The average value of service quality are shown in Table 2. The result respect to each item statement and each section: importance and perception.

ICMEM

Table 2. Questionnaire Result

Dimensions	No	Item Statements	Iij	Wij	Pij	SQij
Tangible	Q1	SCU has up-to-date equipment & technology.	4.44	0.72	3.85	2.77
	Q2	SCU physical facilities are visually appealing.	4.33	0.67	3.76	2.50
	Q3	SCU employees are well dressed and appear neat.	4.40	0.7	3.91	2.74
	Q4	The appearance of the physical facilities of these institutions should be in keeping with the type of services provided.	4.38	0.69	3.90	2.69
Reliability	Q5	SCU promise to do something by a certain time.	4.34	0.67	4.12	2.76
	Q6	SCU are sympathetic and reassuring.	4.37	0.69	4.19	2.87
	Q7	Employees are dependable.	4.33	0.67	3.93	2.61
	Q8	Employee provide their services at the time they promise to do so.	4.41	0.71	3.97	2.80
	Q9	The employees keep their records accurately.	4.4	0.70	3.84	2.69
Responsiveness	Q10	The employees tell their customers exactly when services will be performed.	4.35	0.68	3.91	2.64
	Q11	Prompt service from employees of SCU.	4.44	0.72	3.69	2.66
	Q12	The employees always help customers.	4.37	0.69	3.90	2.67
	Q13	Employees are too busy to respond to customer requests promptly.	4.43	0.72	3.91	2.80
Assurance	Q14	Customers trust employees of SCU.	4.35	0.68	3.83	2.58
	Q15	Customers feel safe in their transactions with SCU employees.	4.40	0.70	3.77	2.64
	Q16	The employees are polite.	4.41	0.71	3.86	2.72
	Q17	The employees get adequate support from these institutions to do their jobs well.	4.31	0.66	3.71	2.43
	Q18	SCU give customers individual attention.	4.39	0.70	3.92	2.72
Empathy	Q19	Employees of SCU give customers personal attention.	4.39	0.7	3.89	2.7
	Q20	Employees know what the needs of their customers are.	4.41	0.71	3.9	2.75
	Q21	SCU have their customers' best interests at heart.	4.35	0.68	3.86	2.60
	Q22	SCU have operating hours convenient to all their customers.	4.38	0.69	3.8	2.62
		Average Service Quality				2.68

By plotting Importance as Y axis and Perception as X axis into a scattered chart, each item statement could be placed in respective quadrant. The IPA of service quality of SCU could be seen in Figure 1.

ICMEM
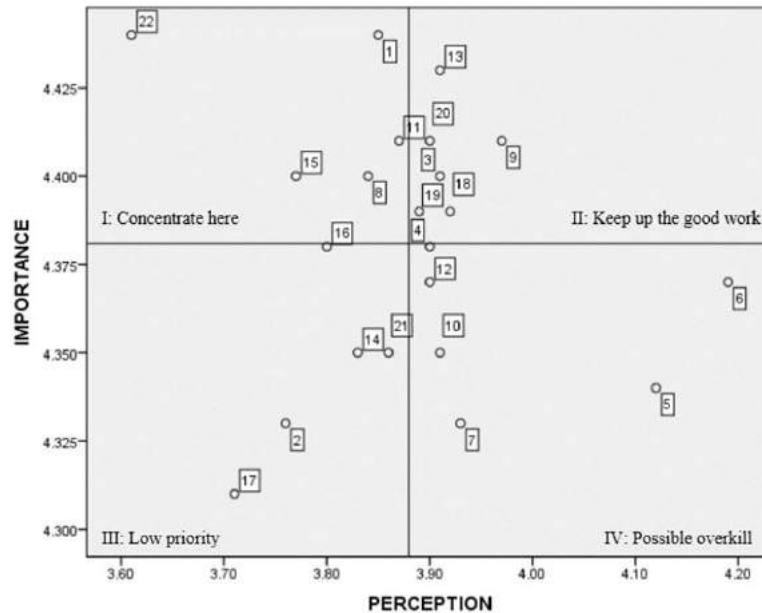
Figure 1. Importance-Performance Analysis of Service Quality of SCU

The item statements in the first quadrant are low in performance but have high importance level, therefore SCU management should concentrate on these items in boosting the service quality. The items are Q1 of tangibles, Q11 of responsiveness, Q8 of reliability, Q15 of assurance and Q22 of empathy.

Several items are located in second quadrant means the items are important and have a good performance. These items are Q3, Q4, Q9, Q13, Q18, Q19 and Q20. It indicates that: customers were satisfied with room and facilities provided at SCU and fond with well-dressed employee; SCU gives service with promised time, accurate customer data achieving; customer are happy with attention given during service and the way SCU communicating information to customers. Mostly every dimension has representative in this quadrant and management should maintain this achievement.

The low priority quadrant indicates the attributes performing sufficiently but customers feel them as less important compared to other attributes. The attributes located in third quadrant are Q2, Q14, Q17 and Q21. Management could not ignore attributes in this quadrant although they do not have high importance level. Improvement in this quadrant could also increase customer satisfaction but not become the first priority for management.

In the possible overkill quadrant several items have high perception but low importance level. The attributes in this quadrant are considered as less important by customers and felt to0 excessive.. The items are Q5, Q6, Q7, Q10, and Q12.

5. Conclusion

Based on SEVPERF and IPA, it can be concluded that SCU is lack of capability to provide best service for its customers as indicated by low average service quality of 2.4 out of 4.00. Management of SCU should improve the service quality to increase patient visit. The highest priority lies in quadrant I and improvements that management could do are: 1) update new equipment, 2) create a reservation system to keep the promised time, 3) increase beautician and doctor to speed up the service, 4) improve comfort and safety in doing transaction with customer, and 5) extend operating hour to suit customer need.

ICMEM

References

Armstrong, G., & Kotler, P. (2004). *Principles of Marketing.* Essex: Financial Times.

Amryyanti, R., Sukaatmadja, I. P. G., & Cahya, K. N. (2013). Pengaruh Kualitas Layanan, Produk, Dan Kewajaran Harga Terhadap Kepuasan Dan Loyalitas Pelanggan Pada Lnc Skin Care Singaraja. *Water*, *2*(1), 320–327.

Angelina, A. T., & Wibowo, S. A. (2012). Service Quality Improvement at CV . Citra Tiara (Citi Trans) Bandung, *1*(3), 166–174.

Babakus, E., & Mangold, W. (1990). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Journal of Marketing*, 69-82.

Badan Pusat Statistik. (2017, December 2017). Retrieved from Badan Pusat Statistik: https://www.bps.go.id/

Badan Pusat Statistik Kota Bontang. (2017). *Bontang Municipality in Figures 2017.* Bontang: CV. Suvi Sejahtera.

Badan Pusat Statistik Kota Bontang. (2017). *Statistik Saku Kota Bontang 2017.* Bontang: Badan Pusat Statistik Kota Bontang.

Bohang, F. K. (2018, April 19). *Kompas.com.* Retrieved from https://tekno.kompas.com/read/2018/02/22/16453177/berapa-jumlah-pengguna-internet-indonesia

Boller, G., & Babakus, E. (1992). An empirical assessment of the SERVQUAL scale. *Journal of Business Research*, 253-68.

Cosmoprof. (2016, September 21). *Cosmoprof.* Retrieved from Cosmoprof: http://www.cosmoprof-asia.com/blog/indonesias-personal-and-beauty-care-market-sees-strong-growth/

Cronin, J., & Taylor, S. (1992). Measuring Service Quality: A Re-examination and Extension. *Journal of Marketing, 56*, 55-68.

Dayan, N. (2008). *Skin Aging Handbook.* New York: William Andrew Inc.

Fred, R. (2011). *Strategic Management: Concepts and Cases* (13th ed.). New Jersey: Prentice Hall.

Hadyan, Z. (2013). Pengaruh Customer Relationship Marketing, Kepercayaan, dan Kepuasan Terhadap Loyalitas Pelanggan (Studi Kasus Pada Natasha Skin Care di Kudus), 1–16.

Hayes, B. (2008). *Measuring Customer Satisfaction and Loyalty.* Milwaukee: Quality Psess.

Kotler, P., & Keller, K. (2012). *Marketing Management.* New Jersey: Pearson Education Inc.

Lee, H., Lee, Y., & Yoo, D. (2000). The determinants of perceived quality and its realtionship with satisfaction. *Journal of services marketing, 14*(3), 217-231.

Lestari, R. (2018, Februari). (Y. Hermawan, Interviewer)

Lewis. (1983). *The Marketing Aspects of Service Quality.* Chicago: American Printing.

Lovelock, C., & Wright, L. (1999). *Principles of Service Marketing and Management.* New Jersey: Prentice-Hall, Inc.

Martilla, J., & James, J. (1977). Importance-Performance Analysis. *Journal of Marketing*, 77-79.

O. C., F., & Hartline, M. (2010). *Marketing Strategy.* Ohio: South-Western.

Papanikolaou, V., & Zygiaris, S. (2014). Service Quality Perceptions in Primary Health Care Centres in Greece. *Health Expectations*, *17*(2), 197–207.

Paramita, E. (2017, April 27). *Majalah Kartini.* Retrieved March 14, 2018, from http://majalahkartini.co.id/mode-kecantikan/kecantikan/industri-kecantikan-di-indonesia-alami-pertumbuhan-pesat/

Parasuraman, e. (1988). A conceptual model of service quality and its implications for future research. *Journal of Marketing, 49*, 41-50.

Rasyida, D. R., Mujiya Ulkhaq, M., Setiowati, P. R., & Setyorini, N. A. (2016). Assessing Service Quality: A Combination Of Servperf And Importance-Performance Analysis. *Matec Web Of Conferences*, *68*, 06003.

Sharon, R., & Riggan, M. (2017). *Reason & rigor : how conceptual frameworks guide research.* Los Angeles: SAGE.

Thompson, A. (2016). *Crafting and Executing Strategy: The Quest for Competitive Advantage.* New York: McGraw-Hill Education.

Wheelen, T. (2012). *Strategic Management and Business Policy: Toward Global Sustainability.* New Jersey: Prentice Hall.

Zeithaml, V. A. (2000). Service Quality, Profitability and the Economic Worth of Customers: What We Know and What We Need to Learn. *Journal of the Academy of Marketing Science*, 67-85.

Zeithaml, V. A. (2012). *Services Marketing* (6th ed.). New York: McGraw Hill Higher Education.

Zeithaml, V., & Berry, L. (1996). The Behavioral Consequences of Service Quality. *Journal of Marketing*, 31-46.

OPERATIONS

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Adoption of Halal Logistic among Industries in Indonesia: The Intention Driver towards Service Innovation

Sherly Artadita[a*], Yuliani Dwi Lestari[b]

[a,b] *School of Business and Management (SBM), Jl. Ganesha No.10, Lb. Siliwangi, Coblong, Kota Bandung, Jawa Barat, 40132*

Abstract

The growing of halal market increased the need of halal logistics service among Indonesian firm to produce halal product from upstream and downstream. Adopting new system is one form of innovation. The main determinant of innovation is perspective of organizational culture, which is driven by behaviour. In general, behaviour is affected by intention. Therefore, the aim of this study is to understand the factors that influence the intention to adopt *halal* logistics system among Indonesian industry (food, cosmetics, pharmaceutical, etc.). This research employed a quantitative research design using survey research method. All question will use 5-point Likerts scale and the data will analyze using partial least square (PLS). The result show that the main factor that influences the intention among industry in Indonesia to adopt *Halal* concept in their logistics activity is organization factor, which is covering financial, Halal awareness, and human resource inside the firm.

Keyword: *Halal logistics; Halal; logistics; Indonesia*

1. Introduction

1. 1. Statement of the Problem

Indonesia is a large country with 242.5 million population in 2010 and 87.2% among the population is identifies as Muslim. This number, about 209 million, made Indonesia as the country with the highest Muslim majority around the world (Desilver, 2017). In Muslim majority, the *Halal* concept is a critical requirement for consumption. *Halal* is an Arabic word for thigs or action which is approved by *Shariah* or Islamic Law and should be fulfilled to show an obligation towards Islamic faith (Alam and Sayuti, 2011). *Halal* aspect is not only limited to food product but also to non–food products, and both of them should comply with *Islamic* rules (Tarmizi, *et al.*, 2014). *Halal* actually deal with much broader meaning including logistics, pharmaceuticals, clothing, finance, hospitality, banking (Minkus-McKenna, 2007 cited in Alserhan, 2010), behaviour, action, speech, attitude, cloth, cosmetic, and medicine (Al Jallad, 2008; Kocturck, 2002; Wilson, 2014a, 2014b cited in Prabowo¸*et al*., 2015). First clause verse one and two of Indonesia constitution No. 33, 2014 about The Guarantee of Halal Product also stated that Halal products are products that have been declared halal in accordance with Islamic Shari'a. Products in this case are goods and/or services related to food, beverage, medicine, cosmetics, chemical products, biological products, genetic engineering products, and goods that used or utilized by the community, and.

Nowadays, *Halal* principles are not only restricted to religious things, but also become an appealing healthy and hygienic cuisine style as people become more health conscious (Rezai, *et al.*, 2012). Because of this value, *Halal* concept becomes popular among non-Muslim consumer. From this situation, it could be seen that the existence of *halal* product is really needed by many people, not only for Muslim consumer, but also for non-Muslim consumer. The integrity of the halal product from upstream (source) to downstream (end-consumer), could be ensured by using *Halal* logistics.

---

[*] Corresponding author

ICMEM

Halal logistics is a part of *Halal* supply chain for *Halal* product that entirely based on greatest *Halal* practices. The *Halal* logistics activities consist of *Halal* transport, *Halal* warehouse, and *Halal* retail (SIRIM cited in Tarmizi, *et al.*, 2014). This concept also applied in Indonesia, which is stated in Indonesia constitution No. 33, 2014, clause one verse three, that *Halal* product process is a series of activities to ensure Halal product covering the equipping of materials, processing, storage, packaging, distribution, sales, and product presentation. The basic concept of *Halal* logistics is to avoid immediate contact with Haram product; this concept is similar with Tieman's (2011) study that found the foundation of *Halal* supply chain which is determined by direct contact with Haram, risk of contamination and perception of Muslim consumer. The implementation of *Halal* logistics activity is not only to fulfill the urgency from consumer side only, but also in order to get competitive advantages (differentiation) or to embrace more consumer both inside and outside the country; all this things contributed to overall company profitability and growth (Sandbergh, 2013).

All this situation showed that *Halal* logistics is a promising way for industry to expand their business. Unfortunately there are few study that examine Halal logistics in Indonesia, it is probably because of industry Indonesia have not use this system. Halal logistics is counted as innovation and its is important to find the factor that effect certain industry to adopt innovation. The main determinant of the adoption of innovation within the organization could be seen from the perspective of organizational culture (Naranjo-Valencia, *et al.*, 2011). Organizational innovation culture represent the expressive character of employees, which is communicated and reinforced through several factors, one of them called behaviour (Schein, 1984 cited in Xie, *et al*, 2016) and in general, behaviour is driven by individual intention. This thing showed that intention have a big role in determining industry decision to adopt new system or not. Because of that, this study is designed to investigate the factors that influence the intention of industry that exist in Indonesia in adopting *halal* concept in their logistics activity.

1. 2. Objectives

The purpose of this study is to determine the factor that influences the intention among industry in Indonesia to adopt *Halal* concept in their logistics activity

1. 3. Research Questions

From the objective above, the research question of this study is "What factor that influence the intention to adopt Halal logistics?"

2. Literature Review

2.1 Halal Logistics

The principles of *Halal* logistics are the intention to create a global halal logistics system, minimize hardship for the halal industry, define cross contamination between halal and haram and the way to avoid it, create an evolution of a complete halal value chain and supply chain, and benchmark with existing halal standards, best practices, and international standards (Tieman, 2013). Halal logistics has different standard in Muslim and non-Muslim country. In Muslim country the level reach into preferred level (direct contact with *Haram*, risk of contamination, and perception of the Muslim consumer), and for non-Muslim country the level is only limited to minimum level (direct contact with *Haram* and risk of contamination) (Tieman, 2013). The perception of the Muslim is depend on the Islamic school of thought, local fatwas (religious rulings), and local custom (Tieman, 2011).

Halal logistics nowadays get a lot of intention due to the urgency of halal product among consumer, both Muslim and non-Muslim consumer. Halal logistics not only restricted to the product, but included the process from upstream (source) to downstream (end-consumer). Tieman (2013) study found three key discipline of halal logistics includes warehousing, transportation, and terminal operations. Critical control points in a *halal* warehousing are unloading/loading, labelling, zoning of storages areas, packaging, and consolidation of cargo on load carriers. The preferred minimum segregation of Halal product in Muslim and non-Muslim country is different. The Muslim country

ICMEM

has a higher standard of segregation and higher willingness to pay for a Halal logistics system than in non-Muslim country (Tieman, *et al*., 2013).

2.2 Intention

The intent of people to perform certain behaviour would determine his or her performance of that behaviour. Ajzen (1991, cited in Alam and Sayuti, 2011) stated that an attitude towards a behaviour is an evaluation (could be positive or negative) of performing that behaviour, and beliefs about the individual's possession of the opportunities and resources need to engage in certain behaviour will inform perceived behavioural control.

The actual behaviour originated from behavioural intention which is affected by attitude and subject norm. Behaviour is driven by knowledge, attitude, norms of society, innate belief, and expected results of certain behaviour. Other studies found that attitude, subjective norms, and perceived behavioural control were the positively and significantly influence intention (Alam and Sayuti, 2011). Study that conducted by Shahijan, *et al*. (2014), showed that normative belief (NB), subjective norms (SN), behavioural belief, and attitude are positively related to behavioural and actual behaviour, which is will motivate retailers for high retail performance and critical point in Halal product handling.

In TRA, a person's intention determined by personal in nature, which is described as individual's positive or negative evaluation of performing the behaviour, and the other factor is the person's perception of the social pressure put on that person to perform/not perform the behaviour. Personal in nature is termed attitude toward the behaviour, and person's perception terms as subjective norm (Ajzen and Fishbein, 1980 cited in Lada, *et al*, 2009). Intention positively and significantly influenced by attitude, subjective norms (Lada, *et al*., 2009; Yadav, *et al*., 2015), perceived behavioural and perceived usefulness (Yadav, *et al*., 2015). Subjective norms also positively related to the attitude (Yadav, *et al*., 2015).

2.3 Drivers of Intention on Company Level

Intention is an important thing that affected industries' adoption for new service/system. This fact supported by the study of Tarmizi, *et al* (2014) that found intention as the major factors that affect the readiness toward halal logistics adoption. Many research had been conducted to find the factor that influence intention of organization in adopting Halal logistics or other innovation. In 2017, Ngah, *et al.*, (2017) conduct a study that examine the factors that contribute to the adoption of Hall warehousing by using technology, organization, and environment (TOE) framework. In 2012, Gao, *et al.* examine the relationship between perceived value and perceived risk toward intention to adopt innovation. They view the perception of value and risk are contributing to organization' decision to adopt or reject innovation. Because of that, this study will focus on the relation between technology, organization, environment, perceived value, and perceived risk with the intention to adopt Halal logistics. Further explanation regarding the relationship between technology, organization, environment, perceived value, and perceived risk with intention to adopt are presented in section 2.3.1 until 2.3.4.

Technology

The study by Talib, et al. (2015) found that information is the critical succes factor of Halal Supply Chain. A good transportation system will ensure logistics efficiency, reduce operating costs, and enhance the service quality. Information technology is a critical success factor for Halal industry, specifically the Halal supply chain, to maintain Halal products' or services' integrity and Halal status.

H1. Technology positively affect intention to adopt

Organization

Tarmizi., et al (2014) study found Halal assurance and company vision as the factor that influenced the readiness of logistics players towards Halal logistics. The companies need Halal assurance in their Halal logistics operation as the general guideline to ensure the integrity of Halal product along the supply chain (Tarmizi, et al. 2014). The change of company's vision is a responsibilityof top-management level. The leader should remember that the vision is something that also guide the employee. So, the vision should be learned, understood, and handled by all members of the management. Tarmizi et al (2014) also found that the companies who have knowledgde about Halal logistis is more ready than a company with less knowledge towards Halal logistics. Awareness is a barrier that make the majority

ICMEM

of Halal manufactures is not adopting Halal supply chain services (Ngah et al., 2013). This study reinforced with the study that conducted by Ngah, *et al.*, (2015), which is found that awareness, complexity, and top management support were the determinant factors in the halal warehousing services adoption among Malaysian halal manufacturers. Halal assurance, infrastucture and resources, knowledge, awareness, and organizational/company vision are the factor that come from inside the firm and related to organizational capabilities.

H2. Organization positively affect intention to adopt

Environment

Ngah, *et al.* (2013) found that lack of competitive pressure is become one of the barriers for Halal supply chains providers from adopting Halal supply chain service. Competitiveness is reflecting the level of competition environment intensity inside the industry where the firms operate and this firms is responding to the competition by offering innovative service and product (Lertwongsatien and Wongpinunwatana, 2003).

H3. Environment positively affect intention to adopt

Perceived Value and Perceived Risk

The research by Suki and Suki (2007) provides evidence of the effect of perceived value and perceived risk online shoppers' innovativeness in relation to adoption behaviour of online behaviour. Their study found both perceived value and percived risk influence the consumer's attitude toward online shopping innovativeness. Gao, et al. (2012) found that both perceived value and perceive consumer's attitude toward risk influence the manufacturers' intention in adopting expensive, discontinous innovation, where in this case, intentions are enhanced by perceived value but reduced by perceived risk. According tp Zeithaml (1988), perceived value is defined as the the overall customer's assessment of the utility of a product, based on perception of what is received (benefits) and what is given (sacrifices) (Coutelle-Brilet, et al., 2014).

Talked about perceive risk, this concept initially was come from psychology named Bauer who believes that uncertainty is implied when consumer making decision to purchase something (Zhang and Hou, 2017). Accoding to Taylor (1974), the uncertainty of decision outcomes and the consequences of making wrong decision which is lead to the importance of possible loss is two factor of perceived risk (Zhang and Hou, 2017). Zhang and Hou (2017), found that when engaging in ongoing information search in the context of innovative products and services, consumers are influenced by both functional risk and emotional risk, where functional risk has a negative influence on ongoing information search, and emotional risk has a positive influence on ongoing information search. For pre-purchase information search, emotional risk has a positive impact, whereas functional risk has no significant impact

H4. Perceived value positively affect intention to adopt

H5. Perceived risk positively affect intention to adopt
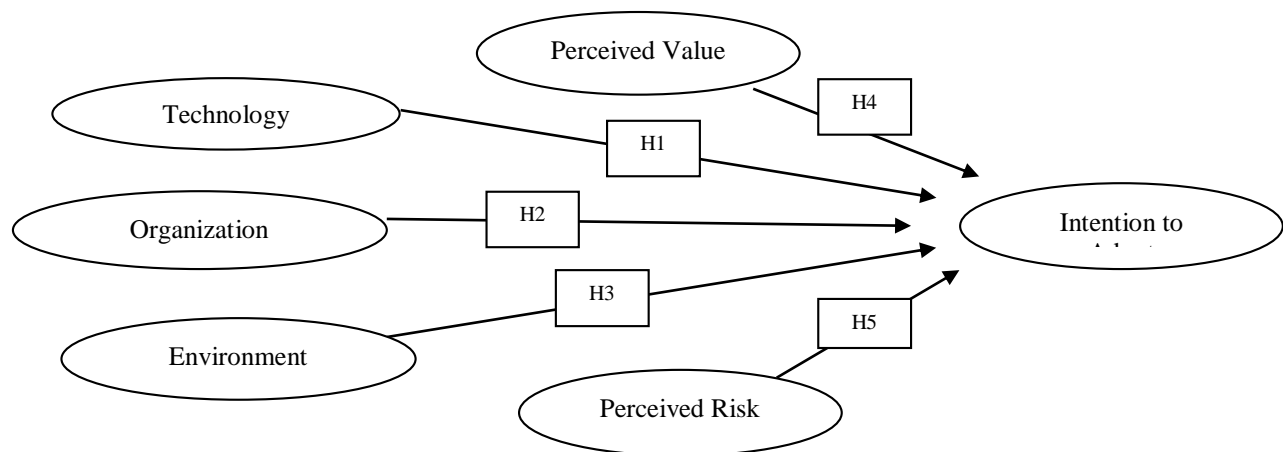
Fig 1. Research Framework

ICMEM

3. Research Design

3.1. Method

The data will be gathered by using structured questionnaire. Structured questionnaire has several advantages, such as effective, consistent, and fair. The data measure is using five-Likert scale. Likert scale was chosen because it's function that could measure variables such as opinions, perceptions, and behaviours with broader and reliable result; at the end this method will discover the level/degrees of opinion that make a clear differences in order to have an understanding about the feedback.

3.2. Population and Sample

In order to gain information about the factor that influence industries' intention to adopt *Halal* logistics, two types of industry, food industry and pharmaceutical industry was chosen as the population of this study. This two industry was chosen because they have good income in Global Market. As been stated by Dr.H.Sapta Nirwandar the Chairman of Indonesia Halal Lifestyle Center in Adiwidya Seminar and Talkshow held by ITB Postgraduate, Halal Food sector receive 1.173 Billion US Dollar and Pharmaceutical sector 78 Billion US Dollar in 2015. The sample of this study is the employee and/or middle-up position from those two industries in any department (but more preferred from business strategy, business development, and research and development (RnD) department).

3.3. Sampling Technique

The questionnaires were distributed online by using Google form to several food and pharmaceutical industry in Indonesia. There is no constraint about the position of employee in the questionnaire. It is because Halal logistics is considered as an innovation in business activities, in order to gain the information as much as possible, the random sampling was chosen as a sampling technique. In random sampling, each member of the population has a same probability to be chosen as an subject research/study.

4. Result

The total respondents are 11 people, with specification 90.9% are men and 9.1% are women; 90.9% in the range of age 20-25 years old and 9.1% from the group 35-40 years old; and 72.7% are working in food industry and the rest are working in pharmaceutical industry. The data that have been gathered from survey then analyzed by using PLS-PM in Rstudio. In general, the construct in this study were divided into six construct, they are technology (T), organization (O), environment (E), perceived value (PV), perceived risk (PR), and intention to adopt (IA).

4. 1. Unidimentionality

According to Vinzi et al (2010), the indicators in the reflective meaasurement model which linked to the same latent variable should covary, means that the change in one indicator will change the others indicator. Because of that, the unidimentionality and homogeneous of each block should be checked to know its internal consistency. The first tool to check the unidimentionality is Cronbach Alpha. Among, six construct only "technology" and "intention to adopt" that have Cronbach's Alpha above 0.7, which is according to the rule of thumb, this value is considered acceptable, means that the data were realible.

Second tool is Dillon-Goldstein's rho which is better known as composite reliability (Vinzi et al, 2010) should be greater than 0.7 to indicate the result is homogeneous, and all construct from PLS-PM test (except perceived value) has DG.rho above 0.7. The last tool is principal component analysis of a block, where the first eigen value of its correlation matric is higher than 1, while the other are smaller than 1 to consider the block unidimentional, and all construct fulfill this situation.

4. 2. Loading

ICMEM

Loading indicate the degree of correspondence between the variable and the factor, with higher loadings making the variable representative of the factor, loading ± 0.50 or greater are considered practically significant, and loading greater than 0.70 are considered indicative of well-defined structure (Hair, et al., 2010). The result show that out of 12 indicators, only 8 indicators that have factor loading of outer model greater than 0.7. The four factors which has loading below 0.7 then eliminated and the second running of analysis by using 8 indicators was conducted. This action not only make all the loading of eight indicators become larger than 0.7 but also make the value of Cronbach Alpha, DG rho, and eigen value of all construct fulfill the requirement.

4. 3.   Quality of Structural Model

To assess the quality of structural model, there are several evaluation that could be done. First, the evaluation of coefficient determination or R^2 which indicates the amount of variance in the endogenous latent variable explained by its independent latent variabel – of IA is 0.8157558 means that in this model, 81% of the variance of Intention to Adopt were explained by its manifest variable. This score is counted as high score of R^2 because it is greater than 0.60. Second, the Goodness-of-fit of the model, which described about the quality of overall model (both structural and measurement models), is 0.8454117. This score is counted as a good score because it already surpass 50%.

Third, the evaluation of p-value and patch coefficient of each latent variable. Path coefficient of "technology", "organization", "environment", "perceived value", "perceived risk" towards "intention to adopt" are 0.1245, 0.4002, 0.0469, 0.5168, and -0.1615, respectively. The link between construct "technology", "organization", "environment", "perceived value" had the intended sign but was not significant (p>0.1). Link between construct "perceived risk" and "intention to adopt" was not supported, as the path negative and not significant (p>0.1).
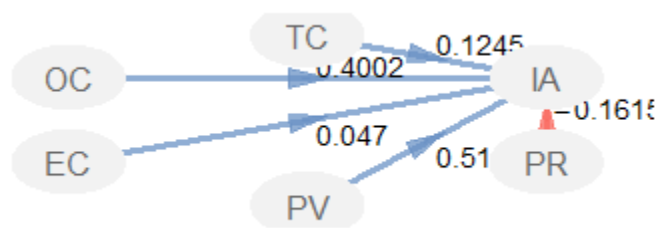
Fig 2. Inner Model Path Coefficient of Second Running

5.   Discussion

The purpose of this study are to find the factor that influence industry in Indonesia to adopt *Halal* logistics. In this research the type of industry only limited to food and pharmaceutical industry and the factor that examined are technology, organization, environment, perceived value, and perceived risk. The GoF and R^2 of the structural model show that the model is good.

The path coefficient is refer to the hypothesis. The highest path coefficient are in construct "organization" and "intention to adopt". The organization context in this case is regarding the awareness of Halal within the organization. *Halal* awareness is one of attitude construct (Baharuddin *et al*., 2015). Attitude could be defined as the level of favorable or non-favorable assessment or appraisal from a person related to the behavior in question (Ajzen, 1991 cited in Soltanian, et al.2007). Awareness itself is a basic element of the innovation's adoption (Papazafeiropoulou, 2002). This statement show that the Halal awareness is very important aspect that should be considered when certain company want to adopt an innovation, in this case is Halal losgistics.

The second highest path coefficient is construct "perceived value", from this situation it could be said that if by adopting Halal logistics will give the company more profit. The third highest path coefficient is technology factors in this case is information technology. Information technology is important because it can make the logistics more efficient and more controlled. The last factor which has positive path coefficient is environment factors, which cover

ICMEM

the competitor condition. The respondent is tend to not put a big attention toward their competitors. Different with other four factors, the perceived risk has negative path coefficient with "intention to adopt", which is indicates that there is no effect for the contribution of construct "perceived risk" to construct "intention to adopt".

To find the hypothesis being rejected or accepted the calculation between path coefficient and p-value is needed. Unfortunately, in this paper the p-value is not significance (p>0.1) and make the hypothesis is assumed to be not supported. But, it is important to remember that this result were not significant "statically", and can be concluded as inconclusive result, not "entirely no effect". One of the factor that could affect p-value is sample size. In this study the sample size is only 11, so it is still a chance to make the p-value <0.05 if the number of response higher than current number of respondent. So based on this situation those four factor, named technology, organization, environment, and perceived risk will categorized as partially significant.

6.   Conclusion

Although the four factor, technology, organization, environment, perceived value, are partially significant, still the organization is the factor which has highest path coefficient. Because of that, the organization, more precisely organization's Halal awareness, could be categorize as the most important factor among all five factors in this study that affect the intention to adopt among food and pharmaceutical industry in Indonesia. From this result the industry that have not adopt Halal industry, hopefully get an idea about the aspect that they should considered when they want to use that system.

The sampel of this research is only 11 respondent, which is this number is very small. This small number of respondent probably become one of the factor that make the construct has p-value >0.1. Because, of this further research which involved more respondent to get more comprehensive result is needed. Not, only that it is better if the study use the effect size as the consideratin while making the significant judgement.

In this paper, the technology, organization, and environemnt factors only cover one aspect for each factors (technology covers information technology aspect, organization covers Halal awareness, environment covers competitor aspect), so for the next study it is better to use other aspect of in each factors to get broader finding.

References

Alam, S.S., Sayuti, N. M. (2011). Applying the Theory of Planned Behaviour (TPB) in *Halal* food purchasing. *International Journal of Commerce and Management*. Vol.21 No. 1, pp. 8 -20.

Alserhan, B. A.(2010).Islamic branding : a conceptualization of related terms. *Brand Management*. Vol. 18, 1, 34-49

Coutelle-Brillet, P., Riviere, A., des Garets, V.(2014).Perceived value of service innovation: a conceptual framework. *Journal of Business & Industrial Marketing*. Vol. 29 No.2, pp 164-172.

Baharuddin, K., Ahmad Kassim, N., Nordin, S. K., & Buyong, S. Z. (2015). Understanding the halal concept and the importance of information on halal food business needed by potential Malaysian entrepreneurs. *International Journal of Academic Research in Business and Social Sciences*, Vol. *5* No. 2, pp. 170-180.

Creswell, J. W., & Poth, C. N. (2017). Qualitative inquiry and research design: Choosing among five approaches. *Sage publications*.

Desilver, D. 2017. World's muslim population more widespread than you might think. Available online at http://www.pewresearch.org/fact-tank/2017/01/31/worlds-muslim-population-more-widespread-than-you-might-think (Accessed 14 October 2017)

Gao, T., Leichter, G., Wei, Y. (2012). Countervailing effects of value and risk perceptions in manufacturers' adoption of expensive, discontunuous innovation. *Industrial Marketing Management*. Vol. 41, pp. 659-668.

Govindaraju, V.G.R., Vijayaraghavan, G.K., Pandiyan, V. (2013). Product and process innovation in Malaysia manufacturing: The role of government, organizational innovation, and exports. *Innovation: Management, policy & practice*, 15(1): 52-68.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010) Multivariate Data Analysis. 7th Edition. Pearson Education: N.J. (ISBN: 0138948585)

Indonesia constitution No. 33, 2014 about The Guarantee of Halal Product. Available online at http://www.dpr.go.id/dokjdih/document/uu/1615.pdf

Junaida, Z., Shah, M.Z., Iskandar, M. (2016). Factor that influence the intention to adopt halal logistics services among Malaysian SMEs : formation of hypotheses and research model". *Asian Social Science*. Vol.12 No.7

ICMEM

Lada, S., Tanakinjal, G.H., and Amin, H. (2009). Predicting intention to choose halal products using Theory of Reasoned Action. *International Journal of Islamic and Middle Eastern Finance and Management*. Vol. 2 No.1, pp.66-76

Lertwongsatien, C., Wongpinunwatana, N. (2003). E-commerce adoption in Thailancd: an empirical study of small and medium enterprises(SMEs). *Journal of Global Information Technology Management*. Vol. 6, No.3, pp. 67-83

Lin, C.Y. (2007). Factors Affecting Innovation in Logistics Technologies Service Providers in China. *Journal of Technology Management in China*, Vol. 2 No. 1, pp. 22-37.

Naranjo-Valencia, J.C., Jimenez-Jimenez, D., and Sans-Valle, R. (2012). Innovation or imitation? the role of organizational culture.*Management Decision*. Vol. 49 No. 1, pp. 55-72.

Ngah, A. H., Zainuddin, Y., Thurasamy, R. (2013). Adoption of Halal supply chain among Malaysian Halal manufactures : an exploratory study. *Procedia-Social and Behavioual Science.*

Ngah, A. H., Zainuddin, Y., Thurasamy, R. (2015). Barriers and enablers in adopting of Halal warehousing. *Journal of Islamic Marketing* Vol 6. No.3, 2015 pp. 364-376

Ngah, A.H., Zainuddin, Y., Thurasamy, R. (2017). Applying the TOE framework in the Halal warehouse adoption study. *Journal of Islamic Accounting and Business Research*. Vol. 8 No.2, pp.161-181.

Papazafeiropoulou, A., Pouloudi, A., & Doukidis, G. (2002). A framework for best practices in electronic commerce awareness creation. *Business Process Management Journal*, *8*(3), 233-244.

Prabowo, S., Rahman, A.A., Rahman, S.A., and Samah, A.A. (2015). "revealing factors hindering Halal certification in East Kalimantan Indonesia. *Journal of Islamic Marketing*. Vol. 6 No. 2, pp. 268-291.

Ramayanah, T., Rouibah, K., Gopi, M., and Rangel, G.J. (2009).A decomposed Theory of Reasoned Action to explain intention to use internet stock trading among Malaysian investor. *Computers in Human Behaviour*. Vol. 25 No.6, pp.1222-1230.

Rasoolimanesh, S. M., Jaafar, M., Ahmad, A. G., & Barghi, R. (2017). Community participation in World Heritage Site conservation and tourism development. Tourism Management, 58, 142-153.

Rezai, G., Mohamed Z. and Shansudin, M.D. (2012). Non-Muslim consumers' understanding of Halal principles in Malaysia. *Journal of Islamic Marketing*. Vol. 3 No.1, pp. 35-46

Sanberg, E. (2013). Understanding logstics-based competition in retail – a business model approach. *International Journal of Retail and Distribution Management*, Vol. 41 No.3, pp.176-188.

Sanchez, G. (2013). PLS path modeling with R. Berkeley: Trowchez Editions

Shahijan, M. K., Rezaei, S., Preece, C. H., and Ismail, W. K. W. (2014). Examining retailers' behaviour in managing critical points in Halal meat handling : a PLS analysis. *Journal of Islamic MarketingI*, Vol. 5 No. 3, pp. 446-472

Suki, N.M., Suki, N.M.(2007).Online buying innovativeness: effect of perceived value, perceived risk, and perceived enjoyment'. *International Journal of Business and Society*. Vol. 2 No.2, pp. 81-93.

Sugiono. (2013). Metode Penelitian Kombinasi (Mixed Method).Bandung :Alfabeta, p.361.

Talib, M.S.A., Hamid, A.B.A, Zulfakar, M.H, and Chin, T.A.(2015). Barriers to Halal logistics operation : views from Malaysian logistics expert. *International Journal of Logistics System and Management*. Vol.22 No.2

Tarmizi, H.A., Kamarulzaman, N.H., Latiff, I.A, and Rahman, A.A. (2014). Factors behind third party logistics providers readiness towards *Halal* logistics. *International Journal of Supply Chain Management*. Vol. 3 No.2.

Tieman, M. (2011). The application of *Halal* in Supply Chain Management : in-depth interviews. *Journal of Islamic Marketing*, Vol. 2 No.2, pp. 186-195

Tieman, M., van der Vorst, J. G. and Ghazali, M.C. (2012). Principles in Halal Supply Chain Management. *Journal of Islamic Marketing*, Vol. 3 No. 3, pp 217-243

Tieman, M. Ghazali, M.C., and Vorst, J.G.A.J.v.d. (2013). Consumer perception on Halal meat logistics. *British Food Journal*, Vol. 115 No. 8, pp. 1112-1129

Tieman, M. (2013). Establishing the principles in Halal logistics. *Journal of Emerging Economies and Islamic Research*. Vol.1 No.1

Soltanian, M., Zailani, S., Iranmesh, M., and Aziz, A.A.(2016). Motivations of SME entrepreneurs to become Halalpreneurs. *Journal of Science and Tehcnology Policy Management*. Vol 7 No.2, pp. 173-189

Vinzi, V. E., Tinchera, L., and Amato, S. (2010). PLS path modelling: from foundations to recent developments and open issues for model assessment and improvement. *Handbook of Partial Least Square*, Springer Handbooks of Computational Statistics.

Wei, J., Liu, Y. (2015). Government support and firm innovation performance empircal analysis of 343 innovatuve eterprises in China. *China Management Studies*, Vol.9, No.1, pp.38-55.

ICMEM

Xie, X., Wu, Y., Zeng, S. (2016). A theory of Multi-Dimensional organizational innovation cultures and innovation performance in transitional economies the role of team cohesion. *Chinese Management Studies,* Vol. 10 No.3, pp. 458-479.

Yadav, R., Chauhan, V., Pathak, G.S.(2015). Intention to adopt internet banking in an emerging economy : a perspective of Indian youth. *International Journal of Bank Marketing.* Vol. 33 No.4, pp 530-544

Zailani, S., Kanapathy, K., Iranmesh, M., and Tieman, M. (2015). Drivers of Halal orientation strategy among Halal food firms. *British Food Journal*, Vol. 117 No.8, pp.2143-2160

Zhang, Z., Hou, Y.(2017).The effect of perceived risk on informatin search for inovative products and services: the moderating role of innate consumer innovativeness'. *Journal of Consumer Marketing*, Vol. 34 No.3, pp. 241-254.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Material Requirements Planning Method in Improving Production Planning in Fashion Company

Cindy Harpin[a]*, Desy Anisya Farmaciawaty[b]

[a,b]School of Business and Management Institute Technology Bandung

Abstract

As fashion industry growth rapidly, REYN came as one of fashion industry that focused on women fashion bag, located in Bandung, Indonesia. As one of fashion industry, REYN also faced so many problems in their process. In operation, REYN currently faced discontinuity of raw material purchasing with the production target which caused by the absence of mature production schedule. Accordingly, this research was aimed to solve this problem by the Material Requirements Planning (MRP) method which purposed to generate the mature production planning and scheduling. To forecast the demand, researcher will use qualitative data collection which is jury of executive method, collected by depth-interview. Before analysis, researcher will also complete the Bill of Material (BOM), lead time, and Master Production Scheduling (MPS). The data analyses will be the comparison of lot-sizing method such as Lot-for-Lot, Economic Order Quantity (EOQ), and Periodic Order Quantity (POQ) to find the most efficient one. The result of this research is the implementation of MRP method for fashion company, which is REYN company by using Lot-for-Lot as the lot-sizing method. Moreover, this study can be the references for other fashion industry to generate their production planning and scheduling.

Keywords: *Material Requirements Planning; Fashion Industry; Production Schedule; Inventory Management*

1. Introduction

Since 1970, there are a rapid growth of fashion industry which resulting from the advancement and expansion of the industry. By the advancement of industry, it will cause to decreasing cost and flexibility in quality, design product, and tension to the market (Bhardwaj & Fairhurst, 2010). According to Badan Pusat Statistik (BPS) data, during the period 2007-2011, export of fashion in Indonesia have positive trend in amount of 12,4 percent with main destination countries such as United States of America (USA), Singapore, German, Hongkong, and Australia. During the period from January to November 2012, fashion exports data reached 12.79 billion US dollars, up 0.5 percent compared to the export value of the previous period. Look at its great potential for Indonesian economy, the fashion sector of Indonesia with its local strength can continue to be developed to become the centre mode in the region, as well as playing an important role at the global level (Kompas, accessed on September 17, 2015). By these data, it means that fashion industries in Indonesia have a big opportunity to expand their businesses.

In addition to the high level of fashion products demand, the operation process must be clearly prepared. Fashion business have long and various circuit of supply chains such as raw material, production, manufacturing, construction, shipping, retail, and residual disposal material (Yang, et al., 2017). A complex operation process will need a mature planning that can be used to directing all the activities. Production Planning and Scheduling intend to generate production schedules in detail for the shop floor in a relatively short time (Stadler, 2005).

REYN is a fashion business which running in making women's bag products made by imitation leather in Indonesia. Now, REYN company has faced some problems in operation. First problems are raw material out of stock from

---

ICMEM

suppliers which ever happened on October 2017 and threatening company for delayed of production. Second, unmatched production with the demand which cause to accumulate goods where we produce 3 dozen of bags within 3 months, but average total sales only 3 to 5 pieces per month. And, the problem of inflexibility schedule of production with company's vendor. These problems can cause to miss opportunities of gain more sales which cause by delayed of production schedule. All those problems can threaten company to lose any opportunities to get higher profit.

Based on fishbone analysis, there are three classification problems that makes REYN Company inefficient in production which are material, method, and machine. The problem in material are supplier out of stock so it causes to delayed of production, price increasing of raw materials that cause to increase of COGS, and do not have a proper vendor that cause to less quality of our products. The problem in method are about no production planning because there is no production scheduling which cause to problem on raw material purchasing and no production planning that cause to production unmatched with the demand. And the last, problem in machine is lack of capital so we still have no factory. In addition, from the pareto chart analysis, the researcher determines that the main problem that must be solve urgently is have no production planning.

2. Literature Review

Demand Forecasting

Forecasting demand is a measurement method to know amount of production to be sold in the market which can prevent any imbalance between supply and demand (Greasley, 1999). There are two types of forecasting methods, which are subjective forecasting and objective forecasting. Subjective forecasting includes of sales force composites, customer surveys, jury of executive opinion, and the Delphi method (Nahmias & Olsen, 2015). Sales force composites is a qualitative method which combine of the result of sales person prediction of sales level on their own area with the provincial and national sales level to gain the comprehensive forecast. Customer survey or market survey use some information from potential customers about their eventual purchasing plans to preparing a forecast. Jury of executive is a negotiation with a small group of high-level managers to gain their opinion about estimation group of demand. Delphi method includes of three party which will occupy the questionnaires, which are respondent, decision maker, and staff personnel (Heizer & Render, 2014). Objective forecasting methods includes of time series forecasting and regression models. Regression models use consolidate past recaps of other series and the history data of the series to be forecast will only be used by time series forecasting. Time series forecasting purposed to find certain and reparable pattern in prior data. The advantage of using time series method is easy to make automatic forecasting and updating by assimilate to a computer program (Nahmias & Olsen, 2015).

Inventory Management

Inventory management is a premier learning about stocked of goods which purposed to specifying its configuration and the percentage. The effective inventory management should make the direct or indirect total cost being minimized which correlated with holding the inventory. Determining what, when, how much to have in stock, and how to purchase for a given period are the purposed of Inventory Management. Replenishment lead time, asset management, carrying costs of inventory, inventory valuation, inventory forecasting, future inventory, inventory visibility, physical inventory, price forecasting, quality management, replenishment, available physical space for inventory, returns and defective goods, and demand forecasting are the scope of inventory management involvement (Rawat, 2015).

Inventory control models are divided based on their demand for the item which are independent demand and dependent demand. Independent demand models are basic Economic Order Quantity (EOQ) model, production order quantity model, and quantity discount model. Dependent demand is the condition when demand for items have clearly relationship between each item. Quantities for all components can be computed after receipt an order or forecasting the final product because all the components are dependent items. Dependent inventory model requires master production schedule (what is to be formed and when), specifications or bill of material (materials and parts appropriate to prepare the product), inventory availability (what is in stock), purchase orders outstanding (expected receipts), and lead times (how long it takes to earn the diverse components) (Heizer & Render, 2014).

ICMEM

Production Planning and Scheduling

Production Planning and Scheduling deliver any production schedules for the short period time in detailed which expect each order can be done exactly at time of the schedule have being planned to be started because any resource completion takes time to processing. There are six steps to generate a model into a production schedule: model building; extracting required data from ERP system, Master Planning, and Demand Planning; generating a set of assumptions; generating a production schedule; analyze production schedule and interactive modification; and approval scenario, so after that have to execute and updating the production schedule (Stadtler, 2005).

Material Requirements Planning

Material Requirements Planning (MRP) is a set of tools which is computerized that has purpose for planning future needs of finished product to deliver the needs of all subassemblies, components, and raw material. This tool will be used with the combination of Master Production Schedule, Bill of Materials, inventory status data, and lead time information(Burcher, 2015). MRP recommend to remove any increased of material order and when it have been due date and the required date are not accordance with the specified date, it needs to reschedule the open orders. MRP is used for any dependent demand items with aim to create a right parts with the exact timing by ensure that all the parts required in production are available (Stevenson, 2002).

Master Production Schedule (MPS) is functioning to prepare a Material Requirements Planning (MRP) environment by maintain the customer service level and create a stabile production planning. There will be continual changes in MPS if it used for preparing MRP which is to line up adjustments in the system (Tang & GrubbstroKm, 2000). After selected the Master Scheduling Items (MSI), the MPS will be completed to regulate the lot sizes which aim to minimize total inventory costs and satisfy the customer demands. Lot-sizing and the time horizons used in this method will determining the efficiency of the decisions (Lin, 1989). Bill of Material (BOM) is a list of quantities of components, materials, and ingredients which needed to produce a product which not only describe the physical dimensions but also any special processing of raw material from each part is made (Heizer & Render, 2014). Bill of Material is a list structure and quantity of material parts that composed in a single product (Burcher, 2015). The on-hand inventory and the portion of fixed lead time for each component are provided by the inventory records file (Ho & Chang, 2001). A by-product of well-managed purchasing and inventory-control departments will bring the knowledge of outstanding orders. Records of the scheduled delivery dates and orders must be available to production personnel when purchase orders are completed. Execution of an MRP system will be really need good purchasing data which can prepare the essential production plans (Heizer & Render, 2014). Lead time is the time required to acquire (purchase, assemble, or produce) an item which needed in a product. Move, setup, and assembly or run times for each component are the lead time for a manufactured item. And the lead time for purchased item consists of the time between admission of need for an order and time of its available for production (Heizer & Render, 2014). In MRP system, after have net requirements, then deciding about how much to order will be done, which named a lot-sizing decision (Heizer & Render, 2014).

Lot-sizing is a lot size combination strategy which applied to multi-level of product structure or production process. There are any criteria of performance in lot-sizing, which is total planned setup costs, total planned overtime costs, total planned inventory carrying costs, the average weekly load in machine hours, and the coefficient of aggregate load variation (A. Collier, 1980). There are many types of lot-sizing techniques. In Lot-for-Lot Techniques, the decision to make order is only the required order for production based on net requirements. This technique can be very efficient if the frequent orders are economical and have implemented just-in-time inventory. But it can be very expensive if the setup costs are high. Economic Order Quantity (EOQ) technique is prefer for a known constant demand. EOQ is using averages and MRP system use known dependent demand which based on a master production schedule. Periodic Order Quantity (POQ) required for predetermined period and calculated when orders are released (Heizer & Render, 2014).

ICMEM

3. Methodology

In data collection, researcher will use qualitative approach by depth-interview to the co-founder of REYN company in doing demand forecasting which is jury of executive's opinion. Besides of demand forecasting, researcher will gain the required company's data such as the future marketing plan. The data demand arranged for six months, from July till December 2018, which each quarter consist of two months. Observation method will also be done. Observe REYN company's data such as bill of material, lead time, and inventory data of PENTA bag, one of REYN company's bag series. This data can be collected by observing the historical data of the company.

In analyzing data, researcher will do lot-sizing technique by comparing the third methods which is Lot-for-Lot, Economic Order Quantity (EOQ), and Periodic Order Quantity (POQ) method by utilize the bill of material, lead time, and inventory data.

4. Findings and Argument

After all the data has collected, the next step is analyzing the data. In this research, researcher will use Material Requirement Planning (MRP) method to analyzing and solving the research problem. There are several steps of MRP analyzes such as dependent demand forecast, bill of materials, lead time, and master production schedule.

4. 1. Demand Forecasting

In this study, researcher will use jury of executive's opinion method as the forecasting method. This election was based on a rationale which the company's demand data is invalid for the research. Because, the demand data was really uncertainty and still in a short period of time. By jury executive's opinion method, researcher will take some opinion from the co-founders of REYN company to give the targeted demand for the next period. The targeted demand will be adjusted with the future marketing plans of the company and the other company's resources condition. The future marketing strategy will use the promotion and discount strategy in Instagram to increasing sales and also do some advertising such as Instagram adds and so on. The demand forecasting will be divided into three sections which each section consists of two months start from July.

Table 1. Forecasting Demand for First Quarter

Quarter	Channel	Media	Targeting Sales (pcs)
1	Personal Selling	Cindy Harpin (Co-founder)	1
		Valencia Indina (Co-founder)	1
	Social Media	Instagram	6
	TOTAL		**8**
2	Personal Selling	Cindy Harpin (Co-founder)	1
		Valencia Indina (Co-founder)	1
	Social Media	Instagram	6
	TOTAL		**8**
3	Personal Selling	Cindy Harpin (Co-founder)	2
		Valencia Indina (Co-founder)	2
	Social Media	Instagram	10
	TOTAL		**14**

ICMEM

There is the hieratical structure of raw material required in making a product. The product structures consist of many trees which divided by the series.
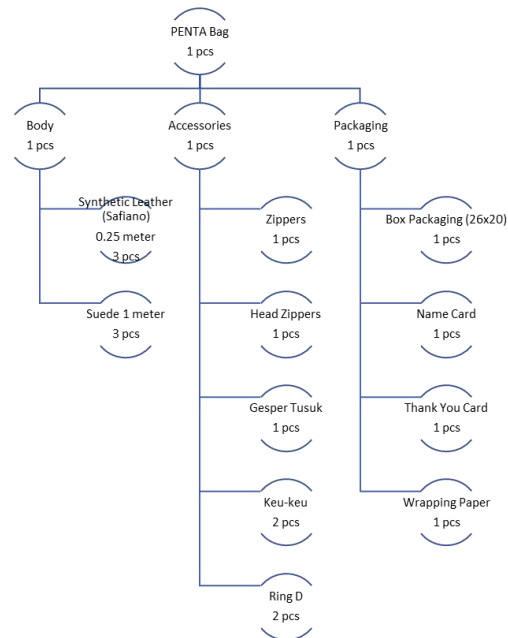
Fig. 1. Bill of Material

PENTA bag series consists of three level which level 1 is a finished good of PENTA bag; level 2 are body, accessories, and packaging; level 3 are the material required to make the level 2 items, such as synthetic leather safiano type and suede to make body, zippers, head zippers, gesper tusuk, keu-keu, and ring D are parts of accessories, and box packaging, name card, thank you card, wrapping paper are required to make packaging.

4. 3. Lead Time

To make a production planning, we should know the lead time needed for each component. After making a bill of material, researcher construct the lead time for every product, which divided into Penta Bag. By making a lead time, we can see how long time needed to produce a product, start from purchasing material till producing.

Table 2. Lead Time Table

Code	Item	Lead Time (weeks)
A	PENTA Bag	4
B	Body	1
C	Synthetic leather (safiano) 0.25 m	3
D	Suede 1 m	2
E	Accessories	1
F	Zipper	2
G	Head Zipper	1
H	Gesper Tusuk	1
I	Keu-keu	1
J	Ring D	1
K	Packaging	1
L	Box Packaging	3

M	Name card	1
N	Thank you, card,	1
O	Wrapping paper	1

The table above is the lead time list of PENTA bag. Lead time is required time to get the component. Researcher will use week as the units. After have the lead time table, the following is the lead time structure of PENTA bag.
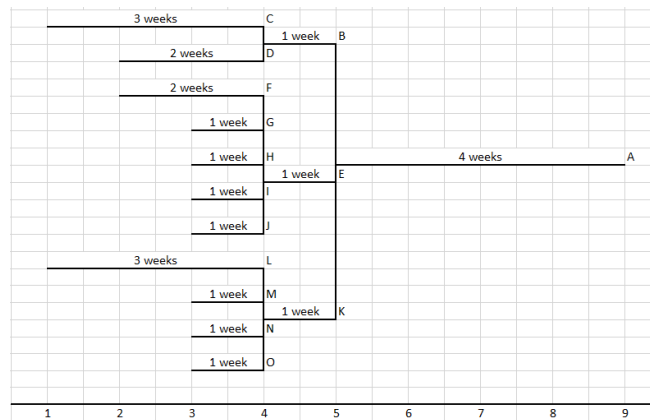
Fig. 2. Lead Time Structure

From the lead time structure above, we can find the total lead time for one product PENTA bag is 9 weeks. All the components, such as body, accessories, and packaging, must be collected before the production process by vendor. All the lead time above is the maximum lead time, not the exactly lead time. Researcher use the maximum lead time to make sure that the production will not find any delays.

4. 4. *Master Production Schedule*

After have the demand forecasting, bill of material, and the lead time of each product series, researcher will compile the Master Production Scheduling (MPS) which aim to simplify before the data being analysed in lot-sizing.

ICMEM

Table 3. Master Production Schedule

Code		Quarter 1										Quarter 2										Quarter 3									
		1	2	3	4	5	6	7	8	9	Lead Time	1	2	3	4	5	6	7	8	9	Lead Time	1	2	3	4	5	6	7	8	9	Lead Time
A	Required date									8	4 week									8	4 week									14	4 week
	Order release date					8										8										14					
B	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
C	Required date				24						3 weeks				24						3 weeks					42					3 weeks
	Order release date	24										24											42								
D	Required date				24						2 weeks				24						2 weeks					42					2 weeks
	Order release date		24										24											42							
E	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
F	Required date				8						2 weeks				8						2 weeks					14					2 weeks
	Order release date		8										8											14							
G	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
H	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
I	Required date				16						1 week				16						1 week					28					1 week
	Order release date			16										16											28						
J	Required date				16						1 week				16						1 week					28					1 week
	Order release date			16										16											28						
K	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
L	Required date				8						3 weeks				8						3 weeks					14					3 weeks
	Order release date	8										8											14								
M	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
N	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						
O	Required date				8						1 week				8						1 week					14					1 week
	Order release date			8										8											14						

From the Master Production Schedule, researcher get the required date of each components and the order release date which is when the company should make the order of each component. This information will help researcher to arrange the Material Requirement Planning (MRP).

4. 5.   Lot-Sizing

In lot-sizing techniques, researcher will compile the third of lot-sizing techniques, which is Lot-for-Lot, EOQ, and POQ. This technique will aim to make the comparison between third technique to determine the most effective one to minimize the costs and determine the amount of ordered. Holding cost will be calculated from the cost of the place used for the holding inventory storage. The holding inventory will be saved in a room sized 16.2 m^2 at price of Rp1,700,00.00/month. The inventory will use for one fifth of the total room space. The total costs will be divided into 580 units' goods as the maximum capacity of the holding in that space. Accordingly, the holding cost per unit is Rp586.21/month, Rp7,034,48/year, and Rp146.55/week. Moreover, the setup cost will be calculated from the total of transportation costs and pulse were spent in the setup process, which the detail as the following.

ICMEM

Table 4. Setup Cost

Code	Item			Setup cost	Total setup cost
A	PENTA Bag	Transportation		20,000	21,000
		Pulse		1,000	
B	Body	Transportation		10,000	10,000
C	Synthetic leather (safiano) 1 m	Transportation		3,000	4,000
		Pulse		1,000	
D	Suede 1 m	Transportation		3,000	4,000
		Pulse		1,000	
E	Accessories	Transportation		10,000	10,000
F	Zipper	Transportation		9,000	10,000
		Pulse		1,000	
G	Head Zipper	Transportation		1,000	2,000
		Pulse		1,000	
H	Gesper Tusuk	Transportation		1,000	2,000
		Pulse		1,000	
I	Keu-keu	Transportation		1,000	2,000
		Pulse		1,000	
J	Ring D	Transportation		1,000	2,000
		Pulse		1,000	
K	Packaging	Transportation		10,000	10,000
L	Box Packaging	Pulse		1,000	1,000
M	Name card	Transportation		1,000	2,000
		Pulse		1,000	
N	Thank you, card	Transportation		1,000	2,000
		Pulse		1,000	
O	Wrapping paper	Transportation		1,000	2,000
		Pulse		1,000	

- Lot-for-Lot

In Lot-for-Lot technique, the decision of quantity to make order is only the required based on net requirements. The table consists of Gross Requirements (GR) which is the required item obtained from Master Production Scheduling (MPS), Scheduled Receipts (SR) is the quantity of item which still plan to arrive, Planned on Hand (PoH) is the quantity of item which still held in stock, Net Requirement (NR) is the required quantity after reduced with the PoH, Planned Order Receipt (PORC) will have same quantity with Net Requirements in Lot-for-Lot technique and Planned Order Release is the time planned to make order.

As it can be seen on the appendix A, the lot-for-lot technique generate the minimum holding cost with the maximum setup cost because the company will make the order in the required amount only on each quarter. The holding costs for each component are calculated from multiplication of holding cost per week with total PoH quantity. And the ordering costs each component are calculated from the multiplication of setup costs of the component with how many times the order is made which can be seen in PORL rows. As the example, in item A, there are 3 times of order placed in week 5, 14, and 23, so Rp21,000.00 (the setup costs of item A) will multiplied 3 as the total ordering costs of the component A. In Lot-for-Lot technique, the ordering cost will always find the maximum amount, because there is no on-hand stock, otherwise the holding cost will reach the minimum amount. After that, holding cost and ordering cost of each component will be summed up as the total cost of the component. From the calculation of total costs in lot-for-lot technique, this technique spent for Rp368,655.17 total costs which the detail as the following below.

ICMEM

Table 5. Total Cost by Lot-for-Lot Technique

Code	Item	Total cost
A	PENTA Bag	69,594.83
B	Body	33,663.79
C	Synthetic leather (safiano) 1 m	20,793.10
D	Suede 1 m	20,793.10
E	Accessories	33,663.79
F	Zipper	32,931.03
G	Head Zipper	8,931.03
H	Gesper Tusuk	8,931.03
I	Keu-keu	11,862.07
J	Ring D	11,862.07
K	Packaging	33,663.79
L	Box Packaging	21,025.86
M	Name card	43,077.59
N	Thank you card	8,931.03
O	Wrapping paper	8,931.03
	Total	**368,655.17**

- Economic Order Quantity (EOQ)

The Economic Order Quantity method aims to find the minimum inventory costs by find the balance quantity from combining the holding cost and the setup costs. The EOQ technique generates from the formula below.

$$EOQ = \sqrt{\frac{2DS}{H}}$$

Note:

D = Annual demand

S = Setup cost

H = Holding cost

So, the EOQ technique will determine the quantity to be ordered by the formula which considering the setup costs and the holding costs with the annual demand of the components. Annual demand will be determined based on the demand forecasting which each quarter will considered flat for 10 pieces (BOM considered 1 unit), a year have 6 quarter, so the annual demand will be 60 pieces. In this formula, the holding costs will use units per year which is Rp7,034,48. The EOQ result will be applied as the PORC and PORL quantity. EOQ amount for each component will be multiplied by the Bill of Material number.

According the table of EOQ method on appendix B, the calculation of total holding costs of each component is based on the summary of total PoH item multiplied with the holding cost per week number. As example, in item A, there are PoH 5 units each week from week 1 until 9 and 16 pieces in week 10 until 18, so the holding cost calculated is 5x9xRp146.55 sum 16x9xRp146.55 in result for Rp40,155.17. And the ordering cost will be based on how many times company need to make an order which will be multiplied with the

ordering cost for each component which can be seen from the table 12. As the example, in item A, there are two times the company have to make order in week 5 and 23, so the calculation will be 2xRp21,000.00 that is Rp42,000.00 for total ordering cost of item A. After find the holding costs and ordering costs each component, then they will be summed up to be the total costs of components. The total costs of component summed up as the total costs of PENTA Bag by using EOQ method.

From the table above, researcher find the result that EOQ technique generates the bigger costs than Lot-for-Lot technique. It is because of the big amount of holding cost resulted from the EOQ number. EOQ number incline to give the big amount of PoH on every quarter. For ordering cost, the amount still inclines high because EOQ number too big too till give on-hand stock, but not enough to fulfil the net requirement, so the company still must do the setup. So, the total costs by use EOQ technique is Rp1,099,560.34.

Table 6. Total Cost by EOQ Technique

Code	Item	Total Cost
A	PENTA Bag	82,155.17
B	Body	62,939.66
C	Synthetic leather (safiano) 1 m	140,336.21
D	Suede 1 m	140,336.21
E	Accessories	62,939.66
F	Zipper	64,112.07
G	Head Zipper	48,112.07
H	Gesper Tusuk	48,112.07
I	Keu-keu	92,224.14
J	Ring D	92,224.14
K	Packaging	62,939.66
L	Box Packaging	45,698.28
M	Name card	61,206.90
N	Thank you card	48,112.07
O	Wrapping paper	48,112.07
	TOTAL	1,099,560.34

- Periodic Order Quantity (POQ)

  In POQ technique, the quantity will be determined from the calculation of EOQ result and the average weekly gross requirements. The formula of POQ is as the following.

$$POQ = \frac{EOQ\ value}{average\ weekly\ gross\ requirements}$$

This method aims to minimize the setup costs by calculate the appropriate interval time period. If the POQ number is 15, so the PORL must covered net requirement to the 15 weeks forward. The average weekly gross requirements are calculated from the totalize of number in gross requirements row then divided with total week in the table which is 27 weeks.

From the POQ table on appendix C, same with other method, to calculate the holding costs of each component, researcher will be summed up the total PoH item, then multiplied the number with holding cost per week number which is Rp146.55. The example has discussed in other method. The ordering cost calculated by how many times company need to make an order for the component then multiplied with the

ordering cost for each component which can be seen from the table 12. The total costs of each component determined from the sum of the total holding cost and total ordering costs each component which will be summed up as the total cost of PENTA Bag by using POQ method.

By doing the analyses above, the POQ method resulting to some of holding cost and setup cost in medium rate. But, because the rate of holding costs in PENTA bag are quite high, so to have some on-hand inventory will give high costs compare with the setup costs' rate. So, the result of POQ technique above, the result is POQ technique have in middle position between Lot-for-Lot and EOQ technique result, in total costs of Rp513,112.07.

Table 7. Total Cost of POQ Technique

Code	Item	Total Cost
A	PENTA Bag	59,146.55
B	Body	34,215.52
C	Synthetic leather (safiano) 1 m	48,448.28
D	Suede 1 m	46,448.28
E	Accessories	34,215.52
F	Zipper	33,482.76
G	Head Zipper	17,482.76
H	Gesper Tusuk	17,482.76
I	Keu-keu	30,965.52
J	Ring D	30,965.52
K	Packaging	34,215.52
L	Box Packaging	37,491.38
M	Name card	53,586.21
N	Thank you card	17,482.76
O	Wrapping paper	17,482.76
	TOTAL	**513,112.07**

4. 6.   *Material Requirements Planning*

After the lot-sizing have done, in Material Requirement Planning, researcher will compare the third method to find the most effective and efficient by comparing the total cost of each method.

Table 8. Comparison of Lot-Sizing Technique

Lot-Sizing Method	Total Costs
Lot-for-Lot	Rp368,655.17
EOQ	Rp1,099,560.34
POQ	Rp513,112.07

The result of lot-sizing techniques, Lot-for-Lot technique will give the most effective costs for REYN company compare with EOQ and POQ method. The total costs of holding inventory costs and setup costs by using Lot-for-Lot technique is Rp368,655.17.

As the selected method of lot-sizing is Lot-for-Lot technique, so the company will place the order for each component just as much as the required quantity on that quarter. In PORL (Planned Order Releases), company should start to make order or processing the components and targeted that in PORC (Planned Order Receipts), the components have finished or ready. All the schedule can be seen from the Lot-for-Lot table as the criterion of when and how much the quantity have to ordered.

5.   Conclusion

This research shows that Material Requirement Planning (MRP) method can solved REYN company's problem about production planning system. In this study, researcher have made the demand forecasting which done by some

interview and observation to REYN company. As the result, researcher have compiled the Master Production Schedule (MPS) by using Bill of Material (BOM) and Lead Time structure to manage the arrangement accurately.

REYN company can use Lot-for-Lot technique in Lot-Sizing method. Lot-for-Lot technique will be the most effective one because it can generate the lowest total costs than EOQ or POQ technique. By using Lot-for-Lot technique, REYN could also minimize the inventory because there will expected to not give any holding inventory.

By using Material Requirement Planning (MRP), the company could determine easily how much to place the order and when it should start ordering. By knowing how much to be ordered, REYN company will minimize the risk of unmatched demand with amount of goods produced, stacking of inventory, and minimizing the inventory costs. And by knowing when to place the order, REYN company will minimize the out of stock raw material in supplier and the late availability of goods, which can cause to risk of customers and profit lost.

Thus, researcher will highly recommended REYN company to use this method to maintain all the production planning and scheduling. The Material Requirement Planning (MRP) will always be adapted along the process by following the changes of demand or the future marketing plan.

6. Appendix

Appendix A: Lot-sizing: Lot-for-Lot method

Lot-Size: L4L — Lead time: 4 weeks

ITEM A (Level 1)

Month	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR									8									8									14
SR																											
PoH, BI: 5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR									3									8									14
PORC									3									8									14
PORL					3									8									14				

Holding cost 6,594.83 — Ordering cost 63,000.00 — Total cost 69,594.83

Lot-Size: L4L — Lead time: 1 week

ITEM B (Level 2)

Month	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									8									14				
PORC					3									8									14				
PORL				3									8									14					

Holding cost 3,663.79 — Ordering cost 30,000.00 — Total cost 33,663.79

Lot-Size: L4L — Lead time: 3 weeks

ITEM C (Level 3)

Month	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				9									24									42					
PORC				9									24									42					
PORL	9									24									42								

Holding cost 8,793.10 — Ordering cost 12,000.00 — Total cost 20,793.10

Lot-Size: L4L **Lead time: 2 weeks**

ITEM D — LEVEL 3

	May				Jun				Jul				Aug				Sept						Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				9									24									42					
PORC				9									24									42					
PORL		9									24									42							

Holding cost 8,793.10   Ordering cost 12,000.00   Total cost 20,793.10

Lot-Size: L4L **Lead time: 1 week**

ITEM E — LEVEL 2

	May				Jun				Jul				Aug				Sept						Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									8									14				
PORC					3									8									14				
PORL				3									8									14					

Holding cost 3,663.79   Ordering cost 30,000.00   Total cost 33,663.79

Lot-Size: L4L **Lead time: 2 weeks**

ITEM F — LEVEL 3

	May				Jun				Jul				Aug				Sept						Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									8									14					
PORC				3									8									14					
PORL		3									8									14							

Holding cost 2,931.03   Ordering cost 30,000.00   Total cost 32,931.03

Lot-Size: L4L **Lead time: 1 week**

ITEM G — LEVEL 3

	May				Jun				Jul				Aug				Sept						Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									8									14					
PORC				3									8									14					
PORL			3									8									14						

Holding cost 2,931.03   Ordering cost 6,000.00   Total cost 8,931.03

Lot-Size: L4L **Lead time: 1 week**

ITEM H — LEVEL 3

	May				Jun				Jul				Aug				Sept						Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									8									14					
PORC				3									8									14					
PORL			3									8									14						

Holding cost 2,931.03   Ordering cost 6,000.00   Total cost 8,931.03

ICMEM

ITEM I — Lot-Size: L4L   Lead time: 1 week   LEVEL 3

	May				Jun				Jul				Aug					Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				6									16									28					
PORC				6									16									28					
PORL			6									16									28						

Holding cost 5,862.07   Ordering cost 6,000.00   Total cost 11,862.07

ITEM J — Lot-Size: L4L   Lead time: 1 week   LEVEL 3

	May				Jun				Jul				Aug					Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				6									16									28					
PORC				6									16									28					
PORL			6									16									28						

Holding cost 5,862.07   Ordering cost 6,000.00   Total cost 11,862.07

ITEM K — Lot-Size: L4L   Lead time: 1 week   LEVEL 2

	May				Jun				Jul				Aug					Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									8									14				
PORC					3									8									14				
PORL				3									8									14					

Holding cost 3,663.79   Ordering cost 30,000.00   Total cost 33,663.79

ITEM L — Lot-Size: L4L   Lead time: 3 weeks   LEVEL 3

	May				Jun				Jul				Aug					Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 15	15	15	15	15	7	7	7	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				0									1									14					
PORC				0									1									14					
PORL	0									1									14								

Holding cost 18,025.86   Ordering cost 3,000.00   Total cost 21,025.86

ITEM M — Lot-Size: L4L   Lead time: 1 week   LEVEL 3

	May				Jun				Jul				Aug					Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 25	25	25	25	25	17	17	17	17	17	17	17	17	17	9	9	9	9	9	9	9	9	9	0	0	0	0	0
NR				0									0									5					
PORC				0									0									5					
PORL			0									0									5						

Holding cost 37,077.59   Ordering cost 6,000.00   Total cost 43,077.59

ICMEM

Lot-Size: L4L Lead time: 1 week — ITEM N (LEVEL 3)

ITEM N	May				Jun				Jul				Aug				Sept					Okt					Nov
Week →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									8									14					
PORC				3									8									14					
PORL			3									8									14						

Holding cost 2,931.03 | Ordering cost 6,000.00 | Total cost 8,931.03

Lot-Size: L4L Lead time: 1 week — ITEM O (LEVEL 3)

ITEM O	May				Jun				Jul				Aug				Sept					Okt					Nov
Week →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									8									14					
PORC				3									8									14					
PORL			3									8									14						

Holding cost 2,931.03 | Ordering cost 6,000.00 | Total cost 8,931.03

Appendix B: Lot-sizing: Economic Order Quantity

Lot-Size: EOQ Lead time: 4 weeks — ITEM A (LEVEL 1)

ITEM A	May				Jun				Jul				Aug				Sept					Okt					Nov
Week →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR									8									8									14
SR																											
PoH, BI: 5	5	5	5	5	5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8
NR									3									0									6
PORC									19									0									19
PORL					19									0									19				

Annual Demand: 60 pcs

Set up cost:	transporation	20,000	EOQ:	19	Holding cost	40,155.17
	pulse	1,000			Ordering cost	42,000.00
	total	21,000			Total cost	82,155.17
Holding cost	7,034 /year					

Lot-Size: EOQ Lead time: 1 week — ITEM B (LEVEL 2)

ITEM B	May				Jun				Jul				Aug				Sept					Okt					Nov
Week →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13
NR					3									0									6				
PORC					19									0									19				
PORL				19									0									19					

Annual Demand: 60 pcs

Set up cost:	transporation	10,000	EOQ:	19	Holding cost	42,939.66
	total	10,000			Ordering cost	20,000.00
Holding cost	7,034 /year				Total cost	62,939.66

ITEM C

Lot-Size: EOQ						Lead time: 3 weeks																					
	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	48	48	48	48	48	48	48	48	48	24	24	24	24	24	24	24	24	24	39	39	39	39	39
NR				9									0									18					
PORC				57									0									57					
PORL	57									0									57								

Annual Demand: 180 pcs

Set up cost:	transporation	3,000		EOQ:	19 * 3	Holding cost	132,336.21
	pulse	1,000			57	Ordering cost	8,000.00
	total	4,000				Total cost	140,336.21
Holding cost	7,034 /year						

ITEM D

Lot-Size: EOQ						Lead time: 2 weeks																					
	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	48	48	48	48	48	48	48	48	48	24	24	24	24	24	24	24	24	24	39	39	39	39	39
NR				9									0									18					
PORC				57									0									57					
PORL		57								0										57							

Annual Demand: 180 pcs

Set up cost:	transporation	3,000		EOQ:	19 * 3	Holding cost	132,336.21
	pulse	1,000			57	Ordering cost	8,000.00
	total	4,000				Total cost	140,336.21
Holding cost	7,034 /year						

ITEM E

Lot-Size: EOQ						Lead time: 1 week																					
	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13
NR					3									0									6				
PORC					19									0									19				
PORL				19									0								19						

Annual Demand: 60 pcs

Set up cost:	transporation	10,000		EOQ:	19	Holding cost	42,939.66
	total	10,000				Ordering cost	20,000.00
Holding cost	7,034 /year					Total cost	62,939.66

ITEM F

Lot-Size: EOQ						Lead time: 2 weeks																					
	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13
NR					3									0									6				
PORC					19									0									19				
PORL		19									0									19							

Annual Demand: 60 pcs

Set up cost:	transporation	9,000		EOQ:	19	Holding cost	44,112.07
	pulse	1,000				Ordering cost	20,000.00
	total	10,000				Total cost	64,112.07
Holding cost	7,034 /year						

ICMEM

Lot-Size: EOQ **Lead time: 1 week**

ITEM G — LEVEL 3

	May				Jun				Jul				Aug				Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13	13
NR				3									0									6					
PORC				19									0									19					
PORL			19									0									19						

Annual Demand: 60 pcs

Set up cost:	transporation	1,000		EOQ:	19		Holding cost	44,112.07
	pulse	1,000					Ordering cost	4,000.00
	total	2,000					Total cost	48,112.07
Holding cost	7,034 /year							

Lot-Size: EOQ **Lead time: 1 week**

ITEM H — LEVEL 3

	May				Jun				Jul				Aug				Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13	13
NR				3									0									6					
PORC				19									0									19					
PORL			19									0									19						

Annual Demand: 60 pcs

Set up cost:	transporation	1,000		EOQ:	19		Holding cost	44,112.07
	pulse	1,000					Ordering cost	4,000.00
	total	2,000					Total cost	48,112.07
Holding cost	7,034 /year							

Lot-Size: EOQ **Lead time: 1 week**

ITEM I — LEVEL 3

	May				Jun				Jul				Aug				Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	32	32	32	32	32	32	32	32	32	16	16	16	16	16	16	16	16	16	26	26	26	26	26
NR				6									0									12					
PORC				38									0									38					
PORL			38									0									38						

Annual Demand: 120 pcs

Set up cost:	transporation	1,000		EOQ:	19 * 2		Holding cost	88,224.14
	pulse	1,000			38		Ordering cost	4,000.00
	total	2,000					Total cost	92,224.14
Holding cost	7,034 /year							

Lot-Size: EOQ **Lead time: 1 week**

ITEM J — LEVEL 3

	May				Jun				Jul				Aug				Sept				Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	32	32	32	32	32	32	32	32	32	16	16	16	16	16	16	16	16	16	26	26	26	26	26
NR				6									0									12					
PORC				38									0									38					
PORL			38									0									38						

Annual Demand: 120 pcs

Set up cost:	transporation	1,000		EOQ:	19 * 2		Holding cost	88,224.14
	pulse	1,000			38		Ordering cost	4,000.00
	total	2,000					Total cost	92,224.14
Holding cost	7,034 /year							

ICMEM

Lot-Size: EOQ **Lead time: 1 week**

ITEM K — LEVEL 2

Month	May				Jun				Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	8	13	13	13	13
NR					3								0										6				
PORC					19								0										19				
PORL				19									0									19					

Annual Demand: 60 pcs

Set up cost:	transporation	10,000		EOQ:	19	Holding cost	42,939.66
	total	10,000				Ordering cost	20,000.00
Holding cost	7,034 /year					Total cost	62,939.66

Lot-Size: EOQ **Lead time: 3 weeks**

ITEM L — LEVEL 3

Month	May				Jun				Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 15	15	15	15	15	7	7	7	7	7	7	7	7	7	18	18	18	18	18	18	18	18	18	4	4	4	4	4
NR				0							1											0					
PORC				0							19											0					
PORL	0								19									0									

Annual Demand: 60 pcs

Set up cost:				EOQ:	19	Holding cost	44,698.28
	pulse	1,000				Ordering cost	1,000.00
	total	1,000				Total cost	45,698.28
Holding cost	7,034 /year						

Lot-Size: EOQ **Lead time: 1 week**

ITEM M — LEVEL 3

Month	May				Jun				Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 25	25	25	25	25	17	17	17	17	17	17	17	17	17	9	9	9	9	9	9	9	9	9	14	14	14	14	14
NR				0									0									5					
PORC				0									0									19					
PORL			0									0									19						

Annual Demand: 60 pcs

Set up cost:	transporation	1,000		EOQ:	19	Holding cost	59,206.90
	pulse	1,000				Ordering cost	2,000.00
	total	2,000				Total cost	61,206.90
Holding cost	7,034 /year						

Lot-Size: EOQ **Lead time: 1 week**

ITEM N — LEVEL 3

Month	May				Jun				Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	8	13	13	13	13
NR					3								0										6				
PORC					19								0										19				
PORL				19								0									19						

Annual Demand: 60 pcs

Set up cost:	transporation	1,000		EOQ:	19	Holding cost	44,112.07
	pulse	1,000				Ordering cost	4,000.00
	total	2,000				Total cost	48,112.07
Holding cost	7,034 /year						

Lot-Size: EOQ — Lead time: 1 week

ITEM O — LEVEL 3

	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	16	16	16	16	16	16	16	16	16	8	8	8	8	8	8	8	8	8	13	13	13	13	13
NR				3									0									6					
PORC				19									0									19					
PORL			19									0									19						

Annual Demand: 60 pcs

Set up cost:	transporation	1,000		EOQ:	19		Holding cost	44,112.07
	pulse	1,000					Ordering cost	4,000.00
	total	2,000					Total cost	48,112.07

Holding cost 7,034 /year

Appendix C: Lot-sizing: Periodic Order Quantity

Lot-Size: POQ — Lead time: 4 weeks

ITEM A — LEVEL 1

	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR									8									8									14
SR																											
PoH, BI: 5	5	5	5	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0
NR									3									0									14
PORC									11									0									14
PORL					11									0									14				

EOQ: 19

Average weekly gross requirements:	1.1		Holding cost	17,146.55
POQ interval:	17 weeks		Ordering cost	42,000.00
			Total cost	59,146.55

Lot-Size: POQ — Lead time: 1 week

ITEM B — LEVEL 2

	May				Jun				Jul				Aug				Sept				Okt						Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									0									14				
PORC					11									0									14				
PORL				11									0									14					

EOQ: 19

Average weekly gross requirements:	1.1		Holding cost	14,215.52
POQ interval:	17 weeks		Ordering cost	20,000.00

Lot-Size: POQ   Lead time: 3 weeks

ITEM C — LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	24	24	24	24	24	24	24	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				9									0									42					
PORC				33									0									42					
PORL	33									0									42								

EOQ:	57									Holding cost	40,448.28
Average weekly gross requirements:				3.3						Ordering cost	8,000.00
POQ interval:	17	weeks								Total cost	48,448.28

Lot-Size: POQ   Lead time: 2 weeks

ITEM D — LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				24									24									42					
SR																											
PoH, BI: 15	15	15	15	15	24	24	24	24	24	24	24	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				9									0									42					
PORC				33									0									42					
PORL	33									0									42								

EOQ:	57									Holding cost	40,448.28
Average weekly gross requirements:				3.3						Ordering cost	6,000.00
POQ interval:	17	weeks								Total cost	46,448.28

Lot-Size: POQ   Lead time: 1 week

ITEM E — LEVEL 2

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									0									14				
PORC					11									0									14				
PORL				11									0								14						

EOQ:	19									Holding cost	14,215.52
Average weekly gross requirements:				1.1						Ordering cost	20,000.00
POQ interval:	17	weeks								Total cost	34,215.52

Lot-Size: POQ   Lead time: 2 weeks

ITEM F — LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									0									14					
PORC				11									0									14					
PORL		11								0									14								

EOQ:	19									Holding cost	13,482.76
Average weekly gross requirements:				1.1						Ordering cost	20,000.00
POQ interval:	17	weeks								Total cost	33,482.76

Lot-Size: POQ **Lead time: 1 week**

ITEM G — LEVEL 3

	May					Jun			Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									0									14					
PORC				11									0									14					
PORL			11									0									14						

EOQ:	19								Holding cost	13,482.76
Average weekly gross requirements:				1.1				Ordering cost	4,000.00
POQ interval:	17	weeks						Total cost	17,482.76

Lot-Size: POQ **Lead time: 1 week**

ITEM H — LEVEL 3

	May					Jun			Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				8									8									14					
SR																											
PoH, BI: 5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3									0									14					
PORC				11									0									14					
PORL			11									0									14						

EOQ:	19								Holding cost	13,482.76
Average weekly gross requirements:				1.1				Ordering cost	4,000.00
POQ interval:	17	weeks						Total cost	17,482.76

Lot-Size: POQ **Lead time: 1 week**

ITEM I — LEVEL 3

	May					Jun			Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	16	16	16	16	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				6									0									28					
PORC				22									0									28					
PORL			22									0									28						

EOQ:	38								Holding cost	26,965.52
Average weekly gross requirements:				2.2				Ordering cost	4,000.00
POQ interval:	17	weeks						Total cost	30,965.52

Lot-Size: POQ **Lead time: 1 week**

ITEM J — LEVEL 3

	May					Jun			Jul				Aug				Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR				16									16									28					
SR																											
PoH, BI: 10	10	10	10	10	16	16	16	16	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				6									0									28					
PORC				22									0									28					
PORL			22									0									28						

EOQ:	38								Holding cost	26,965.52
Average weekly gross requirements:				2.2				Ordering cost	4,000.00
POQ interval:	17	weeks						Total cost	30,965.52

ICMEM

ITEM K

Lot-Size: POQ Lead time: 1 week

LEVEL 2

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
NR					3									0									14				
PORC					11									0									14				
PORL				11									0								14						

EOQ:	19		Holding cost	14,215.52
Average weekly gross requirements:	1.1		Ordering cost	20,000.00
POQ interval:	17 weeks		Total cost	34,215.52

ITEM L

Lot-Size: POQ Lead time: 3 weeks

LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 15	15	15	15	15	7	7	7	7	7	7	7	7	7	14	14	14	14	14	14	14	14	14	0	0	0	0	0
NR				0									1									0					
PORC				0									15									0					
PORL	0									15									0								

EOQ:	19		Holding cost	36,491.38
Average weekly gross requirements:	1.1		Ordering cost	1,000.00
POQ interval:	17 weeks		Total cost	37,491.38

ITEM M

Lot-Size: POQ Lead time: 1 week

LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 25	25	25	25	25	17	17	17	17	17	17	17	17	17	9	9	9	9	9	9	9	9	9	0	0	0	0	0
NR				0									0									5					
PORC				0									0									5					
PORL			0									0									5						

EOQ:	19		Holding cost	51,586.21
Average weekly gross requirements:	1.1		Ordering cost	2,000.00
POQ interval:	17 weeks		Total cost	53,586.21

ITEM N

Lot-Size: POQ Lead time: 1 week

LEVEL 3

	May				Jun				Jul				Aug					Sept					Okt				Nov
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
GR					8									8									14				
SR																											
PoH, BI: 5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NR				3										0									14				
PORC				11										0									14				
PORL			11										0								14						

EOQ:	19		Holding cost	13,482.76
Average weekly gross requirements:	1.1		Ordering cost	4,000.00
POQ interval:	17 weeks		Total cost	17,482.76

ICMEM

	Lot-Size: POQ				Lead time: 1 week																								
	ITEM O	May				Jun			Jul				Aug					Sept				Okt					Nov	
													Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
L	GR				8									8									14					
E	SR																											
V	PoH, BI: 5	5	5	5	5	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	NR				3									0									14					
L	PORC				11									0									14					
3	PORL			11									0									14						

EOQ:	19				Holding cost	13,482.76
Average weekly gross requirements:		1.1			Ordering cost	4,000.00
POQ interval:	17	weeks			Total cost	17,482.76

References

A. Collier, D., 1980. A comparison of MRP lot sizing methods considering capacity change costs. *Operation Management,* Volume 1, pp. 23-29.

Bhardwaj, V. & Fairhurst, A., 2010. The International Review of Retail, Distribution and Consumer Research. *Fast Fashion: response to changes in fashion industry*, 18 February.

Burcher, P., 2015. *Material Requirements Planning Volume. 10 Operation Management.* s.l.:Wiley Encyclopedia Magement.

Christopher, M., Lowson, R. & Peck, H., 2004. *Creating Agile Supply Chains in the Fashion Industry,* United Kingdom: Emerald Group Publishing Limited.

Greasley, A., 1999. *Operation Management in Business.* London: Stanley Thornes.

Heizer, J. & Render, B., 2014. *Operation Management Tenth.* England: Pearson.

Ho, J. C. & Chang, Y.-L., 2001. An integrated MRP and JIT framework. *Computers & Industrial Engineering.*

Lin, N.-P., 1989. *MASTER PRODUCTION SCHEDULING IN UNCERTAIN ENVIRONMENTS,* s.l.: University Microfilms International.

Nahmias, S. & Olsen, T. L., 2015. *Production and Operations Analysis: Seventh Edition.* s.l.:Waveland Press.

Rachmawati, A., 2013. *Penerapan Hasil Belajar Menggambar dan Memodifikasi Desain Fesyen 1 Pada Pembuatan Desain Busana Casual Remaja,* Bandung: Universitas Pendidikan Indonesia.

Rahmawan, M. F. & Hanifa, F. H., 2016. *Pengaruh Strategi Penetapan Harga Diskon Harbolnas dan Web Quality 4.0. Lazada.co.id Terhadap Keputusan Pembelian ,* Bandung, Indonesia: Prosiding Seminar Nasional Penelitian dan PKM Sosial, Ekonomi, dan Humaniora.

Rawat, K., 2015. *Today's Inventory Management Systems: A Tool in Achieving Best Practices in Indian Business,* India: Anusandhanika; Ranchi.

Souiden, N., M'Saad, B. & Pons, F., 2011. A Cross-Cultural Analysis of Consumers' Conspicuous Consumption of Branded Fashion Accessories. *Journal of International Consumer Marketing.*

Stadler, H., 2005. Production Planning and Scheduling. Dalam: *Supply Chain Management and Advanced Planning.* Berlin, Heidelberg: Springer.

Stevenson, W. J., 2002. *Operation Management.* New York: Mc Graw-Hill.

Tang, O. & GrubbstroKm, R. W., 2000. Planning and replanning the master production schedule under demand uncertainty. *International Journal of Production Economics.*

Yang, S., Song, Y. & Tong, S., 2017. Sustainable Retailing in the Fashion Industry: A Systematic Literature Review. *Sustainability*, 19 July.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Designing Strategic Logistic Vendor Development to Increase Sales Satisfaction Index (SSI) at PT. Toyota-Astra Motor

Yopi Hirmawan[a*], Milind Gadre[b]

[a,b]*Graha Irama Building Lt. 12, Jl. H.R. Rasuna Said Kav. 1-2 Jakarta 12950, Indonesia*

Abstract

The ASEAN automotive market has been enjoying high performance levels and grew almost constantly in the recent decades affected by positive growth of the population and increase of middle-class income and affluent customers. In Indonesia, automotive industry also enjoying the positive trends in the last decade and believed will continue to grow due to car ownership ratio relatively low, only 4% in 2015, compare to others country in the region. The grow will also supported by the promising macroeconomic condition in the future. In Indonesia, the biggest automotive brand is Toyota in term of market share. Under PT. Toyota-Astra Motor (TAM), a sole agent and distributor, this brand become superior player in Indonesia. In 2016, Toyota gained 35% market share. Despite gained significant market share in 2016, however, J.D Power Sales Satisfaction Index (SSI) achievement is below target. SSI is level of customer's satisfaction in the new car purchasing process, including searching process, visiting the showroom, purchasing the car until obtaining the new car. SSI achievement score will determine the loyalty and advocacy of customer in purchasing certain brand. Therefore, the impact of SSI achievement on sales performance and market share is obvious. Based on J.D Power, the biggest factors determining SSI score is Delivery Process & Timing. Function in the company which has big contribution in this factor is Vehicle Logistic Division (VLD), the function that has responsibility in physical distribution process of the car. In 2016, delivery achievement of VLD is below target, includes low Actual Time Arrival (ATA) compliance and high defect ratio. This low performance caused by increase of transportation mode handled by VLD, not complete KPI for all transportation mode, un-proper reward and punishment system, no sharing knowledge from TAM to vendors to solve operation problem, lack of driver's knowledge, lack of supervisor from TAM in improvement activity, and no common goal between TAM & vendors. This research found that the proper solution for this problem is applying Strategic Logistic Vendor Development. The development process includes establish new performance measurement system (KPI), apply performance based volume sharing, performance enhancement trough (Plan-Do-Check-Action) PDCA scheme, conduct regular vendor audit program, logistic contest, logistic campaign, *Kyoryoku Kai* activity, and regularly conduct regular annual meeting with vendors.

Keywords: Logistic Vendor; Sales Satisfaction Index (SSI); Strategic Development; Vendor Development

1. Introduction

The ASEAN automotive market has been enjoying high performance levels and grew almost constantly in the recent decades (EIBN, 2015). The positive growth of the population, may help explain its positive performance. In addition, the fact that the middle-class income and affluent customers are increase in the region. The automotive high performance believed will be continue to grow due to low average level of car ownership to the present economic environment in ASEAN (EIBN, 2015). The level of car ownership in Indonesia (4%), Philippines (6%), Vietnam (2%) and Thailand (51%) are relatively very low compare to other countries in the region. Only Malaysia could be consider as saturated market for automotive industry as it car ownership ratio is 82% (Figure 1). A big opportunity for automaker player to gain bigger market in ASEAN is obvious.

As the world's fourth most populous nation, Indonesia is a large consumer market for automotive industry. After the crisis in 1998, this industry enjoyed the positive trends in Indonesia. This positive trends predicted will continue

---

ICMEM

due to stable growth of the domestic economy, an increasing of middle class income, an increasing automotive production capacity and the continuous of infrastructure development by government.
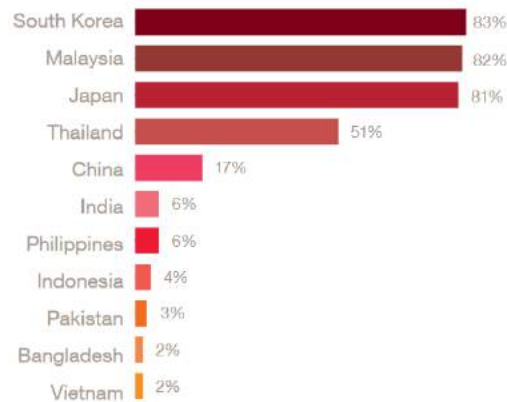
Fig. 1. Car ownership ratio in ASIA (PWC, 2015)

PT. Toyota-Astra Motor (TAM) is the biggest automotive company in Indonesia. Established on 12 April 1971 as an importer, in 1972 it became a sole agent or distributor of Toyota brand in Indonesia. In the milestone of the company's history in Indonesia, TAM has several time change its business concept in accordance with the internal company situation, regulation, and market trend. To manage its sales and after sales service, TAM cooperates with 36 dealers across the nation. In 2017, Toyota has 280 outlets and more than 100 service workshops all over Indonesia. Toyota provide more than 25 brand models, including Sedan, hatchback, MPV, SUV, Commercial, Sport and Hybrid. In 2016, Toyota succeed held 35% market share (Figure 2).
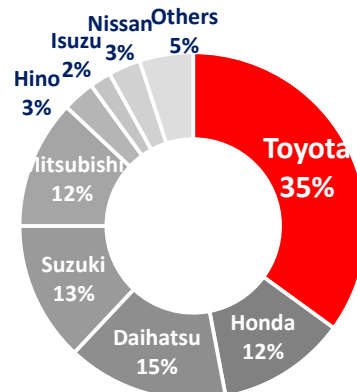
Fig. 2. Indonesian Car Market Share 2016 (Gaikindo, 2017)

Basically, TAM is marketing and distributor company. To get the new car, it strongly rely on manufacturer. Meanwhile, for sales activity TAM rely on its dealers. Detail business scope of TAM shown in Figure 3. All the activities in the company are emphasis on how to fulfill the expectation of the consumers in all purchasing aspects. This includes searching process, visiting the showroom, purchasing process, obtaining the new cars, until the experience in owning Toyota car.

ICMEM
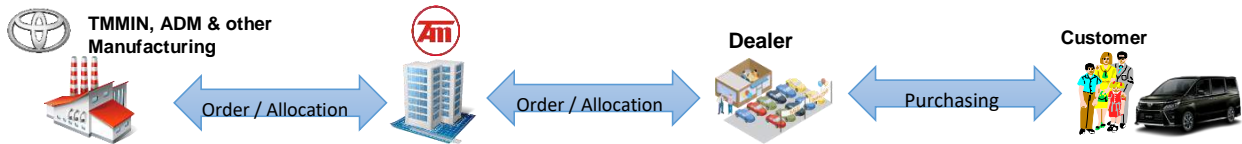
Fig. 3. Business Scope of PT. Toyota-Astra Motor

In a company level, TAM has five business performances that should be achieved to increase customer satisfaction and maximize shareholder value:

1. Market share
Market share for TAM means number of all Toyota car that sold out compare to total car sales in the Industry.

2. Service Share
Service share means number of total car that enter Toyota's workshop compare to total industry.

3. Employee Satisfaction
Employee satisfaction is the level of employee satisfaction that working at PT. Toyota Astra Motor.

4. Sales Satisfaction Index (SSI J.D Power)
SSI is level of customer's satisfaction in the new car purchasing process, including searching process, visiting the showroom, purchasing the car until obtaining the new car.

5. Customer Service Index (CSI J.D Power)
CSI is level of customer's satisfaction in vehicle service (after sales) process—how automakers engage customers at their waiting lounges.

Table 1 shows the status of each company performance in the last three years. TAM has good performance in market share despite decreasing achievement in 2015. Performance in service share is always increase in the last three years due to the expanded number of workshop network across the nation. Customer satisfaction's performance shown the positive direction to grow. The last year CSI J.D Power rating is achieve the target No. 1 in the industry. However, TAM suffer in its Sales Satisfaction Index (SSI) performance.

Table 1. Company Performance

Performance	Unit	Achievement		
		2014	2015	2016
Market Share	%	33,00%	31,00%	35,00%
Service Share	%	55,00%	59,40%	60,90%
Employee Satisfaction	%	73,00%	73,50%	73,50%
SSI JD Power Position	Rank	#4	#6	#6
CSI JD Power Position	Rank	#2	#3	#1

The objective of this research is to improve the biggest factors determining Sales Satisfaction Index (SSI) score achievement at PT. Toyota-Astra Motor. To realize its vision to gain significant market leadership and best-in-town dealership in Indonesia, TAM has to achieve No.1 SSI unless it will endanger it market share. Based on the study of J.D. Power — a marketing, consumer intelligence, and data analytics company that helps its clients measure, understand, and improve the key performance metrics that drive their growth and profitability—in 2016, the SSI achievement will determine the loyalty and advocacy of customer in purchasing certain brand. In its study, 35% of the customer become loyal and 55% of them will recommend others people to buy certain brand from the company that

ICMEM

achieve high SSI score. Therefore, the impact of SSI achievement on sales performance and market share is very significant.

The author developed a conceptual framework to find the root cause of company's problem. Prior to this, two types data developed. First, in-depth qualitative data are collected through interview and brainstorming. Second, quantitative data in the form of Likert scale questions. To find the solution of the root cause, interview, brainstorming with key logistic personal at VLD were conducted, as well as categorical question survey beside a comprehensive based study of the related previous literature and company document.

2. Literature Review

2.1 Transportation Role in Supply Chain

Transportation refers to the movement of product from one location to another as it makes its way from the beginning of a supply chain to the customer. Any supply chain's success is closely linked to the appropriate use of transportation. Transportation is an important supply chain driver because products are rarely produced and consumed in the same location. Transportation is a significant component of the costs incurred by most supply chains. Moreover, the role of transportation is even more significant in global supply chains.

To understand transportation in a supply chain, it is important to consider the perspectives of all four parties. A *carrier* makes investment decisions regarding the transportation equipment (e.g., locomotives, trucks, airplanes) and, in some cases, infrastructure (rail), and then makes operating decisions to try to maximize the return from these assets. The carrier's primary objective is to ensure good utilization of its assets while providing customers with an acceptable level of service. A *shipper*, in contrast, uses transportation to minimize the total cost (transportation, inventory, information, sourcing, and facility) while providing an appropriate level of responsiveness to the customer. The effectiveness of carriers is influenced by infrastructure such as ports, roads, waterways, and airports. Most *transportation infrastructure* throughout the world is owned and managed as a public good. It is important that infrastructure be managed in such a way that monies are available for maintenance and investment in further capacity as needed. *Transportation policy* sets direction for the amount of national resources that go into improving transportation infrastructure. Transportation policy also aims to prevent abuse of monopoly power; promote fair competition; and balance environmental, energy, and social concerns in transportation.

Supply chains use a combination of the following modes of transportation: air, package carriers, truck, rail, water, pipeline, and intermodal. The effectiveness of any mode of transport is influenced by equipment investments and operating decisions by the carrier and the available infrastructure and transportation policies.

2.2 Supplier Development

Hahn et.al. (1990: 3) defined supplier development program as any systematic organizational effort to create and maintain a network of competent supplier. It involved both the creation of new sources and activities design to upgrade existing suppliers' capabilities to meet the changing competitive requirements.

Hartley et.al. (1997: 24) stated that supplier development is the practice of working with suppliers to improve their performance and increase capability. It has two objectives (1) to make immediate change in the supplier's operation to reduce the problems and (2) to increase the supplier's ability to make its own improvements.

Krause et.al. (1998: 40) defined supplier development as any set of activities undertaken by a buying firm to identify, measure and improve supplier performance and facilitate the continuous improvement of the overall value of goods and services supplied to the buying company's business unit. These activities include, but are not limited to, goal setting, plant visits, supplier audits, supplier training, performance measurement, supplier certification, and supplier recognition.

Based on the studied result on 84 companies Krause et.al. (1998: 43-44) indicated that companies generally follow an evolutionary path to supplier development and increased supply base performance. The first step is the adoption of TQM, followed by supply assessment and reduction, and culminating in supplier development strategies. This progression is shown in Figure 4.

ICMEM

The primary differentiator between the strategic and reactive approach is a focus on identifying critical commodities and suppliers requiring development, with the driver being a strategic intent to improve the overall performance of the supply base. A strategic supplier development approach focus on long-term development process instead of short term problem resolution. This approach enable a buying firm to gain competitive advantage for its non-core competencies.
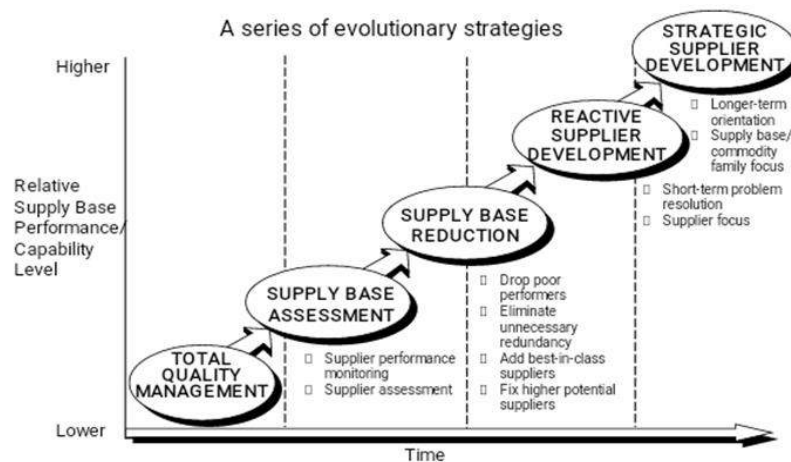
Fig. 4. Progression towards supplier development strategies (Krause et.al., 1998: 44)

Burt et.al. (2003: 514) defined supplied development as activity that a company undertakes to improve its supplier's performance and capabilities to meet its supply chain needs. A company use a variety of activities to improve its supplier performance, including assessing suppliers' operations, providing incentives to improve performance, instigating competition among suppliers, and working directly with suppliers, either through training or other activities.

They stated that supplier development in world-class company is proactive. Instead of working with suppliers for quick fixes to problems, supplier development should focus on helping suppliers retain the learning that occurs in the development process. Ronnquist & Wenner (2014: 1) stated that proactive supplier development means prevention of future problems by long-term improvement of supplier base. With reactive supplier development program, the buying firm no longer work with "firefighting" and only working with the most urgent problems when they have already occur.

Burt et.al. (2003: 514) further explained that, retained learning is critical for suppliers so that they may continuously improve their own systems. A supplier who has retained its ability to improve then can work with its suppliers to help them improve further. The net effect is a more capable and a more competitive supply chain.

Supplier development requires that both parties (buying firm and suppliers) commit financial, capital, and personnel resources to the work; share timely and sensitive information; and create an effective means of measuring performance and progress. Executives and employees at the buying firm must be convinced that investing company resources in a supplier is worthwhile. Executives at the supplier's firm must be convinced that their best interest lies in accepting direction and assistance from their customer. At first, the convincing may not be congenial but eventually it should evolve into collaboration based on mutual goals.

As a result, when suppliers become proficient at new technologies, improve their quality or delivery performance, or improve their own supply management systems, they create cost savings that benefit both themselves and the end customer. The improvements also create an example for other members in the supply chain that can stimulate improvement.

World-class supplier development requires a commitment to collaboration between customer and supplier. The commitment must be approached with mutual benefit in mind. Effective supplier development is more than getting cost reductions for a particular part; it means helping suppliers remove wasteful costs from their processes. The

ICMEM

strategic intent is to create win-win opportunities wherein both the buyer and supplier gain. For collaboration in supplier development to be successful, the collaboration must have commitment, communication, measurement, and trust.

2.3 Supplier Development Process

There are many studies conducted on supplier development process (Ahmed & Hendry, 2012). Hahn et.al. (1990) provide a conceptual model that describe the organizational decision process associated with a supplier development program. Their proposed decision model can be utilized as a guideline for designing a supplier development program that link purchasing strategy with a firm's overall corporate strategy.

In 1997, Hartley and Jones developed process-oriented supplier development process in building supplier's capability for improvement compare to result-oriented supplier development process. Previously, if a supplier had problem the buyer would first pressure the supplier for improvements, then quickly switch the suppliers if performance did not achieve. With process-oriented supplier development process, the buying firm help their suppliers increase their performance.

Krause et.al. (1998: 40) defined supplier development as any set of activities undertaken by a buying firm to identify, measure and improve supplier performance and facilitate the continuous improvement of the overall value of goods and services supplied to the buying company's business unit. These activities include, but are not limited to, goal setting, plant visits, supplier audits, supplier training, performance measurement, supplier certification, and supplier recognition. The primary differentiator between the strategic and reactive approach is a focus on identifying critical commodities and suppliers requiring development, with the driver being a strategic intent to improve the overall performance of the supply base. A strategic supplier development approach focus on long-term development process instead of short term problem resolution. This approach enable a buying firm to gain competitive advantage for its non-core competencies.

Table 2. Alternative supplier development framework

No	Author	Research (Book) Tittle	Remark
1	Hahn et.al. (1990)	The supplier development program: a conceptual model	The 3rd process of the development process required an evaluation (rating) of current vendor performance.
2	Hartley & Jones (1997)	Process oriented supplier development: building the capability for change	Lack of framework to assess the degree of "fit" of the supplier in the 1st step of supplier development.
3	Krause et.al. (1998)	An empirical investigation of supplier development: reactive and strategic processes	The process is focus on how to improve current vendors' capabilities that are suitable for VLD's current operation.

Hahn et.al. (1990) proposed 8 steps of the organizational decision process associated with a supplier development program. The third step is to evaluate or rating the current supplier performance. There is a difficulty to assess current vendor performance since the KPIs for current operation is not proper yet. Four steeps in process oriented proposed by Hartley & Jones (1997) required a buying firm to determined degree of "fit" of supplier readiness for change. A good "fit" means that the buyer's expertise, attitudes, and value are compatible with the supplier's needs, goal, and value system. There is no guidance or framework to measure the compatibility of VLD's capability at the moment. Based on these explanation above, the author adopted 10 steps of strategic supplier development proposed by Krause et.al. (1998) as proper framework to improve current logistic vendor's capabilities at TAM VLD. Development process generated from cross-industry study at 84 companies is more relevant for current TAM's logistic operation. Every process in the process is clear and realistic to do.

ICMEM

3. Methodology

3.1 Research Methodology

According to Malik & Hamied (2016: 16) qualitative and quantitative paradigm of research take different approaches. The qualitative research design aims to exploring and understanding the issues. Meanwhile, quantitative research design is focus on explanation, relationship and comparing different groups. Moreover, they are difference in some aspects including:

- Analytical objectives
- Type of question they posed
- Type of data collection instrument they use
- Form of data they produce
- Degree of flexibility built into study design

According to Merilyn Litchman (2008), there are several aspects that differentiate between qualitative and quantitative method of research. Based on Table 3, the qualitative method is more suitable to be applied because the author can observe in many ways inside the company through various stakeholder point of view. In addition, the qualitative method used in this final project in order to have more comprehensive view of the problem and solution because this method will provide the richer information and deeper insight into the phenomenon under study to the researcher (University of Leichester, 2009). Qualitative research consists of a set of interpretations, material practice that make the problem feasible (Cresswell, 2007). They turn the problem into a series of representations, including field notes, interviews, conversations, photographs, recording and memos to itself.

Table 3. Comparison of qualitative and quantitative method (Adapted from Litchman, 2008)

Aspect	Qualitative	Quantitative	Comments
Nature of reality	Single reality. In a well-designed study, a reasonable approximation can be observed	Multiple realities. Reality is constructed by the observer.	Most qualitative researcher do not take the position of any reality is a reasonable one. Many qualitative researcher acknowledge the influence of the observer, even while trying to omit it.
Objectivity/subjectivity dichotomy	Objectivity is a critical in a scientific approach to acquiring knowledge	Subjectivity based on role of researcher is expected. Objectivity is inconsistent with the ideas of constructed reality.	Qualitative researchers acknowledge difficulties in reaching objectivity. Many qualitative researchers still hold on to the objectivity stance.
Role of researcher	Researcher tries to remain outside of the system, keeping biases to a minimum	Researcher is a central to any study. Interpretations are based researcher's experience and background.	In fact, both acknowledge the researcher could not stay outside the system. Double blind experiments are designed to do this. But other factors may compromise things.
Generalizability	Goal to apply other situation	Not interested in cause and effect of generalizing, but want people to apply to own situation.	Quantitative researchers are more successful in cause/effect than generalizing since sample are limited.
Ways of knowing	Through the process of science	Multiple ways of knowing. We can learn about something in many ways.	But science is not so pristine

3.3 Problem Breakdown

Despite become the market leader in term of sales volume, the SSI rank of Toyota is number 6 in 2016. Even below the industry average—Toyota only get total points of 768, meanwhile the industry average is 770 points. The highest point is gained by the biggest challenger of Toyota in Indonesia, Daihatsu, brand that only hold 15% market share in the industry.

Factors that determine overall Sales Satisfaction Index (SSI) are Delivery Process & Timing, Sales Person, Sales Initiation, Dealer Facility and Deal Process. Pie chart diagram shown in Figure 5 indicates that the biggest factor which has biggest contribution determining SSI satisfaction level is Delivery Timing & Process. This factor contribute more than one third overall assessment score. Related function in the company which has responsibility and contribution related to this factor is Vehicle Logistic Division (VLD).

VLD is one of PT. Toyota-Astra Motor's core function. It role based on company business supply chain is focus on logistic process of the new car from plant to dealers. Logistic function at TAM has three main responsibilities,

ICMEM

includes receive unit from plant, store unit at stockyard, and deliver unit to dealers. All of these three activities are conducted at Pre Delivery Centre (PDC), the place where the unit receive, store, and deliver to next process.
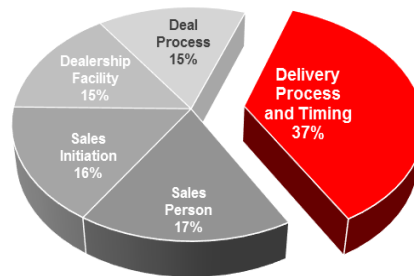
Fig. 5. Pie chart diagram of SSI factors (J.D. Power, 2017)

Delivery process conducted by VLD is took significant role to support sales activity at branches. VLD's delivery process will determine the promise delivery date (PDD) given by branches to customer. Wherever the branches, they can give PDD to customers based on the delivery lead time that already been standardized. This kind of sales operation should be supported by an excellent logistic operation

In 2016, VLD's delivery performance is under target, where Actual Time Arrival (ATA) compliance achievement 66,4% (target 84%) and Defect Ratio achievement 3,9% (target 3,6%). ATA compliance is a percentage of vehicle that arrive at destination (branches) on timely compare to total delivery. Meanwhile, DF ratio is the ratio of unit defect during the transportation process compare to total delivery.

a.
b.
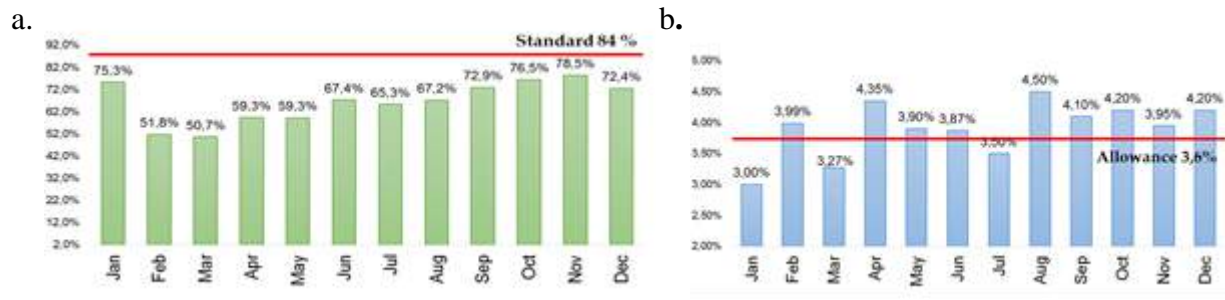
Fig. 6. (a) ATA compliance performance; (b) Defect ratio performance

3.4 Data Collection

To get more insight and capture the actual situation of delivery operation that affected the ATA compliance and Defect ratio achievement in 2016, the author collected several data through three mechanisms;

- Conducted semi-structure interview

The interview were conducted with key personal involved in Logistic Vendor Planning function (section heads), Safety and Quality function (section head), Logistic Vendor Kaizen function (section head), and logistic vendors (3 operational manager). There are total 3 respondents from VLD for each function and 3 managers of logistic vendors as representative for each transportation mode. The interview conducted to get more information about delivery operation, challenges, and priority during logistic integration phase in 2016.

- Conducted brainstorming session

Brainstorming session with several parties is conducted to generate the idea of why delivery performance achievement is below target. Brainstorming is a technique, generally used in group setting, to quickly generate a large

ICMEM

number of ideas about specific problem or topic (U.S. Coast Guard, 2014: 113). This activity help encourage creative thinking and generated enthusiasm and avoid holding evaluation of ideas until group has identified different possibilities. To encourage the participants can build off each other's ideas, the author conduct unstructured brainstorming. Parties that involved as participants in this brainstorming session were 4 members (2 section head & 2 officer) from Logistic Vendor Management (LVM) Department's & 1 member (section head) from Planning & Development (PD) Department.

Result of the brainstorming shows that there are 23 factors that possibly become the causes of delivery performances deficiencies. In general, the findings divided into three categories based on the similarity of symptoms described by participants i.e. man power issue, management issue, and organizational issue.

- Conducted questionnaire survey

To validate the interview and brainstorming result above, the author distributed Likert Scale questionnaire survey. The questionnaire survey of this research is disseminated through paper based questionnaire to 22 members of VLD (2 managers, 4 section heads, 3 officers and 13 staffs). The questioner is basically asking the question regarding 23 factors generated from previous interview and brainstorming using Likert scale choices. The Likert scale items are scaled from 1 to 5 as follows, strongly agree (5), Agree (4), Moderate (3), Disagree (2), Strongly disagree (1). To decide whether a factor is valid or not, the author used geometric mean (geomean) value of each factors. The higher geomean's value means the higher contribution of it factors determining delivery performance in 2016. In contrast, the lower geomean's value, the less it factor contribute to the delivery performance. Among 23 factors, 3 factors have geometric mean below 3 and consider these factors has no significant contribution to high defect ratio and low ETA compliance achievement during 2016.

To find root problem of high defect ratio and low ETA compliance achievement, these 20 factors then analysed using 5-Why table analysis and arranged into Why-Tree diagram as shown in Figure 7.
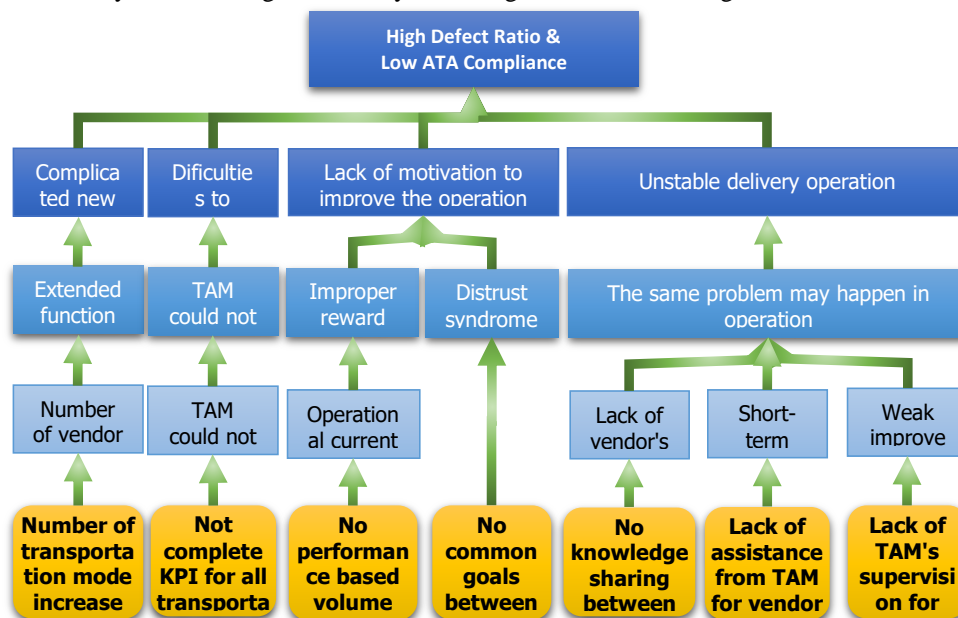
Fig. 7. Why Tree diagram analysis

4. Result & Analysis

After find the root problem, conducted literature study, interview with VLD's division head and discussion with key Logistic Vendor Management (LVM) Department's member, the author proposed 8 solutions to overcome the root cause (Table 4). These solutions are conduct annual meeting & mid-year logistic meeting, Establish new KPIs

ICMEM

for all mode, Performance based volume sharing, leverage PDCA scheme to enhance KPIs, vendor audit program, logistic campaign, logistic contest and Kyoryoku Kai activity.

Considering limited time and resource to implement all of these solution simultaneously, the author set the priority level. Prior to this, a questionnaire survey were distributed to 8 LVM'm member (2 section heads, 2 officers, and 4 staffs). The questioner is basically asking the Level of importance of the solution and Implementation feasibility (Qing Lu et.al., 2016: 233). The level are scaled from 1 to 3 (1: not important/easy to implement, 2: moderate, 3: very important/very difficult).

The level importance of a solution refers to the relevance of the solution in operations, and the degree of potential improvement by implement it in the operation. The implementation feasibility refers to the practicability of the solution to be implemented from the ground operation based on parties' involved, knowledge and resources required. The higher importance level of a solution, the more relevance and more potential it bring improvement in operation. Meanwhile, the lower level of implementation feasibility of a solution, the easier it solution could be implement in operation. Detail of the solution for each root problem and its priority level is shown in (Figure 8 and Table 4).

SOLUTION (importance, implementation feasibility):

A. Establish new KPIs for all mode (2.6, 2.0)

B. Performance based volume sharing (2.6, 1.8)

C. Leverage annual meeting & mid-year logistic meeting (2.4, 2.2)

D. Logistic campaign (2.0, 1.9)

E. Logistic contest (2.3, 2.4) F. Vendor Audit (2.1, 2,2)

G. Kyoryoku Kai initiative (1.3, 1.3)

H. PDCA scheme to enhance KPIs (2.3, 1.5)
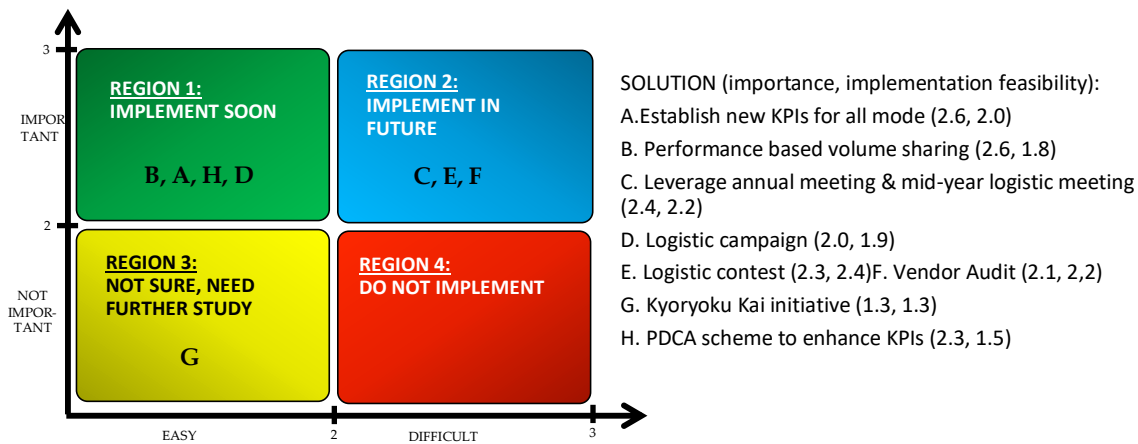
Fig. 8. Strategy for solution implementation

Table 4. Solution of the root cause

Problem	Root cause	Proposed solution	Priority
Low ETA compliance achievement & high defect ratio	Transportation mode increase from only 1 transportation mode to 3 modes Not complete KPI for all transportation mode	Establish new KPIs for all mode	1
	No performance based volume sharing	Performance based volume sharing	2
	Lack of supervision from TAM	PDCA scheme to enhance KPIs	3
	No common goal between TAM and vendor	Leverage annual meeting & mid-year logistic meeting	5
		Logistic campaign	4
	No sharing knowledge between TAM & vendors	Logistic contest	6
		Vendor Audit	7
	Lack of assistant from TAM	Kyoryoku Kai initiative	8

4.1 Establish New Performance Measurement System (KPI)

Like mentioned by Krause et.al. (1998: 48), companies that applied strategic supplier development process had formal performance measurement system (KPI). Currently, TAM only handle inbound logistic operation, where the responsibility is only to delivery unit from plant up to central warehouse in Jakarta. Meanwhile, the outbound

logistic operation (delivery from central warehouse in Jakarta to outside Jakarta) were handle by dealers. That's why, TAM did not has the KPI for another transportation mode like Self Drive and Shipment. Harrington (1991) said, "*if we can not measure it, we can not control it. If we can not control it, we cannot manage it. If we cannot manage it, we can not improve it*" (Yuen, 2006: 53). The importance of complete KPIs for all transportation mode at TAM VLD is therefore obvious as a tool to improve the operation.

Besides the current KPIs for delivery process was not complete as the expanded function of VLD, key logistic personal was also explain that the current KPIs are not relevant anymore as these only cover short distance transportation process (< 30 km). Meanwhile, the current transportation process could reach more than 1.000 km.

The author leverage Context, Content, Process (CCP) framework to determine the KPI of logistic vendor at TAM VLD. Supply Chain Operations Reference (SCOR) attributes employed also to categorize the performance metrics in determining the content of the metrics.

Context

The new KPIs will be implemented and used to evaluate the performance of transportation vendors in delivery process (physically) from original point to destination point (stockyard/dealer's showroom).

Content

To classify the metrics, the author utilized and modified SCOR attributes become reliability, responsiveness, flexibility, and management concern.

Process

Current reporting in LVM conducted monthly based, except daily delivery planning. All raw data collected from daily operation and downloaded from Toyota Logistic System (TLS). Then processed into A3 paper summary report so every member has same level of information regarding past activity.

Table 5. Existing and Proposed KPIs

No	Current KPI			Proposed KPI		
	Shipment	**Car Carrier**	**Self-Drive**	**Shipment**	**Car Carrier**	**Self-Drive**
1	N/A	Attendance	N/A	On Time Departure	Truck Readiness	Driver Readiness
2		On Time Arrival		On Time Arrival	Truck Attendance	Driver Attendance
3		Spot Order		Defect Ratio	Compliance of Trip	Compliance of Trip
4		Readiness Truck		Injured/Accident	Defect Ratio	Defect Ratio
5		Safety		Administration conformity & Information accuracy	Injured/Accident	Injured/Accident
6		Recertification and Support Improvement		Lead Time delivery	Lead Time delivery	Lead Time delivery
7				Upside/Downside cargo flexibility	Upside/Downside cargo flexibility	Upside/Downside cargo flexibility
8				Vendor Audit Grade	Vendor Audit grade	Vendor Audit grade

4.2 Establish Performance Based Volume Sharing

Existing vendor's delivery operation at TAM is based on area. Certain destination is for certain vendor, hence the vendor has no spirit to compete and improve their performance. To keep the spirit and efforts of vendors to always instil continuous improvement throughout their operation, Krause et.al. (1998: 40) suggested buying firms to provide recognition to its suppliers. It is very important to give same opportunity to all vendors in delivery process. Every vendor must be flexible and could provide delivery service to all destinations. To make clear and fair judgment related to volume sharing for vendor, performance based volume sharing could be applied. Leveraging the KPIs as the assessment guidance in determining cargo volume sharing for this reward and punishment system is important. The scheme of performance base volume sharing shown in Figure 9.
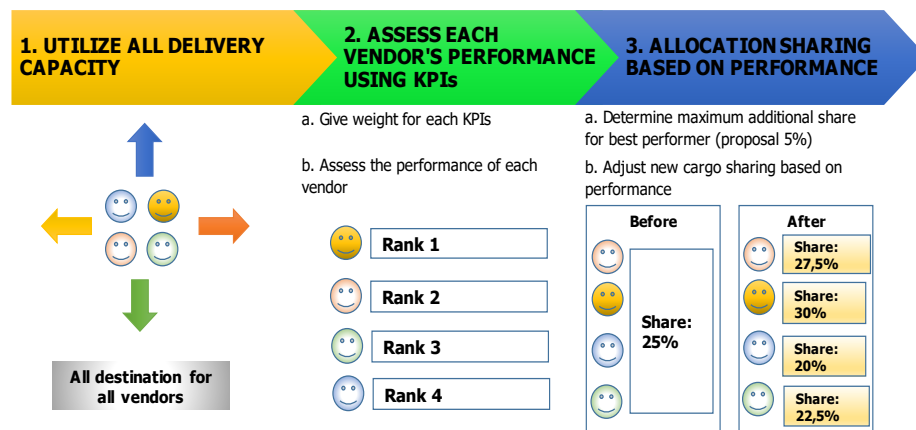
Fig. 9. Performance based volume sharing scheme

4.3 Performance Enhancement through PDCA Scheme

Due to area based volume sharing, improvement activity at vendor is rarely conducted. Limited knowledge due to no man power that responsible for improvement activity in vendors may explain this condition. Lack of management support and encouragement also become the major cause of this condition. Burt et.al. (2003: 517) mentioned that a world-class supplier development requires a commitment to collaboration between customer and supplier. Despite vendor's proactive role in this PDCA improvement activity is strongly expected, however, TAM's involvement is important. This join improvement process will be conducted through PDCA scheme. Detail of PDCA scheme activity shown in Figure 10.
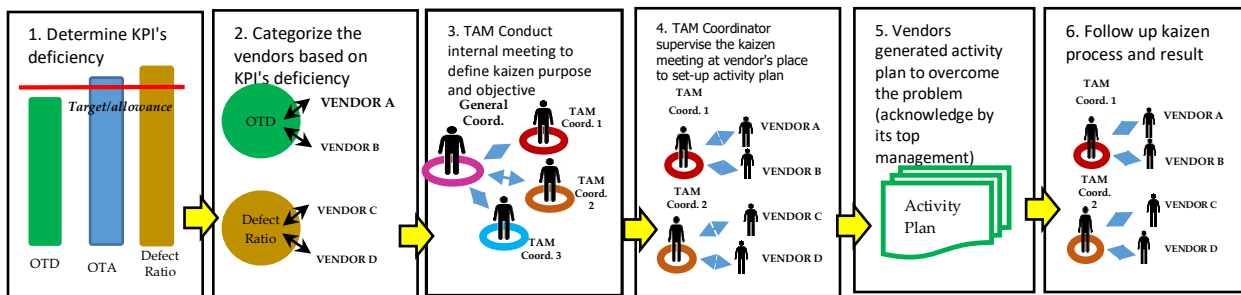
Fig. 10. PDCA Scheme

ICMEM

4.4 Logistic Campaign

Logistic campaign at VLD should be conducted regularly to enhance the awareness of all vendors (driver, coordinator, supervisor, manager until top management) about safety and quality standard in operation. The campaign activity could be held through mini poster, banner or pamphlet. Contents of the campaign could be either a dominant problem in operation or information to prevent major problem happen in operation. Every year, the campaign theme could be different based on the phenomena in delivery operation.

4.5 Conduct Annual Meeting & End Year Logistic Meeting

One of the root cause regarding low ETA compliance and high defect ratio achievement in 2016 is due to no common goal between TAM and vendors. This thing showed by the fact that both TAM and vendors working for its own interest. TAM work to overcome internal particular issue in the operation while vendors focus on their own anxiety for the business uncertainty after integration process. To manage this situation, it is very important for TAM to conduct official meeting with all vendors soon and regularly as media to build good relationship that will resulted to synergize collaboration in operation. The agenda in the meeting could be arrange as follows;

- Evaluation meeting of KPI achievement and new target setting. This include the announcement of new sharing after the evaluation of vendor's performance (reward & punishment).
- Strategic Logistic Plan sharing by VLD's management.
- Sales projection, market trend sharing and company policy (Hoshin) by TAM's Management. This is important to communicate to vendor as the information of next year's activity plan for them.
- Presentation of improvement activity in operation.
- Awarding ceremony

4.6 Logistic Contest

This is a very important activity in the series of strategic vendor development process. Through contest, TAM give chance to all vendors to developed their self before follow the competition. For success of this contest, it is very important to set up proper series of activities as a guidance. Figure 11 shows proposed steeps as a reference to conduct the contest activity.
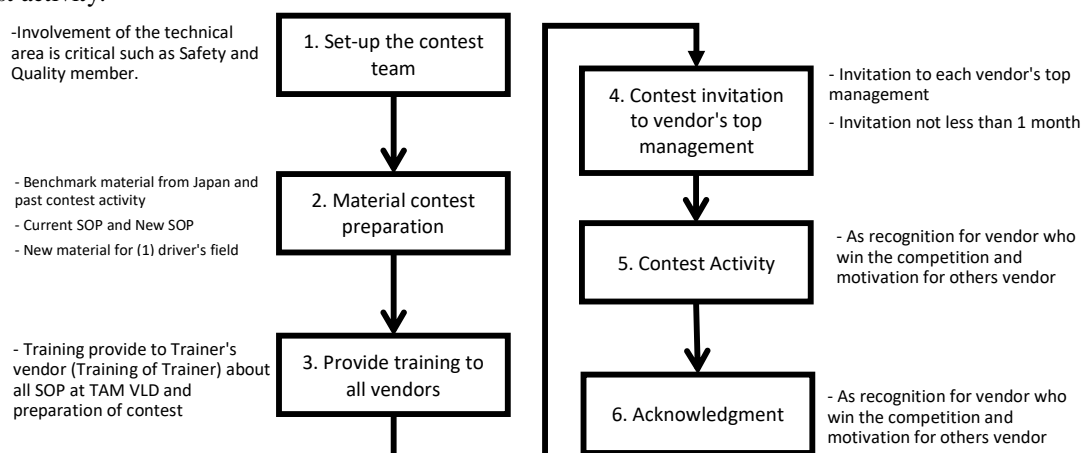
Fig. 11. Logistic contest procedure reference

4.7 Vendor Audit Program

One of the activity that could be employed in strategic supplier development program is supplier audit (Krause et.al., 1998: 40). Handzo (1990: 54) mentioned that the main objective of supplier audit is to verify that adequate quality system exist in a supplier's operation to assure that the supplier provide a good performance consistently. Vendor audit activity should be emphasis on how to help the vendor enhance their delivery performance through standard process to stabilize the logistic operation. Not only in particular process, but also in all of their process. Moreover, Handzo (1990: 55) mentioned that a good quality system audit should emphasis on partnership relationship. Item to be audited in conducting the audit process for all three transportation modes shown in Table 6.

Table 6. Item check of vendor audit program

No	Shipment	Car Carrier	Self-Drive	Method
1	VENDOR'S MANAGEMENT PRACTICE	VENDOR'S MANAGEMENT PRACTICE	VENDOR'S MANAGEMENT PRACTICE	Document check & interview
	※PDCA Activity	※PDCA Activity	※PDCA Activity	
	※Legal aspect	※Legal aspect	※Legal aspect	
2	LOADING & DISCHARGING OPERATION	BEFORE & AFTER OPERATION	BEFORE & AFTER OPERATION	Document check & interview
	※Stevedore/Operator Evaluation	※ Driver health check	※ Driver health check	
	※ Standard Operation Procedure	※ Truck checking before operation	※ Driver allocation plan	
	※ Operational practice	※ Truck checking after operation		
	※ Equipment	※ Truck allocation plan		
	※ Vessel Facility			
3	YARD MANAGEMENT	ON GOING OPERATION	ON GOING OPERATION	Document check & interview
	※Operator Evaluation	※ Standard route guidance	※ Standard route guidance	
	※ Standard Operation Procedure	※ Driving pattern standard	※ Driving pattern standard	
	※ Operational practice	※ On road monitoring system	※ On road monitoring system	
	※ Equipment	※ Standard of abnormality reporting (Stop Call Wait)	※ Standard of abnormality reporting (Stop Call Wait)	
	※ Yard Facility			

4.8 Kyoryoku Kai (Cooperative Associations)

Basic idea of Kyoryou Kai is collaboration of several vendors to find the causes of common abnormality happen in delivery operation and together overcome the abnormality. VLD member role in this activity is to assist Kyoryoku Kai group to conduct the activity. This includes provide abnormality data, what should they do, what kind of improvement for certain issue. The concept of Kyoryoku Kai at VLD could be applied through several steps at Figure 12.

ICMEM

- The problem should be determined by TAM - Type of improvement	**1. Select common abnormality (problem)**	**4. Kyoryoku Kai Activity**	Assist vendor to: - Developed project charter - Set-up improvement target - Set-up timeline - Implementation of Improvement - Evaluation
- The member should be determined by TAM - To maximize the effort of each member, one Kyoryoku Kai group should be no more than 4 vendors	**2. Determine Kyoryoku Kai member**	**5. Sharing/presentation session**	To acknowledge the effort, each group given time to present their activity in front of TAM and others vendor's top management in formal forum every year.
Commitment of each member is strongly expected. to get the commitment of each member, top vendor's management should issued assignment letter for its dedicated PIC for the project.	**3. Asking assignment letter from vendor's management**	**6. Yokoten**	Best practice sharing to others area or being benchmark reference

Fig. 12. *Kyoryoku Kai* activity process

As management expected, the solution in this research will be emphasis on how to enhance the long term capability of vendors to gain competitive advantage in the future. Krause et.al. (1998: 39) said, "*If the supply chain is to be a source of competitive advantage, suppliers' performance must be managed and developed to meet the needs of the buying firm*". Based on this theory, if TAM want to make its logistic process become a source of its competitive advantage, it has to develop its vendor's capability through vendor development process.

There are two purpose of firm used supplier development process (Krause et.al., 1998: 44-45). Some firms used this approach as a strategic tool, while others used supplier development predominantly as a remedial process to correct obvious supplier deficiencies. A large scale survey of over 500 supplier development efforts by Krause in 1994 indicated that supplier development strategies could result in significant supplier performance, including reduction of incoming defect by 5-90% and improvement in on time delivery by 6-15% (Handfield, 2016: 2). Therefore, the best design of vendor development activity in this research is strategic logistic vendor development process.

Based on Table 2, the framework chosen by the author is 10 steps of generic process model proposed by Krause et.al. (1998). It is because this 10 generic process is suitable for the context in this research and TAM's current situation.

In general, Krause's framework on supplier development could be divided into 4 processes:

1. Initial development phase

TAM should approaching vendor development process to improve the deficiency of delivery performance which has biggest contribution determining sales satisfaction index (SS1). In 2016, performance of delivery are below company target due to deficiency of logistic vendor's performance. This problem, impacted Delivery Timing & Process of SSI contribute 37% of total assessment score.

2. Proactive development phase

This phase is include determining KPIs and assessing the current performance to identify opportunity and potential improvement. TAM has to assess current vendor's performances use process based performance measurement system for all transportation mode. More complete KPIs are suggested as the assessment tools. Afterwards, TAM has to start communicate with vendor's executive management to gain commitment for synergy collaboration in the development process.

3. Integrative development phase

TAM should identify the critical performance for improvement for each vendor. Then, conduct PDCA scheme for collaboration improvement process to solve KPIs deficiency. Through TAM involvement in the improvement process, the development of future capability of vendor could resulted significant increase. Best performer vendor

ICMEM

deserve rewards as an acknowledgment from their best effort. In contrast, vendor who did not perform well get the consequences through re-adjustment of their volume sharing.

4. Sustainable development phase

TAM has to initiate several improvement programs and activities with vendor such as vendor contest, vendor audit, logistic campaign, and Kyoryoku Kai activity. This phase purpose is to instil a philosophy of continuous improvement in vendors.

Detail of Strategic Logistic Vendor Development process as strategic solution in this research is provided in Figure 13.
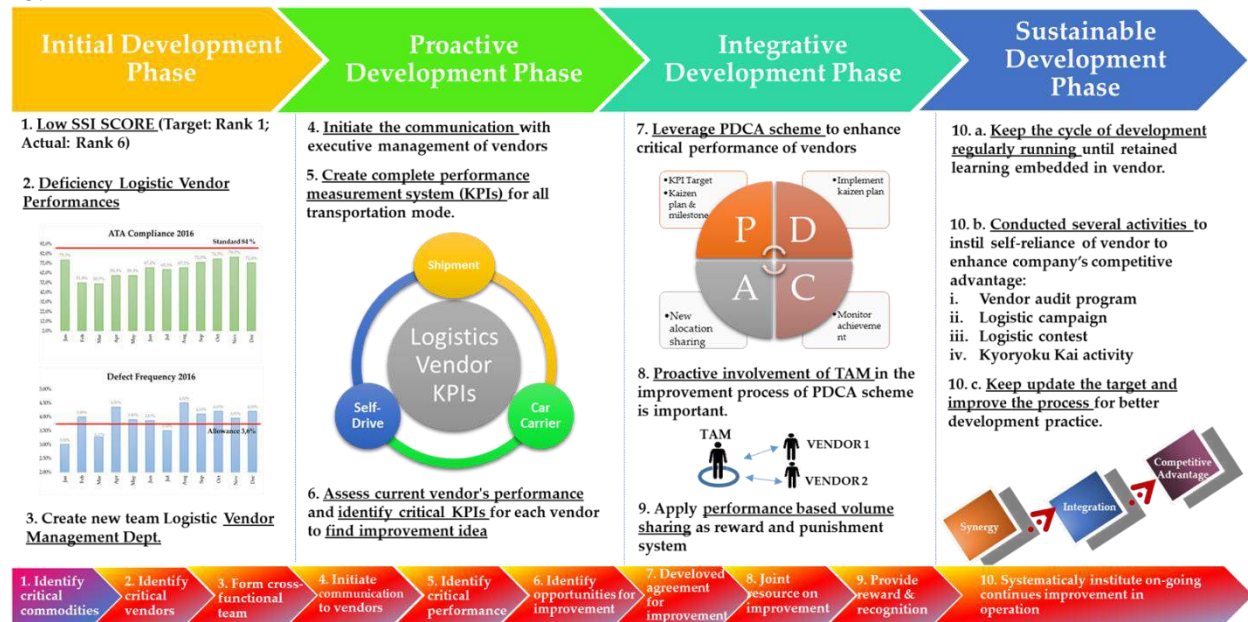
Fig. 13. Design of Strategic Logistic Vendor Development for PT. TAM

5. Conclusion

The conclusion of this research as follows:

1. The significance of Sales Satisfaction Index (SSI) score to sales performance is it determine the loyalty and advocacy of customer in purchasing certain brand. Therefore, achieving SSI number 1 is very important for TAM to realize its vision become the market leader in Indonesia.
2. Factors determining Sales Satisfaction Index (SSI) score consist of Delivery Process & Timing, Sales Person, Sales Initiation, Dealer Facility and Deal Process. Where the biggest factor is Delivery Process & Timing which has 37% weight of overall factors.
3. Root causes of VLD's deficiency performance on ATA Compliance and Defect Ratio in 2016 directly affected 37% of SSI performance are increase number of transportation mode, not complete KPI for all transportation mode, no performance based volume sharing to vendor, no common goal between TAM and vendors, no knowledge sharing between TAM and vendors, lack of TAM's supervision and assistance in improvement activity.
4. The solutions to overcome deficiency performance on ATA Compliance and Defect Ratio in 2016 are establish new KPIs for all mode, apply performance based volume sharing, leverage PDCA scheme to enhance KPIs, held annual logistic meeting with vendor's executive management, conduct logistic campaign, contest, vendor audit and Kyoryoku Kai activity.
5. As the objective of this research, to improve the biggest factors determining Sales Satisfaction Index (SSI) score performance which is Delivery Process & Timing, TAM has to develop its logistic vendor's long-term capability

ICMEM

through Strategic Logistic Vendor Development process. Strategic development approach will help TAM strengthen its competitive advantage in logistic operation as management expected while overcoming current delivery deficiency.

References

Ahmed, M. & Hendr, L. (2012) Supplier Development Literature Review and Key Future Research Areas. *International Journal of Engineering and Technology Innovation,* 2 (4): 293-303

Balancescorecard (2017) Basic Tools for Process Improvement-Affinity Diagram. Available from https://www.balancescorecard.org/portals/0/pdf/affinity.pdf [Accessed on 2 November 2017]

Bappenas, n.d. Indonesia to develop low carbon economy and contribute to international actions on global warming. Available from https://www.bappenas.go.id/files/3413/5071/6654/advicctf-28__20111006022703__3445__0.pdf [Accessed on 25 October 2017]

BusinessDictionary (2017) Campaign definition. Available from http://www.businessdictionary.com/definition/campaign.html [Accessed on 5 December 2017]

Burt, et.al. (2003) *World Class Supply Management* (7th ed.), New York: McGraw-Hill Companies

Chopra, S. & Meindl, P. (2016) In D. Tylman & M. Rees (Eds.), *Supply Chain Management-Strategy, Planning, and Operation: 400-406, 433-441,* USA: Pearson Education

Climate Transparancy (2017) Brown to Green: G20 Transition to a Low Carbon Economy-Indonesia Country Facts, July

Creswell, J.W. (2009) Research Design: Quantitative, Qualitative, and Mixed Methodes Approachs, California: SAGE Publication

Cuthbertson, R. & Piotrowicz, W. (2011) Performance measurement systems in supply chains-A framework for contextual analysis. *International Journal of Productivity and Performance Management,* 60 (6): 583-602

EIBN (2014) Automotive, *EIBN Sector Report.* Available from www.eibn.org/upload/EIBNSecRep2014_Auto_ExecSummary.pdf [Accessed on 6 September 2017]

Gaikindo (2017) ASEAN Auto Market (2007 – 2016). Available from https://www.gaikindo.or.id/asean-auto-market-2007-2016/ [Accessed on 2 September 2017]

Gaikindo (2017) Domestic Auto Market by Brand (2010-2016). Available from https://www.gaikindo.or.id/domestic-auto-market-by-brand-2013-2016/ [Accessed on 2 September 2017]

Gaikindo (2017) Domestic Auto Market by Category (2017). Available from https://www.gaikindo.or.id/domestic-auto-market-by-category-2017/ [Accessed on 2 September 2017]

Gupta, P. (2006) Process management-Beyond PDCA A New Process Management Model. *Quality Progress*, 39 (7): 45-46

Hahn, et.al. (1990) The Supplier Development Program: A Conceptual Model. *Journal of Purchasing and Materials Management,* 26 (2): 2-7

Handfield, R. (2016) Executive Report of Key Result of Recent Research on Supplier Development Strategies and Outcomes. *Supply Chain Resource Consortium,* North Carolina State University

Handzo, C. S. (1990) Developed a Consistent Supplier Audit. *Purchasing World, 34 (4): 54-56*

Hartley, et.al., 1997, Process Oriented Supplier Development Program: Building The Capability for Change. *International Journal of Purchasing and Materials Management, 33 (3): 24-29*

Hines, P. & David, J. (1995) Getting more from your suppliers. Journal of *Purchasing & Supply Management: 37*

HR Division PT TAM & TMMIN, 2017, 40 Tahun Toyota Kijang-Semangat Toyota Membangun Pasar dan Industri Otomotif Nasional, *INFO Karyawan TAM-TMMIN*, 54: 3-7

Investor Relation Unit (IRU) of Republic Indonesia (2017) A Resilient and Progressive Economy, July: 24

J.D Power (2017) About J.D. Power, n.d. Available from http://www.jdpower.com/about-us/press-release-info [Accessed on 20 November 2017]

J.D Power (2016) J.D. Power Ratings, October 3. Available from http://www.jdpower.com/press-releases/jd-power-2016-indonesia-sales-satisfaction-index-ssi-study-mass-market-segment [Accessed on 2 September 2017]

Junaidi, E. (2016) Scenario Planning development for furniture manufacturing company: the case of PT Indo creative meuble, *Final Project SBM ITB* Jakarta

Katherine, L. (2004) Strengthening Supplier Relationship: With Comprehensive Audit Planning. *Annual Quality Congress Proceedings, 58: 79-84*

Krause, et.al. (1998) An empirical investigation of supplier development: reactive and strategic processes. *Journal of Operations Management*, 17: 39-58

ICMEM

Lu et.al. (2016) A SCOR Framework to measure logistics performance of Humanitarian organization. Journal of Humanitarian Logistics and Supply Chain Management, 6:222-239

Ministry of Economic Affairs (2017) Perjalanan Ekonomi Indonesia 1945-2017, August 30. Available from https://www.google.co.id/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwiQhMOd7PbXAhVMpo8KHWgLB-EQFgg5MAM&url=https%3A%2F%2Fkatadata.co.id%2Fdownloads%2Fsejarahekonomi%3Fdownload%3Dbuklet_ekonomi_indonesia&usg=AOvVaw3e0t2x_ZF2JeKJj68HKzOO [Accessed on 6 September 2017]

Ministry of Energy and Mineral (2017) Presidential Regulation of Rencana Umum Energi Nasional No. 22 tahun 2017, March 13

Ministry of Finance (2017) APBN 2017, Available from https://www.kemenkeu.go.id/apbn2017 [Accessed on 2 September 2017]

Ministry of Industry (2015)Indonesia Australia Business Week-Indonesia Automotive Industry, November 18. Available from https://www.google.co.id/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwjR1OTe6_bXAhUJOo8KHRIbCY0QFghDMAI&url=https%3A%2F%2Fwww.austrade.gov.au%2FArticleDocuments%2F1418%2FIABW_Auto_Min-of-Industry-Indonesia.pdf.aspx&usg=AOvVaw2E3JJrw_f6rU51-0aLGdgF [Accessed on 5 September 2017]

President Regulation (2017) Peraturan President Republik Indonesia No. 22 TENTANG Rencana Umum Energi Nasional (RUEN), March 13: 88

PT. Asuransi MSIG Indonesia (2014) Back To The Basic SOP. *MSIG Logistic Quality Information* (Vol.5)

PT. Toyota Astra Motor (2017) TAM Organization Structure 2017, July

Rastogi, et..al. (2013) Asia's Next Big Oppertunity-Indonesia Rissing Middle-Class and Affluent Consumers, *The Boston Consulting Group*

Ronnquist, S. & Wenner, M. (2014) Supplier Development– Moving from a Reactive to a Proactive Approach. *The division of Engineering Logistics at The Faculty of Engineering*, Sweden: Lund University

Sekaran (2003) Research methode for business. United States: Jhon Wiley & Sons

Shekhawat P. (2014) Rising middle class incomes spur multi-industry growth in Indonesia, Markplusinsight, n.d. Available from http://www.markplusinsight.com/article/detail/30/rising-middle-class-incomes-spur-multi-industry-growth-in-indonesia [Accessed on 15 November 2017]

Sondalini, M. (2017) Understanding How to Use The 5-Whys for Root Cause Analysis, *Lifetime Reliability Solution-The masters of plant and equipment reliability improvement*, n.d. Available from www.lifetime-reliability.com [Accessed on 20 October 2017]

Theeranuphattana, A. & Tang, J. (2007) A conceptual model of performance measurement for supply chains-Alternative considerations. *Journal of Manufacturing Technology Management,* 19 (1): 125-148

Titikorn (016) ASEAN Automotive Outlook. Available from http://data.thaiauto.or.th/iu3/images/stories/PDF/aiu59/seminar%20AIU59%20-8-7-2016.pdf [Accessed on 6 September 2017]

Toyota Motor Corporation (2013) 15th Japananese Driver Contest. Toyota Transportation Toyota KyoyukaiU.S. Coast Guard Leadership Development Center, 2014, Performance Improvement Guide (6th Edition), Boston: U.S. Government Printing Office.

University of Leichester (2009) Module 9 Introduction to Research: Methode of Collecting qualitative data. n.d. Available from http://libweb.surrey.ac.uk/library/skills/Introduction%20to%20Research%20and%20Managing%20Information%20Leicester/page_54.htm [Accessed on 30 November 2017]

Vehicle Logistic Division (2016) TO REDUCE GAP OF ETA/ATA ACCURACY FROM JAKARTA TO PADANG AREA. *Cross Function Improvement,* December

Vehicle Logistic Division (2017) Division Strategy 2018 Presentation, October 10

Vehicle Logistic Division(2017) Organization structure VLD 2017.

Vehicle Logistic Division (2016) Vehicle Logistic Division Concept

Wijeratne, D., & Lau, S. (2015) Riding Southeast Asia's automotive highway, November, PWC

Wikipedia (2017) 5 Whys, October 1. Available from https://en.wikipedia.org/wiki/5_Whys [Accessed on 19 October 2017]

Wikipedia (2017) Toyota Astra Motor, October 1. Available from https://id.wikipedia.org/wiki/Toyota_Astra_Motor [Accessed on 2 October 2017

WorldBank (2017) Indonesia, n.d. Available from https://data.worldbank.org/country/indonesia [Accessed on 15 November 2017]

WorldBank (2017) Inflation, consumer prices (annual %), n.d. Available from https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?end=2016&locations=ID&start=1990 [Accessed on 15 November 2017]

Yuen S. M. (2006) Performance Measurement and Management of Third Party Logistics: An Organizational Theory Approach, *Thesis Hong Kong Baptist University*

ICMEM

The 3rd International Conference on Management in Emerging Markets

Implementation of World Class Maintenace in PT Krakatau Daya Listrik in Order to Increase Electrical Power Reliability Supply to Consumers

Ermawanto[a]*, Adirizal Nizar[b]

a,b School of Business and Management, Institut Teknologi Bandung, Indonesia

Abstract

PT Krakatau Daya Listrik (PT KDL) engaged in power generation and transmission and distribution in Krakatau Industrial Estate Cilegon area since 1978. Since 2015 PT KDL has operated a new 120 MW Combine Cycle Power Plant. The number of problems faced such as the age of old equipment, the low reliability of electricity supply, the company's revenue decreased, demand decreased, and the index of customer satisfaction also decreased to be the problems that must be resolved soon. The root cause of the problem is sought by mind mapping method by interviewing various respondents representing all stakeholders plus the company's performance data for the last 5 years by comparing with the existing standard values. The solution of the problem is PT KDL needs to make management changes by applying World Class Maintenance Management standard and Total Productive Maintenance where the improvement of all problems above must involve all divisions in PT KDL not only in maintenance division.

Keywords: Reliability of power supply; Mind Mapping; World Class Maintenance Management; Total Productive Maintenance

1. Introduction

PT XYZ is a Private Power Utilities company which has electricity business license for public use/IUPTL from government. PT XYZ has 3 types of business namely electricity supply, electrical services, oil & gas. Industries in this industrial area got electrical power supply from PT XYZ 174.7 MW (48.1%), PT PLN 29 MW (7.9%), and external power plant : 160 MW (43.9%). For the PT XYZ's customer there are 3 kinds of customer : Parent Company : 1 company 130 MW (74%), Subsidiary Companies : 9 companies 11.7 MW (6.6%), Others : 249 companies 33 MW (18.8%). Meeting the needs of reliability electrical supply to the customers, PT XYZ also interconnection with PT PLN in 150 kV voltage level to maintain reliability. Interconnection with PT PLN also from two source there are PLN Main Feeder (2 feeder) and PLN Backup Feeder (1 feeder). This interconnection function is that when the PT XYZ power plant trips then the supply is taken by PT PLN, and vice versa so that reliability becomes the main value. In addition, the system supply to customers using a ring system/redundant where there are two supply lines to every consumer. If one of the paths is interrupted or there is a maintenance program then the consumer can be supplied from the other ring. For emergency supply, PT XYZ also interconnection with another power plant in 6 kV side only used if PT XYZ and PT PLN blackout then house load can be supplied from another power plant. In a world filled with intense business competition, it spurs all companies to innovate and deliver the best service to meet consumer expectations. PT XYZ as a company in the field of power plants trying to answer this challenge how to produce reliable electricity and the quality can be maintained. In contrast to PT PLN where PT XYZ sells higher electricity prices, but reliability and quality of electricity is to guarantee customer satisfaction. Preliminary, researcher observe

---

* Corresponding author.

E-mail address: ermawanto@sbm-itb.ac.id

ICMEM

the problem of PT XYZ : Reliability electrical supply to customer decrease in 5 years last, Electrical consumption from customer (demand) decrease in 5 years last, Revenue in 5 (five) years last was decrease especially from electricity business. Maintenance cost also increase or high in 5 years last. It makes PT XYZ suffered in cash flow, Customer satisfaction survey in 5 years last also tend to goes down.

ICMEM

2. Literature Review

To improve reliability and decrease cost, researcher use Total Quality Management (TQM) tools. From *Operations Management an International Perspective,* David Barnes (2008) : TQM sees quality as a source of competitive advantages. It is built on the belief that quality needs to be defined from the customer's point of view and that its pursuit will deliver improvements in corporate performance. Quality needs to be managed strategically and that requires organization-wide commitment and a long term perspective. In TQM, the pursuit of quality is viewed as a never ending goal, a journey rather than a destination. TQM stresses the importance of involving all organizational members in the achievement of quality in all activities.

TQM requires : Commitment from top managers, Good relation between management and workforce,Good communication and relationship between different department, Continues education at all levels, Good relation with customers, Good relation with suppliers, Shop-floor initiatives to be encourages and facilitated.

3. Methodology

From this concept, to identify and to solve the problems there are any steps :

[1] Researcher interview some respondents which represent from 7 people as state in above (TQM requires). They were interviewed to get information about current conditions and what they expected and how they solve the problems. Goal of this project is to find the actual problem by interview as qualitative data to be analyzed.

[2] Root cause analysis using mind mapping from quantitative and qualitative data and then grouped into several categories according to the symptoms. Major findings and have big impact will be categorized as root cause. The criteria of root cause are : the most commonly referred to by the respondent, which is described by respondent in detail, the problem which is lead into other problems. Quantitative data taken from internal document compared with standard/best practice value.

[3] Suggest solving the problem using world class maintenance standard/best practice.

4. Finding And Argument

Table 1. Data Interpretation of Reliability Performance in 2012-2016 (Average) (Source : PT XYZ's Internal Document)

No	Item to be measured	Actual	Standard	Gap	Standard Reference
1	SAIDI (System Average Interruption Duration Index)	1.98	<1.5	0.48	IEEE 1366 based on a North American Survey
2	SAIFI (System Average Interruption Frequency Index)	1.66	<1.1	0.56	IEEE 1366 based on a North American Survey
3	Breakdown Work	11.20%	<3%	8.20%	WCMM Best Practice (*Charles Brooks Associates, Inc. 843-881-8656*)
4	Planned Maintenance Work	76.70%	>90%	13.3%	WCMM Best Practice (*Charles Brooks Associates, Inc. 843-881-8656*)
5	Maintenance Schedulling Compliance	58.50%	>95%	36.5%	WCMM Best Practice (*Charles Brooks Associates, Inc. 843-881-8656*)

Table 2. Average Data of Financial Performance in 2012-2016 (Source : PT XYZ's Internal Document)

No	Item to be measured	Actual	Standard
1	Revenue	from $144 million in 2012 become $89 million in 2016 (Decrease)	Increase
2	Demand Growth	from 196 MVA in 2012 become 93 MVA in 2016 (Decrease)	Increase
5	Maintenance Cost	Increase	Decrease

6	Gap Competence for maintenance division employee	38.19	Minimize
7	Customer Satisfaction Survey	81.49%	>85%

Table 3. Proposed Solution for the root cause problem

No	Possible Root Cause	Root Cause	Proposed Solution	Discussion
1	Gap Competence for maintenance division employee too high	Lack of Human Capital Development Management	WCMM Implementation	Competency-Based HR Management by *David D. Dubois and William J. Rothwell (2004)*
2	People quality low			Training & Education in WCMM by *Rolly Angeles (2009)*
3	Maintenance Schedulling Compliance too low	Lack of Maintenance Management System		Set-up Maintenance Indices and KPIs in WCMM by *Rolly Angeles (2009)*
4	Old equipment			Addressing Basic Equipment Condition in WCMM by *Rolly Angeles (2009)*
5	Planned Maintenance Work too low			Preventive Maintenance in WCMM by *Rolly Angeles (2009)*
6	Breakdown Work too high			Predictive Maintenance in WCMM by *Rolly Angeles (2009)*
7	Maintenance Cost increase			Life Cycle Management in WCMM by *Rolly Angeles (2009)*
8	Lack of insurance spare part	Lack of Logistic Management		Spare part management in WCMM by *Rolly Angeles (2009)*
9	SAIDI too high	Lack of O&M Management		Reliability and Improvement Strategies in WCMM by *Rolly Angeles (2009)*
10	SAIFI too high	Lack of O&M Management		Autonomous Maintenance and Root Cause Failure Analysis in WCMM by *Rolly Angeles (2009)*
11	Unintegrated System	Lack of Top Management	Implementation of Enterprise Business Software like SAP/Maximo	Computerized Maintenance Management System in WCMM by *Rolly Angeles (2009)*
12	Revenue decrease	Lack of Planning, Financial and Commerce Business Management	Road Map of Business Strategy for short term and long term	
13	Financial liquidity by low revenue from business service			Increase revenue from business service by expand the business
14	Tariff to KS too low, no profit			Negotiate to increase the tariff to PARENT COMPANY
15	Gas price of PT PGN too expensive			Negotiate to PT PGN to decrease the tariff and joint venture
16	Limited source of gas supply to power plant			Build new coal power plant in 2018
17	Demand Growth decrease			Attract existing customer by deliver the value and new customer by increase marketing sales

4. 1.   Lack of Human Capital Development Management

Competence Based HR Management

Based on *Competence-Based Human Resource Management Book by David D. Dubois and William J. Rothwell* (2004) there are 5 steps to implemented :

Competency Identification

ICMEM

a. The Job Competence Assessment Method (JCAM)

The method relies on the collection and analysis of data obtained through a process called behavior event interviewing (BEI) is a technique developed by McClelland and Charles Dailey (1973) combine with Flanagan's (1954) critical incident technique called Thematic Apperception Test (TAT). The interviewer asks a series of detailed questions about actions performed in the work setting that workers perceive to be successful or unsuccessful and the thoughts, feelings, and outcomes that accompanied them. Exemplary and fully successful workers are first identified and then interviewed about critical events in their work experience.

b. The Competency Menu Method

It relies on competency lists obtained from sources in the private and public domains. Practitioners create menus from the lists and then use the menus to identify the competencies necessary for a work role or traditional job in an organization. They can search in the World Wide Web.

c. The Modified DACUM Method.

This method based on the "Developing A CurriculUM (DACUM) method (Norton, 1997). DACUM is a popular job analysis process that relies on a disciplined, focus group approach for information collection, analysis, and presentation of results. This method begins by assembling work experts. These expert may be exemplary performers, managers, supervisors, team leaders, and possibly customer if they are highly informed about the work to be profiled by describe the work activities people perform daily to achieve the necessary results. These work activities become the basis for discovering the underlying competencies essential to achieving work outputs or results..

HR Management

HR Management is the understanding that effective organization must be able to find, use, keep, and develop human beings in order to achieve results. As Sherman, Bohlander and Snell (1998) noted, "the term 'human resources' implies that people have capabilities that drive organizational performance (along with other resources such as money, material, information, and the like).

Competency-Based HR Management

This concentrates first on the person and then on his or her outputs or results. Competencies are enduring, while work activities and specific work tasks are transitory. Competencies drive recruitment, selection, placement, orientation, training, performance management, and worker's rewards.

Meeting Business Needs through Competency-Based HR Management

As Pritchard (1997) saw competencies as a way to integrate HR strategy with business strategy, thus adding performance value to the organization. Competencies are to improve organization performance, increase the ability to be competitive, support culture change, enhance training and development effectiveness, improve process associated with recruitment and selection, reduce turnover, clarify managerial roles, and specialist roles, increase emphasis on business objectives, aid in career and succession planning, analyze skills and be able to identify the current and projected deficiencies ins kills, improve workforce flexibility, support the integration of overall HR strategies, and provide a basis for compensation and reward program (Pickett, 1998).

Aligning Competencies with Business Plans, Objectives, and Needs

HR is often held accountable for chainging workforce competencies, and it is vital to adopt an effective strategy (McDowell, 1996). "The alignment of workforce capabilities with business strategies must be strategic, collaborative, and business focused to be successful". HR plays a significant role in creating business strategy. The HR department should have a list of technical knowledge and skills in the organization and should be able to supply information about the organization's cultural strengths and weakness.

2. Training and Education

Based on *WCMM Book by Rolly Angeles (2009)* about provide the training : Consider training not as a cost but rather as an investment, Start your training with the Top Management, Management must set expectation with their people that they send to the training, Determine not only the needs but also the time to use it, Determine where are you are and where you want to go, Consider training as a long term and not as a short term investment, Close the loop and communicate the results with your training department.

ICMEM

There are steps in improving current training needs and requirements : Assess the currents training needs and requirements of your industry, Design and finalize a curriculum for the maintenance department, Implement and execute the training program, Provide a skills development program for maintenance.

For detailed job description, competence need, training curriculum, and schedule of maintenance division employee in PT XYZ will be create to solve the problem. The other concern about people is optimizing the time working. Instead of talking about what proper planning and scheduling. Without planning and scheduling, the wrench-on time for a company is on average only 35%. That means that for every technician working an 8-hour day, only 2.8 hours of actual work on assets is done.

4. 2. *Lack of Maintenance Management*

Set-up Maintenance Indices and KPIs

Based on *WCMM Book by Rolly Angeles (2009),* measuring our maintenance indices and KPI's clarifies the need to focus on long term goals and strategies by comparing our actual performance against the goals we set forth. We can only be in control of the situation if we measure what is meaningful and important to us because measurements allow us to make the right decisions in our organizations.

There are several thing for this :

a. Right reasons why we need to measure performance

   Measurement and KPI's allow us to determine if our equipment is performing well or not. Data gathered can tell us that our equipment is functioning based on our targets and goals. We measure our equipment so that we can evaluate its performance. The purpose of evaluation is to determine what strategies we need to adopt and those that we need to drop.

b. Selecting the right KPI's for maintenance

   There is a wide selection of measurement for maintenance. We can measure the rate or number of breakdowns, downtime, availability, utilization, mean time indicators, set up time, repair time, maintenance costs, spare part costs, and so on.

c. Measurement of time

   In the industry, time is measured by the summation of both uptime and downtime. Operations and maintenance keep track and record losses and downtime encountered on their equipment.

d. Availability and utilization explained

   Availability is computed as the total available time minus all the downtime encountered on the equipment whether machine or non-machine related divided by the available time itself.

Addressing Basic Equipment Condition

Based on *WCMM Book by Rolly Angeles (2009),* majority of catastrophic failures can definitely be avoided if both operators and maintenance work together towards a common goal on addressing the basic equipment conditions. Always remember that big problems are caused by the accumulation of small things often left ignored and neglected. Addressing also mean assess your equipment. The detailed data from the technical specification, year of manufacture, current condition, and so on. This information need to maintenance planning/scheduler to create work order based on operation hour/ time based or condition based.

Preventive Maintenance

Based on *WCMM Book by Rolly Angeles (2009),* Reactive maintenance is still what most industries are experiencing today. Preventive maintenance is a basic maintenance performed on a scheduled basis in order to extend the life of the equipment and to assure that the equipment capacity support the goal and targets of the industry. It is also a series of tasks performed at a defined frequency dictated by the passage of time, running hours, volumes, cycles or any means that either extend the life of the asset or detect that an asset is on its critical wear curve and is on the process of failing. Preventive maintenance activities include regular routine inspection, checking, routine cleaning, and lubrication, scheduled or planned component replacement, scheduled minor and extensive overhauls, periodical shutdown, outages, planning and scheduling. The concept of preventive maintenance, assumes that the condition of the machine and the need for maintenance is correlated with time which means that the item can be expected to operate reliably for a considerable amount of time and is expected to wear out eventually.

ICMEM

Predictive Maintenance

Based on *WCMM Book by Rolly Angeles (2009),* predictive maintenance is a type of maintenance performed on the equipment that is based on the condition of the equipment with the aid of diagnostic monitoring tools or insturments to determine potential failure. There are failure modes that provide signs or signal that they are on the process of failing. These failure modes are the best candidates for predictive maintenance. Vibration monitoring, infra red termography can be used to capture these symptomps. Benefit of predictive maintenance (PdM) : More proactive than reactive, Condition-Based Maintenance (CBM) is performed while the machine is running, PdM can determine the cause of the problem, reduce environmental and safety consequences, reduce maintenance cost, peace of mind for maintenance.

Steps in building a predictive maintenance strategy : Start by having basic education on CBM on both maintenance and operation people, define the objective of your CBM strategy and make this as your focal strategy in your implementation, conduct a machine ranking and identify critical equipment in your plant that will undergo condition monitoring, organize the CBM group and allocate permanent manpower resources for CBM to handle the different non destructive and diagnostic instruments, study and define PdM instruments best suited for your plant maintenance, source different vendor for the PdM instrument and allow them to conduct some demonstration in your equipment, generate a feasibility or project study on the acquisition of PdM instruments, Procure of the equipment needed, select people for the PdM team to undergo, create a comprehensive database system management for PdM strategy.

Life Cycle Management

Based on *WCMM Book by Rolly Angeles (2009),* looking at the initial costs of the equipment is just the tip of the iceberg, because underneath the iceberg are many more costs involved from commissioning up to the time the equipment will be placed out of services or decommissioned. The best way to reduce cost is to understand the life cycle cost which is considering both the initial and running cost of the equipment. Considerably, operators, maintenance, and engineer job is to consolidate their efforts in identifying these parts in their equipment and improve their designs. In this case, we are not only speaking about the comparison in term of cost about two filters, but also speaking about the life of the people affected by this decision. Imagine the day to day failures, pressure, frustration, as aresult of this on the part of the person involved.

4. 3.   Lack of Logistic Management

Spare Part Management

Based on *WCMM Book by Rolly Angeles (2009),* every industry itself has its own stockroom for storing equipment part. Spare part management simply means acquiring the right part at the right time when maintenance needs it most. Spare part management is the science of managing parts inside a storeroom when operations and maintenance require it in the event of a breakdown that seeks replacement or for PdM activities. There are just some few problems when manage spare part : Disorganized storeroom, inaccurate inventory, obsolete part are still being ordered. Benefit of spare part management : Lessening repair time, access to information for problem solving, parts can be controlled.

4. 4.   Lack of Operation & Maintenance

Reliability and Improvement Strategies

Based on *WCMM Book by Rolly Angeles (2009),* Total Productive Maintenance (TPM) believes that in order to advance to any other improvement program, basic equipment condition must be carried first on the equipment, while Reliability Centered Maintenance (RCM) believes that the first step is to change the way people think and then apply this changed thought to their assets.

Autonomous Maintenance and Root Cause Failure Analysis

Based on *WCMM Book by Rolly Angeles (2009),* it will be a very difficult task for the maintenance to overcome the vicious cycle of reactive maintenance if the operators will not be involved with their equipment. Always remember that operators are the first line of defense against failure. Hence, the equipment must always be a shared responsibility for both operators and maintenance working together towards a common goal.

ICMEM

Autonomous Maintenance is the activities in which each worker performs cleaning inspection, lubrication and part replacement, minor repair, and troubleshooting, accuracy check and so forth on one's own equipment which aim on keeping the equipment in good healthy condition.

Skill that needed for Autonomous maintenance operators : Operators can detect, correct, and prevent equipment abnormality from occurring; ability to understand the basic function of their equipment; ability to conduct simple analysis on the causes of equipment failure by using conventional analytical tools and problem solving techniques such as brainstorming and why-why analysis; Operators ability in conducting minor repairs, conversion, adjustment in their equipment; Operators not only know how to operate their equipment but make sound decision on whether to shutdown the equipment in the event of a breakdown or quality defects on the product being produced; Operators ability in transfer knowledge to other operators.

TPM's seven steps on Autonomous Maintenance (AM) : Preparatory Stage : Training and preparation for AM, Perform initial cleaning on the equipment, Address sources of contamination and hard to access areas in their equipment, Establish cleaning, lubrication, and inspection standard, Develop general equipment inspection procedures and training, Conduct general equipment inspection autonomously, Manage a systematic AM workplace, Achieve empowered AM workforce.

Root Cause Failure Analysis (RCFA) is trying to understand why something goes wrong by understanding the cause of the problem. The distinction between a maintenance and a mechanic : Maintenance uses his brain much more rather than his hands in analyzing the problems while a mechanic uses his hands more in fixing failures then later on becomes good at doing it. There are a wide range of analytical tools on the market that has been provided such as Ishikawa or fishbone diagram, FMEA, Pareto analysis, Kepner tregoe, 8 disciplines, TOPS< P-M Analysis, FMEA.

Step to make RCFA as part of a structured system : Train and educate all people on RCFA, set-up the RCFA team and freeze the evidence, conduct the RCFA Analysis, recommend for the improvement plan, Implementation of the improvement plan, track result and measure Key Indicators on RCFA, translate the findings and share lesson learned. In the example RCFA form, we can see the history of failure, root cause analysis by using fishbone diagram and 5 W + 1 H method, root cause description attached by fact finding, and then action plan to fix the root cause problem with clearly counter measure.

4. 5.   Lack of Top Management

Computerized Maintenance Management System (CMMS)

Based on *WCMM Book by Rolly Angeles (2009),* CMMS is a maintenance software for the maintenance department whose function is to streamline and automate the maintenance process. An effective CMMS should support these function by capturing and automating maintenance administrative tasks, as well as gathering relevant information in order to perform this process. CMMS also need to be able to develop and manage a strategic plan for proper maintenance, replacement and upgrade of major assets.

Step to initially implement CMMS in maintenance : Organize a team to study the need for CMMS, decide what to include in the CMMS, decide Access Levels for CMMS, select the most suitable vendor for CMMS, install the CMMS and start encoding, train the users of CMMS, train all the other on the CMMS, close the CMMS roadmap and make a final report, assess your CMMS performance.

4. 6.   Lack of Planning, Financial, and Business Service Management

Increase revenue from business service by expand the business

From electrical supply and oil & gas difficult to increase the revenue because of limited resources. From business services PT XYZ can increase revenue by increase the sales marketing for Electrical Services and Operation & Maintenance for Power Plant and also Training or Consultant. This business area not only in Cilegon but also try to penetrate national wide range.

Negotiate to increase the tariff to Parent Company

Parent Company as customer of PT XYZ which is the portion is approximately 74% from the total load, if the tariff of electrical supply no profit it can make PT XYZ more suffer. PT XYZ have to pay the debt of CCPP investment and also PT XYZ must have enough equity as requirement to get the loan from bank to invest new coal fire power plant.

ICMEM

Negotiate to PT PGN to decrease the tariff and joint venture

PT PGN as the only source of gas supply for CCPP of PT XYZ where the price can not compete, 50% gas price increase in 2014 makes PT XYZ more difficult to create profit. For that PT XYZ despite already got a discount price from PT PT PGN but the discount is still very far from expectations. For that PT XYZ must try to renegotiate to PT PT PGN to get discount again. On the other hand PT XYZ may try to offer some of its shares to PT PT PGN to get fresh funds and gas prices can be further suppressed.

Build new coal power plant in 2018

In the face of future gas price uncertainty where PT XYZ only get gas source from one company only, for that PT XYZ need to make new plant with different fuel that is coal which is currently still cheap price. So PT XYZ has a variety of fuel sources that can be relied upon when gas prices rise. This anticipation step needs to be done as soon as possible so that PT XYZ can face the dynamics of unpredictable future changes.

Attract existing customer by deliver the value and new customer by increase marketing sales

To maintain customer loyalty, PT XYZ must improve its electricity supply service to customers. Maintain reliability according to standard and provide fast and friendly service. In order for new consumers interested in investing in the KIEC area, PT XYZ should be able to prove the results of existing customer satisfaction surveys as well as providing competitive electricity prices. With the planned construction of coal plants, PT XYZ's production cost is expected to decrease and the price of electricity sold to customers can be more competitive, especially with PLN.

5. Conclusion

To solve all problem, top management must drive all division to support the reliability issue and also increase the business services in order to create trust for existing customer and attract new customer with positive comment from other customer experiencing with services of value from PT XYZ so PT XYZ can increase revenue and create profit. By using world class maintenance standard/best practice, PT XYZ can achieve the goals.

References

Angeles, Rolly. (2009). *World Class Maintenance Management : The 12 Disciplines.* Philippines : Asia iKnowledge Sdn Bhd.

Barnes, David. (2008). *Operation Management : An International Perspective.* United Kingdom : Thomson Learning.

Campbell, John D. Andrew K. (2001). *Maintenance Excellence : Optimizing Equipment Life-Cycle Decisions.* USA : Marcel Dekker, Inc.

Dubois, D David. William J. Rothwell. (2004). *Competency-Based Human Resource Management.* 1st edition. USA : Davies-Black Publishing.

Zeithaml, Valarie. Mary Jo. Dwayne. (2013). *Services Marketing : Integrating Customer Focus Across the Firm.* Singapore : Mc Graw Hill.

Zikmund, Babin, Carr, Griffin. (2013). *Business Research Methods.* 9th edition. Canada : Cengage Learning.

http://www.mahadiscom.com/emagazine/mar06/what%20are%20saifi.shtm

https://inspectioneering.com/journal/2015-04-21/4543/best-practices-of-maintenance-

ICMEM

The 3rd International Conference on Management in Emerging Markets

Operations Strategy for Decreasing Stock Takinng Discrepancy in PT.Akashi Wahana Indonesia

Aditya Rahmansyah Gunawan[a*],Mursyid Hasan Basrr[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Indonesia*

Abstract

PT. Akashi Wahana Indonesia in one of automotive parts manufacturing company in Indonesia, especially for transmission and steering gear. Stock op-name or stock taking Is the event or activity that counting the amount of inventory in the factory and as the instrument to make sure that there is no discrepancy between actual stock in the warehouse and actual stock on database. Management of PT. Akashi Wahana Indonesia targets zero discrepancy between actual stock and database although in reality there is an average of about 200 million rupiahs discrepancy each month.

There are several aspects that can cause inventory inaccuracies such as untidy of warehouse and storage area, member's lack of knowledge and skills, unreliable production facility that resulting in high stock level, unclassified inventory, and uncontrolled project management. So it needs a deeper analysis and improvement on some systems related to inventory management. The research was conducted to be able to make improvements on several aspects that have relevance to inventory with the aim to decrease the inventory data discrepancy on stock taking by using the Theory of Constraint (TOC) thinking process approach.

Based on observation result using Current Reality Tree (CRT), there are eight things to do improvement, such as 5S in inventory storage, inventory level adjustment in some areas, communication system with supplier, improvement related to reliability of production facility, effective method for change product model, inventory classification, project management system, and also training system. All of the system improvement above are targeted to reduce 50% of current discrepancy level and expected to be finish on March 2018.

Keywords: Automotive; Stock Taking; Inventory; Current Reality Tree

1. Introduction

The growth of automotive industry nowadays is getting high due to high market demand in this business sector. Competition among automotive business players are getting strict and this competition spur them to develop their product to attract the market attention in order to make a domination in the market. One of other challenge is price competition and To answer the challenge is about cost reduction program in car manufacturer and also their supply chain. All of them have to make a program/KPI to searching for opportunity of cost reduction in order to reduce or prevent yearly cost increase which can impact to cost of good sales and also price per unit of a whole car.

In Toyota production system, inventory is one of the most important things to control because inventory level is one of the essential cost concern for company, the company have to think and setting the optimum inventory level as low as possible as long as it will not affect to service level that set by customer (on time delivery, right quantity, etc). Meanwhile, in inventory management, one thing that important enough to concern is about stock op-name/inventory taking to make sure the precision inventory data in and out and also balance of inventory used for production activity.

This research are held in PT. Akashi Wahana Indonesia. PT. Akashi Wahana Indonesia (AWI) is automobile parts manufacturer which have main product is manual transmission unit and steering unit. They supply their parts to Astra

---

* Corresponding author.
E-mail address: aditya.rahmansyah@sbm-itb.ac.id

ICMEM

Daihatsu Motor. Management of PT. Akashi Wahana Indonesia have the target and policy to set zero discrepancy of inventory data when stock taking event, because large amount of data differentiation can affect to validation data of company's financial and accounting data especially for inventory data. From initial operation of factory, AWI have never reach the target of zero different data between actual stock and application data, and here is the last 3 months stock taking activity.
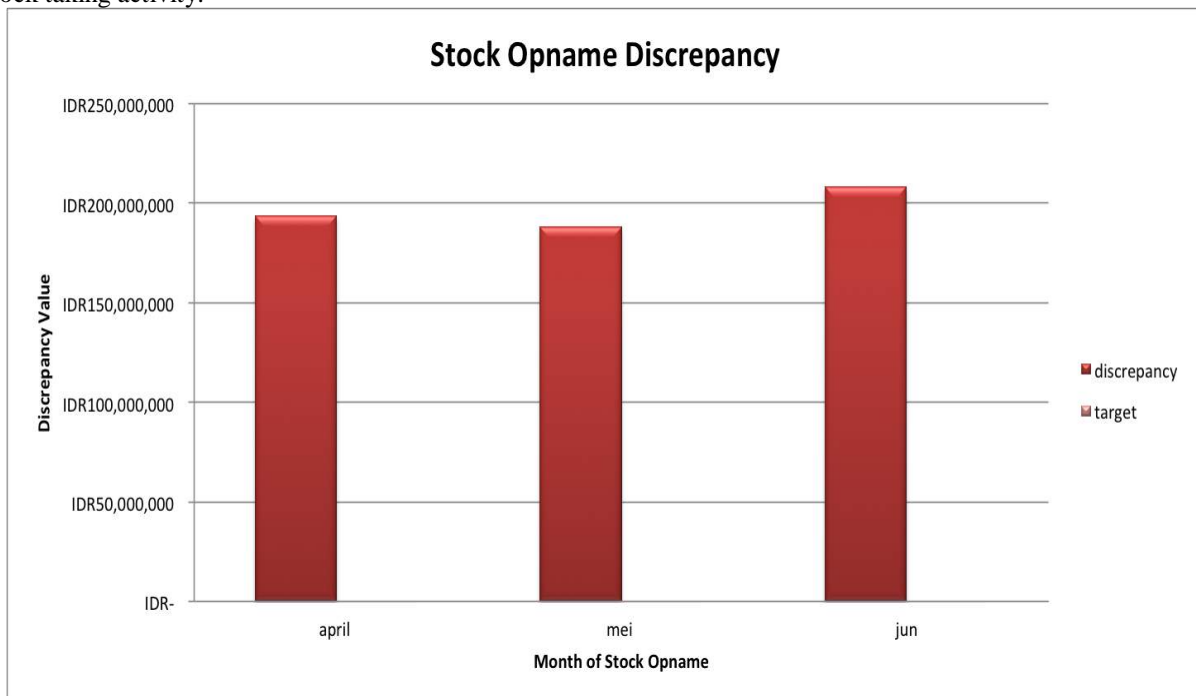
Figure 1. Discrepancy of stock opname/stock taking data

Based on data shown in Figure 1., it can be seen that inventory discrepancy happen in AWI is not reach the target set by management, need deeper analysis and solution to minimize stock discrepancy when stock/ inventory counting activity or often called stock taking or stock/inventory taking. Inventory in the factory are moving from warehouse to be WIP part in production line and become a finish good that ready to deliver to customer, they are all moving following the production activity day by day, need tighter control for several part and also system improvement to press the possibility of high discrepancy between inventory data and actual parts in the factory including warehouse, office, production plant and all of the factory area. Many factor that can caused high discrepancy when stock taking, such as high stock level on warehouse, bad warehouse management, WIP part, and so on, that will be do deeper analysis to get the root cause and countermeasure.

ICMEM

2. Conceptual Framework

Figure 2. Conceptual Framework
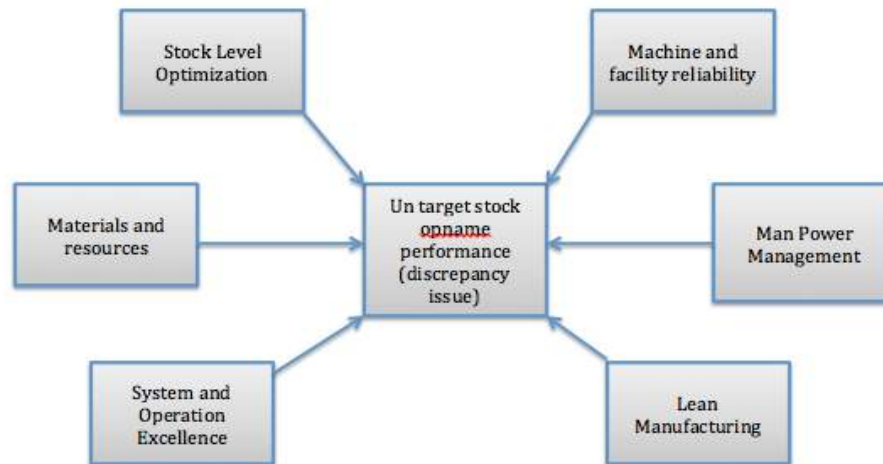
The business objective is to find the best and suitable strategy to decrease the gap data on stock taking event by system improvement on inventory management. Factors that related to the problem in this business case are shown in conceptual framework that can be seen in Figure 2. above.

According to author's thinking based on several literature related operation management combining with company conditions, there are 6 aspect that affected to main issue, such as materials and resources, stock level, machine and facility reliability, man power management, lean manufacturing and also system improvement that will be analyze one by one in the next section.

Materials that used for production line have to consider in this case, material availability and material storage have to analyze. Good material management system can make good data accuracy in stock taking.

Stock level are essential aspect in every company, the challenge is how to make stock level in the minimum level without disturbing service level and on time delivery. Maintain stock level in minimum level can make data simplification and easier to manage.

Idle time of production because of machine breakdown can disturb supply flow to next process, and it affected to increase of stock level configuration, if the machine breakdown are low, the stock level can be minimized. Good maintenance management is necessary for manufacturing company

Man power are the most important role in each process, many problem are caused by man power fault. Existing training system have to do evaluation and the new and more reliable training system have to establish in order to increase man power knowledge and competencies related to each job role.

Lean manufacturing system are necessary in the factory especially for inventory and supply performance. One of the most important is 5S (Sort, Set in order, Shine, Standardized, Sustain) aspect, the placement of every single part in factory, sign/labeling, the neatness of storage are important to make all of the part are easy to control and easy to count.

Not only man power that have to improve, every system in the factory are important to improve, such as automation system, *pokayoke* /Fault prevention system and integrated communication system between supply chain in AWI have to improved too in order to minimize the human error and another fault that can disturb factory operational.

ICMEM

3. Research Methodology
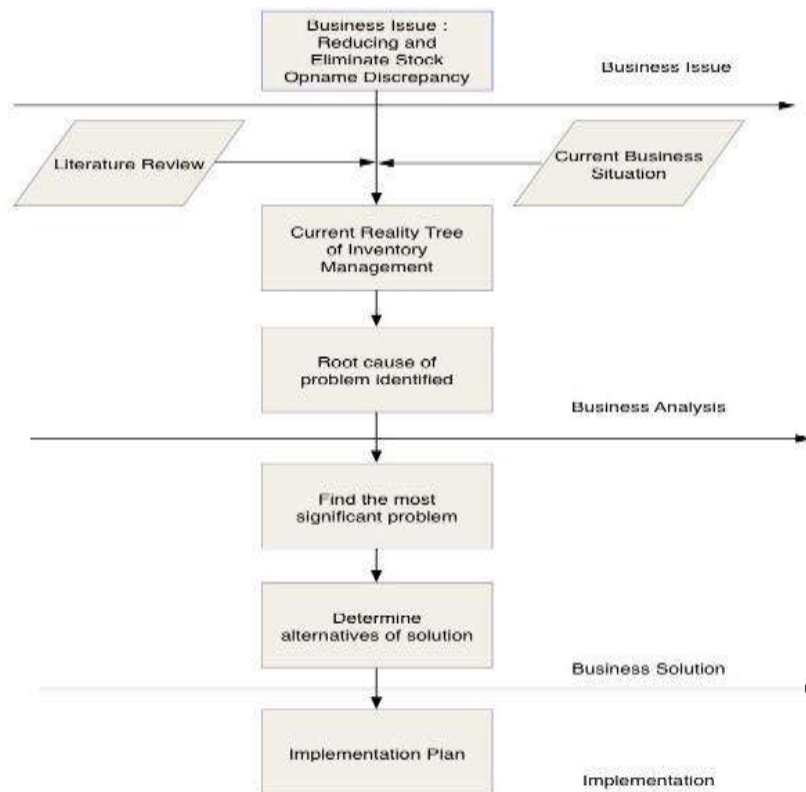
Figure 3. Research Methodology

There are 4 phase to solves the business problems on this research, in phase 1 author will describe one of business issue that faced by PT. Akashi Wahana Indonesia related to inventory management, author will describe the problem faced by AWI in stock taking activity, AWI's management board targeted zero discrepancy in stock taking event, but actually AWI never reach that, the goal is how to set the improvement plan and system management to solve this business issue.

In phase 2, current condition in PT.AWI including system that exist in the factory will be evaluate, and then linked to the theory of inventory management, lean manufacturing, and other related theory to see the most effective system that should AWI implement and also make a business exploration by identifying root cause of undesirable effect and problem using one of Theory of Constraints tools, Current Reality Tree and become a guidance for business solution alternative.

In phase 3, the observation of factors that significantly contribute to the emergence of the business issue being faced from Current Reality Tree will be done. The most significant problems will be analyze one by one, then author will determine alternatives solution.

In phase 4, author will present the implementation plan of several alternatives for each significant problem. Research methodology for this research can be seen in Figure 3 above.

ICMEM

4. Business Issue Analysis

4. 1. AWI Stock Op-name/Stock Taking Event

Stock taking is the regular monthly event held in PT.AWI to count and check actual data of all inventory status in PT.AWI compare with data in system in the end of month. As shown in figure 4 below, before event held, there are some preparation stage, such as inventory tag preparation, tag layout, STO scenario, man power in charge, stock monitoring data and list of outstanding goods. In this company, daily control of inventory moving are controlled by stock card that contain the history of part movement. Every single type of part in the rack have their stock card and they have their own fix location in the warehouse.

Actually there are several warehouse in AWI, such as material and child part warehouse, maintenance part warehouse, tool warehouse and consumable warehouse that have to maintain everyday to fulfill daily operational needs. PPC have to maintain inventory in each warehouse keep in optimum level and avoid shortage supply to production. PPC have to manage uncertainty in a supply chain for safety inventory, so that the main goal is the inventory keep maintain in optimum level with zero delay or shortage supply to production process and if we have the optimum stock on the warehouse and work in process (WIP), it can be easy when we do stock taking and it can increase stock taking accuracy with minimum discrepancy.
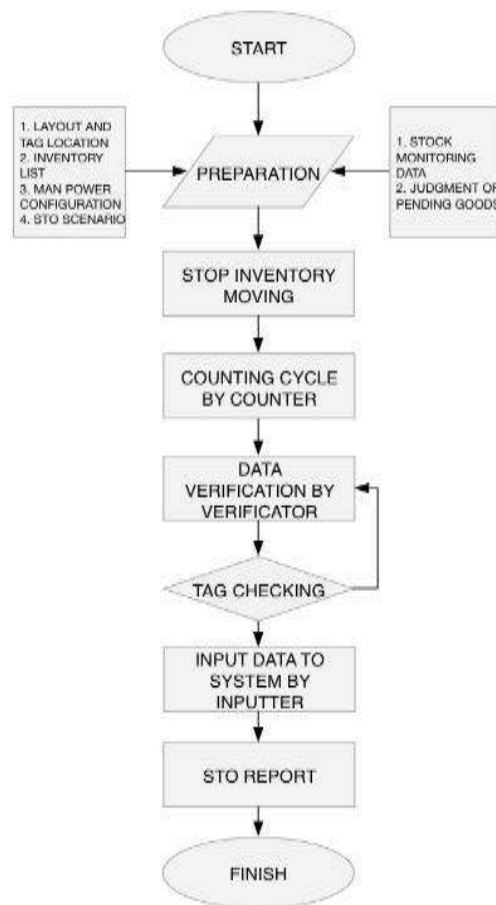
Figure 4. AWI Stock taking Flow

ICMEM

PPC, accounting and other related department such as production, maintenance, and tooling engineering held some stock taking scenario meeting to discuss about event flow, scenario, man power, and also re-evaluating about previous event to prevent same mistakes and improve weakness point. After these all finish, man power start to printing tag and put that tag on each tag location appropriate with inventory tag layout. PPC also setting the production schedule related to stock taking activity in order to prevent delivery problem to customer.

Good inventory management is the key of success factors for stock taking accuracy, if the organization have a good inventory management system, it can be saving more inventory cost, prevent shortage supply to production process, zero delay delivery to customer, and good inventory accuracy with zero discrepancy when stock taking. Not only for good inventory management but also the organization have to have an excellent production performance or good OEE, if the OEE is good, its mean the safety stock can be decrease and the organization will have the optimum inventory level. Many company or factory have difficulty when they do stock taking and face high discrepancy between actual stock and system count, so that in PT.AWI, many possibility can caused the issues, author will try to analyze the root cause of this issue on the next section in this chapter using one of theory of constraints tools, Current Reality Tree. Beside CRT, author will try to combine the analysis tools mind map to found the root cause of several issues as mention in the previous chapter.

4. 2. Root Cause Analysis

Cause effect analysis have to be done in order to deeper understanding about root cause of the problem. After the root cause of the issue have identified, need deeper analysis of each root cause in order to get right actions or activities to eliminate barriers or weakness point that caused the business issues. In this thesis, author use Cause Effect Mind Map and Current Reality Tree (CRT) to help author to found the root cause of each problem in the business issues.

Cause effect mind map will be create and analyze in order to know all of the possibility cause that can effect performance, in this mind map, all of the possibility are counted. In CRT, Undesirable Effect (UDE) will be listing at the first, and then traces those UDE back to the core problem, they are all construct similar like a tree shape. Mind map can be seen in appendix 1 in this paper.

The Current Reality Tree (CRT) is one of the Thinking Processes logical tools. As the name tells, it depicts the current reality in a series of dependent logical cause-and-effect relationships, starting from Undesirable Effects down to one or a few critical root causes. By identifying root causes common to most or all of the problems, a CRT can greatly aid focused improvement of the system. Theory of Constraints assumes that most Undesirable Effects are the visible effects of a unique or a small number of root causes, the constraints. If the constraint can be identified and eliminated, all related UDEs will disappear. Therefore it is meaningful to focus all energy and limited resources to identify and eliminate the constraint.

ICMEM

How do we read such a tree? From the bottom to the top. "If 'cause' then 'effect'". And where there is an eclipse indicating a logical "and" we use "if 'cause' and if 'other cause' then 'effect'". In this tree, several symptoms are mapped back to other common problems and in-turn a single core problem. Note too, that there is also a neutral effect in the tree. The neutral effect, while of its self is not negative, it is needed to sufficiently describe the current reality. The current reality tree is the tool of choice in seeking to gain agreement on the magnitude of the problem that we are investigating and preliminary agreement on the core problem or core conflict that is driving the agreed symptoms or undesirable effects. Commonly, in CRT, symptoms are also called UDE or undesirable effects.
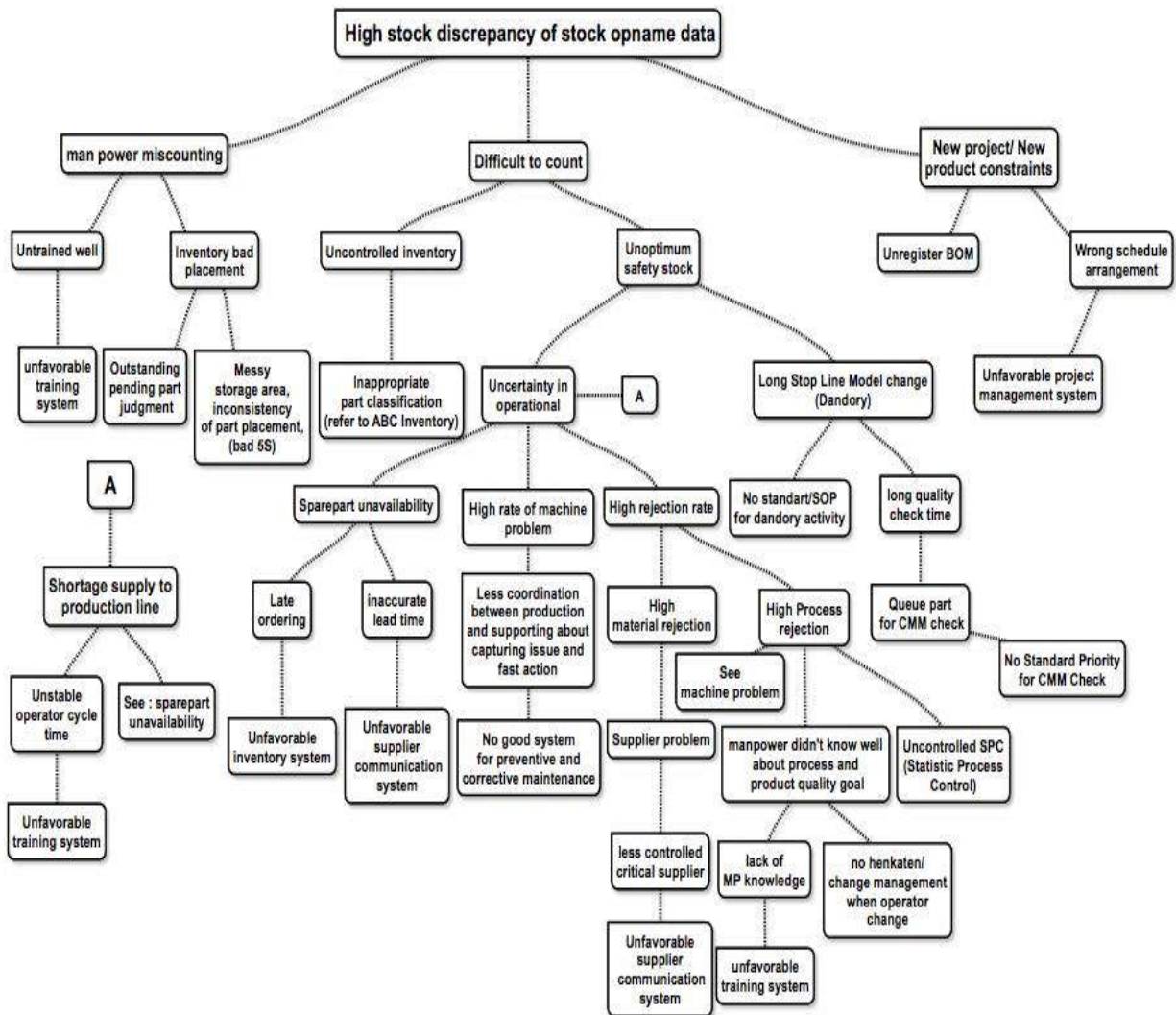
Figure 5. Current Reality Tree

Based on CRT diagram above, there are several areas and things that considered as root cause and need to solve in order to solve the main issues and also the other undesirable effect that have mentioned in section current reality tree analysis above such as : 5S in warehouse and storage area have to be improved because current condition is messy, inconsistent of part placement, and also inconsistency of stock card filling, Safety stock or inventory level have to be optimized, Less communication system with supplier, related supplier problem and lead time supply, Related to

ICMEM

production line stop, there is less coordination between production and supporting (maintenance, engineering, QA) about capturing issue and fast countermeasures, Long time needed when change model (dandory), No part classification for all of the inventory (refer to ABC inventory classification), Unfavorable project management system for managing new product (high probability of mistakes/error), Training system have to improved related to knowledge and skill of man power, especially for new man power.

This 8 items are identify as the root cause that have contribution to the main issues, so the further action plan will be described more on the next chapter about Business Solutions.

5. Business Solutions

As mentioned in previous chapter, according to CRT that there are 8 item root cause of problems that have to be solved and searching for alternative of solutions to choose as best alternative that can accurately fix the issues as can be seen on figure 6. root cause mapping.
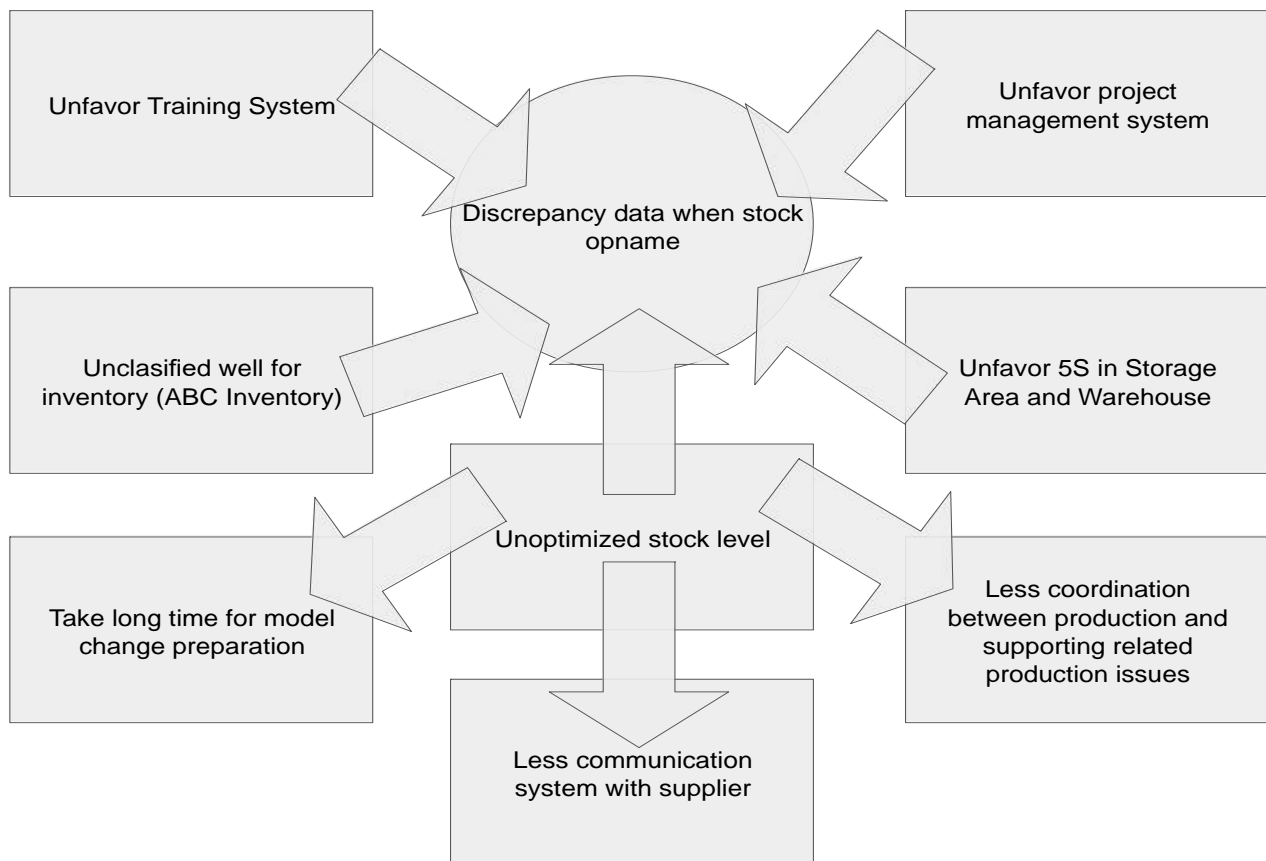
Figure 6. Root cause mapping

From those all root cause, the solution of each root cause are must be found and do by capturing the root cause of the issues and arrange the improvement plant to eliminate each root cause. There are several solution of root cause aspect that can affected the main business issue such as new propose of training system, new configuration of storage management, *pokayoke* system, building breakdown management system, *dandory* management, manufacturing integrated management system, inventory classification review, and project management. By doing all of

ICMEM

improvement above, expected to get some result of lowering stock level, neat of storage area, and fault prevention, that can affected to get at least 50% reduction of stock discrepancies than current condition. Here is the solution table.

Table 1. Business Solution

Root Cause	Solution
Training system have to improved related to man power skill and knowledge, especially for new man power	1. Creating new training system
	1.1 Concept and training flow
	1.2 Training for trainers
	1.3 Build process and knowledge dojo
5S in warehouse and storage have to improved because of messy condition, inconsistency of part placement, and also inconsistency of stock card filling.	2. New configuration of storage management in warehouse and production storage area
	3. Installing fault prevention system (pokayoke system) in each storage area
Less cordination between core process (Production) and supporting (Engineering, Maintenance, PPIC, Quality)	4. Building new system (Breakdown Management System)
Long time needed while model change (*dandory*)	5. Managing *dandory* activity and improve *dandory* system
	5.1 Collecting data
	5.2 Improvement planning based on data
	5.3 Execution and standarization
Less communication system between AWI and suppliers	6. Building integrated application system with suppliers
Inappropriate parts and inventory classification	7. Make inventory classification by its value (refer to ABC inventory classification)
Unfavorable project management system for managing new product (high probability of mistakes and error)	8. Improve project management system and framework
	8.1 Project management training and certification for project manager
	8.2 Installing appropriate project management software

6. Conclution And Further Research

6. 1. Conclution and Implementation Plan

Stock taking discrepany are the common issues that face by most manufacturing company in the world and especially in PT.AWI. Its need to be searching for solution especially for system development in inventory, supply chain and also operation management in order to fix this issue. After do the root cause analysis by using current reality tree (CRT) framewiok, found there are seven root cause that have to fixed. From that root causes, there are eight solution from several aspect from supply chain and operation management that have to do in order to eliminate issue.

After analyze each root cause and designing for the solutions of each root cause, need plan to executing each selected alternative solution, and the plan can be seen on the table 2. below:

ICMEM

Table 2. Activity Task

Activity	PIC	Related Dept.	Starts On
1. Creating new training system	HRD	-	Jul-17
1.1 Concept and training flow	HRD	Each department	Jul-17
1.2 Training for trainers	HRD	-	Aug-17
1.3 Building training facility (Dojo)	HRD	Production	Aug-17
2. New configuration of storage management in warehouse and storage area (production line shutter)	PPC	Production	Sep-17
3. Installing *pokayoke* (fault prevention) system in each storage area	PPC	IT, Engineering	Jan-18
4. Building Breakdown Management System	Maintenance	Production	Jul-17
5. Managing *dandory* activity	Production	PPC	Oct-17
5.1 Mapping and data collecting	Production	-	Oct-17
5.2 Kaizen planning based on data	Production	Engineering	Dec-17
5.3 Kaizen execution	Production	Engineering	Jan-18
5.4 Standardization	Production	-	Feb-18
6. Building integrated application system with AWI's Suppliers	PPC, Purchasing	IT	Jul-17
7. Make inventory classification by inventory value (refers to ABC inventory planning)	PPC	-	Jan-18
8. Make better project management system	BOD	all dept	Feb-18
8.1 Project management training for project manager	HRD	-	Feb-18
8.2 PMP Certification for project management	HRD	-	Feb-18
8.3 Installing project management software (e.g. Microsoft project)	IT	-	Feb-18

The implementation plan contains of action plan from each alternative solution which has been proposed and discussed in previous chapter. The implementation plan related to company activities and the department who responsible for those task.

Actually, those 8 items of activities can be done together because there is no dependency each other, the detailed task of each activity have to breakdown and managed well as project management flow. And This following table are contain of project schedule that have to do in order to fix business issue in the form of Gant Chart.

Table 3. Gant Chart

Activity	PIC	Starts On	Duration (Month)	2017						2018		
				Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1. Creating new training system	HRD	Jul-17	2	■	■							
1.1 Concept and training flow	HRD	Jul-17	1	■								
1.2 Training for trainers	HRD	Aug-17	1		■							
1.3 Building training facility (Dojo)	HRD	Aug-17	2		■	■						
2. Reconfiguring storage management in warehouse and storage area (production line shutter)	PPIC	Sep-17	2			■	■					
3. Installing pokayoke (fault prevention) system in each storage area	PPIC	Jan-18	3							■	■	■
4. Building Breakdown Management System	Maintenance	Jul-17	1	■								
5. Managing dandory activity	Production	Oct-17	3				■	■	■			
5.1 Mapping and data collecting	Production	Oct-17	3				■	■	■			
5.2 Kaizen planning based on data	Production	Dec-17	1						■			
5.3 Kaizen execution	Production	Jan-18	1							■		
5.4 Standardization	Production	Feb-18	1								■	
6. Building integrated application system with AWI's Suppliers	PPIC, Purchasing	Jul-17	9	■	■	■	■	■	■	■	■	■
7. Make inventory classification by inventory value (refers to ABC inventory planning)	PPIC	Jan-18	2							■	■	
8. Make better project management system	BOD	Feb-18	2								■	■
8.1 Project management training for project manager	HRD	Feb-18	1								■	
8.2 PMP Certification for project manager	HRD	Feb-18	2								■	■
8.3 Installing project management software (e.g. Microsoft project)	IT	Feb-18	1									■

On the following gantt chart above, all of the activities are expected to finish on March 2018 and the result of discrepancy data are control month by month to see the result of the project.

6.2 Future Reseacrch

There are some future research that can be conducted in the future, especially related to inventory management, such as : Internet of Things and big data technology application especially in supply chain and inventory management for facing industry 4.0, Investment feasibility analysis of application of technology investment in supply chain operation and inventory management, Business strategy analysis (External and Internal analysis) to compare the alignment between market research and supply chain strategy, Determining procurement and outsourcing strategy for standard parts using make/buy decision based on supply chain design framework.

REFERENCES

Book

Chase, R and Jacobs, R. 2014. *Operation and Supply Chain Management*. Global Case Edition, New York: Mc Graw Hill.

Dettmer, H.W., (1997), *Goldratt's Theory of Constraints: a system approach to continuous improvement*, ASQC Quality Press, pp 62-119.

Kerzner, Harold. 2009. *Project Management: Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 10th edition*, WileyISBN 0-470-27870-6.

Meredith R. Jack & Jr. Mantel Samuel, 2009, *Project Management : A Managerial Approach,* New Jersey : John Willey & Sons.

PT. AWI. 2016. Company Profile. Karawang, West Java.

PT.AWI. 2016. Document Control. Karawang. West Java.

Scheinkopf, L., (1999) *Thinking for a change: putting the TOC thinking processes to use*. St Lucie Press/APICS series on constraint management, pp 143-169.

Wibisono, Dermawan (2013), *Panduan penyusunan skripsi, thesis, dan disertasi*, Jakarta, Indonesia: Andi.

ICMEM

Website

Cerasis, n.d. Lean Inventory Management Technique, viewed 13 August 2017 at *http://cerasis.com/2015/01/08/lean-inventory/*

Dr.K.J. Youngman, 2003-2009, A Guide To Implementing Theory of Constraints (TOC), viewed 13 October 2017 at *http://www.dbrmfg.co.nz/Thinking%20Process%20CRT.htm*

Hohmann Chris, n.d. Current Reality Tree, viewed 11 October 2017 at *https://hohmannchris.wordpress.com/2014/11/06/thinking-processes-current-reality-tree/*

Lean Production, n.d. Theory of Constraints, viewed 11 October 2017 at *https://www.leanproduction.com/theory-of-constraints.html*

PT.Astra Otoparts,Tbk. N.d. Company Vision, Mission, and Values, viewed 13 August 2017 at *http://www.component.astra.co.id/profile.asp?id=1002310*

ICMEM

The 3rd International Conference on Management in Emerging Markets

Cicendo Eye Hospital location analysis

Nanda Akmalia[a*], Mursyid Hasan Basri[b], Aldiana Halim[c]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl.Ganesha No.10, Bandung, 40132, Indonesia*
[c]*PMN RS Mata Cicendo, Jl.Cicendo No.4, Bandung, 40117, Indonesia*

Abstract

The eye is one of the important organs that strongly supports human life. It is very important for a country to provide a good eye health service for its people. In West Java, Indonesia, the high number of blindness prevalence reached 2.8% and become one of the big problems in the health sector. There is a national eye center located in Bandung city which acts as a tertiary special hospital, named Cicendo Eye Hospital. As a national hospital, it should be able to handle the eye patients that can be measured by ophthalmologist availability, facilities availability, and adequate building space. However, the hospital management faced a problem about the lack of capacity in serving patients and inadequate parking space. Moreover, Indonesia also faced the problem about the unreachable target of cataract surgery. Those problems made the Cicendo Eye Hospital needs to develop the building space. However, because the existing location could no longer be expanded, a new location needs to be searched. In this paper, the location determination was conducted using Greenfield analysis, AHP method, and factor rating method. The result showed that the Ngamprah sub-district in Bandung Barat Regency is the most recommended location for the new eye hospital.

Keywords: Location Determination; Greenfield Analysis; AHP; Factor Rating; Eye Hospital

1. Introduction

Based on *Rapid Assessment of Avoidable Blindness* (RAAB) survey in West Java among people aged 50+ years old, the adjusted prevalence of blindness reached 2.8% (Syumarti, Rini, Ratnanina, Halim, & Limburgh, 2017) and based on national survey in 2014, the cataract prevalence of Indonesia reached 1,8% (Perdami, 2017). From the result of the national survey, it also knew that the cause of blindness in Indonesia mostly caused by cataract (0.78%), glaucoma (0.2%), refraction disorder (0.14%), retinal disorder (0.13%), and corneal abnormalities (0.1%). This condition not only happened to people aged above 50 but also on children. If this situation not handled well, it will trigger the appearance of a young generation with the poor quality of life (Perdami, 2017).

In Indonesia, people tend to get cataracts faster than people who live in subtropics area for about 15 years earlier, so it is estimated that about 16 – 22% of cataracts patients will do cataract surgery before 56 years old (Tsan, 2015). The number of cataract surgery in Indonesia is only about 180.000 acts, which is still below the minimum target to be achieved. The incident rate of cataracts in Indonesia is estimated to reach 0.1% annually or about 250,000 new cases per year. The lack of ability to cope with the high number of people suffering cataract is caused by several factors, such as lack of access to eye health services, especially the people in rural area, as well as the lack of the ophthalmologist. This issue is important to be noted because the unhealthy eye can decrease the welfare and the quality of human life (BKPM Kemkes RI, 2016).

Cicendo Eye Hospital is the center of eye health service in Indonesia which located in Bandung City, West Java. This hospital has been established as a national eye center based on the Regulation of Indonesia Health Minister number 059/Menkes/SK/I/2009. As a national eye center, Cicendo Eye Hospital categorized as a tertiary health service

---

ICMEM

which has a function as the highest referral hospital for eye health in Indonesia (PMN RS Mata Cicendo, 2016).

The condition of the Cicendo Eye Hospital that always crowded every day and made the patients should queue in a long time, especially for JKN participants, giving assumption that the hospital was lack of capacity in meeting the patients' need for eye care. The number of patients came to Cicendo Eye Hospital is estimated reached 800 people per day. With so many people visited the hospital, it would require a large parking lot to accommodate private vehicle of patients. However, the lack of parking space made the patients parked their vehicle on the roadside. This condition makes the roads narrower and leads to traffic jam especially in front of the hospital area (Darmanto, 2016).

There are several factors which affect the supply of eye health services, such as the availability of eye examination tools, the availability of doctors, and the availability of hospital. Eye examination tool is important because their deficiencies can cause disruption in eye health service. The availability of doctor is important because it can affect to how many patients can be served in a hospital. Shortage of ophthalmologist will also affect the supply and quality of eye care. When the prediction of patient demand is higher, it will increase the need for an ophthalmologist. Furthermore, the increasing of the ophthalmologist will affect the increases of space requirement. The availability of hospital is important because it relates to the ability in accommodating many patients (Mosadeghrad, 2014).

With the current condition, Cicendo Eye Hospital can accommodate patients up to 175,366 outpatients' visits per year. However, with the ongoing construction process, the hospital will be able to accommodate up to 263,000 outpatients' visits. Based on the calculation that has been done by IRIHM & PMN RS Mata Cicendo (2017), the demand for eye service at tertiary level in West Java will reach 319,000 visits in 2018 and moreover 447,000 visits in 2030. In another word, in 2018 there will be around 56,000 outpatient visits that cannot be served at this hospital. So, with the existing building condition, the hospital building needs a development to be able to accommodate more patients. Cicendo Eye hospital as the government hospital also has a good potency and chance to be developed.

However, the existing location of Cicendo Eye Hospital has almost reached the maximum limit for the construction of the building. In the existing location, it is quite difficult to more develop the building space, especially to increase the number of building floors level, because in Cicendo area there is a government rule that inhibits the construction of high building. The existing location of Cicendo Eye Hospital is included in the area of flight operation safety, which means the area around the airport that is used to flight activity. Due to that condition, it is necessary to limit the height of building around the airport area in accordance with applicable regulations. So, building development in the existing location should be considered not to have a negative impact on the surrounding area (PT Pandu Persada, 2015). To fulfill the high demand for eye care, Cicendo Eye Hospital need to be expanded by open a new branch to increase the capacity of eye services. However, it is still unknown where is the best location to open the new hospital. Based on that, it should be considered another good location in West Java to build a new eye hospital to keep a good eye service for eye patients.

2. Literature Review

Finding a good location for a new eye hospital in West Java is important. A right hospital site selection can help in matching the provision of eye health services with the areas that need it (Zhou & Wu, 2012). The location of the hospital can affect to how quick the disease can be handled, which seen from the closeness of new location to the areas with the high potential of the patient and the easiness of patient to access to the hospital. A good new location also can help the patient by decrease their transport cost, the traveling time, and time spent for doing treatment. Besides, in determining a new hospital location, it should be considered about the availability of facilities that support the operation of the hospital (Ye & Kim, 2016).

In the healthcare industry, poor location facility or too few facilities, such as hospital and clinic, can lead to increase death (mortality), morbidity (disease), and cost. On the other hand, if too many facilities in a certain area, the capital cost and inventory carrying cost will be surpassed by the desirable value. In the previous study, the facility location selection is tended to focus on three aspects, such as accessibility, adaptability, and availability. Accessibility means the patient's ability to reach the health care facility, as well as the ability of health care providers to reach patients. Accessibility model is trying to find a new facility location which has a good performance with static inputs such as demand, cost, and travel distance. The goals of this model are to maximize coverage and minimize the average distance. Adaptability model is about making a scenario planning due to its deals with uncertain future conditions.

ICMEM

Availability model tries to calculate for short-term unavailability of facilities (Daskin & Dean, 2004).

In a research of hospital site selection for an aging population, there are three main categories that consist of several criteria to choose a location, those are needs, capacity, and support. Needs is divided into demographics, socio-economics, health conditions, existing health service, and health service utilization. Capacity means the building's infrastructure that divided into the construction phase, accessibility, and other utilities. Support consists of financial support and community support (Kim, Senaratna, Ruza, Kam, & Ng, 2015). In determining a good location for the new hospital, disaster risk also should be considered, it is better if the location is in an area that free of disaster both natural disaster or disaster due to human error (Moradian, et al., 2017).

Other criteria that are used for hospital site selection are existing hospital, residential area, road, street, sub-street, public transportation, river, and public toilet. The thing that should be considered about the existing hospital criterion is the distance to the new hospital that should be not too close, so it will not give a negative impact on the new hospital. Residential area relates to the population density and allocation. Criteria of the road, street, sub-street, and public transportation are used to see the patient's accessibility. River and public toilet are connected to the contamination or population (Zhou & Wu, 2012). In choosing a good location for the new hospital, the criteria of proximity to future expansion space, travel time, governmental policy, rivalry to another hospital, land cost, and centrality also need to be considered (Soltani & Marandi, 2011).

Based on the document of Master Plan of Cicendo Eye Hospital, there are several aspects of location analysis that has to be done in choosing the best location for new hospital: (1) The spatial planning in an area has to be considered, in order to not violate the provisions which are set by the government, (2) Land condition and land use should be considered, so the new hospital placement will be in accordance with the spatial plan of the region, (3) The accessibility and the availability of city utilities are important to consider, so the patient can reach the hospital easily, and the hospital services can run well (PT Pandu Persada, 2015). Moreover, the availability of health workers such as ophthalmologists and non-medical personnel also important to be considered, so the hospital service can run well and not burden a large expenditure for human resource (Sari, Rohmawati, Argentino, & Witari, 2015).

There are many methods that often used for hospital location selection. The method that can be used to decide the optimal location to establish a new facility which determined based on the location and demand of the customer, named *Greenfield Analysis Method*. This method can be useful in deciding the location of the new facility in a regional configuration. Analytical Hierarchy Process (AHP) often used when there are already several options for location selection. This method is used to evaluate the various options of the location based on predefines criteria which assessed by the stakeholder or the expert (Busief & Shouman, 2012). Travel Time Method is related to patient's accessibility to the health service. The criteria for travel time from patient's place to the hospital usually maximum 30 minutes (Varnakovida & Messina, 2006). Factor rating method is a widely used technique to identify potential sites or location for new facilities. This technique provides a mechanism to combine diverse factor in an easy-to-understand format (Jacobs & Chase, 2014).

3. Methodology

Greenfield Analysis method is usually used to determine the optimal location for arranging a new facility in the supply chain if demand data and location of customer exist. The objective function of this method is to minimize the total weighted distance where the demand of customers, in this study the customer means patients, is used as weight. The location of the new location is represented by their latitude and longitude. To calculate the distance between two locations, it is used the formula stated below (Mani, 2016):

$$d = 2r \arcsin\left(\sqrt{\sin^2\left(\frac{lat_2 - lat_1}{2}\right) + \cos(lat_1)\cos(lat_2)\sin^2\left(\frac{(lon_2 - lon_1)}{2}\right)}\right) \qquad (1)$$

where, (1) r = 6,371 km (earth radius); (2) lat_1 = latitude of the city/regency; (3) lat_2 = latitude of new location; (4) lon_1 = longitude of the city/regency; and (5) lon_2 = longitude of new location. This method will give result one city or regency from 27 cities/regency in West Java. After that, to find the more specific location as a sub-district, literature study is done to find the criteria which affect the location determination. It is used AHP analysis to find the priority

ICMEM

level of each criterion. The AHP data was gathered by questionnaire using purposive sampling. Three respondent that has an ability to do an assessment in this survey is chosen.

In the first step, the respondents are asked to give a score in pairwise comparison based on the scale 1 – 9 proposed by Saaty. Table 1 shows the fundamental scale of the absolute number that describes the intensity of importance. To make a comparison between each criterion, the scale of number is needed to indicate how many times one criterion is more important over another criterion (Saaty, 2008). The second step, after getting the questionnaire data from every respondent, it is necessary to check whether the judgments are consistent or not. The consistency ratio (CR) compares the consistency index (CI) of the matrix in question (criteria) with the consistency index of a random-like matrix (RI) with the formula of CR = CI/RI (Mu & Pereyra-Rojas, 2017).

CI is calculated using the formula of CI = $(\lambda_{max}$ - n) / (n – 1), where λ_{max} is the maximum eigenvalue of the matrix, n is the matrix size or the number of compared element, and RI is the average CI for a number that randomly generated matrices which shown at Table 2. The consistency ratio (CR) that acceptable to continue the AHP analysis is 0.10 or less.

Table 1. The Scale for Pairwise Comparison in AHP

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgment slightly favour one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgment strongly favour one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity *i* has one of the above non-zero numbers assigned to it when compared with activity *j*, then *j* has the reciprocal value when compared with *i*.	

Source: (Saaty, 2008)

Table 2. Consistency Index for a Randomly Generated Matrix

n	1	2	3	4	5	6	7
RI	0	0	0.58	0.9	1.12	1.24	1.32

The third step, the group data of the AHP respondent is aggregated to find the weight of each criterion. In this study, the data is aggregated using *Aggregating Individual Judgment* (AIJ) method, by calculating the geometric mean of all individual judgment to get the AHP weight for the group (Forman & Peniwati, 1998). The weight calculation is divided into two types, local weights and global weights. The value of a local weight is the AHP result of each criterion. The sum of the local weight of the total criteria or sub-criteria on the same hierarchy is 1.00. The value of global weights equaled the value of the local weight within each criterion multiplied by the value of local weight in each sub-criterion. The sum of global weight is also 1.00. For example, the value of the global weight for 'travel time' is equal to the local weight of the 'accessibility' criterion multiplied by the 'travel time' sub-criteria. The weight/priority ranking is arranged based on the order of the global weight (Kil, Lee, Kim, Li, & Newman, 2016). After the weight of every criterion was found, the factor rating method is used by multiply the weight of every criterion with the score of every location (Jacobs & Chase, 2014).

In short, the methodology begins with the consideration of several factors that affect the eye hospital location

ICMEM

planning. After that, using the AHP method, the weight of every criterion and sub-criterion is determined. Then, the condition data of every location based on the criterion is collected and transformed into score form. Finally, using the factor rating system, the weight of every criterion is multiplied with the score of every location and the calculation result will give the total score of every location. The highest total score will be the best location for a new eye hospital.

The limitation of this research are: 1) The area of study focuses on West Java province because most population concentrated in West Java. So, it is assumed that its population can represent the Indonesian population and good for the pilot project; 2) The condition of location for every criterion in this paper determined based on the current condition.

4. Findings

Determination of New Hospital Location Area using Greenfield Analysis

Using the calculation that shown in formula (1), the result showed that the optimum latitude and longitude of the new hospital is in Bandung Barat Regency area. The calculation is shown in Appendix A. The red marks in Figure 1 shows the location of Bandung Barat Regency. The position is quite in the center of West Java Province and at the west of Bandung City. This area has 16 sub-districts and based on those alternatives potential location, one location is chosen to be the best location for the new eye hospital.

Fig. 1. Optimum Location for New Eye Hospital Based on *Greenfield Analysis*

Considered factor/criteria in location planning for Cicendo Eye Hospital

Based on the literature study, it is found six main criteria with nine sub-criteria that affect the determination of hospital location. The result is shown in Table 3. Those criteria are selected from several kinds of literature that has a relation with eye hospital location determination.

Accessibility is chosen because it related to how easily the future hospital location can be reached by patients from any regions in West Java. Accessibility can be assessed by travel time, the availability of transportation, and the city infrastructure (Zhou & Wu, 2012). The potential demand is selected because it is important to know how many patients will need the eye hospital in a region, so the new hospital can be placed as close as the high demand area. Capacity is selected because it must be ensured that the area has the ability to provide land for the construction of hospital building (Zhou & Wu, 2012) and also have enough human resource in order to decrease the cost for hiring people from another city (Sari, Rohmawati, Argentino, & Witari, 2015). Cost criterion is selected because we need to consider lower land cost and the cheapest transportation cost from patients' houses to the future eye hospital (Soltani & Marandi, 2011).

ICMEM

Existing hospital is selected to see the competition with other hospital or eye clinic and see the distance from the existing eye hospital (Zhou & Wu, 2012). Disaster risk is selected because the location for the hospital should be the place with the lowest level of disaster risk (Moradian, et al., 2017). In this research, only six main criteria chosen because those factors can be measured, and the data can be collected.

Table 3. Considered Factor / Criteria in New Eye Hospital Location Selection

No	Criteria	Sub-Criteria	Reference
1	Accessibility	Travel Time	(Soltani & Marandi, 2011)
		Public Transportation Availability	(Ye & Kim, 2016)
			(Zhou & Wu, 2012)
		City Infrastructure	(PT Pandu Persada, 2015)
2	Potential Demand	-	(Daskin & Dean, 2004)
3	Capacity	Availability of Land	(Zhou & Wu, 2012)
		Human Resource	(Sari, et al., 2015)
4	Cost	Land Cost	(Soltani & Marandi, 2011)
		Transportation Cost	(Ye & Kim, 2016)
5	Existing Hospital	Number of Eye Clinic	(Kim, et al., 2015)
		Distance from Existing Cicendo Eye Hospital	
6	Disaster Risk	-	(Moradian, et al., 2017)

Determination of factor's weight to select a specific location using AHP method

Based on the pairwise comparison result, the weight/priority values of every criteria and sub-criteria is shown in Table 4. Criteria with the highest priority in the determination of eye hospital location is disaster risk with 0.2262, followed by potential demand with 0.1752, and the third priority is the number of eye clinic in the new location with 0.1312. In the other hand, the criteria that has the lowest priority is travel time with 0.0262, followed by land cost with 0.0401, and distance from existing Cicendo Eye Hospital in the ninth priority with 0.0422.

Table 4. Weighted value and rankings of criteria and sub-criteria for eye hospital location selection

Main Criteria	Local Weight	Sub-criteria	Local Weight	Global Weight	Rank
Accessibility	0.1735	Travel time	0.1510	0.0262	11
		Public Transport Availability	0.5382	0.0934	5
		City Infrastructure	0.3108	0.0539	7
Potential Demand	0.1752			0.1752	2
Capacity	0.1452	Availability of Land	0.3247	0.0471	8
		Human Resource	0.6753	0.0981	4
Cost	0.1064	Land Cost	0.3772	0.0401	10
		Transportation Cost	0.6228	0.0663	6
Existing Hospital	0.1735	Number of Eye Clinic	0.7565	0.1312	3
		Distance from Existing Cicendo Eye Hospital	0.2435	0.0422	9
Disaster Risk	0.2262			0.2262	1

From this result, it is indicated that in select the new location for special eye hospital, disaster risk become the most important aspect to be considered compared to other criteria. It becomes the most important because a hospital should be safe and still functional during emergencies and disaster. If the hospital building is located in a very vulnerable to

ICMEM

disaster, it will give an impact to the hospital operational activity. For example, if the hospital is near to a volcano, the hospital should think about patient evacuation if the volcano erupted where that condition really disturbs the hospital activities (Moradian, et al., 2017).

Determination of new eye hospital location using factor rating method

In this study, the data about the location condition for every criteria and sub-criteria is already collected as shown in Table 5. The time travel data from all city in West Java to the potential location and distance from existing Cicendo Eye Hospital in Bandung city to every potential location are taken using Google Maps application. Public transportation availability index and city infrastructure index is taken from the document of *Indeks Kesulitan Geografis Kabupaten Bandung Barat tahun 2015* (BPPD KBB & BPS KBB, 2015). The potential demand data for eye health service is taken from the Document of Academic Paper for Development of Cicendo Eye Hospital (IRIHM & PMN RS Mata Cicendo, 2017). The availability of land and land cost data obtained from various websites which provides the advertisement for land sales and purchase. The human resource and the number of clinics data collected from the website that provides the hospital condition in Indonesia (Kemenkes RI, 2017). Transportation cost collected by multiply the travel distance with transportation cost per kilometer (which assumed as Rp3,500 accordance with the Regulation of the Minister of Transportation No.108 about the administration of public transportation with the vehicle not in the route). The travel distance, as well as the distance from existing Cicendo Eye Hospital, collected using Google Maps application. The data of disaster risk obtained from BPBD (regional disaster management agency) Bandung Barat Regency (Lintangantara, 2017).

Table 5. The location condition based on criteria and sub-criteria

No	Sub-District	Accessibility			Potential Demand (Visits)	Capacity	
		Time Travel (Minute)	Public Transport Availability (Index)	City Infrastructure (Index)		Availability of Land (sqm)	Human Resource (Ophthalmologist)
1	Batujajar	184	9.67	6.83	858	18,000	0
2	Cihampelas	194	11.42	10.07	1017	2,800	0
3	Cikalongwetan	185	7.18	10.91	1086	35,000	0
4	Cililin	211	9.24	9.32	797	7,630	1
5	Cipatat	188	7.17	9.04	1166	9,650	0
6	Cipeundeuy	199	9.00	10.75	726	5,000	0
7	Cipongkor	232	10.39	12.18	798	15,000	0
8	Cisarua	190	7.22	10.81	656	8,600	0
9	Gununghalu	246	7.00	11.05	671	-	0
10	Lembang	203	7.92	6.83	1722	4,445	0
11	Ngamprah	177	8.74	9.58	1548	40,000	2
12	Padalarang	174	9.16	6.43	1565	14,000	2
13	Parongpong	196	7.17	6.67	988	6,500	0
14	Rongga	249	12.15	12.30	491	-	0
15	Saguling	204	9.04	12.53	271	8,400	0
16	Sindangkerta	228	11.73	9.94	611	4,550	0

Table 5 (Cont'd). The location condition based on criteria and sub-criteria

No	Sub-District	Cost		Existing Hospital		Disaster Risk
		Land Cost (Rp)	Transport Cost (Rp)	Number of Eye Clinic	Distance from Cicendo Eye Hospital (Km)	
1	Batujajar	Rp 1,100,000	Rp 434,920	0	27.80	High
2	Cihampelas	Rp 607,143	Rp 474,315	0	27.60	High
3	Cikalongwetan	Rp 500,000	Rp 452,407	0	44.70	High

ICMEM

4	Cililin	Rp 100,000	Rp 499,981	1	32.40	Very High
5	Cipatat	Rp 1,200,000	Rp 453,833	0	29.60	High
6	Cipeundeuy	Rp 50,000	Rp 465,111	0	22.70	High
7	Cipongkor	Rp 50,000	Rp 513,333	0	54.90	Very High
8	Cisarua	Rp 2,500,000	Rp 454,222	0	27.40	High
9	Gununghalu	Rp 1,000,000	Rp 565,963	0	58.60	Very High
10	Lembang	Rp 1,350,000	Rp 431,926	0	15.40	High
11	Ngamprah	Rp 700,000	Rp 433,974	1	21.60	High
12	Padalarang	Rp 2,000,000	Rp 434,687	1	21.30	High
13	Parongpong	Rp 5,000,000	Rp 426,222	0	15.00	High
14	Rongga	Rp 50,000	Rp 536,926	0	58.20	Very High
15	Saguling	Rp 35,714	Rp 468,093	0	37.40	Very High
16	Sindangkerta	Rp 1,000,000	Rp 541,852	0	48.50	Very High

Each location then rated against each factor, and a score value is selected from its assigned range. This score value also can be calculated by finding the relative score in one criterion against all alternatives location. The sum of score value from all criteria then compared for each location. Finally, the location with the highest score is selected to be a recommended location for a new eye hospital. Table 6 shows the rating scale assigned for the factor rating system.

Table 6. Summary of scale for factor rating system

No	Criteria or Sub-Criteria	Scale	Score
1	Time Travel	The faster the travel time (the smaller number of minute), the higher the score given. $$Relative\ score = \frac{most\ desirable\ value}{evaluated\ value} \times 100$$ Where the most desirable value is 174 minutes	Based on calculation
2	Public Transport Availability	1) Value ≤ 5.085 2) 5.085 < value ≤ 7.371 3) 7.371 < value ≤ 9.731 4) Value > 9.731 (BPPD KBB & BPS KBB, 2015)	100 75 50 25
3	City Infrastructure	1) Value ≤ 6.916 2) 6.916 < value ≤ 10.024 3) 10.024 < value ≤ 13.234 4) Value > 13.234 (BPPD KBB & BPS KBB, 2015)	100 75 50 25
4	Potential Demand	The higher the potential demand, the higher the score. $$Relative\ score = \frac{evaluated\ value}{most\ desirable\ value} \times 100$$ Where the most desirable value is 1722	Based on calculation
5	Availability of land	The minimum area of land is 16,672 m^2 ≈ 15,000 m^2 (IRIHM & PMN RS Mata Cicendo, 2017) 1) Land area < 15,000 m^2 2) 15,000 – 20,000 m^2 3) 20,000 – 25,000 m^2 4) 25,000 – 30,000 m^2 5) Land area > 30,000 m^2	20 40 60 80 100
6	Human Resource	1) 0 ophthalmologist 2) 1 ophthalmologist 3) 2 ophthalmologists 4) 3 ophthalmologists 5) 4 ophthalmologists	20 40 60 80 100
7	Land Cost	1) > Rp 2,000,000 /m^2 2) Rp 1,500,000 – 2,000,000 /m^2 3) Rp 1,000,000 – 1,500,000 /m^2 4) Rp 500,000 – 1,000,000 /m^2 5) Rp 0 – 500,000 / m^2	20 40 60 80 100

ICMEM

8	Transport Cost	The lower the transport cost, the higher the score. $$Relative\ score = \frac{most\ desirable\ value}{evaluated\ value}\ x\ 100$$ Where the most desirable value is Rp 426,222	Base on calculation
9	Number of Eye Clinic	1) 4 2) 3 3) 2 4) 1 5) 0	20 40 60 80 100
10	Distance from Existing Cicendo Eye Hospital	1) < 10 Km 2) 10 – 20 Km 3) 20 – 30 Km 4) 30 – 40 Km 5) > 40 Km	20 40 60 80 100
11	Disaster Risk	1) Very High 2) High 3) Medium 4) Low 5) Very Low	20 40 60 80 100

For the time travel and transport cost, the desirable value is the smallest number among other locations, because the faster the travel time and the cheapest the transport cost from patient place to the hospital, it will be easier for the patient to get health service. For potential demand, the desirable value is the highest number of potential demand among other locations, because it is better if the hospital available in an area with the high demand of eye care.

Based on the result at Table 7, it shows that the most recommended location for the new eye hospital is in Ngamprah sub-district, followed by Cikalongwetan sub-district, and Padalarang sub-district. Based on the factor rating calculation, Ngamprah sub-district has the highest score compared to other with 69,45 points. This location has the best land availability and human resource, with lower disaster risk than the other. For other criteria, this location has a lower score than the other. However, because relatively it has a good score almost in all aspect, this location became the most recommended place for a new eye hospital.

Table 7. Composites score of weight and relative score

No	Sub-District	Accessibility			Potential Demand	Capacity	
		Travel Time	Public Transport Availability	City Infrastructure		Availability of Land	Human Resource (Ophthalmologist)
	WEIGHT (AIJ)	**0.026**	**0.093**	**0.054**	**0.175**	**0.047**	**0.098**
1	Batujajar	2.481	4.670	5.394	8.729	1.886	1.961
2	Cihampelas	2.353	2.335	2.697	10.346	0.943	1.961
3	Cikalongwetan	2.467	7.005	2.697	11.048	4.715	1.961
4	Cililin	2.160	4.670	4.045	8.108	0.943	3.923
5	Cipatat	2.428	7.005	4.045	11.862	0.943	1.961
6	Cipeundeuy	2.287	4.670	2.697	7.386	0.943	1.961
7	Cipongkor	1.967	2.335	2.697	8.118	1.886	1.961
8	Cisarua	2.403	7.005	2.697	6.674	0.943	1.961
9	Gununghalu	1.855	7.005	2.697	6.826	0.943	1.961
10	Lembang	2.242	4.670	5.394	17.518	0.943	1.961
11	**Ngamprah**	2.583	4.670	4.045	15.748	4.715	5.884
12	Padalarang	2.627	4.670	5.394	15.921	0.943	5.884
13	Parongpong	2.325	7.005	5.394	10.051	0.943	1.961
14	Rongga	1.833	2.335	2.697	4.995	0.943	1.961
15	Saguling	2.241	4.670	2.697	2.757	0.943	1.961
16	Sindangkerta	2.004	2.335	4.045	6.216	0.943	1.961

Table 7 (Cont'd). Composites score of weight and relative score

No	Sub-District	Cost	Existing Hospital	Rank

ICMEM

		Land Cost	Transport Cost	Number of Eye Clinic	Distance from Cicendo Eye Hospital	Disaster Risk	Total Score	
	WEIGHT (AIJ)	0.040	0.066	0.131	0.042	0.226		
1	Batujajar	2.408	6.493	13.123	2.534	9.048	58.727	7
2	Cihampelas	3.211	5.954	13.123	2.534	9.048	54.506	9
3	Cikalongwetan	4.013	6.242	13.123	4.223	9.048	66.543	2
4	Cililin	4.013	5.648	10.499	3.379	4.524	51.912	11
5	Cipatat	2.408	6.223	13.123	2.534	9.048	61.580	5
6	Cipeundeuy	4.013	6.072	13.123	2.534	9.048	54.734	8
7	Cipongkor	4.013	5.502	13.123	4.223	4.524	50.350	13
8	Cisarua	0.803	6.217	13.123	2.534	9.048	53.408	10
9	Gununghalu	3.211	4.990	13.123	4.223	4.524	51.359	12
10	Lembang	2.408	6.538	13.123	1.689	9.048	65.535	4
11	**Ngamprah**	3.211	6.508	10.499	2.534	9.048	69.444	**1**
12	Padalarang	1.605	6.497	10.499	2.534	9.048	65.621	3
13	Parongpong	0.803	6.626	13.123	1.689	9.048	58.969	6
14	Rongga	4.013	5.260	13.123	4.223	4.524	45.908	16
15	Saguling	4.013	6.033	13.123	3.379	4.524	46.341	15
16	Sindangkerta	3.211	5.212	13.123	4.223	4.524	47.798	14

Ngamprah sub-district is the capital of Bandung Barat Regency. It has eleven villages with a total area of 36.01 km^2. Based on the population distribution, the largest population is in Margajaya village, however, the area with the highest population density is Cilame village (BPS KBB, 2017). Ngamprah sub-district is the one of an industrial area in Bandung Barat Regency and will be developed as the central government, which will be provided by good facilities and urban infrastructure (Pemda KBB, 2018).

Based on the 'Long-term Development Plan of Bandung Barat Regency Region' (RPJPD Kabupaten Bandung Barat 2005 – 2025), it also stated that Ngamprah sub-district need to develop the district function in health sector even though it is not stated clearly for a special eye hospital. Because of that, it is recommended that the new eye hospital is built in Ngamprah sub-district. However, that location is obtained based on the calculation from historical data of each factor affecting location selection. The calculation also assumed that the factor used is static and only based on current condition.

5. Conclusion

The new eye hospital building in the new location would act as an additional building for the Cicendo Eye Hospital in Bandung City. It is expected that the new eye hospital can increase the capacity to meet the needs of eye health services up to 2030, especially for the people of West Java. Based on the greenfield analysis, it is found that Bandung Barat Regency was the best area for new eye hospital location. From the AHP method, it is found that disaster risk is the most important criteria in eye hospital location selection. By using the weight of criteria from AHP analysis, the factor rating method found that Ngamprah sub-district was the most recommended location for new eye hospital location based on the current condition. We suggest starting the hospital development planning as soon as possible, better in 2018, so the eye patient that cannot be handled at the center eye hospital can be served well in the future.

Acknowledgement

ICMEM

Appendix A. Greenfield Analysis Calculation

City/Regency	Latitude	Longitude	Demand (visits)	Distance from Hospital (Miles)	Distance from Hospital (Km)	Patient Km
BANDUNG	-7.007365	107.663649	32,610	20.96597529	33.74138268	1,100,321.21
BANDUNG BARAT	-6.846437	107.421832	14,973	6.203048796	9.982814549	149,467.96
BEKASI	-6.226872	107.095755	30,432	45.61565936	73.41110523	2,234,078.24
BOGOR	-6.471541	106.805670	50,587	50.17325812	80.74583122	4,084,675.18
CIAMIS	-7.290553	108.425260	10,687	74.59481862	120.0484254	1,282,984.03
CIANJUR	-7.017325	107.159723	20,482	27.31300956	43.95591881	900,308.52
CIREBON	-6.789947	108.594419	19,470	77.05588832	124.0091233	2,414,399.25
GARUT	-7.266329	107.842081	23,344	42.60599427	68.56753082	1,600,664.39
INDRAMAYU	-6.482174	108.125958	15,470	49.16292715	79.11986518	1,223,964.85
KARAWANG	-6.280814	107.406111	20,873	34.19201985	55.02658522	1,148,572.14
KOTA BANDUNG	-6.898385	107.639432	22,674	14.48241639	23.307132	528,454.48
KOTA BANJAR	-7.380006	108.553247	1,643	85.26409409	137.2189172	225,443.51
KOTA BEKASI	-6.306495	106.959418	25,211	47.61622071	76.63068864	1,931,904.25
KOTA BOGOR	-6.585974	106.782781	9,668	48.96700043	78.80455247	761,860.38
KOTA CIMAHI	-6.891084	107.545442	5,381	9.702015741	15.61384201	84,018.68
KOTA CIREBON	-6.739599	108.553032	2,836	74.24208538	119.4807577	338,859.60
KOTA DEPOK	-6.393990	106.827877	19,682	51.29745644	82.55504855	1,624,842.15
KOTA SUKABUMI	-6.935225	106.928158	2,925	38.95219241	62.68732134	183,362.54
KOTA TASIKMALAYA	-7.358636	108.229057	5,996	65.91401799	106.0780657	636,004.45
KUNINGAN	-6.978683	108.581735	9,653	77.49479297	124.7154701	1,203,827.51
MAJALENGKA	-6.751370	108.194857	10,815	49.65258002	79.90788312	864,193.73
PANGANDARAN	-7.656432	108.516881	3,575	94.20273548	151.6042303	542,028.47
PURWAKARTA	-6.632945	107.446532	8,474	9.718359484	15.64014465	132,534.31
SUBANG	-6.448630	107.686531	14,033	26.74344342	43.03929323	603,961.86
SUKABUMI	-7.062185	106.742367	22,242	53.8946612	86.73483406	1,929,181.31
SUMEDANG	-6.837614	107.991071	10,389	35.94010971	57.83985615	600,908.69
TASIKMALAYA	-7.400432	108.183675	15,863	65.37208366	105.2059091	1,668,843.12

	Latitude	Longitude		Objective Function	Avg Patient Km
City/Regency	-6.771401617	107.4714749		29,999,664.81	69.77
	Bandung Barat Regency				

References

BKPM Kemkes RI. (2016). *Kementerian Kesehatan Republik Indonesia*. Retrieved January 12, 2018, from http://www.depkes.go.id/article/view/16011100003/ katarak-sebabkan-50-kebutaan.html

BPPD KBB & BPS KBB. (2015, December). *Indeks Kesulitan Geografis Kabupaten Bandung Barat Tahun 2015*. Retrieved March 14, 2018, from http://bandungbaratkab.go.id/media/artikel//18/afef1edbc5-ikg-kbb-2015-ok.pdf

BPS KBB. (2017). *Kecamatan Ngamprah Dalam Angka. Ngamprah Subdistrict in Figure.* Kabupaten Bandung Barat: Badan Pusat Statistik Kabupaten Bandung Barat.

Busief, I. M., & Shouman, M. A. (2012). Hospital Site Selection in Benghazi City in Libya. Istanbul: International Conference on Industrial Engineering and Operation Management.

Darmanto, A. (2016). *Pojok Bandung: Lahan Parkir Susah, Cicendo Tetap Utamakan Pasien*. Retrieved November 21, 2017, from http://bandung.pojoksatu.id/read/2016/09/27/lahan-parkir-susah-cicendo-tetap-utamakan-pasien/

ICMEM

Daskin, M. S., & Dean, L. K. (2004). Chapter 3. Location of Health Care Facilities. In Kluwer (Ed.), *The Handbook of OR/MS in Health Care: A Handbook of Method and Applications* (pp. 43-76). -: -.

Forman, E., & Peniwati, K. (1998). Aggregating individual judgments and priorities with the Analytic Hierarchy Process. *European Journal of Operational Research, 108*, 165 - 169.

IRIHM & PMN RS Mata Cicendo. (2017). *Naskah Akademik Pengembangan PMN RS Mata Cicendo.* Bandung: Unpublished Manuscript.

Jacobs, F. R., & Chase, R. B. (2014). *Operations and Supply Chain Management* (14th ed.). New York: McGraw-Hill Education.

Kemenkes RI. (2017). *Data Rumah Sakit Online*. Retrieved Oktober 27, 2017, from http://sirs.yankes.kemkes.go.id/rsonline/data_list.php

Kil, S.-H., Lee, D. K., Kim, J.-H., Li, M.-H., & Newman, G. (2016). Utilizing the Analytic Hierarchy Process to Establish Weighted Values for Evaluating the Stability of Slope Revegetation based on Hydroseeding Applications in South Korea. *Sustainability, 8*(58), 1-17.

Kim, J. I., Senaratna, D. M., Ruza, J., Kam, C., & Ng, S. (2015). Feasibility Study on an Evidence-Based Decision-Suport System for Hospital Site Selection for an Aging Population. *sustainability, 7*, 2730-2744.

Lintangantara. (2017). *Enam Kecamatan di Kabupaten Bandung Barat Masuk Zona Paling Rawan Bencana*. Retrieved April 2, 2018, from http://www.lintangantara.id/2017/10/enam-kecamatan-di-kabupaten-bandung.html

Mani, B. (2016, September 15). *Greenfield Analysis Method: Facility Location in Supply Chain*. Retrieved October 21, 2017, from Youtube.com: https://www.youtube.com/watch?v=xdYDTjE9Rlg

Moradian, M. J., Ardalan, A., Nejati, A., Boloorani, A. D., Akbarisari, A., & Rastegarfar, B. (2017). Risk Criteria in Hospital Site Selection: A Systematic Review. *PLOS Current Disaster, 1*.

Mosadeghrad, A. M. (2014). Factors Affecting Medical Service Quality. *Iranian Journal of Public Health*, 210-220.

Mu, E., & Pereyra-Rojas, M. (2017). *Practical Decision Making* (1 ed.). Springer International Publishing.

Pemda KBB. (2018). *Pemda Kabupaten Bandung Barat: Potensi Industri*. Retrieved April 16, 2018, from http://simpenas.bandungbaratkab.go.id/content/potensi-industri

Perdami. (2017). *Vision 2020 di Indonesia*. Retrieved January 26, 2018, from https://perdami.id/vision-2020-indonesia/

PMN RS Mata Cicendo. (2016). *Rencana Strategis Bisnis (Revisi) Pusat Mata Nasional Rumah Sakit Mata Cicendo (PMN RS Mata Cicendo) 2015 - 2019.* Bandung: PMN RS Mata Cicendo.

PT Pandu Persada. (2015). *Master Plan PMN RS Mata Cicendo.* Bandung: PT Pandu Persada.

Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *Int. J. Services Science, 1*(1), 83-98.

Sari, K. D., Rohmawati, A. N., Argentino, J., & Witari, A. A. (2015). *Analisis Faktor Penentu Lokasi RSUD Dr. Mohammad Soewandhie Surabaya.* Surabaya: Institur Teknologi Sepuluh Nopember.

Soltani, A., & Marandi, E. Z. (2011). Hospital Site Selection Using Two-Stage Fuzzy Multi-Criteria Decision Making Process. *Journal of Urban and Environmental Engineering, 5*(1), 32-43.

Syumarti, Rini, M., Ratnanina, N., Halim, A., & Limburgh, H. (2017). Prevalence and Cause of Blindness in People Age 50 Years and Above, the Intervention Category and Action Required Reducing Blindness in West Java Province Indonesia – Journal of Ophthalmology and Clinical Research. *Journal of Ophthalmology & Clinical Research, 1*(1), 1-4.

Tsan, R. (2015). *Kompasiana*. Retrieved January 12, 2018, from https://www.kompasiana.com/rikitsan/upaya-eliminasi-kebutaan-jalan-di-tempat_561540152cb0bd480ce8f506

Varnakovida, P., & Messina, J. P. (2006, February 2). *Hospital Site Selection Analysis.* Retrieved 2 2, 2018, from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.121.4330&rep=rep1&type=pdf

Ye, H., & Kim, H. (2016). Locating healthcare facilities using a network-based covering location problem. *GeoJournal, 81*, 875-890.

Zhou, L., & Wu, J. (2012). *GIS-Based Multi-Criteria Analysis for Hospital Site Selection Haidian District of Beijing.* Gavle: Hogskolan I Gavle.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Supply Chain Risk-Based Analysis on Vendor Managed Inventory (VMI) in Indonesian Aircraft Manufacturing Company

Evyta Septriani Rosalina[a*], and Nur Budi Mulyono[b]

[a,b]*Master of Business and Administration, SBM ITB, Jl. Gelap Nyawang No.1, Bandung, 40132, Indonesia*

Abstract

Indonesian Aerospace (IAe) (Indonesian: PT. Dirgantara Indonesia (DI)) is an Indonesian aerospace company involved in aircraft design and the development and manufacture of civilian and military regional commuter aircraft. Since the aviation industry has been growing steadily in commercial sector, PT DI is also in run to produce new aircraft that is going to be marketed in commercial market. N219 is a propeller type of aircraft that is planned to compete in commercial market. Since its going to be marketed in a different market than PT DI current market, a change in supply chain strategy would take place, including the implementation of Vendor Managed Inventory (VMI). Risk-based analysis is used in this research to generate a reference that could be used in order to design and implement VMI effectively. Literature studies and benchmarking were used as a tool to identify the risks. These identified risks were then scored by expert judgment method then ranked by using Failure Mode Effect Analysis (FMEA) to identify risks that come from the implementation of existing strategy. Risk mapping was also involved to see whether the risks could be shifted after implementing the possible treatment. VMI was proven to be able to shift the risks from existing strategy. The result of this research suggests that there is collaboration of strategy that could be used in order to reduce the risks that come for VMI so PT DI could design a more effective and less risky VMI such as Collaborative Planning, Forecasting and Replenishment (CPFR), Time Series and Linear Regression Forecasting Method, 3PL with Supply Hubs, and Supply Contract.

Keywords: Risk Management; Vendor Managed Inventory; FMEA; Benchmarking; CPFR; Time Series Forecasting; Linear Regression Forecasting; 3PL; Supply Hubs; Supply Contract

1. Introduction

PT Dirgantara Indonesia (PT DI) is an Indonesian state-owned company which specializes in aircraft manufacturing. PT DI is currently developing its new aircraft product which is N219 that would be sold in a commercial market. Jumping into commercial market is surely a different thing and would have different business process than the one that is already on going on the company. To sustain the change, PT DI would have to undergo an industrial transformation so that it could achieve its goal to produce N219 as a commercial market. The N219 is designed to meet the needs for the pioneer flight of extreme geographical characteristics, where the majority of airfields are very short airstrip, unpaved runway and are located at high altitude areas.

N219 will be the most suitable mode of transport to open isolated areas, improve people economy growth as well as to maintain defense and security. Since its going to be marketed in a different market than PT DI current market, a change in supply chain strategy would take place, including the implementation of Vendor Managed Inventory (VMI). Risk-based analysis to generate a reference that could be used in order to design and implement VMI effectively would be useful for the company. (Dokumen Kajian PT Dirgantara Indonesia. 2017)

PT Dirgantara Indonesia (PTDI) is one of the indigenous aerospace companies in Asia with core competence in aircraft design and development, aircraft structure manufacturing, aircraft assembly, and aircraft services for both

---

* Corresponding author.
  E-mail address: evyta.septriani@sbm-itb.ac.id

civilian and military of light and medium aircraft. Since being established in 1976 as a state owned company in Bandung, Indonesia, PT Dirgantara Indonesia has successfully explored its ability as aerospace industry. In the field of aircraft manufacturing, PTDI has been producing various types of aircraft, such as CN235 under TC (Type Certificate) for civil or military transport, maritime patrol, surveillance, and coast guard.

PT DI's market is currently not selling its product for commercial market since its products are military aircraft and training aircraft. This N219 production would have some major change in its business process. To undergo the planned transformation, there are two strategies that could be implemented which are Technological Advancement and Industrial Maturity. Both of these strategies would be used by PT DI to reach the desired goal which is to be able to produce 40 aircrafts per year.

ROADMAP OF PTDI NEW BUSINESS MODEL

DEVELOPMENT OF CONCEPTUAL MODEL	INDUSTRIAL MATURITY		
First step's objective is to provide a suitable environment for further improvement. In order to ensure any project ahead can be delivered: 1. concurrent business process; 2. manpower qualification must be set up first.	SUPPLY CHAIN STRATEGY This phase placed first in Industrial Maturity, because what to make and how it procured is analysed. Therefore, this phase defines: 1. product configuration; 2. make-or-buy analysis.	DESIGN & PRODUCTION ENGINEERING This phase's main objective is to design the process to be more efficient. The milestones are: 1. manufacturing interchangeability; 2. mock-up design; 3. inspection simplification.	DETAILED OPERATIONS The final phase's objective is to provide sufficient supply for our assembly line: 1. For in-sourcing, any operational problem will be solved by providing more suitable resources; 2. for out-sourcing the guideline will be provided.
	TECHNOLOGY ADVANCEMENT Technological Advancement is one way to boost current capability which cannot be achieved solely with Industrial Maturity. With help of upgraded facilities, process duration and non-value added activities can be reduced. To-be-upgraded facilities are: 1) jig; 2) platform; 3) positioner; 4) CATS; 5) support system.		

Figure 1 PT DI Road Map (PT DI, 2017)

From the Industrial Maturity Strategies, one of the factor that is heavily related to operation aspects is its supply chain strategy. PT DI has to improve and redesign its existing supply chain strategy which supports its current capacity which is 3-4 aircrafts per year to a new supply chain strategy and design that can sustain its desired capacity for N219 productions which are 40 aircrafts per year. (PT DI, 2017)

One of the sector that needs an adjustment is its supply chain sector. Vendor Managed Inventory (VMI) has been chosen as one of the strategy to sustain N219 supply chain strategy.Risk-based analysis is necessary to analyze whether VMI could reduce the risks from existing strategy. Other than that, VMI also comes with its own risks once its implemented, therefore, it is also necessary to identify the risks from VMI implementation and more importantly it is necessary to create supporting strategy so that PT DI could design a better VMI in order to reduce the risks and work efficiently.

The objectives of this studies is to identify the risks that come from PT DI current strategy and whether the VMI could shift those risks into minimal. This research is also aimed to identify the risks from VMI implementation and eventually generate a helicopter view on supporting strategy to sustain a better VMI design in order for it to work effectively and efficiently. The limitation of this research that the study only focuses on supply chain risks and VMI implementation on N219 production. The observation and data collection for this research only takes place from November 2017 until February 2018.

2. Literature Review

According to Dawei Lu (2011) supply chain is defined as a group of inter-connected participating companies that add value to a stream of transformed input from their source of origin to the end products or services that are demanded by the designated end-consumers. In this definition, there are a number of key characteristics that have been used to

ICMEM

portrait a supply chain. First, a supply chain is formed and can only be formed if there are more than one participating companies. Second, the participating companies within a supply chain normally do not belong to the same business ownership, and hence there is a legal independence in between. Third, those companies are inter-connected on the common commitment to add value to the steam of material flow that run through the supply chain. is material flow, to each company, comes in as the transformed inputs and goes out as the value added outputs. Cetinkaya and Lee (2000, 217).

Supply chain also involves risks in its implementation. Decision making theory defines risk as "reflecting variation in the distribution of possible outcomes, their likelihoods, and their subjective values" (March et al. 1987). Risk can be expressed mathematically as "the probability of occurrence of loss/gain multiplied by its respective magnitude." (Jaafari 2001). Since risks are commonly associated with negative outcomes (March et al. 1987), the distinction between risks and problems often remains unclear. Risk is not necessarily a problem, but a "potential problem" that may result from making a particular decision within the business process (Charette 1990). In the context of process management, risk has mainly been addressed as a factor in the management of process- related projects. Risk can be expressed mathematically as "the probability of occurrence of loss/gain multiplied by its respective magnitude." (Jaafari 2001). Risk is not necessarily a problem, but a "potential problem" that may result from making a particular decision within the business process (Charette 1990). In the context of process management, risk has mainly been addressed as a factor in the management of process- related projects.

One of the method to measure risk is Failure Modes and Effect Analysis Method. Failure modes and effects analysis (FMEA) is a method of investigation for determining how a product, process, or system might fail and the likely effects of particular modes of failure. For example, a product, machine, or structure might fail physically as a result of a faulty part or user behavior. A manufacturing, business, or administrative process might fail operationally as a result of poor personnel training, faulty control, faulty design, or faulty equipment. In all of these cases and others, FMEA can be used to help assess the possible ways in which failures might occur, assess the magnitude of the effects of failure, uncover the possible cause or causes of failure, and understand what can be done to prevent such failures or mitigate the likelihood of their occurring. (Stamatic, 1995).

To identify and to generate risk registers, one of the method that could be done is by conducting a benchmarking method. Hornby (2002) dictionary had defined benchmarking as standard example and point of reference for making comparisons. However, benchmarking in general can be defined as key themes that include measurement, comparison and identification of best practices, implementation and improvement (Anand and Kodali, 2008). Ribeiro and Cabral (2006) had found that benchmarking give benefits to companies especially in the metal casting industry but it is a time consuming tool and demands continuous commitment of the top- managers. Also, (Fry *et al*., 2005), claimed that benchmarking was identified as the most used performance improvement technique for both airlines and airports. From these cases, it obviously indicates that benchmarking had played a significant role in assisting companies from different fields to grow and become successful. Furthermore, benchmarking has also become an integral part of organizational improvement methodology (Boulter, 2003).

According to Wilson et al., (2000), approaching every aspect with some perspectives on the potential pitfalls and problems that may come up must be done in order to conduct a successful benchmarking. Potential challenges include the need to ensure agreed outcomes for all partners and selecting an appropriate partner. There are several types of benchmarking. Each type seems useful for a particular situation. However, the type of benchmarking is not as important as long as the goals of benchmarking itself are clear and achievable. Three types of benchmarking advocated by the Australian Universities Quality Agency (AUQA) are:

1. Sector benchmarking: which is a type of benchmarking that focuses on some functions or aspects that are made against a benchmarking partners in the same sectors.
2. Generic benchmarking: which is a type of benchmarking that involves comparisons of processes and practices regardless of the industry.
3. Best practice benchmarking: which is a type of benchmarking in which the company selects a comparator known to be best in the area to be benchmarked. (Stella & Woodhouse, 2007)

ICMEM

In conducting benchmarking, there are several steps that need to be executed, those steps, as explained by Hacker and Kleiner (2000) are:

1. Planning: In planning itself, five steps are present. First, the company needs to decide and determine what aspects that are going to be benchmarked. Then key performance indicators need to be identified which then continue to benchmarking partners also being identified. The planning ste ends with determining data collection method and finally collecting the data;
2. Analysis: analysis involves two steps which are understanding performance gaps and predicting future performance levels.
3. Integration: integration involves two steps. First, the company has to communicate findings and gain acceptance, followed by establishing functional goals and implementation plans;
4. Action: action involves three steps. It starts with implementing and monitoring progress, measuring results against stakeholder wants and needs, and finally recalibrating benchmarks.

It is expected in this research that VMI could reduce the risks from the current supply chain strategy. The reason why companies are shifting to VMI system differs. The most common reasons are VMI is considered to help the company increase their inventory turn over, and increase their return on asset as well as improving their service level. (ESCA & ChainLink, 2003). Vendor Managed Inventory or VMI is a supply chain coordination system where the vendor holds the responsibility for managing the company's inventory or stock. VMI is an alternative to the traditional order-based or transaction-based replenishment or restock practice. The American Production and Inventory Control Society defines VMI as a means of optimizing supply chain performance in which the supplier is given access to the company's or their customer's inventory data as well as responsible for maintaining their inventory level. VMI practice is done by a process in which re-supply is done by the vendor through regularly reviews on the on-site inventory. According to Classen et al (2008) and Zammori et al (2009), in the complete implementation of VMI, vendors would have an absolute control over its own production and they also have control in terms of deciding the replenishment or the resupplying schedules.This should be done according to the agreed service level with the customers. VMI shifts responsibility in decision making of the replenishment schedule and inventory management from the customer to the supplier. (Zammori et al. 2009, 166.). In other words, VMI is a form of outsourcing as organizational functions previously done by the customer are done by the vendor. (Iloranta & Pajunen-Muhonen 2008, 49.). Conflicting performance measure often becomes a dilemma in VMI implantation, for example a low level inventory is a contradiction to a high service level. VMI could help companies solving this issues (Waller, Johnson and Davis, 1999). Other benefits that could be achieved by implementing a successful VMI is a relationship between the supplier and customer. The suppliers will face a more stable demand from the customer and an increase in information flow. This will lead to a gain in flexibility and improve the supplier's ability to plan his production. The customer, on the other hand, will obtain a lower inventory level, reduced administration costs, an increase in service level and a reduced risk for stock outs. In the long run VMI will lead to a higher turnover rate for the entire supply chain. (Hines et al, 2000).

Although VMI could reduce risks from traditional supply chain system, with its implementation, VMI could also generate new risks that could be catastrophic if not being identified. By generating other supporting strategies, a good VMI design could be created and therefore would create an improved supply chain strategy for the company (Kamalapur, 2013)

3. Methodology

Research Process

This section contains research process that describe how the author find the problem, collect and analyze the data, and give recommendation related to the assessment's result at *PT Dirgantara Indonesia*. Figure 2 shows the research process of this research.

ICMEM
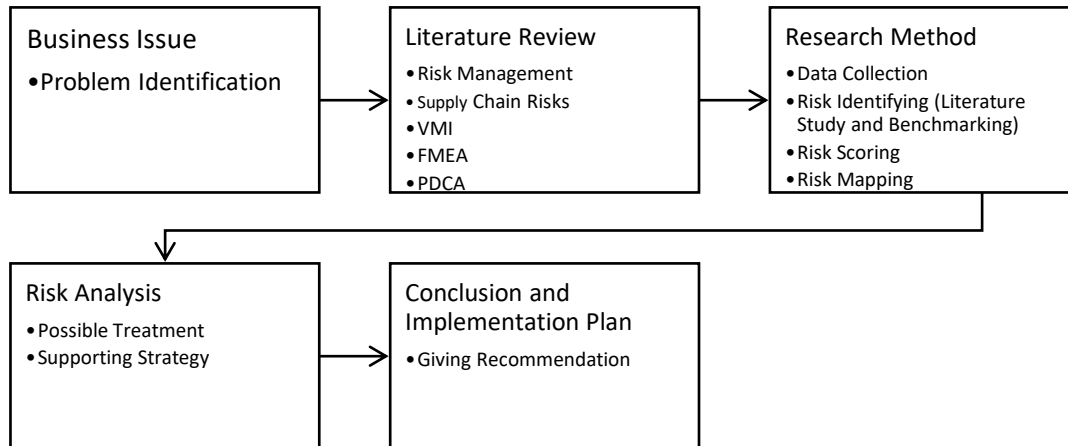
Figure 2 Research Process

This research started with consolidating with PT Dirgantara Indonesia in order to get a better scope of what the company current condition and upcoming project. To get a better and deeper understanding of the business issues, the author did literature review to find related literatures such as about risk management, supply chain, VMI and related possible method to do this research such as FME and PDCA.

The research then continued to data collection. The risk identifying process is done by counselling with the person in charge and visit to the company. The risks were identified also by literature study and benchmarking. Risks were then being scored by implementing the expert judgments method. Risks that were already being scored could then be ranked by using FMEA method. FMEA is used to determine the likelihood, severity and detection factor for each risks. The result from FMEA then could be used to map the risks in order to locate in which quadrant each risks were located. By mapping the risks, the range for each risks could be seen from either low to high risk quadrant. Once the risks have already been mapped, the possible treatment which was the VMI was also mapped and scored so that it could be seen that VMI could shift the risks.

Risk analysis was also done in VMI implementation. The process involving identifying the risks. Risks from VMI implementation were generated by conducting a benchmarking. Benchmarking was used since VMI hasn't been implemented in PT Dirgantara Indonesia, therefore, there was no historical data that could be used to generate risks.

The outcome from this research was then generated in the next step which was generating the supporting strategy to reduce risks from VMI. Conclusion and Implementation plan were also generated. This supporting strategy was also generated by conducting benchmarking and literature studies. This supporting strategies were proposed so that PT Dirgantara Indonesia could design a less risky, more effective and more efficient VMI system.

4. Data Collection Method

This research uses only one method which is Qualitative method. According to Denzin & Lincoln (2005), Qualitative research is the activity that located observer in the world aligned with naturalistic research, textual or visual data, inductive reasoning, constructivism and subjectivity. In qualitative methods, observer can gather the data with interviews, photographs, recordings, or even memos to themselves. From that activities, researchers can interpret the phenomena happened. There are two types of data that are used in this research which are Primary Data and Secondary Data. Primary data was obtained by requesting the documents related to the planned production system for N219. Other than that, the existing production system was also collected by both observing the manufacturing sites, and conducting interviews with the people related to the business process. Observation in the manufacturing site was

ICMEM

carried out over 3 months' observations. Secondary data was obtained by going through literature study. These literature studies involved textbooks and journals as well as case studies that are related to the aircraft manufacturing industries, VMI and supply chain strategy. Secondary data is necessary since this secondary data would be used to understand the basic theory and as well as to refer to similar cases so that the solution could be obtained. This research used the risks assessment that has already been studied previously, therefore, literature study is very crucial. Also, this industrialization for this new specific product is a brand new thing and has never been done before in PT Dirgantara Indonesia, therefore benchmarking through case studies and literature studies are very much necessary.

5. Findings

Based on the analysis of the current supply chain strategy and risks analysis from the current existing strategy, most of the current strategy fell on to high risk to medium risk criteria once they have already been mapped. Table 1 shows the risks identified from literature study and benchmarking. There are 28 individual risks that were identified. These risks were then mapped in order to locate each of the risks. From 28 individual risks, in which 12 of the risks could be relocated to either medium or to low area by implementing the VMI.

Table 1 Risks Mapping Summary Before and After Treatment

No	Potential Risks Caused by Existing Supply Chain (Failure Mode)	Risk Consequences (Failure Effects)	Possible Treatment	Risk Rating Before Treatment	Risk Rating After Treatment
1	Quality aspects are ignored since the volume of parts and materials increase	Decreasing service level and customers' satisfaction	Supply Contract	Medium High	Medium High
2	Lack of supplier flexibility	Scarcity of raw materials	Multiple Suppliers	High	Medium High
3	High variations of input	Sub-standards products and high variations of end-products	Vendor Managed Inventory (VMI) in order to procure the parts and materials continuously	Medium High	Medium High
4	Demand is lower than actual demand	Excessive investment and loss of profit	Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting, and Replenishment (CPFR)	Medium	Low Medium
5	Demand is higher than actual demand	Inability to meet customers' demand	Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting, and Replenishment (CPFR)	Medium High	Low Medium
6	Change in aircraft technology	Incapability to fulfill customers' demand with existing resources	Forecasting	Medium	Low Medium
7	Change in product specifications demanded		Forecasting	Medium	Low Medium
8	Machine breakdown due to over-usage	Decreasing production capacity	Flow-shop Assembly line, High Speed Machining and Automated Technology	Medium High	Medium
9	Products tend to vary	High variations of end-products	Flow-shop Assembly line, High Speed Machining and Automated Technology	Medium High	Medium

ICMEM

10	Delay in production	Decreasing customers' satisfaction	Flow-shop Assembly line, High Speed Machining and Automated Technology	Medium High	Medium
11	Delay in supply chain process	Decreasing customers' satisfaction and disrupting the whole business process	Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting, and Replenishment (CPFR)	High	Medium
12	Manpower shortage	Delay in production, inability to meet customers' demand	Automated Technology	High	Medium
13	Under capacity	Inability to meet customers' demand	Manufacturing Site Expansion, Outsourcing non-core products	Medium High	Medium
16	Lack of information sharing throughout supply chain parties	Ineffective supply chain design , slow distributions of parts and materials throughout entire system(inbound supply chain)	Vendor Managed Inventory (VMI) with supply chain parties added to SAP system	High	Medium
17	Ineffective SAP	Increase cycle time from planning throughout purchasing	Adjusted SAP	Medium High	Medium
18		Lower rate of meeting customers order	Adjusted SAP	High	Medium
19	Requirement Gaps	Ineffective supply chain design (inbound supply chain)	Adjusted SAP	High	Medium High
20	Bullwhip Effect throughout the supply chain process	Excessive investment in inventory, stock outs, delay in delivery	Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting, and Replenishment (CPFR)	Medium	Low Medium
21	Bullwhip Effect throughout the entire business process	Decreasing service level and customers' satisfaction, delay in delivery	Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting, and Replenishment (CPFR)	Medium	Low Medium
22	Increase process time from ordering to delivering	Decreasing service level and customers' satisfaction	Vendor Managed Inventory (VMI) in order to implement a continuous replenishment without having to order parts and materials per transaction	High	Low Medium
23	No assurance that part would be delivered on time	Stock outs, delay in production	Vendor Managed Inventory (VMI) in order to have a better control over replenishment planning	High	Medium
24	Longer lead time	Decreasing service level and customers' satisfaction	VMI	High	Medium
25	Many parts are reserved in warehouse will result in excessive inventory investment	Increase operational costs	Vendor Managed Inventory (VMI) to have a better control over the inventory management	Medium	Low Medium
26	Stock outs for perishable items	Delay in production	Vendor Managed Inventory (VMI) with continuous replenishment to avoid stock-outs	High	Medium

27	Increase inventory holding and ordering costs	Increase operational costs	Vendor Managed Inventory (VMI) where the inventory held by suppliers until the items are actually sold or used	Medium High	Low Medium
28	Speed to market is surpassed by competitors	Products become obsolete in market compared to competitors'	Competitive Strategy	Medium	Low Medium
	Products do not have differentiation aspects from competitors		Differentiation Point (price, specification etc)	Medium High	Medium

6. Discussion

From the findings, it could be concluded that VMI could be the best option to be implemented. However, VMI itself comes with its own risks. There are several risks that could come up by implementing the VMI. These risks were generated by benchmarking and literature studies. Table 2 shows the risks that could come up in VMI Implementation.

According to previous chapter, after analyzing the current condition of supply chain design and potential risks that come with the existing strategy when applied in N219 production in PT Dirgantara Indonesia, the next step is to offer planning solution. From the previous chapter, VMI implementation is in line with PT DI strategy for N219. With the implementation of VMI, the risks identified in the previous chapter could be eliminated, however, there would be other risks that should be considered. The design for the VMI itself should considered this potential risks of its later implementation. The solution that this research offers would be how to improve and what necessities that should be added in order for the VMI to work efficiently based on the risks analysis. Table 4 shows the possible risks from VMI implementation.

Table 2 Risks from VMI implementation

Risk Category	Key Driver	Risks in VMI	Risk Consequences	Preventive Strategy/Business Solution
General Risks	Confidence Crisis	Vendors are not committed to their responsibility	Vendors or suppliers are not approaching 100% service level	Suitable Supply Contract that gives incentives to both parties
		Flawed record of vendors or suppliers		
	Resources' Lackness	Demand is lower than expected	Obstructed VMI implementation	Develop advance demand forecast
	EDI issues	Inability of employee to adapt with new system	Obstructed VMI implementation	Training of employee
		EDI between vendors and PT DI do not match		Communication with vendors
Inventory Risks	Intellectual Property Issues	Misused information shared	Loss of trust	Suitable Supply Contract that gives incentives to both parties
	Inventory Location	Vendors warehouse are too further away from manufacturing site	Delay in delivery and production	Supply Hubs with 3PL
	Sourcing Policy	Parts and materials are sourced from vendors' production	Increase the risk of production lead time for PT DI	Sourcing the parts and materials from vendors' stock instead of its production.
Inventory Risks	Inventory Ownership	Inventory is held by PT DI	Increase inventory cost	The supplier or vendor owns the parts and materials until they are sold or consumed
Decision Making	Replenishment Decision	Late replenishment	Stock-outs	Periodic replenishment and ordering review
			Delay in production	
Decision Making	Control Limits	Vendors interfere beyond their jurisdiction, breaching inventory	Disrupting the whole business process	Suitable Supply Contract that gives incentives to

		policy		both parties
	Shipment Decision	Shipping is disrupted by external factors	Delay in delivery and production	Vendors
	Demand Visibility	Inaccurate forecast	Bullwhip effect	Develop advance demand forecast
Information Issues	Access to Information	Insufficient information sharing	Inaccurate replenishment decision	CPFR and VMI collaboration
		Inability to access information related to sales, inventory	Delay in production	CPFR and VMI collaboration
			Delay in delivery and production	
			Stock-outs	
IT System	IT configuration	Confidentiality exposure to the vendors	Longer and more complex system	Suitable Supply Contract that gives incentives to both parties
		Government regulations		

Based on the risks that were generated there are 5 possible supporting strategies that could prevent the risks so that the VMI design and implementation could work effectively and efficiently.

First is the integration of VMI with CPFR or Collaborative Planning, Forecasting and Replenishment. By using the traditional VMI, vendors hold more responsibility compared to PT DI. This would decrease PT DI's control that would create more risks of uncertainty. A collaboration between VMI and CFPR could be an option where information sharing is still crucial and vendors still play a big role in managing PT DI's inventory whilst having accurate data. PT DI would still have power by deciding its own production quantity based on the forecasting that they themselves generate. By having enough information regarding the inventory level for parts and materials, vendors would be able to decide order quantity to stock for certain parts and materials. CPFR is also considered to be able to cover up VMI's flaws and imperfection (Kamalapur, 2013). Table 5 shows the summary of divided responsibility scheme for VMI and CPFR Integration.

Table 3 Traditional VMI vs CPFR and VMI (Kamalapur, 2013)

Task	CPFR and VMI		Traditional VMI	
	Vendors	PT DI	Vendors	PT DI
Develop Demand Forecast	✖	✔	✔	✖
Determine Order Quantity	✔	✖	✔	✖
Determine Production Quantity	✖	✔	✔	✖
Fulfill Customers' Demand	✖	✔	✖	✔
Fulfill PT DI's orders	✔	✖	✔	✖
Information shared	Forecast results, production Quantity, Inventory Level, Sales		Production quantity that should be made for PT DI	

By comparing traditional VMI and VMI collaboration with CPFR, with VMI collaboration with CPFR PT DI could have a better focus in achieving its productions target for N219 and it could also have a better response in processing the order since the inventory level is managed by the vendors. Figure 2 is a proposed scheme of each parties' responsibility (both PT DI vendors) for its function in supply chain system.

ICMEM
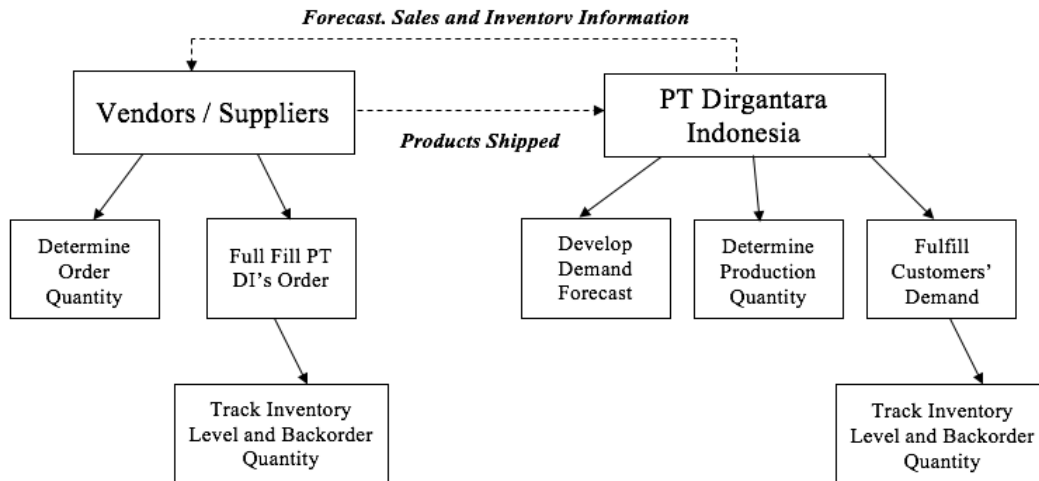
Fig. 2 Collaboration Scheme Between VMI and CFPR

Second, is the use of a more advance forecasting method. Based on several methods used for aircraft demand forecasting, the most common method is Time Series Analysis and Linear Regression as shown in Table 4.

The Multiple Regression gives an insight regarding the past behaviour of the economic indicators used in forecasting. It is very important to analyse the input variable for the regression model before the forecasting since the correlation between each variable are needed to be identified. Highly correlated input variables can hinder a forecast, therefore it is important to eliminate highly correlated input variables for the regression analysis. As for the time series analysis method, it can be used effectively to capture pure data generating process of orders and deliveries to create a forecast. The forecasting scheme that should be implemented is shown in figure 3.5.

Table 3.3 Type of Forecast Used to Forecast Aircraft Demand

Literature	Type of Forecast
Harvey (1951)	Time Series Analysis and Causal Models
Verleger (1962)	Time Series Analysis and Causal Models
Bartlett (1965)	Linear Regression
Vitek and Taneja (1975)	Linear Regression
Jacobson (1970)	Linear Regression
Brown and Watkins (1968)	Time Series Analysis and Multiple Regression
Haney (1975)	Linear Regression
Thomet and Sultan (1979)	Multiple Linear Regression
Mellman et.al. 1980	Multiple Linear Regression
Karlaftis et. al. (1996)	Time Series Analysis
Duncanson (1974)	Time Series Analysis
Taneja (1978)	Linear Regression

ICMEM
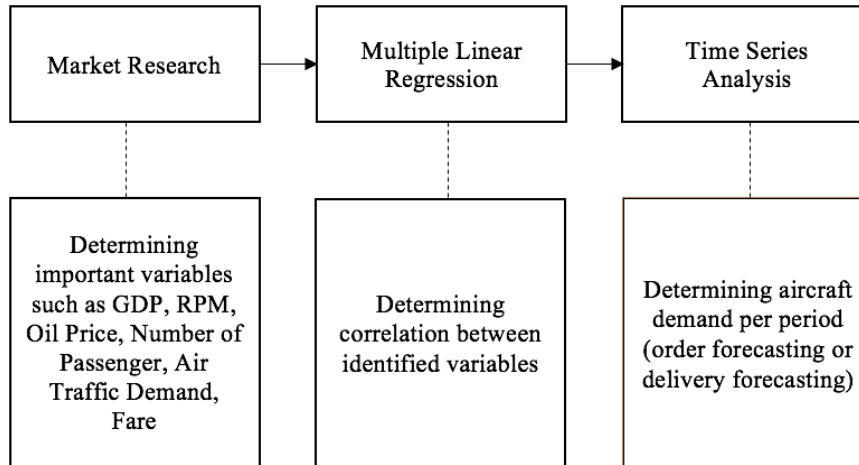
Fig. 3 Forecasting Scheme for Aircraft Demand Forecasting

Therefore, based on the literature studies, PT Dirgantara Indonesia should incorporate these methods into their forecasting strategy especially for N219 demand forecasting since it is aimed to be marketed in commercial market. Additionally, it is important to notice that from a practical supply chain perspective, it is inherently more valuable to have a prediction for deliveries, rather than orders, since orders can change during the lead time used in the forecasting.

The third is 3PL with Supply Hubs strategy. PT DI should follow the second option by having 3PL to support the physical delivery of the parts and materials ordered. Since in the first few years of VMI implementation, it would be safe to assume that PT DI would not have a solid suppliers' relationship yet.

This 3PL strategy should also be supported by implementing supply hub strategy. Supply hub is a place where all the participating vendors or suppliers place their materials. Using the hub can serve to reduce their exposure to high inventory costs (for storage and ordering at diverse points in Asia), component obsolescence and non-fixed asset sheet costs. A supply hub is typically a location physically close to a manufacturer's facility where all or some of its supplies are warehoused with the agreement that the materials will be paid for only when consumed. Having a hub would be beneficial for PT DI since They can concentrate on planning (sourcing globally from new vendors), and focus on product management issues such as incoming product quality accreditation. Table 6 shows the general suggestion on the implementation of the supply hubs.

Table 6 Summary of Supply Hubs

Aspects	Specifications
Location	Near PT DI proximity, probably inside Husein Sastranegara perimeter
Quantity	1
Primary function	As a storage for suppliers to stock their parts and materials, so once the order has to be made, the delivery lead time could be much shorter
Party in Charge	Third Party Logistics (3PL)

ICMEM

An intense communication and information sharing between parties involved are very crucial for this to be successful. Suppliers would manage their inventory level in supply hubs, therefore when its time to make an order or to deliver parts to maintain PT DI inventory level, the delivery could directly be made. This could reduce the delivery lead time since the suppliers involved would spread in different areas. PT DI would share information such as their inventory level, sales and forecast to suppliers. Supplier would then generate and determine the order quantity that should be made. This information would then be shared to 3PL at the supply hubs. 3PL at supply hubs would then make an actual delivery of parts and materials to PT DI as instructed and informed by the suppliers. Figure 3.5 shows the process flow in implementation of 3PL with Supply Hubs and Figure 3.6 shows the 3PL with Supply Hubs scheme. Figure 5 shows the 3PL with Supply Hubs Scheme for PT Dirgantara Indonesia whereas Figure 6 shows the 3PL with Supply Hubs Scheme for PT Dirgantara Indonesia
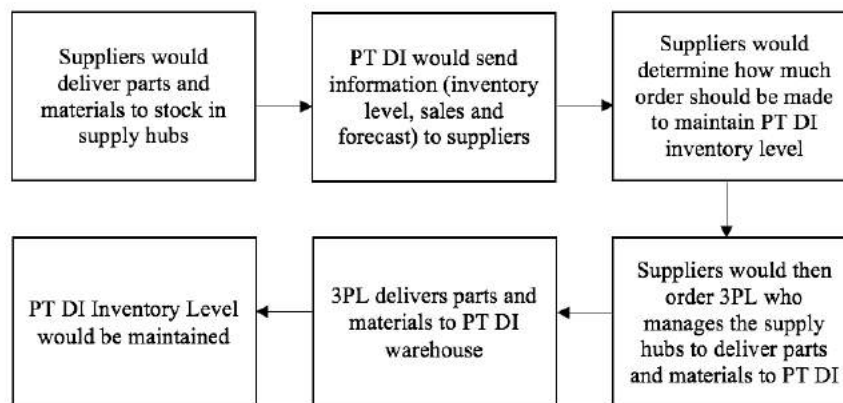
Fig. 4 Implementation for 3PL with Supply Hubs

ICMEM
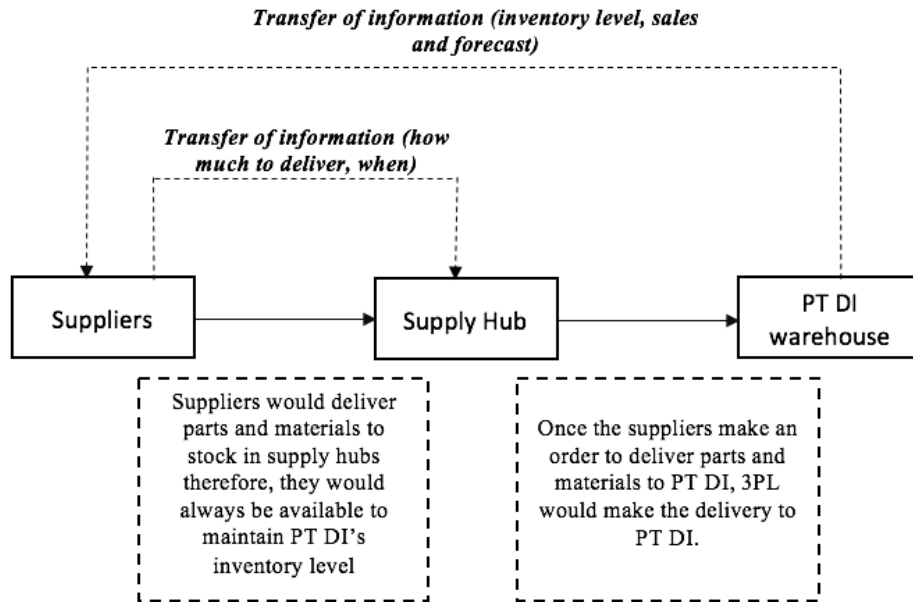
Fig. 5 Supply Hub Scheme

The last one is supply contract. The most critical component, by far, in the success of the VMI arrangement was the agreement with the supplier. The terms and conditions of the agreement were negotiated before the VMI implementation. Things such as service level (fill rate) requirements, processes to be followed, lead-times (of delivery), IT system requirements, performance metrics, payment terms and liabilities were clearly defined and agreed upon. PT DI should also apply long term supply contract to minimize risks of stocking out. Long term supply contract could also give incentives to suppliers since it could minimize their financial risk.

7.   Conclusion and Future Researches

The objectives of the research would be answered in this part in which VMI is proven to be able to reduce the risks from the existing strategy. However, the implementation of the VMI itself would have its own potential risks. Therefore, supporting strategy could be generated in order to design a better VMI so that it could work more efficiently and effectively in a less risky way.

The supporting strategy are the CPFR integration with the VMI so that the forecasting could be done more accurately where the replenishment would still be done continuously by the vendors involved. The CPFR integration would also allow the vendor to have a more accurate information so that it could determine a more accurate quantity to be delivered.

Forecasting would also play a main role in the success of the VMI, therefore an advance forecasting method is needed. Linear regression and Time series analysis are necessary to be done in order to get an accurate forecasting result.

Supply Hubs and 3PL are also important in order to get a better lead time and to avoid stock outs. These all strategies would then be secured by a supply contract that could give all parties involved a needed benefit.

Based on this research, there are several recommendations that could be done for further research so more comprehensive business solutions could be generated and therefore could make more improvements to the company. Those recommendations are:

[1] Further research regarding the cost and financial aspects in implementing VMI as well as supporting strategies proposed in this research.
[2] Conducting a simulation of VMI to compare with the current supply chain strategy, hence a more suitable design that suits the environment could be designed.

Conducting different risk analysis method in order to compare the risks for example Analytical Hierarchy Process to reduce the subjectivity factor that exists from this research.

APPENDIX

Example of Risk Mapping

Table A.1 Risk Mapping from quality aspects are ignored since the volume of parts and materials increase

	Severity				
Likelihood	1 - No Effect	2 - Minor	3 - Moderate	4 - High	5 - Very High
5 - Very Likely					
4 - Likely					
3 - Possible					
2 - Unlikely					✔
1 - Not Likely					

Table A.2 Risk Mapping for lack of supplier flexibility

	Severity				
Likelihood	1 - No Effect	2 - Minor	3 - Moderate	4 - High	5 - Very High
5 - Very Likely					
4 - Likely					✔
3 - Possible					
2 - Unlikely					
1 - Not Likely					

Table A.3 Risk Mapping for high variations of input

	Severity				
Likelihood	1 - No Effect	2 - Minor	3 - Moderate	4 - High	5 - Very High
5 - Very Likely					
4 - Likely					
3 - Possible					
2 - Unlikely					✔
1 - Not Likely					

ICMEM

References

Lu, Dawei. 2001. *Fundamentals of Supply Chain Management*. University of Gothenburg.

Cetinkaya and Lee. (2000). Stock Replenishment and Shipment Scheduling for Vendor- Managed Inventory Systems, *Management Science 46 (2), pp. 217–232.*

Zammori, Franceso, Braglia, Marcello and Frosolini, Marco 2009. *A Standard Agreement for Vendor Managed Inventory. Strategic Outsourcing: An International Journal.* Vol. 2, no. 2. pp. 165-186.

Claassen, M.J.T., Van Weele, A.J., and Van Raaij, E.M., 2008. *Performance outcomes and success factors of vendor managed inventory (VMI).* Supply Chain Management: An International Journal, 13 (6), 406–414.

Iloranta, Kari and Pajunen-Muhonen, Hanna 2008. Hankintojen Johtaminen: ostamisesta toimittajamarkkinoiden hallintaan. Jyväskylä. Gummerus Kirjapaino Oy.

Waller, M., Johnson, E.M., Davis, T., 1999. *Vendor Managed Inventory in the retail supply chain*. Journal of Business Logistics 20(1), 183-203.

Hines, P & Taylor, D 2000, *Going Lean*. Lean Enterprise Research Centre, Cardi Business School, Cardi , UK.

Raj Kamalapur, R., Lyth, D., Houshyar, A.: *Benefits of CPFR and VMI Collaboration Strategies: a Simulation Study* ISSN: 1984-3046 • Journal of Operations and Supply Chain Management Volume 6 Number 2 pp 59 – 73

Jaafari, A. 2001. *Management of Risks, Uncertainties and Opportunities on Projects Time for a Fundamental Shift.* International Journal of Project Management, 19, 89-101.

Charette, Robert. 1990. *Software Engineering Risk Analysis and Management.* McGraw Hill.

Hopkin, P. (2012). *Fundamentals of Risk Management* (2nd ed.). Kogan Page.

Hornby, A.S., *Oxford Advance Learner' s English-Chinese Dictionary*. 4th. Edition. 2002. The Commercial Press, New York, ISBN-10: 7100034159, pp: 2016.

Anand, G. and R. Kodali, 2008. *Benchmarking the benchmarking models*. Benchmarking. Int. J., 15: 257-291. DOI: 10.1108/14635770810876593

Ribeiro, L.M.M. and J.A.S. Cabral, 2006. *A benchmarking methodology for metalcasting industry*. Benchmarking. Int. J., 13: 23-35. DOI: 10.1108/14635770610644556

Fry, J., I. Humphreys and G. Francis, 2005. *Benchmarking in civil aviation*. Some empirical evidence. Benchmarking. Int. J., 12: 125-137. DOI: 10.1108/14635770510593077

Boulter, L., 2003. *Legal issues in benchmarking. Benchmarking*. International Journal, 10: 528-537. DOI: 10.1108/14635770310505166

Wilson, A., & Pitman, L. (2000). Best practice handbook for Australian university libraries.

Meade, P. H. (1998). *A guide to benchmarking*. Dunedin, New Zealand: University of Otago.

Hacker, M. E., & Kleiner, B. M. 2000. *12 steps to better benchmarking*. *Industrial Management, 42*(2), 20- 23.

ESCA (Electronics Supply Chain Association) & ChainLink Research Inc. (2003) www.electronicssupplychain.org/downloads_presentation_r.asp?contentid=189

Simchi-Levi, David. Kaminsky, Philip. Simchi-Levi, Edith. *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies*. 2008. 3rd Edition. McGraw Hill.

Harvey, D.A. (1951) *Airline passenger traffic patterns within the United States*. Journal of Air Law and Commerce.

Verleger P.K. (1972) *Models of the Demand for Air Transportation*. The Bell Journal of Economics and Management Science.

Bartlett, H. (1965). *The demand for Air Transportation*. Unpublished Ph. D. dissertation. University of Michigan.

Vitek, R. L., & Taneja, N. K. (1975). *The Impact of High Inflation Rates on The Demand for Air Passenger Transportation*. Cambridge, Mass.: Flight Transportation Laboratory, Dept. of Aeronautics and Astronautics, Massachusetts Institute of Technology

Brown S.M. & Watkins W.S. 1968.*The Demand for Air Travel: A Regression Study of Time-Series and Cross Sectional Data in The US Domestic Market*. Highway Research Record

Haney, D. 1975. *Review of aviation forecasting methodology*. Rep. dot-40176, 6.

Thomet, M. A., & Sultan, S. M. 1979. *Traffic Forecasting for the New Riyadh International Airport*. ICAO manual on air traffic forecasting.

Karlaftis, M. G., Zografos, K. G., Papastavrou, J. D., & Charnes, J. M. 1996. *Methodological framework for air-travel demand forecasting*. Journal of Transportation Engineering, 122(2), 96-104.

Duncanson A.V. 1974. *Short-Term Traffic Forecasting*. Proceedings of the 14th Annual AGIFORS Symposium.

Taneja, N. K. 1979. *AIRLINE TRAFFIC FORECASTING; A REGRESSION ANALYSIS APPROACH*.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Queuing Performance Analysis of E-Toll Implementation in Indonesia: A Case Study in PT. Jasa Marga Branch Purbaleunyi

Claudia Natasya Tambunan[a*], Yuanita Handayati[b]

[a,b]*Institut Teknologi Bandung, Jl. Ganesha No 10 Bandung 40132, Indoniesia*

Abstract

In this modern era, fast transaction time is one of the factors desired by toll road users when passing through toll gates. To meet this factor, PT Jasa Marga as Highway Corporation in Indonesia replaced their payment system from manual to electronic payment to reduce transaction time. An essential factor is by measuring the performance by using queuing theory method. However, PT. Jasa Marga has not analyzed the effect of electronic payment implementation, especially on queuing performance. Therefore, this paper present analysis of queue performance from a case study in Pasteur toll Exit gate that operated by PT. Jasa Marga branch Purbaleunyi to find out how effective the improvement happened after the implementation of electronic payment in the Pasteur toll. The method used is Multi-Server Queuing Model or (M / M / s) queuing. From the calculation by using (M/M/s) formula, the queuing performance is getting better after the implementation of E-toll, it is clearly seen from the average service time that significantly increased from around 5 seconds to 2.5 seconds on average. It also impacts the server utilization that decreases and probability the system will be empty increase.

Keywords: E-Toll; Multi-Channel Queuing Model; Performance Measure; Jasa Marga

1. Introduction

In order to increase public awareness toward the security of the transaction, the Indonesian government applying GNNT "Gerakan Nasional Non-Tunai". GNNT is the program of non-cash payment utilization proclaimed by Bank Indonesia on August 14, 2014. GNNT aims to raise awareness and increase the implementation of non-cash among all parties such as communities, businesses, and government. In general, the aim of creating the cash-less society is to improve the economic welfare of the country by creating non-cash payment to conduct financial transactions, which is easy, safe and efficient. (Swartz, Hahn, & Farrar, 2007) This program is expected to increase financial inclusion of the country. Financial inclusion is a process that ensures ease of access, availability, and benefits of the formal financial system for all actors' economy. (Sarma, 2008) Furthermore, the shift from cash to electronic payment instrument have to give benefit to all parties that involved. (Daniel D, Robert W, & Anne, 2006)

In order to accelerate the program, Bank Indonesia as the payment system authority in Indonesia is issuing E-Money as a way of official payment. E-money / Electronic Money is one of the biggest programs to support the Financial Electrification and Inclusion Program and led by Director of the Policy and Supervision Department of the Payment System of Bank Indonesia. Electronic Money is a stored-value or prepaid product, in which a certain amount of monetary value is stored in electronic equipment. Nominal money that is stored electronically and done by exchanging a sum of money or by debiting a bank account. With electronic devices that already stored by funds, customers can make various transactions.

---

* Corresponding author. Tel.: +62-821-299-222-52.
  E-mail address: claudia.natasya@sbm-itb.ac.id

ICMEM

The regulation of mandatory electronic toll payment or called E-toll constitute to GNNT program to create less cash society by considering the high number of toll road user in Indonesia. The e-toll usage rules are implemented for 35 toll roads that already have non-cash toll payment facilities. One of the toll road that already uses e-toll for all transaction is Purbaleunyi toll. Purwakarta-Bandung-Padaleunyi or called Purbaleunyi is 123 km Toll Road that makes the distance between Jakarta and Bandung closer. This toll road operated by Jasa Marga Branch Purbaleunyi that initially operated the Padalarang-Cileunyi toll road along 58.5 km since 1991. Purbaleunyi toll road, especially Pasteur toll gates, are the first toll road that applies Kartu Tanda Masuk Elektronik (KTME) or Technology of Electronic Sign Card. The use of the card which also became the forerunner of Gerbang Tol Otomatis (GTO) or Automatic Toll Gate that require all user to make toll payment by using E-Money. Reza Febrianto as the General Manager of PT. Jasa Marga Brach Purbaleunyi said that on 24 October 2017, 100% toll transaction in Pasteur Gate must use E-Money as a payment method. The implementation of electronic toll collection (ETC) is done by installing the RFID scanner or electronic money taping device of the toll road users when entering the toll gate. At the toll booth, the vehicle users no longer get a toll entrance card, but simply by taping electronic money users of the vehicle. The center of computer will send information and automatically cut the balance from a specific account. (Xu, 2008) Based on (Galande et al., 2015) about Automated Toll Cash Collection System for Road Transportation the benefit of applying for electronic payment in toll gates is eliminated congestion, especially during those seasons when traffic seems to be higher than normal or called peak hour. Furthermore, another general benefit of implementation of electronic payment is the minimization of fuel wastage, air pollution reduction, reducing queues and waiting time of vehicles in the queue and increasing monitoring capability. (Saffarzadeh, 2006)

Jasa Marga Office Brach Purbalenyi has a high volume for the number of cars entering or leaving the gates, one of them is in Pasteur gate. Pasteur gate is one of the main entrance gate when entering Bandung area. No surprisingly during peak hour, Pasteur toll always crowded and cause long queues to make payments in exit gate. For example, on 26th June 2017 PT Jasa Marga Office Branch Purbaleunyi recorded 32,000 cars passed out Pasteur gates which caused the queue more than 2 kilometers. The implementation of Automated Toll Cash Collection System in Indonesia on 31st October 2017 is expected to increase PT. Jasa Marga service level by reduce the queueing time. ETC was chosen because it is affecting several factors such as ease of use, usefulness, risk, reliability, service quality. (Yu & Rong, 2013) However, PT. Jasa Marga has not measure the impact of electronic payment implementation on queuing performance. As stated by Aksin et al. (2009) the queing performance can be analyzed by measuring waiting time of arriving customer before they are being served.

2.   Literature Review

2. 1. Queuing Theory

Queuing theory first introduced by Agner Krarup Erlang when he done the research about model of Copenhagen telephone exchange in 1910. (Chinwuko, Daniel, & Ugochukwu, 2014) He explained his idea about the application of telecommunication, traffic engineering   and the design of factories, shops, offices and hospitals.

Understanding queuing line is one of the most important areas in interactive operation management. Queuing theory is the main study about waiting lines model that commonly used in manufacturing and service areas. Analysis of queuing in terms of waiting-line length, average waiting line, other factors that can help us to understand the service system such collection of toll payment at highway toll booth. (Heizer & Render, 2014)

2. 2. Model B (M/M/S): Multi-Server Queuing Model

Based on Heizer and Render (2014), Multi-Server Queuing Model happen when arriving consumer are served by two or more channels in the system. Furthermore, the queuing line of car in Pasteur toll gate can be concluded in Model B (M/M/S) because it has following criteria which are the number of servers/ Channel is more than one (multi-server, the number of Phases is single phase, the arrival rate pattern is Poisson distribution, service time pattern is Exponential distribution, Population size is unlimited and the Queue Discipline is First in First Out

ICMEM

3. Methodology

The primary goal of data collection is to get quality data or evidence that easily translates to rich data analysis that may lead to credible and conclusive answers to questions of this research. This research concern to secondary data that related to historical data about:

- The number of vehicle that across the Pasteur exit toll gate
- The transaction time in each booth of Pasteur exit toll gate
- Number of gate h that can be served the toll user

This research conducted in PT. Jasa Marga, branch Purbaleunyi and focusing the research on Pasteur Toll Gate that precisely located in Plaza Tol Pasteur Jl. Dr. Djundjunan No, 257, Pasirkaliki, Cimahi Utara, Kota Cimahi, Jawa Barat 40164. The timing of this research takes place during September 2017 – January 2018.

The payment system uses in the toll Pasteur gates follows Model B (M/M/s): Multiple-Server Queuing Model, hence to analyze the queue performance in Pasteur toll, we measure the performance by using formula as follows:

M = Number of server/channel open
λ = Average arrival rate
μ = average service rate at each server/channel

The utilization of server:

$$q = \frac{\lambda}{\mu \ X \ M}$$

The probability that there are zero people or unit in the system is:

$$Po = \frac{1}{[\sum_{n=0}^{M-1} \frac{1}{n!}\left(\frac{\lambda}{\mu}\right)^n] + \frac{1}{M!}\left(\frac{\lambda}{\mu}\right)^M \frac{M\mu}{M\mu-\lambda}} \qquad \text{for M } \mu > \lambda$$

The average number of people or unit in the system is:

$$Ls = \frac{\lambda \, \mu \left(\frac{\lambda}{\mu}\right)^M}{(M-1)!(M\mu-\lambda)^2} \, Po + \frac{\lambda}{\mu}$$

The average time a unit spends in the waiting line and being served (in the system) is:

$$Ws = \frac{\mu \left(\frac{\lambda}{\mu}\right)^M}{(M-1)!(M\mu-\lambda)^2} \, Po + \frac{1}{\mu} = \frac{Ls}{\lambda}$$

The average number of people or unit in line waiting for service is:

$$Lq = Ls - \frac{\lambda}{\mu}$$

The average time a person or unit spends in the queue waiting for service is:

$$Wq = Ws - \frac{1}{\mu} = \frac{Lq}{\lambda}$$

ICMEM

4. Findings And Analysis

PT. Jasa Marga branch Purbaleunyi stated that it takes about 3 months for the electronic payment system adaptation from October 2017 until December 2017. This is because of the high number of toll users who do not have e-toll or their e-toll balance that is not sufficient. By considering that adaption period time, this research chooses the data from September 2017 for queue performance before implementation of E-toll and data from January 2018 for queue performance after implementation of E-toll.

4. 1.   Before the Implementation of E-toll

There are 8 exit gates to serve toll road users passing through Pasteur toll. Before the implementation of e-toll, toll payments are done manually by toll gate officers. The research for analysis before the mandatory electronic payment at Pasteur toll gate is done by using the data from 1st September 2017 until 31st September 2017 to know the average arrival rate and average service rate. Recorded by PT. Jasa Marga in September 2017 there are 1,001,118 cars out through the Pasteur Toll Exit gates. So, based on data calculation the average arrival rate in Pasteur Toll Exit gates in September 2017 is $1,345,59$ or $1,346$ cars per hour. Therefore, the average service time in that can be provided in Pasteur exit gate is 5.293 seconds.

$$\text{Average Service Rate} = \frac{1}{5.293} \text{ x } 3600 = 680.144 \text{ users per hour}$$

So, based on calculation the average service rate that can be provide from PT. Jasa Marga in September 2017 is 680.144 toll users per hour.

The utilization of server:

$$q = \frac{1,346}{680.14 \, X \, 8} = 24.74 \text{ \%}$$

The probability that there are zero people or unit in the system is:

$$Po = \frac{1}{[\sum_0^7 \frac{1}{n!}\left(\frac{1,346}{680.14}\right)^n] + \frac{1}{8!}\left(\frac{1,346}{680.14}\right)^8 \frac{8(680.14)}{8\,(680.14)-1,346}} = 13.82\% \quad \text{for M } \mu > \lambda$$

The average number of people or unit in the system is:

$$Ls = \frac{1,346\,(680.14)\left(\frac{1,346}{680.14}\right)^8}{(7)!(8(680.14)-1,346)^2} \; 0.1382 + \frac{1,346}{680.14} = 1.979$$

The average time a unit spends in the waiting line and being served (in the system) is:

$$Ws = \frac{680.14\left(\frac{1,346}{680.14}\right)^8}{(7)!(8(680.14)-1,346)^2} \; 0.1382 + \frac{1}{680.14} = 5.29$$

The average number of people or unit in line waiting for service is:

$$Lq = 1.979 - \frac{1,346}{680.14} = 0.00035$$

The average time a person or unit spends in the queue waiting for service is:

$$Wq = 5.29 - \frac{1}{680.14} = 0.056$$

4. 2.   After the Implementation of E-toll

The analysis queue performance after implementation of e-toll uses the data from 1st January 2018 until 31st January 2018 due to the transition time, where all users have been using e-toll for toll payment. PT. Jasa Marga branch

ICMEM

Purbaleunyi recorded there are 1,009,018 cars in total that passed through Pasteur toll exit gate in January 2018. So, on average there were 1,356.21 or 1357 cars/hour that needs to be served. Therefore, after the implementation of E-toll, the service time in Pasteur toll exit gate significantly decrease to 2.32 second on average

Average service Rate $= \frac{1}{2.32}$ x 3,600 = 1,551.724 users per hour

Based on calculation above, the average service rate that can be provided from PT. Jasa Marga to serve Pasteur toll user is 1,552 user every hour.

The utilization of server:

$$q = \frac{1357}{1,551.72 \; X \; 8} = 10.93\%$$

The probability that there are zero people or unit in the system is:

$$Po = \frac{1}{[\sum_0^7 \frac{1}{n!}\left(\frac{1357}{1,551.72}\right)^n] + \frac{1}{8!}\left(\frac{1357}{1,551.72}\right)^8 \frac{8(1,551.72)}{8(1,551.72)-1357}} = 41.71\% \quad \text{for M } \mu > \lambda$$

The average number of people or unit in the system is:

$$Ls = \frac{1357 \; (1,551.72)\left(\frac{1357}{1,551.72}\right)^8}{(8-1)!(8(1,551.72)-1357)^2} \; 0.4171 + \frac{1357}{1,551.72} = 0.875$$

The average time a unit spends in the waiting line and being served (in the system) is:

$$Ws = \frac{1,551.72\left(\frac{1357}{1,551.72}\right)^8}{(8-1)!(8(1,551.72)-1357)^2} \; 0.4171 + \frac{1}{1,551.72} = 2.32$$

The average number of people or unit in line waiting for service is:

$$Lq = 0.875 - \frac{1357}{1,551.72} = 0.000488$$

The average time a person or unit spends in the queue waiting for service is:

$$Wq = 2.32 - \frac{1}{1,551.72} = 0.0000776$$

4. 3. *Queuing Performance*

Table 1. Queuing Performance in Pasteur Exit Gates

Queuing Performance	Before E-toll	After E-toll	
Average Arrival Rate (λ)	1346	1357	/ hour
Average Service Rate (μ) per server	680.144	1551.72	cars/hour
Number of Server (M)	8	8	gates
Average service utilization (q)	24.74 %	10.93%	busy
Average number of customer in the queue (Lq)	0.00035	0.0000488	in queue
Average number of consumer in the system (Ls)	1.979	0.875	in the system
Average waiting time in the queue (Wq)	0.056	0.0000776	second
Average time in the system (Ws)	5.29	2.32	second
Probability (% of time) system is empty (P_0)	13.82%	41.71%	empty

To analyze the performance before and after the implementation of E-toll as an electronic payment in Pasteur toll exit gates, we compare the queue performance in September 2017 and January 2018. As can be seen in Table 1, there are several factors that can be analyzed and compared. First of all, the average service rates that increase doubled after

ICMEM

the implementation of E-toll. When PT. Jasa Marga still collect toll payment manually the service rate only 680.144 per hour. After changing the system by using the machine to replace human work, the service rate increase to 1551.72 per hour. It shows that by using electronic PT. Jasa Marga branch Purbaleunyi can serve more toll user every hour. Increase in service rate also impacts server utilization that decreased to 10.9% to 24.7% after the implementation of E-toll. The value shows that the system becomes less busy because of the service time that decreased significantly. Still, the utilization still considers as underutilization because the system does not work to the maximum potential. For the average number of user in the queue do not show any change, because in September 2017 and January 2018 the average number of consumer in the queue is only one person. On the hand, the average number of consumer in the overall system increased from two people on average to one person in the system.

The average waiting time in the queue also shows better performance after the implementation of E-toll. The average waiting time in the queue decreased from 0.0056 seconds to 0.0000776 seconds. Still, in average each user only need very short time to wait to be served. But, the significantly decreased shows in average time in the system. On average, in September 2017 each toll user need 5.29 second to wait in the queue and being served but after the implementation of E-toll, each consumer only needs 2.32 second. This is because human error while serving toll user can be reduced after PT. Jasa Marga replaces human labor to the machine to collect payment. This also causes the probability the system will be empty rise to 41.71% from 13.82% before the implementation of E-toll.

5.   Conclusion

Overall, the queuing performance improves after E-toll Implementation. It clearly shows from the average waiting time that becomes shorter, average service time that decreases almost doubled, and probability the system will be empty that getting bigger even on peak hour. However, after observed in Pasteur toll Exit gates, queues are still frequent happened and toll user still has to wait for more than one second while based on the calculation in this research. After directly observing, we know that cars allocating in Pasteur toll are not well enough that cause some machines to do not serve user at all while some machine served more user that caused more traffic. Other reason why queues still happen in Pasteur till exit gates are because queue from traffic light after toll Pasteur gates which cause toll user cannot go forward and make payment.

However, queue performance in Pasteur toll Exit gate is getting better after the implementation of E-toll as a new payment by utilizing RFID machine that replaces human to collect toll payment. However, the use of the machine still underutilization that means the system does not work maximally. This because of the number of gates that too many. Furthermore, the average number of toll user in the queue or in the system that needs to be served has not changed significantly because the number of cars that passed through remains the same. On the other hand, it is clearly seen that average time in the system has decreased dramatically almost double from around 5 seconds to 2.5 seconds on average. It shows that toll user can save more time to make toll payment after the implementation of E-toll. It also makes the probability to the system will be empty increase. So, in overall, the performance has been effective but not too efficient because the average server utilization does not perform to its maximum capacity or underutilization

Reference

Xu, G. (2008). The Research and Application of RFID Technologies in Highway's Electronic Toll Collection System. *4th International Conference on Wireless Communication, Networking, and Mobile Computing.* Dalian: IEEE.

Saffarzadeh, M. (2006). Cost-Benefit Analysis of Electronic Toll Collection (ETC) System in Iranian Freeways. *PIARC International Seminar on Intelligent Transport System (ITS) in Road Network Operation*, (p. 8). Kuala Lumpul.

Yu, C., & Rong, C. (2013). The adoption behaviours of freeway electronic toll collection: A latent class modelling approach. *Transportation Research Part E*, *49*, p. 2018.

Chinwuko, D. C., Daniel, E. C., & Ugochukwu, O. P. (2014). Analysis of a queuing system in an organization (a case study of First Bank PLC, Nigeria). *American Journal of Engineering Research*.

ICMEM

Galande, S., Oswal, S., Giddle, V., Ranaware , N., & Bandgar, S. (2015). Automated Toll Cash Collection System for Road Transportation. *International Journal of Computer Science and Mobile Computing*, 217-218.

Heizer, J., & Render, B. (2014). *Operation Management: Sustainability and Supply Chain Management* (11st Edition ed.). London: Pearson Education, Inc.

Zeynep, A., Mor, A., & Vijay, M. (2009). The Modern Call Center: A Multi-Disciplinary Perspective on Operations Management Research.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Reducing Company's Logistic Cost by Optimizing Transportation Cost In Bandung City – A Case Study Of 8 Lima Logistik

Edwin Prajna Adistana[a*], Desy Anisya Farmaciawaty[b]

[a,b]School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No 10, Bandung, 40132, Indonesia

Abstract

One of the most effective way to reduce logistic cost is by optimizing transportation cost as it impacts about 50% of the logistic cost. As a start-up company that provides distribution logistic services in Bandung Area to 7 tenants, 8 Lima Logistik has many constraints due to the limited resources, such as: amount of the vehicle, vehicle's capacity, delivery time per week, Bandung's traffic condition, and the random date of order from the existing customers. This research aims to find delivery route with the lowest cost for 8 Lima Logistik with the company's constraints in order to optimize its transportation cost. The authors will gather the primary data by conducting interview to the company and observing the company's existing delivery route's policy. Secondary data was collected from google maps to find the approximate distance between each tenant. The gathered data will be analyzed using Genetic Algorithm and Nearest Neighbor Procedure method. The Result shows that Genetic Algorithm method gives lower transportation cost compared with Nearest Neighbor Procedure's. This result could also be used by the other company that has similar problem with 8 Lima Logistik.

Keywords: ATSP; Asymetric Traveling Salesman Problem; NNP; Nearest Neighbor Procedure; Genetic Algorithm ; Traveling Salesman Problem; TSP

1.   Introduction

In 2012, the average of logistic cost in Indonesia was IDR 1820 trillion equals to 24% of Indonesia's GDP. In 2017, the average of logistic cost compared with the GDP in Malaysia was about 13%, Thailand 13.2%, Singapore 8.1%, and 10% for both Japan and USA. However, Indonesia was still struggling at the 23.5% level (Bisnis Indonesia, 2018). This fact shows that Indonesia's logistic cost is still not efficient yet compared with the some other country, especially neighbouring country like Thailand, Malaysia, and Singapore.

Logistic cost consist of transportation cost, warehouse cost, stock holding cost, packaging cost, information processing cost, and other logistics overheads (Waters, 2003). Transportation cost gives about 40% to 50% contribution to the logistic cost and should be the first thing that need to be reduce in order to lower the logistic cost (Zhu & Zhai, 2017). There are some method in order to lower the transportation cost like: use low fuel consumption vehicle, maximize the capacity of the car, optimize the vehicle routing, etc.

In this paper, we will discuss more about the optimization of vehicle routing. The main idea of vehicle routing is to minimize the travel distance (cost). However, to get the most feasible solution we need to know the condition of the route itself, like: the traffic condition of the road (one-way, two-ways, or other), the number of vehicle owned, the capacity of the vehicle, etc. We will do a case study of 8 Lima logistik, an SME that provides distribution services for local company in Bandung area. The current condition of this company is it's the main distributor of Sari Jahe Keraton Product in Bandung region, the number of vehicle owned is just one, the maximum capacity of the vehicle is 26 cartons

---

* Corresponding author.

ICMEM

per delivery, the delivery time is limited to 2 days per week, the company has 7 tenants that usually order the product, the order date from the existing tenants is random, and Bandung City's traffic condition has many one-way road.

The purpose of this study is only to find the most optimum vehicle routing solution for 8 Lima Logistik by comparing the result between 2 solutions from Non-Deterministic Approach, the Genetic Algorithm and Nearest Neighbor Procedure. Quoted from a survey on traveling salesman problem, Sanchit Goyal (Goyal, 2010) state that:

> "*The exact solutions provide an optimal tour for TSP for every instance of the problem; however their inefficiency makes it unfeasible to use those solutions in practical applications. Therefore Non-Deterministic solution approach is more useful for the applications which prefer time of run of the algorithm over the accuracy of the result.*"

Considering the statement above, the author only comparing the result between 2 Non-Deterministic Approaches, rather than comparing between Deterministic and Non-Deterministic Approach.

2. Theoretical foundation

The following are the theories used for this research.

2.1. Distribution Management

Distribution Management is a supply chain activity that focuses on the outbound flow of products or in more simple word is the delivery process of the products to the customers. The cost that affect this activity are inventory cost, transportation cost, and facility cost. The effectiveness of distribution management can become one of the success factor of a success supply chain management, because the top notch supply chain performance requires both good upstream (Supplier) and downstream (distributors and retailers) management (Heizer, Render, & Munson, 2016).

2.2. Vehicle Routing

Vehicle routing is the strategy for the routing of vehicle that used to provide services, like: taxis, mass transit, trucking firm, etc. Basically, the vehicle routing's main purpose is to minimize the total cost of the services (mileage, capital cost, and personnel cost). In this era, companies need to gather more and more information data in order to adapt with the new situations (Thompson, 2016).

2.3. Vehicle Routing Problem

The objective in Vehicle Routing Problem is to obtain the minimum total of routing cost (mileage, capital cost, and personnel cost). Usually, the problem will be presented as a graphical networks.
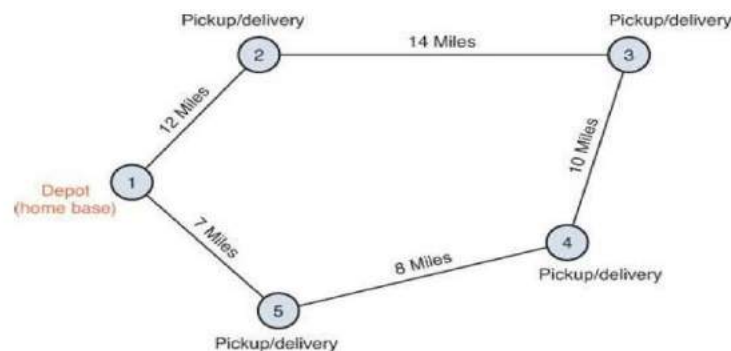
Figure 1. Graphical Network

The Graphic consist of 5 dots and connecting lines, the common name for the dots in the graphical networks is Nodes and the connecting lines between each nodes is called Arcs. The number 1 node is the depot or home base, so the vehicle will start and return again to that place. The number 2 until 5 represents the Pickup or delivery place. The

arcs between nodes usually fill with the explanation of the distance, cost, or time required to travel from one to another node. The arcs above shows the distance between each nodes. The arcs can be directed and undirected, the directed arcs usually shows the arrow that indicate the direction for the vehicle, the arrow will show where to go from depot and where will the vehicle come again to the depot. Directed arcs usually used when the route of the vehicle is a one way route. The undirected arcs is similar like the graphical network above, the vehicle could go from $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 1$ or $1 \rightarrow 5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1$, it doesn't matter as long as it follows the arcs.

The minimum cost solution is subjected to the feasibility of the tour, the feasibility is depend on the problem, however in general the feasibility implies that a tour must start and return again and visit all nodes only once each tour. The output of routing system is usually showing the route sequences from one node to the other and the time to visit the nodes.

There are several theory to find the solution of this vehicle routing. However, we have to classify the problem into some classification, such as the number of vehicle, capacities of the vehicle, garage location of the vehicle, and the routing objectives. The example of the vehicle routing solutions are TSP (Traveling Salesman Problem), MTSP (Multi Traveling Salesman Problem), VRP (Vehicle Routing Problem), and CPP (Chinese Postman problem). Fail to define the right condition and objective of the company will lead to the wrong method and caused the company fails to reach its objective (Haksever & Render, 2013).

2.4. Hamiltonian Cycle Problem

Hamiltonian Cycle Problem (HCP) essence is to find a cycle to visit all the nodes given exactly once. The theory was introduced by a game named Icosian, made by Sir William Rowan Hamilton in 1857. The Idea of the game was exactly the same as the Hamiltonian Cycle Problem, the player had to find the route to visit the 20 given location of the city on the given map exactly once and then returned to the starting point (Vivek S. Bokar, 2012).

2.5. Traveling Salesman Problem

Traveling Salesman Problem or TSP is one of the method to solve vehicle routing problem, this mathematical programming solver is effective to solve not too large problem (Haksever & Render, 2013), usually related to the small number of nodes and only 1 number of vehicle. Based on the distance from each nodes, TSP divided into 2 classes, Symmetric Traveling Salesman Problem (STSP) and Asymmetric Traveling Salesman Problem (ATSP) (Maichel M. Aguayo & Sherali, 2017). If there were 2 nodes named A and B, in STSP the distance from A to B is the same with the distance from B to A. However in the case of ATSP, the distance from A to B might not be the same with the distance from B to A.

There are two approaches that can be used in order to solve the TSP, which are deterministic and non-deterministic approach (Laporte, 1992).

The Deterministic Approach

The Deterministic Approach solve the TSP problem by giving an exact solution for the problem by using the linear programming. The example of the Deterministic Approach are cutting plane method (introduced by Dantzig, Fulkerson, and Johnson), branch-and-cut (introduced by Padberg and Rinaldi), branch-and-bound (Land and Doig) and Concorde (introduced by Applegate, Bixby, Chatal, and Cook). However, as the number of cities were increased, each of these algorithm become highly inefficient (Goyal, 2010).

The Non-Deterministic Approach

Non-Deterministic Approach tries to solve the problem by giving an approximate minimal cost by using heuristic method to solve the problem. The example of Non-Deterministic Approach are Nearest Neighbor Procedure, K-Opt heuristics, Clark & Wright Saving Heuristic, Ant Colony Optimization (ACO) (Rai & Sharma, 2015), Genetic Algorithm (GA) and Lin-Kernighan heuristic by W. Kernighan (Lin & Kernighan, 1971). In this approach we will compare two algorithm, which are Nearest Neighbour Procedure and Genetic Algorithm.

2.6. Nearest Neighbour Procedure (NNP):

ICMEM

One of the most common heuristic method for TSP is the Nearest Neighbor Procedure, the idea of this heuristic is to create the sequences by connect the last visited node to the closest node in the network. It would generate an approximately optimal solution from the distance matrix (Haksever & Render, 2013).

Steps of Nearest Neighbor Procedure are:
1. Choose the starting node (usually warehouse or depot)
2. Find the nearest unvisited nodes and go there
3. If there is still unvisited node left, repeat step 2. Continue until it has visited all nodes.
4. Return to the starting node

2.7. Genetic Algorithm (GA):

Genetic Algorithm method is a computer science search technique to solve combinatorial optimizaton problem by giving an approximate solution, the based of this alogrithm is the natural evolution including the survival of the fittest idea algorithm, in which the main goal is to generate a new solution that better than the previous generation of solution (Kartik Rai, 2014).

Steps of Genetic Algorithm are:
1. Generate a Population from chromosomes, the GA will randomly samples values of changing cells between the lower and upper bound to generate a set of chromosomes.
2. Create a new generation. In order to find the minimum solution, crossover and mutation are used to generate the next generation of chromosomes sets. The chromosomes with smaller fitness function more likely to survive to the next generation.
3. Stopping condition. Each generation's result will be recorded and after it there is no improvement again after finding many consecutive generations, the Genetic Algorithm stops. Then it shows the best set of chromosomes.

3. Methodology

This study will be done by this sequence. First, we identify the problem by conducting interview to the owner of 8 Lima Logistik then do the literatures study related with the identified problems. The next steps is collecting data needed to conduct the research, consist of primary and secondary data. The primary data consist of the list of existing tenant, fuel cost of the vehicle, and the company's delivery policy. These data were gathered by interviewing the owner and observing the company's existing data. Secondary data consist of the approximate distance from warehouse to tenant, tenant to tenant, and tenant to warehouse and collected from google maps. The gathered data will be analyzed using 2 Non-Deterministic Approach methods. The first method is Genetic Algorithm while the second is the Nearest Neighbor Procedure (NNP). The software that will be used to analyze the Genetic Algorithm is Excel Solver. The author will compare the result of both approach and recommend the most optimum routing solution to be applied in 8 Lima Logistik.

4. Data Analysis

The Following contains the company's data, the analysis result using Genetic Algorithm and Nearest Neighbor Procedure, and the discussion about the result.

4.1 Company Data

The Following is the data distance of 8 Lima Logistik from warehouse to tenants, tenants to tenants, and tenants to warehouse.

ICMEM

Table 9. 8 Lima Logistik Distance Matrix

		To Node (distance in KM)								
		X	A	B	C	D	E	F	G	
From Node	X	0	6.1	9.1	8.2	8.6	9.4	11.8	15.9	X: Warehouse
	A	6.7	0	3.7	4.5	4.9	5.7	8.6	9.8	A: Chilli Kafe
	B	7.2	4.4	0	0.75	1.1	1.9	6	6.9	B: Pusaka Rama Drug Store
	C	7	4.1	2.1	0	0.55	1.4	6.1	6.4	C: Dreamliner Spa
	D	7.3	4.5	2.2	0.55	0	0.8	5.6	5.8	D: Susu Murni Silihwangi
	E	8.2	5.1	2.7	1.4	0.85	0	5.3	5	E: Jamu Store Sumber Anyar
	F	11.2	8.4	5.8	4.4	4	4.4	0	6.8	F: PD. Bina Pratama
	G	13.4	10.5	7.5	6.6	6	5.6	6.3	0	G: Sukses Makmur Wholesaler

Table 1. above shows the distance matrix of 8 Lima Logistik company, it shows the distance from warehouse to tenants, tenants to tenants, and tenants to warehouse. For example the distance from warehouse (X) to Dreamliner Spa (C) is 8.2 Km.

Figure 2. Map of Tenant's distribution

Figure 2. shows the distribution of warehouse and current tenant location. It shows that the distribution of the tenants were spread in many area of Bandung city. 4 (B, C, D, and E) out of 7 tenants concentrated in the middle of Bandung city. The other 2 (F and G) were located in the southern area, and the other (A) was located in the northern area.

The distance matrix and the tenant's distribution map shows that 8 Lima logistik has an asymmetric distance matrix which could be solved by ATSP method. This asymmetric distance matrix is affected by the traffic condition in Bandung City which contains many one-way road.

4.2 Genetic Algorithm Analysis

Assume All Nodes is Visited

The following is the step to analyze the Genetic Algorithm using Excel Solver:

Step 1 Put the original matrix.

Tabel 2. Original Matrix

To Node							
X	A	B	C	D	E	F	G

From Node								
X	0	6.1	9.1	8.2	8.6	9.4	11.8	15.9
A	6.7	0	3.7	4.5	4.9	5.7	8.6	9.8
B	7.2	4.4	0	0.75	1.1	1.9	6	6.9
C	7	4.1	2.1	0	0.55	1.4	6.1	6.4
D	7.3	4.5	2.2	0.55	0	0.8	5.6	5.8
E	8.2	5.1	2.7	1.4	0.85	0	5.3	5
F	11.2	8.4	5.8	4.4	4	4.4	0	6.8
G	13.4	10.5	7.5	6.6	6	5.6	6.3	0

The original matrix shows the same distance matrix from the company's data.

Step 2 Modify the original matrix.

Add the second X as the finish point, adjust the value of the matrix, change all the 0 (zero) length distance with 100, and add another name of X with 1, A with 2, etc. until the X finish point with 9 and put it next to the column and below the row.

Tabel 3. Modified Matrix

From Node			To Node								
			X	A	B	C	D	E	F	G	X
			1	2	3	4	5	6	7	8	9
X	1		100	6.1	9.1	8.2	8.6	9.4	11.8	15.9	100
A	2		100	100	3.7	4.5	4.9	5.7	8.6	9.8	6.7
B	3		100	4.4	100	0.75	1.1	1.9	6	6.9	7.2
C	4		100	4.1	2.1	100	0.55	1.4	6.1	6.4	7
D	5		100	4.5	2.2	0.55	100	0.8	5.6	5.8	7.3
E	6		100	5.1	2.7	1.4	0.85	100	5.3	5	8.2
F	7		100	8.4	5.8	4.4	4	4.4	100	6.8	11.2
G	8		100	10.5	7.5	6.6	6	5.6	6.3	100	13.4
X	9		100	100	100	100	100	100	100	100	100

ICMEM

Modify the previous distrance matrix by saparating the X into 2 nodes, the first one as the starting node and the last one as the finish node. After that add the value of 0 distance from all of the node to the starting node, this was because of the hamiltonian cycle problem theory which is visit every node **exactly once.** After that, fill the distance matrix from the finish node to the other node with 0 distance, because we set this as the end point of the route. Last, change the value of all the 0 distance with greater value than the highest value in the matrix in this case we use 100, because if 0 was put in the matrix, it will be assumed as the lowest distance and will ruin the process.

Step 3 Create Sequence Matrix.

Create a new sequence matrix with the formula below the modified matrix and also put the total distance of the sequence matrix.

Tabel 4. Sequence Matrix

Sequence

	1	2	3	4	5	6	7	8	9	Total Distance
Distance	6.1	3.7	0.75	0.55	0.8	5.3	6.8	13.4		37.4

The sequence matrix above shows the random sequence of routing starting with 1 and ended with 9. The distance and the total distance of the route also shown on the matrix. The matrix shows that the distance from node 1 to 2 is 6.1, 2 to 3 is 3.7, etc.

Step 4 Analyze the total distance of the sequence matrix with excel solver to find the minimum distance using genetic algorithm.

Tabel 5. Sequence Matrix after analyzed using GA

Sequence

	1	2	3	5	6	8	7	4	9	Total Distance
Distance	6,1	3,7	1,1	0,8	5	6,3	4,4	7		34.4

After we analyzed the random distance matrix with GA method, it gave the result as the sequence matrix above. The sequences is changing from $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9$ to $1 \rightarrow 2 \rightarrow 3 \rightarrow 5 \rightarrow 6 \rightarrow 8 \rightarrow 7 \rightarrow 4 \rightarrow 9$ / $X \rightarrow A \rightarrow B \rightarrow D \rightarrow E \rightarrow G \rightarrow F \rightarrow C \rightarrow X$ with the total distance of 34.4

Assume Some Nodes Were Not Visited

Assume that vehicle did not visit Node 2, 5, and 8.

Step 1 Remove the not visited nodes by change the value from and to of it into greater amount than the amount that we use for changing zero distance (in this case 100).

Tabel 6. Distance Matrix without visiting Node 2, 5 and 8

				To Node					
X	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**X**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

X	1	100	1000	9.1	8.2	1000	9.4	11.8	1000	100
A	2	1000	1000	1000	1000	1000	1000	1000	1000	1000
B	3	100	1000	100	0.75	1000	1.9	6	1000	7.2
C	4	100	1000	2.1	100	1000	1.4	6.1	1000	7
D	5	1000	1000	1000	1000	1000	1000	1000	1000	1000
E	6	100	1000	2.7	1.4	1000	100	5.3	1000	8.2
F	7	100	1000	5.8	4.4	1000	4.4	100	1000	11.2
G	8	1000	1000	1000	1000	1000	1000	1000	1000	1000
X	9	100	1000	100	100	1000	100	100	1000	100

(Left label spanning rows: **From Node**)

When we don't want to visit all nodes, simply changing the distance value the all of the distance from and to the not visited node with greater number that we used for changing the 0 distance matrix. In this case we use 1000 to change the not visited number. Because we don't want to visit 2, 5, and 8, we changed the value from and to those nodes with 1000.

Step 2 After that, run the solver.

We run the solver, like when we do it in the previous analysis.

Step 3 We will got the result like below, simply subtract the total amount of distance by the multiplication result of the number of not visited nodes and the greater amount that we used.

Tabel 7. Minimum Sequence Result

Sequence

	8	5	2	1	7	6	3	4	9	Total Distance
Distance	1000	1000	1000	11.8	4.4	2.7	0.75	7		3026,65

The sequence matrix shows the sequence of $8 \rightarrow 5 \rightarrow 2 \rightarrow 1 \rightarrow 7 \rightarrow 6 \rightarrow 3 \rightarrow 4 \rightarrow 9$ with the total distance of 3026.65 Km. Simply delete the 2, 5, and 8 nodes, because we decided not to visit them. After that, we will get the result of the best route from $1 \rightarrow 7 \rightarrow 6 \rightarrow 3 \rightarrow 4 \rightarrow 9$ / $X \rightarrow F \rightarrow E \rightarrow B \rightarrow C \rightarrow X$ with the total distance of 26.65 Km.

4.3 Nearest Neighbor Procedure

Assume All Nodes Were Visited

Step 1 Put the NNP matrix, and choose X (Warehouse) as the starting point.

Tabel 8. NNP Matrix

To Node

		X	**A**	**B**	**C**	**D**	**E**	**F**	**G**
From Node	**X**	0	6.1	9.1	8.2	8.6	9.4	11.8	15.9
	A	6.7	0	3.7	4.5	4.9	5.7	8.6	9.8
	B	7.2	4.4	0	0.75	1.1	1.9	6	6.9
	C	7	4.1	2.1	0	0.55	1.4	6.1	6.4
	D	7.3	4.5	2.2	0.55	0	0.8	5.6	5.8
	E	8.2	5.1	2.7	1.4	0.85	0	5.3	5
	F	11.2	8.4	5.8	4.4	4	4.4	0	6.8
	G	13.4	10.5	7.5	6.6	6	5.6	6.3	0

The original matrix shows the same distance matrix from the company's data.

Step 2 Visit the nearest node from the X node.

In this case, the nearest Node from X node is A, so we visit A.

Step 3 Visit the nearest unvisited node from the last visited node.

The nearest unvisited node from the last visited node (A) is B.

Step 4 Repeat Step 3 until there are no unvisited node.

Step 5 Return back to X node from the last visited node.

After visiting all the remaining nodes, as the hamiltionian cycle theory, we returned to the starting node (X).

After following the steps, we got the result of X → A → B → C → D → E → G → F → X with the total distance of 34.4.

Assume Some Nodes Were Not Visited

Step 1 Put the NNP matrix with some not visited nodes and choose X (Warehouse) as the starting point.

Tabel 9. NNP Matrix with some not visited nodes

		X	**B**	**C**	**E**	**F**
From Node	**X**	0	9.1	8.2	9.4	11.8
	B	7.2	0	0.75	1.9	6
	C	7	2.1	0	1.4	6.1
	E	8.2	2.7	1.4	0	5.3
	F	11.2	5.8	4.4	4.4	0

Modify the original matrix node by removing the not visited node form the matrix.

ICMEM

Step 2 Visit the nearest node from the X node.
In this case, the nearest node from the starting node was C, so we visit C.
Step 3 Visit the nearest unvisited node from the last node.
The nearest node from C was E, so we visit E.
Step 4 Repeat Step 3 until there are no unvisited node.
Step 5 Return back to X node from the last visited node.

When there's no unvisited node, go back to the finish point. After using completing the routing with NNP method, we got the result of X → C → E → B → F → X with the total distance of 29.5.

Comparison:

Tabel 10. Summary

Method	Total Nodes	Sequence	Total Distance (in KM)	Fuel Cost
Genetic Algorithm	9	X → A → B → D → E → G → F → C → X	34.4	Rp 38.331
Nearest Neighbor Procedure	9	X → A → B → C → D → E → G → F → X	34.4	Rp 38.331
Genetic Algorithm	6	X → F → E → B → C → X	26.65	Rp 29.696
Nearest Neighbor Procedure	6	X → C → E → B → F → X	29.5	Rp 32.871

The table above shows the comparison result of Genetic Algorithm and Nearest Neighbor Procedure method, the fuel cost above were calculated by divided the total distance with 7 km and multiply the result with the current RON 90 gasoline price in the market. The 7 Km was the length of the distance that can be obtained with 1 litre of gasoline, it was the primary data gathered by the researcher.

4.4 Discussion

The main idea of TSP is to find the minimum distance cost needed in order to visit all nodes given, which in this research means to find the minimum distance to deliver the product from warehouse (X) to tenant(s) then return back to the warehouse (X). The current condition of the company are the company only have one vehicle and the capacity of the vehicle is limited to 26 cartons per delivery, there are 7 tenats, the random date of order from the tenants and the delivery date is limited only on Wednesday and Friday (2 Days per Week). It means when a tenants ordered the product on Friday until Tuesday, the product will be delivered on Wednesday, and if they ordered the product on Wednesday and Thursday, it will be delivered on Friday. Also, when the Vehicle capacity is already reached its limit, the order will be delivered on the next batch. Example, If A orders 14 cartons, B orders 12 cartons, and C orders 10 cartons on the same day, the order from A and B will be delivered on the nearest delivery date, then C's will be delivered on the next nearest delivery date. However this condition has never been happening until now, because the tenants usually order less than 10 cartons per order. Only Sukses Makmur Wholesaler that usually orders more than 10 cartons per batch.

From the calculation above, the author found out that both Genetic Algorithm and Nearest Neighbor Procedure gives the same amount of distance when the company have to visit all nodes, even both of it doesn't give the same routing solution. However, when we modify the must visited nodes, the Genetic Algorithm shows better solution than the Nearest Neighbor Procedure's. The random date of order from the tenants impacts the delivery route decision most, because it determine where to visit on the delivery date, because of this random date of order, the company needs a flexible tool to determine the minimum routing sequences that could easily be modified depends on the company's needs. Which means the genetic algorithm is more suitable to be used as a routing tools for 8 Lima Logistik in order to optimize its Transportation Cost.

ICMEM

5. Conclusion

The Result from both Genetic Algorithm and Nearest Neighbor Procedure show that if the vehicle has to visit every nodes, both of the method gave the equal distance of solution. However, the sequence of visited nodes is slightly different. GA solution's was X → A → B → D → E → G → F → C → X while NNP solution's was X → A → B → C → D → E → G → F → X, both of it shows the same total distance which is 34.4 Km. However, on the second analysis the number of visited nodes decreased (assumed that the vehicle must not visit some nodes), GA's solution has lower total distance than NNP's.

Based on this research, we recommend 8 Lima Logistik to apply Genetic Algorithm method in order to decide the best vehicle routing to deliver the product because when the company applied this method it could reduce the transportation cost of 8 Lima Logistik. The scope of this research is limited only to find the best routing solution for 8 Lima Logistik regarding the company's current conditions and constraints. The future research of delivery scheduling is needed in order to optimize the transportation cost of 8 Lima Logistik.

References

Bisnis Indonesia. (2018, March 28). Menanti Sektor Logistik Lebih Efisien. *EDITORIAL*, hal. 2.

Goyal, S. (2010). *A Survey on Travelling Salesman Problem.* North Dakota.

Haksever, C., & Render, B. (2013). *Service Management An Integrated Approach to Supply Chain Management and Operations.* New Jersey: Pearson Education.

Heizer, J., Render, B., & Munson, C. (2016). *Operations Management Sustainability and Supply Chain Management.* Pearson.

Kartik Rai, L. M. (2014). Research Paper On Traveling Salesman Problem And It's Solution Using Genetic Algorithm. *INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN TECHNOLOGY*, 103-114.

Laporte, G. (1992). The Traveling Salesman Problem: An overview of exact and approximate algorithms. *European Journal of Operational Research 59*, 231-247.

Lin, S., & Kernighan, B. W. (1971). *An Effective Heuristic Algorithm for the Traveling Salesman Problem.* New Jersey: Bell Telephone Laboratories.

Maichel M. Aguayo, S. C., & Sherali, H. D. (2017). *Traveling Salesmen Problems by Generating Subtour Elimination Constraints From Integer Solutions.* Virginia: IISE Transactions.

Rai, S., & Sharma, R. (2015). Solution to Traveling Salesman Problem by Nature Inspired Algorithm. *International Journal of Computer Applications*, 52-54.

Thompson, R. G. (2016). Logistics Systems for Sustainable Cities. *Intelligent Vehicle Routing And Scheduling*, 97-110.

Vivek S. Bokar, V. E. (2012). *Hamiltonian Cycle Problem and Markov Chain.* New York: Springer.

Waters, D. (2003). *Logistics: An Introduction to Supply Chain Management.* New York: PALGRAVE MACMILLAN.

Zhu, R., & Zhai, Y. (2017). Research on the application of VRP theory in logistics transportation. *MATEC Web of Conferences*, 05064.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Implementation of Single Order Inventory Model in KLP Concept Store

Kenny Lisanputera[a*], Gatot Yudoko[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Indonesia*

Abstract

Inventory management is very important to help company to manage stock availability. KLP is a company that sell perishable items and purchasing made once per period. However, KLP often suffer understock and overstock situation. There's no objective calculation from inventory management at current condition since all the purchasing made by owner's intuition, so the owner may purchase too few or many quantity orders that cause understock and overstock. Since the demand is unknown, inventory model that will be used is Single Order Inventory Model. Before using the model, ABC analysis used to choose the products which give big contribution for KLP. This inventory model generates the optimum quantity order for each item for certain cycle service level to maximize expected profit with consideration of expected understock and overstock. Single order model is suitable for this problem because there's no following order of same item since the company sold perishable item.

Keywords: Single Order Model; Inventory Management; Product Availability; Expected Understock; Expected Overstock; Expected Profit

1. Introduction

KLP is a concept store owned by Bukit Mas Abadi company. Concept store is a type of retail business that sells various kinds of items in one place, but the items sold have a characteristic according to the company's theme. KLP provides various kinds of items such as: stationaries, cutleries, clothes, as well as household, and many more. KLP could be categorized as a store that sold perishable items.

Perishable also known as seasonal items are items that after some period, when a newer version is presented, the value of old items declines significantly (Baron, 2011). Perishable good doesn't mean the items has a short life cycle, like newspaper that has daily period. Durable products such as furniture, high-technology products, biotechnology products (vitamins, drugs, cosmetics), etc. are falling prey to perishability (Deniz, Scheller-Wolf, & Karaesmen, 2004). Several factors also influence the item's perishability. Difference in customer preferences, price point of view, and functionality of the time (e.g. Norton and Bass, 1987, Mahajanan and Muller, 1966) affected the demand of products and the value of older products may decrease. The example in KLP case, KLP sells a bag with a floral motive for about a year. At the beginning the bag is saleable, after the new bag model which is leather bag introduced in the store, people tends to buy the leather bag instead of floral motive bag. At the end, the value of floral motive bag decrease that indicates the floral motive bag sold at discount price.

Newsvendor or as known as Single Order Inventory Model is the inventory model that help the user to decide how many products to stock on before observing the demand when there are cost of understock and overstock. Newsvendor firstly introduced to help newspaper stand to find optimal number of newspaper to buy that will maximize the profit.

Newsvendor problem is a one-time business decision that occurs in many different business context and one of them is retail store. Retail store must buy seasonal products (called also as style products) once per period (note that a period can be a day, week, month, year, etc.). For example, most of the fashion shirts can only be purchased seasonally.

---

* Corresponding author.

ICMEM

If buyer purchased too few fashion shirts for the selling season, the retailer will be lost sales and dissatisfied customers. If buyer purchased too many fashion shirts, the retailer will have to sell them at discount (or clearance) price or throw some away (Hill, 2017).

In this case, KLP must decide the optimal quantity that should be ordered despite using owner's intuition to prevent too much understock and overstock since the purchasing done only once per period. Therefore, the purpose of this study is to help KLP implementing Single Order Inventory Model or also known as Newsvendor Model to decide the optimum order quantity with determining the risk of understock and overstock.

Single Order Inventory Model is the most suitable inventory management for the case of KLP Concept Store because the owner only goes abroad around five to ten times in a year and when the owner goes abroad for the second time, the previous item models already run out. Using Single Order Inventory Model, researcher could measure the cycle service level (CSL) and determine quantity of items should be order. By determining quantity of items should be order, the researcher also could determine how many overstock and understock may be occur and how much profit the company will generate.

2. Problem Identification

The problems in KLP such as overstock and understock that indicates there's no inventory management in KLP and owner may purchase too much or few items since the owner purchased with her intuition. To solve this problem, author use Single Order Inventory Model. Single Order Inventory Model is very suitable for the case of KLP because the owner only goes abroad around six to ten times in a year and when the owner goes abroad for the second time, the items' model at the first time already run out, and it will change with new model. With Single Order Inventory Model, author could measure the Cycle Service Level (CSL) of KLP and determine quantity of items should be order. By determining quantity of items should be order, author also could determine how many expected overstock and understock may be occur and how much maximum expected profit the company will generate.

3. Research Limitation

The researcher set the limitation for this research in terms of:
- The calculation all done using Single Order Inventory Model (Newsvendor) for 26 chosen items categorized as class A according to ABC Analysis.
- Since the KLP only provided the sales data in year 2017, so the data that calculated using Single Order Inventory Model is only from 2017 sales data.
- The demand assumed to be normally distributed.

4. Theoretical Foundation

4. 1. Inventory Management

Inventory management is the management of inventory and stock (Jacobs & Chase, 2013). The management of inventory is a common problem for organizations in any sector of the economy. Inventory takes more than 60% of working capital. There can be a risk for organizations either they hold too much or little inventory. Therefore, inventory management is focused on obtaining the balance between two extremes (Dr.G.Brindha, 2014).

There are four functions of inventory (Heizer & Render, 2014):
1. Anticipate the changing of customer demand and to separate the items' demand fluctuation.

2. Separates several parts of the productions process. For example, extra inventory may be necessary for the firms to separate the production process from suppliers if the firms' supplies fluctuate.

3. Reduce the shipping cost by purchase in large quantity or known as quantity discount

ICMEM

4. Gives protection against inflation and upward price changes.

ABC analysis method purpose is to divide inventory items into three classifications based on the amount of annual dollar (Heizer & Render, 2014). ABC analysis is an analytical method of inventory-stock control, so the firms could focus and put more attention on several items.

ABC analysis uses Pareto principle (named after Vilfredo Pareto, 19th-century Italian economist) to analyse which items that considered important and give big impact for the firm. ABC analysis idea is to establish inventory policies that focus resources on the several critical inventory items (Heizer & Render, 2014). To classify the types of inventory items, measurement of the annual dollar is important before conducting ABC analysis. ABC categorized inventory items into three categories: Class A, B, and C.

Class A items has the highest annual consumption value. It represents 70 to 80% of total annual consumption value. Class B items are a medium annual consumption that represent 15 to 25% of total annual consumption. Class C is the lowest annual consumption that represent 5% of total annual consumption (Heizer & Render, 2014). In other words, Class A items are the most important, Class B items are less important, and Class C items is the least important.
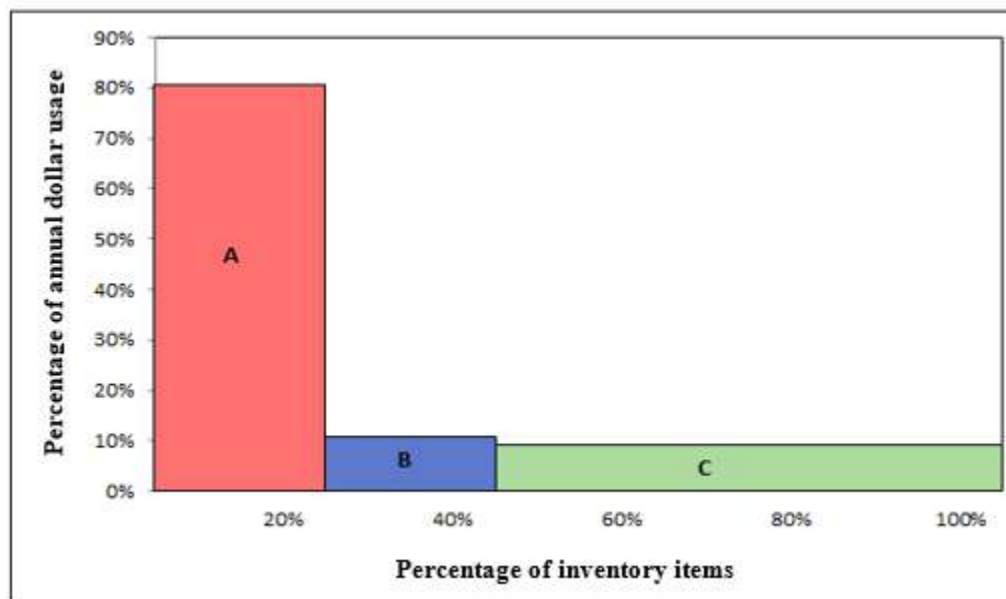
Fig. 1. Inventory Classification (Heizer & Render, 2014)

The objective of ABC analysis is to separate the important from the unimportant. The idea of ABC analysis is to recognize the levels of control should match the risk. There are three policies that should include into following (Heizer & Render, 2014) such as purchase more items, put more inventory control, and pay more attention on controlling and forecasting demand for A class items. According to Heizer & Render (2014), there 3 policies that company should pay attention:

1. Purchasing resources expended on supplier development should be much higher for individual A items than for C items.
2. Put more inventory control on Class A items.
3. Pay more attention on controlling and forecasting demand for Class A items.

4. 2.   *Single Order Inventory Model (Newsvendor Model)*

ICMEM

Jacobs & Chase (2013) gives an example of the single-order problem. The problem came from a newsperson. The newsperson must decide the number of newspapers to sale. If the person does not put enough newspaper, the person will lose the profit. One the other hand, if there's too many and unable to sell it all, the person will have paid for newspapers that were not sold and lowering the income. Later, Heizer & Render (2014) said that single-period model describes a situation in which one order is placed for a product and at the end of the sales season, any remaining product has little or no value. This phenomenon is the same with Kaki (2014) statement, "after the items' period have been passed, the items price will drop from the actual price."

The purpose of this model is to determine how much to order when an item is purchased only one time and it is expected that it will be used and then not reordered. To answer the question, the firms should find out the probability distribution related to demand because the exact demand is never known (Heizer & Render, 2014). Usually the probability is assumed to be normally distribution, but the firms also could use discrete probability distribution using actual data and marginal analysis (Jacobs & Chase, 2013).

In calculation to determine how much to order, the firms must know the optimal level of product availability. The optimal level or product availability, using marginal analysis, occurs at the point where the expected benefits derived from carrying the next unit are less than the expected costs for that unit. The specific benefits and costs depend on the problems. In symbolic terms, C_o derived cost of overstock and C_u derived cost of understock (Jacobs & Chase, 2013). In this paper, will be used only Single Order Inventory Model when the probability of demand is normally distributed.

There are characteristics that must be fulfilled and the purpose of using Single Order Inventory Model:

1. The characteristics:
   - Ordering one time for every period
   - Demand is uncertain
   - Order is made before demand materializes
   - There is cost when ordering too much or few items

2. The purpose:
   - To suggest quantity should be order by determining possibility of understock and overstock.
   - To inform optimal cycle service level based on annual sales.
   - To inform the expected profit, understock, and overstock based on quantity order.

Cost of Overstock, Understock, and Optimal Cycle Service Level

The Model

To use Single Order Inventory Model, first we must identify the Cycle Service Level (CSL). Cycle Service Level (CSL) or product availability is a parameter for customer demand satisfied from available inventory. The level of product availability is one of the primary measures of a supply chain's responsiveness (Chopra & Meindl, 2013).

There are two factors that affect optimal level of product availability: cost of overstocking and cost of understocking.

1. Cost of overstocking is shown as Co and is the loss incurred by a firm for each unsold unit at the end of the selling season. Before calculating the cost of overstock, we must identify the salvage value of the items (Chopra & Meindl, 2013).

$$\text{Salvage Value (s)} = \text{Disposal Value (d)} - \text{Holding Cost (h)} \tag{1}$$

ICMEM

Salvage value is the cost that owner suffers when items are not sold at the end of period. Disposal value is the discount that owner gives to the items when items are not sold at the end of period. After salvage value known, then calculate the cost of overstock (Chopra & Meindl, 2013).

$$C_0 = \text{Cost - Salvage Value (s)} \qquad (2)$$

Note: the cost must be covered the cost of goods sold (COGS) and ordering cost.

2. The cost of understock (C_u) is the margin lost for each lost sale because there is no inventory on hand. The cost (c) already covered Cost of Goods Sold and ordering cost. The margin lost shown in the following equation (Chopra & Meindl, 2013):

$$C_u = \text{Selling Price (p) - Cost (c)} \qquad (3)$$

Then, after cost of overstock and understock are known, next is to calculate the optimal Cycle Service Level (CSL). The purpose of calculating the optimal level of product availability is to calculate expected profit (Chopra & Meindl, 2013).

$$CSL = \frac{C_u}{C_u + C_o} \qquad (4)$$

Optimum Order Quantity

Deciding the right order quantity is the key when facing perishable goods. Single Order Inventory Model already inform the optimal Cycle Service Level and the next step is to find optimum order quantity. Before calculating optimum order quantity, first, we must calculate average demand (μ) and standard deviation (σ) (Chopra & Meindl, 2013).

$$\text{Average Demand } (\mu) = \frac{\sum_{i=1}^{n} D_i}{n}, i = 1, 2, 3, ..., n \qquad (5)$$

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{\sum_{i=1}^{n} (D_i - \mu)^2}{n-1}} \qquad (6)$$

Variable:

i= index of period starts from arrival date (in month)

n= number of period (in month)

After the average demand and standard deviation known, we used Excel equation to calculate optimum order quantity.

$$O^* = NORMINV(CSL^*, \mu, \sigma) \qquad (7)$$

ICMEM

Expected Overstock, Understock, and Profit

The last calculation in Single Order Inventory Model is to calculate the expected overstock, understock, and profit. Single Order Inventory Model also provided the information of expected overstock, understock, and profit to help the user to make purchasing decision. The calculation of expected overstock, understock, and profit are based on the optimum order quantity (O^*), Cycle Service Level (CSL^*), average demand (μ), and standard deviation (σ). Below are the equations for expected overstock, understock, and profit.

$$\text{Expected Overstock} = (O^* - \mu)NORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,1\right] + \sigma NORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,0\right] \quad (8)$$

$$\text{Expected Understock} = \left(\mu - O^*\right)\left[1 - NORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,1\right]\right] + \sigma MORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,0\right] \quad (9)$$

$$\text{Expected Profit} = \left(p - s\right)\mu NORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,1\right] - \left(p - s\right)\sigma NORMDIST\left[\left(\frac{O^* - \mu}{\sigma}\right),0,1,0\right]$$
$$- O^*\left(c - s\right)NORMDIST\left(O,\mu,\sigma,1\right) + O^*\left(p - c\right)\left[1 - NORMDIST\left(O^*,\mu,\sigma,1\right)\right] \quad (10)$$

5. Data Collection

Author use primary and secondary data to conduct this research. Primary data conducted by interview the owner to find the problem, order cost, disposal percentage, and holding cost. Secondary data collected are items list data (consist of item code, name, category, date of arrival, cost, and selling price) and 2017 sales data.

6. Research Methodology

The methodology used in this paper consists of seven important steps that explained on each section.

6.1. Classify Items Using ABC Analysis

ABC analysis used to simplify the calculation and to focus on the profitable product. The calculation for Class A products, or 20% item of KLP that will give about 80% profit contribution for KLP. The method used to classify product by sort the product from the highest profit contribution, after that calculate the cumulative profit contribution and select the products that give 80% profit. After find class A product, the owner chooses which product they want to calculate with single order model. The analysis will be determine using Table.

Table 10. ABC Analysis General Rule

Class	Percentage of Items	Percentage of Overall Profit
A	5-25%	40% to 80%
B	20% to 40%	15% to 40%
C	40 % to 75%	5% to 20%

6.2. Calculate Cost of Overstock and Understock

ICMEM

Next step is calculating the cost of overstock and understock. Component of cost needed such as cost (c), selling price (p), disposal value and holding cost that already collected used in this section. The first step is to calculate the salvage value from each product using equation 1. After that calculate the cost of overstock using equation 2 and cost of understock using equation 3.

6. 3.Calculate Cycle Service Level (CSL)

CSL calculated using the cost of understock and overstock from previous step. The calculation of CSL using equation 4. The CSL used to inform the service level of a company.

6. 4.Calculate Mean and Standard Deviation of the Demand

After find the chosen items to analyze, researcher count the average demand (μ) with 5 and standard deviation of average demand (σ) with equation 6. In this section there's additional data use beside the sales data researcher also use month of arrival as the first index calculation on the demand.

6. 5.Calculate Optimum Order Quantity

Optimum order quantity (O*) show the number of item should order with the current CSL, demand and standard deviation that could minimize the cost of overstock and understock. Equation 7 used to calculate the O*.

6. 6.Calculate Expected Profit, Expected Overstock, Expected Understock

After find each component, the next step is calculating the expected overstock and understock, using equation 8 and 9. These expected overstock and understock used to calculate expected profit. Expected profit means the optimum profit could achieve with the current condition and calculated with equation 10.

6. 7.Comparing the Actual Profit with Expected Profit from Single Order Inventory Model Calculation

To check whether Single Order Inventory Model Calculation will generate better profit, author compared the actual profit with expected profit under the same component, since the expected profit calculation has difference component calculation.

7.   Result and Argument

- KLP Items Classification

  KLP has total items of 7888 during year 2017. Class A item consist of 1657 items (around 21% from total items). Class B item consist of 2185 items (around 28% from total items). Class C item consist of 4046 items (around 51% from total items). Refer to Table 1. ABC Analysis General Rule, Table 2. shows total items per classes along with percentage of items and overall profit and Fig.2. shows ABC Analysis of KLP Items.

ICMEM

Table 11. ABC Analysis of KLP Items

Classification	Total Items per Classes	Percentage of Items	Percentage of Overall Profit
Class A	1657	21%	75%
Class B	2185	28%	19.14%
Class C	4046	51%	5.86%
Total Item	7888	100%	100%

Fig. 2. ABC Analysis of KLP Items
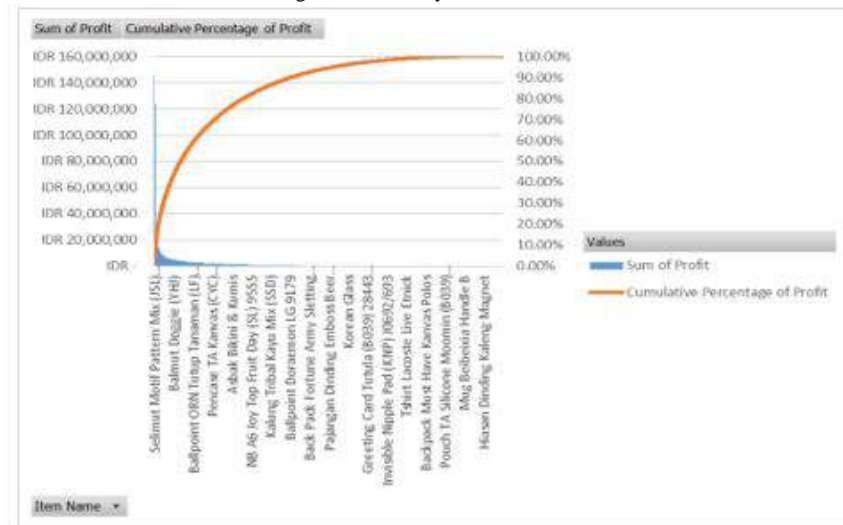
- Item's Average Demand and Standard Deviation
  The calculation of average demand and standard deviation for each item will depends on the arrival date. See Table 3. for the calculation result. To see the monthly demand distribution could be seen on Appendix 2.

Table 12. Item's Average Demand and Standard Deviation

Item Code	Arrival Date	Total Sales	Avg. Demand	Average Demand Round Up	Std Demand	Std. Demand Round Up
07080023	Jan-17	680	56.67	57	68.58	69
00001122	Feb-17	1101	100.09	101	70.78	71
00001947	May-17	899	112.38	113	82.93	83
00002421	Jun-17	975	139.29	140	57.18	58

ICMEM

Item Code	Arrival Date	Total Sales	Avg. Demand	Average Demand Round Up	Std Demand	Std. Demand Round Up
07080009	Jan-17	177	14.75	15	21.46	22
00000393	Jan-17	474	39.50	40	23.38	24
00001739	May-17	558	69.75	70	85.76	86
04040314	Sep-16	246	20.50	21	17.41	18
00001473	Mar-17	273	27.30	28	26.28	27
03080033	Jan-17	497	41.42	42	42.63	43
00001636	Apr-17	171	19.00	19	27.63	28
00000365	Jan-17	900	75.00	75	50.61	51
00002565	Jul-17	236	39.33	40	32.65	33
09050003	Jan-17	116	9.67	10	10.22	11
00000635	Feb-17	1301	118.27	119	66.18	67
00000058	Jan-17	435	36.25	37	29.36	30
00001738	May-17	709	88.63	89	88.51	89
00000405	Jan-17	90	7.50	8	19.82	20
04040004	Apr-16	161	13.42	14	8.49	9
00000461	Feb-17	2411	219.18	220	210.29	211
00000639	Feb-17	1109	100.82	101	37.90	38
00002186	Apr-17	232	25.78	26	37.31	38
00001927	May-17	53	6.63	7	7.85	8
00002134	May-17	119	14.88	15	10.53	11
00000440	Jan-17	126	10.50	11	10.50	11
00001606	Apr-17	807	89.67	90	93.38	94

Based on the calculation of average demand and standard deviation, KLP's sales are very fluctuate for several items. It is identified clearly since the standard deviation is higher than the average demand. With this condition, the demand is uncertain.

ICMEM

- Cycle Service Level and Optimum Order Quantity

  After the average demand, standard deviation, cost of understock, and cost of overstock known, the first step to do is to calculate the Cycle Service Level (CSL). Then the second step is to calculate the optimum order quantity (O*) based on the CSL, average demand, and standard deviation.

Table 3. Item's CSL and Optimum Order Quantity

Item Code	Cu (IDR)	Co (IDR)	CSL	Average Demand. Round Up	Std Demand Round Up	O*	O* Round Up
07080023	174,752.78	67,347.22	72%	57	69	97.6	98
00001122	93,047.42	16,068.58	85%	101	71	175.4	176
00001947	45,240.00	13,476.00	77%	113	83	174.5	175
00002421	33,028.18	9,386.82	78%	140	58	184.5	185
07080009	128,200.00	50,900.00	72%	15	22	27.5	28
00000393	45,554.90	15,957.10	74%	40	24	55.5	56
00001739	37,460.00	15,252.00	71%	70	86	117.8	118
04040314	84,007.42	16,708.58	83%	21	18	38.5	39
00001473	72,000.00	41,905.00	63%	28	27	37.1	38
03080033	40,056.41	6,227.59	87%	42	43	89.5	90
00001636	110,715.00	69,690.00	61%	19	28	27.1	28
00000365	19,048.55	4,666.45	80%	75	51	118.5	119
00002565	71,665.66	12,957.34	85%	40	33	73.8	74
09050003	143,440.59	64,489.41	69%	10	11	15.4	16
00000635	12,706.00	2,867.00	82%	119	67	179.3	180
00000058	37,587.56	9,077.44	81%	37	30	62.8	63
00001738	20,345.00	5,967.00	77%	89	89	155.7	156
00000405	153,823.08	52,276.92	75%	8	20	21.3	22
04040004	83,126.36	34,389.64	71%	14	9	18.9	19
00000461	5,733.11	1,455.89	80%	220	211	395.7	396
00000639	12,320.00	3,253.00	79%	101	38	131.8	132

ICMEM

Item Code	Cu (IDR)	Co (IDR)	CSL	Average Demand. Round Up	Std Demand Round Up	O*	O* Round Up
00002186	52,332.50	16,890.50	76%	26	38	52.4	53
00001927	222,150.00	89,070.00	71%	7	8	11.5	12
00002134	97,840.00	46,575.00	68%	15	11	20.1	21
00000440	92,675.00	34,740.00	73%	11	11	17.7	18
00001606	13,935.00	6,870.00	67%	90	94	131.3	132

Calculation for finding the optimum order quantity needs the information of CSL, average demand, and standard deviation. The CSL that included in this calculation is the optimum one according to cost of understock and overstock. For example, item code 07080023, the CSL is 72 % which means KLP could only satisfied 72% of customer demand. The optimum order quantity is the quantity that should be ordered for each item on each period. In this case for example, with 72% CSL the owner should order 98 quantities for item code 07080023. Furthermore, purchasing more or less than 98 quantities will affect the amount of expected understock, overstock, and profit of KLP.

- Expected Overstock, Understock, and Profit
  Last after known the optimum order quantity then calculate the expected profit for each item and the risk of expected understock and overstock. See Table 4. for the calculation result.

Table 4. Item's Expected Profit, Understock, and Overstock

Item Code	Expected Overstock	Expected Overstock Round Up	Expected Understock	Expected Understock Round Up	Expected Profit (IDR)
07080023	52.7	53	11.7	12	4,355,359
00001122	80.3	81	5.3	6	7,613,509
00001947	72.9	73	10.9	11	3,634,042
00002421	52.3	53	7.3	8	3,893,030
07080009	16.8	17	3.8	4	586,818
00000393	19.6	20	3.6	4	1,343,786
00001739	63.5	64	15.5	16	1,072,094
04040314	19.5	20	1.5	2	1,312,360
00001473	16.5	17	6.5	7	856,352
03080033	50.9	51	2.9	3	1,251,216

ICMEM

Item Code	Expected Overstock	Expected Overstock Round Up	Expected Understock	Expected Understock Round Up	Expected Profit (IDR)
00001636	16.2	17	7.2	8	169,790
00000365	49.5	50	5.5	6	1,093,330
00002565	36.6	37	2.6	3	2,206,533
09050003	8.0	9	2.0	2	626,315
00000635	67.6	68	6.6	7	1,234,329
00000058	29.2	30	3.2	4	1,005,330
00001738	78.6	79	11.6	12	1,105,241
00000405	16.9	17	2.9	3	(90,241)
04040004	6.6	7	1.6	2	800,182
00000461	199.9	200	23.9	24	833,420
00000639	35.4	36	4.4	5	1,074,300
00002186	32.3	33	5.3	6	535,415
00001927	6.3	7	1.3	2	706,558
00002134	8.0	8	2.0	2	895,643
00000440	8.7	9	1.7	2	553,510
00001606	62.2	63	20.2	21	545,707

Based on the optimum order quantity, average demand, and standard deviation, Single Order Inventory Model could generate expected profit when ordering with certain quantity while determine the risk of understock and overstock. The calculation may generate negative value of expected profit since the demand distribution may not be normally distributed. This event could be best for KLP company to determine further selling for this item. The negative value could occur since the item has small average demand while the standard deviation is high which means the item is unfavorable to sell in the high volume or KLP must attract people to buy this kind of item.

- Comparison of KLP Existing Profit with Expected Profit by Using Single Order Inventory Model

There are two scenarios when calculating the expected profit with the same calculation of actual profit. The first scenario is when there's understock situation and second is when there's overstock situation. Both of calculation provided bigger profit than actual profit. The profit is shown in monthly demand since the Single Order Inventory Model calculation using average demand. Actual monthly demand calculation will

ICMEM

be depending on the arrival date of items Table 5. shows the comparison between actual profit and expected profit.

Table 5. Comparison of Actual Monthly Profit with Expected Monthly Profit

Item Code	Actual Monthly Profit (IDR)	First Scenario (there's understock)	Second Scenario (There's Overstock)
		Expected Monthly Profit (IDR)	Expected Monthly Profit (IDR)
07080023	9,902,657.70	17,125,772.73	13,556,370.23
00001122	9,313,200.46	16,376,345.22	15,074,789.91
00001947	5,083,845.00	7,917,000.00	6,933,252.00
00002421	4,600,353.20	6,110,212.71	5,612,711.08
07080009	1,890,950.00	3,589,600.00	2,724,300.00
00000393	1,799,418.47	2,551,074.29	2,231,932.26
00001739	1,741,890.00	4,420,280.00	3,444,152.00
04040314	1,722,152.06	3,276,289.28	2,942,117.63
00001473	2,457,000.00	2,736,000.00	2,023,615.00
03080033	1,659,003.11	3,605,077.17	3,287,470.23
00001636	2,103,585.00	3,100,020.00	1,915,290.00
00000365	1,428,641.36	2,266,777.63	2,033,455.20
00002565	2,818,849.46	5,303,259.16	4,823,837.74
09050003	1,386,592.37	2,295,049.44	1,714,644.75
00000635	1,502,773.27	2,287,080.00	2,092,124.00
00000058	1,362,549.13	2,368,016.42	2,095,693.28
00001738	1,803,075.63	3,173,820.00	2,702,427.00
00000405	1,153,673.08	3,384,107.69	2,495,400.00
04040004	1,487,038.28	1,579,400.91	1,338,673.45
00000461	1,256,593.34	2,270,311.32	1,979,133.20
00000639	1,242,080.00	1,626,240.00	1,509,132.00

ICMEM

00002186	1,349,015.56	2,773,622.50	2,216,236.00
00001927	1,471,743.75	2,665,800.00	2,042,310.00
00002134	1,455,370.00	2,054,640.00	1,682,040.00
00000440	973,087.50	1,668,150.00	1,355,490.00
00001606	1,405,693.13	1,839,420.00	1,406,610.00
Total Monthly Profit	67,815,134.96	108,363,366.47	91,233,206.97

8. Conclusion and Recommendation

As we know from the calculation the standard deviation is high, so the demand is uncertain. The owner cannot buy the items quantity without proper calculation or by intuition because it would be bad since there is the possibility there're understock and overstock that leads the company to suffer lost profit and greater holding cost. With company current condition, Single Order Inventory Model is the most suitable inventory model to implement. This model can be a guidance for the owner to buy the items since the model generate expected profit and the risk of understock and overstock based on the average demand and standard deviation from previous sales data. The calculation may result in negative value since the demand distribution is not normally distributed, but the calculation done using Single Order Inventory Model assume the demand to be normally distributed. Therefore, profit comparison between actual profit with expected profit is necessary. For the future research, researcher may research about demand during lead time since there is lead time between purchase order and items arrival and this research only focus on implementing Single Order Inventory Model. Except that researcher also may analyze the effect of changing the concept store into online store or when using pre-order system.

Appendix A. Chosen Items List Data

Item Code	Cost (IDR)	Price (IDR)	Disposal percentage	holding cost percentage	Disposal Value (IDR)	Holding Cost (IDR)	Salvage Value (IDR)
07080023	94,247.22	269,000.00	20%	10%	53,800.00	26,900.00	26,900.00
00001122	36,852.58	129,900.00	20%	4%	25,980.00	5,196.00	20,784.00
00001947	24,660.00	69,900.00	20%	4%	13,980.00	2,796.00	11,184.00
00002421	16,871.82	49,900.00	20%	5%	9,980.00	2,495.00	7,485.00
07080009	70,800.00	199,000.00	20%	10%	39,800.00	19,900.00	19,900.00
00000393	24,345.10	69,900.00	20%	8%	13,980.00	5,592.00	8,388.00
00001739	22,440.00	59,900.00	20%	8%	11,980.00	4,792.00	7,188.00
04040314	35,892.58	119,900.00	20%	4%	23,980.00	4,796.00	19,184.00

ICMEM

Item Code	Cost (IDR)	Price (IDR)	Disposal percentage	holding cost percentage	Disposal Value (IDR)	Holding Cost (IDR)	Salvage Value (IDR)
00001473	47,900.00	119,900.00	10%	5%	11,990.00	5,995.00	5,995.00
03080033	20,843.59	60,900.00	30%	6%	18,270.00	3,654.00	14,616.00
00001636	79,185.00	189,900.00	10%	5%	18,990.00	9,495.00	9,495.00
00000365	8,851.45	27,900.00	20%	5%	5,580.00	1,395.00	4,185.00
00002565	38,234.34	109,900.00	30%	7%	32,970.00	7,693.00	25,277.00
09050003	95,559.41	239,000.00	20%	7%	47,800.00	16,730.00	31,070.00
00000635	5,194.00	17,900.00	20%	7%	3,580.00	1,253.00	2,327.00
00000058	17,312.44	54,900.00	20%	5%	10,980.00	2,745.00	8,235.00
00001738	9,555.00	29,900.00	20%	8%	5,980.00	2,392.00	3,588.00
00000405	75,176.92	229,000.00	20%	10%	45,800.00	22,900.00	22,900.00
04040004	56,773.64	139,900.00	20%	4%	27,980.00	5,596.00	22,384.00
00000461	2,166.89	7,900.00	10%	1%	790.00	79.00	711.00
00000639	5,580.00	17,900.00	20%	7%	3,580.00	1,253.00	2,327.00
00002186	37,567.50	89,900.00	30%	7%	26,970.00	6,293.00	20,677.00
00001927	176,850.00	399,000.00	30%	8%	119,700.00	31,920.00	87,780.00
00002134	72,060.00	169,900.00	20%	5%	33,980.00	8,495.00	25,485.00
00000440	57,225.00	149,900.00	20%	5%	29,980.00	7,495.00	22,485.00
00001606	7,965.00	21,900.00	10%	5%	2,190.00	1,095.00	1,095.00

Appendix B. Item's Monthly Demand Distribution

Item Code	Arrival Date	2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
07080023	Jan-17	85	38	13	6	15	117	242	79	46	17	15	7
00001122	Feb-17	0	0	102	151	109	206	225	107	67	57	37	40
00001947	May-17	0	0	0	0	0	204	225	105	47	25	138	155

ICMEM

Item Code	Arrival Date	2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
00002421	Jun-17	0	0	0	0	0	22	196	129	160	139	185	144
07080009	Jan-17	1	1	0	0	0	17	75	20	32	12	12	7
00000393	Jan-17	18	87	61	26	15	14	44	13	52	43	39	62
00001739	May-17	0	0	0	0	72	154	239	61	25	6	0	1
04040314	Jan-17	68	17	27	27	13	32	21	11	11	8	4	7
00001473	Mar-17	0	0	1	58	47	35	76	30	10	6	3	7
03080033	Jan-17	105	128	83	61	28	33	17	13	10	7	4	8
00001636	Apr-17	0	0	0	18	75	56	16	1	2	3	0	0
00000365	Jan-17	23	105	114	158	117	107	108	85	34	26	16	7
00002565	Jul-17	0	0	0	0	0	0	10	87	67	44	22	6
09050003	Jan-17	16	0	18	31	20	15	8	6	0	2	0	0
00000635	Feb-17	0	35	235	193	170	116	118	153	126	68	42	45
00000058	Jan-17	39	117	61	37	28	19	47	18	25	15	16	13
00001738	May-17	0	0	0	0	84	87	287	109	85	33	22	2
00000405	Jan-17	3	70	6	7	1	1	0	0	1	0	1	0
04040004	Apr-17	15	25	23	11	22	21	15	11	13	3	0	2
00000461	Feb-17	0	58	167	505	526	523	328	135	67	46	38	18
00000639	Feb-17	0	17	66	128	93	92	102	89	163	112	117	130
00002186	Apr-17	0	0	0	0	0	93	87	24	16	7	1	4
00001927	May-17	0	0	0	0	0	23	10	9	8	3	0	0
00002134	May-17	0	0	0	0	0	7	32	18	11	8	26	17
00000440	Jan-17	0	26	30	25	7	7	13	5	4	3	3	3
00001606	Apr-17	0	0	0	0	240	212	173	80	45	20	10	27

ICMEM

References

Baron, O. (2011). Managing Perishable Inventory. (J. J. Cochran, Ed.) *Wiley Encyclopedia of Operations Research and Management Science*, 5.

Chopra, S., & Meindl, P. (2013). *Supply Chain Management Strategy, Planning, and Operation Fifth Edition.* Edinburgh Gate: Pearson.

Deniz, B., Scheller-Wolf, A., & Karaesmen, I. (2004). Managing Inventories of Perishable Goods: The Effect of Substitution. 1-23.

Dr.G.Brindha. (2014). Inventory Management. *International Journal of Innovative Research in Science, Engineering and Technology*, 8163-9176.

Heizer, J., & Render, B. (2014). *Operations Management Sustainability and Supply Chain Management Eleventh Global Edition.* Edinburgh Gate : Pearson.

Hill, A. V. (2017). The Newsvendor Problem. *Clamshell Beach Press.* Minnesota: Clamshell Beach Press.

Jacobs, F. R., & Chase, R. B. (2013). *Operations and Supply Chain Management 14th Global Edition.* New York: Mc Graw Hill Education\.

Mahajanan V., E. Muller. 1996. Timing, Diffusion and Substitution of Successive Generation of Technological Innovations: The IBM mainframe case. Technological Forecasting and Social Change 51 109-132.Norton, J.A., F.M. Bass. 1987. A Diffusion Theory Model of Adoption and Substitution for Successive Generations of High-Technology Products. Management Science 33 (9) 1069-1086.

Norton, J.A., F.M. Bass. 1987. A Diffusion Theory Model of Adoption and Substitution for Successive Generations of High-Technology Products. Management Science 33 (9) 1069-1086

ICMEM

The 3rd International Conference on Management in Emerging Markets

Product Lifecycle Management Perspective in Creating Company Value, a Study of Strategic Operation Management in Engine MRO Indonesia

Iwan Krisnanto

School of Business and Management, Institut Teknologi Bandung, Indonesia

Abstract

Engine MRO (Maintenance Repair and Overhaul) has changed in decades to be part of the OEM's (Original Equipment Manufacturer) profit center. Independent engine MRO particularly in Indonesia has apparently faced high competition since OEM has established facility, resources and supply chain on its MRO. Engine MRO shall strictly comply with civilian regulation under Indonesian CASR, US Federal FAA or European EASA certification. The regulation requires standard internal resources capability, while the competition requires MRO to become more efficient, integrate & traceable business process. Actually, traceability, integrated business process and requirement compliance are in line with PLM – Product Lifecycle Management substance practices. This research is to analyze implementation of the PLM key substances as one of the engine MRO strategic operation solution. The methodology adopts qualitative research method where the data is collected by interview from intermediate to high level management of PT. Nusantara Turbin & Propulsi (PT. NTP), Bandung. The result shows that there is strong needs of PLM substance implementation since the company has to link and integrate people competency, facilities, repair processes, process of control and customer satisfaction goal. The implementation and recommendation is to obtain transformation readiness of PT. NTP towards as a new MRO business model on its opportunity.

Keywords: PLM; Lifespan; Full Control Data; Transformation Readiness; Shift the Strategy

1. Introduction

Industries now days are widely disrupted by higher efficiency. It urges industries to be more efficient in the circle of vulnerable, uncertainty, complexity and ambiguity world. A firm which avoid any adaptation to it will certainly get suffer on its businesses. In addition to the disruptive environmental, there is a pushing policy from shareholder to have a remarkable return and coverage. A merger for a holding is a solution to become a bigger entity, across similar business functions in order to have higher resilience, less peer competition and eventually less uncertainty manner.

Digital era is unavoidable following broaden application of IoT. Product Lifecycle Management (PLM) is one of a rational innovation process in the industry as a result of digitalization because some PLM key substances are traceability, connected, integrated in which is deliberately aided by IT.

Research by Accenture gives remarkable result that PLM investments could generate up to 50% higher returns (Accenture, 2016). It introduces PLM capabilities in order to connect people across the function, start from Sales, Internal Process of Operation, and Engineering. PLM promises the capability for managing the entire lifespan of a service on those three pillars of MRO.

Many industries see digitalization solely as sort of implementing digital technology. It is a different approach when a PLM requires driving change on a process and organizational level, not just on a technology level. A significant business value and return can be obtained when there is alignment among technology, process and organization level.

ICMEM

MRO engine is a significant role in the aircraft and power plant segment to maintain engines. Aircraft engine is the main component to generate lift, speed and electrical power. Engine is one of component that contain high acquisition cost, beside engine is the most critical part of airplane which requires to be maintained along aircraft service life. Hence, MRO engine has significant contribution to maintain engine's service life despite 10-20 years ago MRO was handled separately from its OEM. Now days OEM occupies MRO rapidly as one of profit center that apparently using business model (St Gallen Busines Model, 2016): Affiliation. Cross Selling, Customer Loyalty, Digitization, Flat rate, Franchising, Integrator, License, Lock-In, Open Business Model, Rent Instead Of Buy, and Subscription.

2. Business Issue Exploration

PT. NTP by years has niche market, generally for a declined engine from old aircraft. There is a difficulty to enlarge the business of Aero Engine due to pressure from market despite Indonesian military market is the best customer they have. Abroad market is very hard to be achieved since OEM requires rules to maintain their MRO business and internal competences handicap.

Current business strategy is sharing revenue by 80% Aero Engine and 20% Industrial turbine engine. Aero Engine is the backbone of company's revenue while Industrial engine uses excess capacity especially for the domestic market share.

PLM is an entry barrier solution for the company in order to enter broad opportunity for Aero Engine and Industrial Engine to create and leverage company's income. This becomes a research premise.

3. Conceptual Framework

Service center dominant logic by Vargo & Lusch (2004) forms foundation of service management in principle consist of improvements along three stages of service provision.

Key concept of management challenge emphasizes Service Promise, Service Encounter and Service Outcome. Service Promise is a form on how expectation is defined. It correlates with how to shape expectation. Service promise factor emerges subsequent actions on strategies.

From the concept, a service starts from pre-purchase stage up to post purchase stage. Pre purchase stage is critical when customer start to build expectation. There is zone of tolerance when desired service confront to get adequate service.

Competences is the first dimension of the services foundation concept. All services start with competence of the workplace. It consists of people, facilities, and processes. All are managed in the business process stream and compliant to the regulation. The activities come to second stage of act and process to obtain performance. Services will not end up merely to performance result. Services gives intangible outcome (Hoffman, 2010), still continue running in customer operation. The lifespan touch is through customer experience. Company will get benefit when they are able to predict the upcoming services through its customer experience.

PLM is the capability for managing the entire lifespan of the services from its ideation, conception and design capability in the Engineering, transform it the competences into Sales and Customer value, continue to conduct internal process sort of early process, repair process, assembly, test and delivery in the Operation, then customer experience. It integrates people, data, method, processes and its business systems (IT).

The main parameter of the PLM function converges to the key substances below:

a. Traceability

Streaming data is able to track in designated group. It follows design bulk data can be traced back to previous process up to beginning phase.

b. Fully control data

Data is essential to be managed particularly in MRO engine, because there is business model of exchange program that running by engine OEM's MRO. While controlling data is mandatory in the whole processes in order to summarize and keep it in the log book as life document.

ICMEM

c. Lifespan Connected to end to end business processes.
Coverage of PLM is end to end business processes. The capability is to manage entire lifespan of a product or a service, from ideation, conception, design through manufacturing, from marketing – sales to after sales service and disposal.

d. Fulfil requirements
PLM is set to manage compliance the whole processes to set of requirements.

e. Ability for cost control
Wide lifespan is crucial for control set of expense in each area along the business processes. Expense is then very measurable accurately. The important outcome ultimately on handling profit and lost.

f. Collection data management
PLM is information driven business strategy. It collects information and convey information from one task to subsequent task. The information is managed internal process and external as well e.g. supply chain.

g. Integrate people, method and technology.
PLM ensures integration of flow business processes, doing by people and using certain technology. PLM guides flow from early requirements, gathering them, do the development, engineering, production, delivery, maintenance and disposal.

The main differences of product-centric approach and customer-centric approach (Shah et al, 2006) can be listed as follows:

Table 1. Customer-Centric Approach

Subject	Product-Centric Approach	Customer-Centric Approach
Basic philosophy	Self products; we will sell to whoever will buy	Serve customer; all decisions start with the customer and opportunities for advantage
Business orientation	Transaction oriented	Relationship oriented
Product positioning	Highlight product features and advantages	Highlight product's benefits in terms of meeting individual customer needs
Organizational structure	Product profit centers, product managers, product sales team	Customer segment centers, customer relationship managers, customer segment sales team
Organizational focus	Internally focused, new product development, new account development, market share growth, customer relations are issues for the marketing department	Externally focused, customer relationship development, profitability through customer loyalty, employees are customer advocates
Management criteria	Portfolio of products	Portfolio of customers
Selling approach	How many customers can we sell this product to?	How many products can satisfy the customer?
Performance measurement	Number of new products, profitability per product, market share by product	Share of customer wallet, customer satisfaction, customer lifetime value, customer equity

4. Analysis Methods

4. 1.   First analysis method is to judge how the company needs the PLM implementation.

Implementation of PLM in services business is a part of strategic operation management policy which involving main key stakeholder in the company. PLM will change nothing if people in its organization has no willingness to do it in its business cycle.

Research methodology adopts Qualitative Method in order to retrieve the people and the organization culture on how their product tracked and maintained. The interview is the means to solicit data. The data then compares with secondary literature studies.

Primary data is collected by 11 respondent interviews, and comparing with secondary literature.

Refer to foundation of service management, service dimension consists of:

- Competence

ICMEM

- Deeds, processes, performances
- Benefit of another entity

Service stages is clearly plotted in Pre-Purchase Stage (before), Purchase Stage (during) and Post purchase Stage (after).

Following a consequences of service dimension and service stage, foundation stipulates management challenge as:
- Service Promise
- Service Encounter
- Service Outcome

Then construct subsequent correlation of service management with subject on implementation in the business process, in order to build up sub categories. The result is presented in Table 2.

Table 2 Subject on Implementation

Service Dimension	Management Challenge	Service Characteristic	Subject on Implementation
Competences	Service Promise	Customer perceive for purchase risk	Pricing
			Standard
			People
Deeds, Processes & Performance	Service Encounter	Integration of Operation, Engineering and Procurement	Operation Process
			Engineering Disposition
			Supply Chain Management
Benefit of another entity	Service Outcome	Intangible outcome service	Delivery
			Customer Retention
			Customer Satisfaction

4. 2.   The second analysis is to analyze current business that needs to be aligned with PLM practices.

The second analysis implies the question how deep implementation on business processes of Sales that represents customer encounter, Operation that represents internal process, repair process including Supply Chain, and Engineering that represents controlling the process and technical decision. For the implementation of business process.

The analysis category is constructed by 3 pillar business processes i.e. Sales, Operation and Engineering, in the implementation field of both Aero Engine and Industrial. Sub category is the main element function that is obtained from emphasize keyword and key role of the function. PLM substances category refers to PLM key substances stated in the method above. Respondent script is taken into account into frequency and counted in the percentage of responses. In order to get explicit result, it uses sub category satisfied and unsatisfied.

Criteria satisfied is in the range of 80% - 100% allowing very limited unsatisfied. It means still manageable to recover any potential unsatisfied based on supporting peers and management policy. For example Sales control data on requirement fulfil-ness, there are 9 respondents indicate satisfied but only 1 respondent signaling unsatisfied, the percentage is 80%. The only one unsatisfied respondent may not significant compare with 9 events, but the important there is an alert for any potential unsatisfied. Criteria un-satisfied is in the range of minus % - 50%, implies that the 50% is very poor. It absolutely needs a reform by PLM in order to align with peer business processes. Criteria partial satisfied is in the range between satisfied and un-satisfied of 50% - 80%, that the business process is basically satisfied partially, can be recovered relatively easy.

5.   Analysis Result

5. 1.   Analysis result on how the company needs the PLM implementation.

ICMEM

Refer to Appendix A, there are 24 parameters of Sub-Sub Category checked by frequency analysis gets 5 top parameters as a key success in the business processes:

1. Competency of company in the business : 55
2. Facility readiness to conduct engine services : 53
3. Customer encounter as business services : 45
4. Repair process in operation : 42
5. Process control in operation : 34

These 5 parameters are representing the services business and main subject on implementation that needs to be integrated as unity process.

1. Competency in the business

NTP has competency in Aero Engine and Industrial. Aero Engine is currently core business, and the rest is Industrial that deals with industrial rotating equipment such as turbine, pump, compressor, turbocharger, etc. Competency is mandatory to enter the business. Competency consist of capability the people, facility, process that present capability and capacity.

Company's business strategy considers competency and market. Respondent DIR expressed to answer question related with strategy as: *"The point is we first see the competency of NTP and we see what the NTP market.... NTP's nature business is an MRO that is all dependent on regulation"*.

There is opportunity on industrial to be enlarged considering current market that is still growing. Respondent GM1 expressed, *"Industrial can still grow rapidly. Our first market is oil and gas, second fertilizers and third power plants. Power plant for electricity is never terminated"*.

2. Facility Readiness

Both Aero Engine and Industrial require sufficient and proven facility. Facility is a part of certification items. Main facility for Aero Engine is test cell, a specific test bench to perform test of specific engine family. While, for Industrial, facility is common sort of balancer machine, lathe, milling, and metal patch machine. Preparing facility for internal process means inclusive to people, infrastructure and quality management system.

3. Customer encounter as business services

Customer encounter has dimension of customer satisfaction which the a result is of intangible value perceived by customer. NTP has loyal customer that maintained through long term contract.

From respondent MGR5 emphasized important of proven capability: *"Customer will also ask NTP whether NTP will be able to meet the requested quality of or not, or the time can be achieved or not"*. Customer requires a proven experience that will ensure solving their problems.

Services characteristic is perishable. Customer will vanish when they have dissatisfaction outcome or service failure. For sure company can initiate a Service Recovery Plan for any dissatisfaction, but the price of service recovery is higher than to initiate service management.

Important terminology of business services that can underpin perception of customer i.e. expectation that related with the price. Customers correlate price with expected quality and continuous support.

There is finding a willingness and alignment to emerge customer satisfaction. One of the mandatory asset to go further on business services. The customer satisfaction is able to be managed by PLM implementation that deliberately integrate and control all process in lifespan of the article, will ensure customer encounter running well.

4. Repair Process in Operation

The company prepares a set of repair capacity in compliance with:

- CASR Part 145 and 43 requirements for Approved Maintenance Organization with certificate no. 145/9900,

- Repair Station with certificate no. NZQYOO6J, FAA USA compliance to FAR Part 145 and 43 requirements,

- Approved Maintenance Organization with certificate no. EASA. 145. 0401 compliance to EASA 145 Part 145.

ICMEM

- Civil Aviation Authority for Thailand, Srilanka, Pakistan, Nepal, Philippines and Brazil.

The company maintains the declined engine in such a way to sustain in the market demand. Respondent DIR expressed the situation as: "*We deal with old engine and customer military or government, then OEM relatively cannot be flexible for competition*". The big competition is existed and shape the market strategy for NTP.

In order to enter the competition for new generation engines, NTP must have entry level to pass through the barrier of the processes. The declined engine will create following risk of spare part scarcity, TAT and its cost.

5. Process Control in Operation

Numbers of procedures implements in the operation to control the process. In accordance with company's Business Process, herewith the summary of document and article control:

- PPIC controlling Receiving area: log book, Receiving Inspection, PO customer. These documents move to Sales.
- Sales conducts Induction meeting that coordinate Engineering, QC, Assy – Dis-assy, Repair process, Finance, and Procurement. Main activity is to check readiness along the whole stream business process. Result is Amendment 0 document that submitted to Engineering.
- Engineering: WRB - Work Review Board. WRB is media to control any compliance to SB, AD, service life, all item needs to be replaced, and the actual condition. WRB submit to Sales. PPCL (Part Process Control List), TMWO (Taylor Made Work Order) as a work order, TRR (Test Requirement Record) to reconcile SB, AD compliance, ATL (Accessories Test Log) to mention its accessories, and LLCR (Life Limit Check Record). These documents are put in the Amendment 1 document.
- Process in Operation is started when Engineering issues WCD – Work Control Document, that accompany lifespan of the engine article, Procurement to purchase material, Accessories Shop to check the stock, Repair shop to conduct any repair and end up in Part Accumulation. WCD then move to Assembly & Accessories Assembly.
- Engine Test and Trouble Shooting gets assemble engine article to conduct engine test in test cell.
- Once engine test accepted, Quality Inspection do final check prior shipment, along with ARC (Airworthiness Released Certificate) and Log Book record in the work package review.

5. 2.   Analysis result on what current business process that needs alignment with PLM practices.

The result is presented in the Appendix B. Several facts from Table Appendix B, as follows:
  a. Traceability.
      All business processes have implemented the traceability substance. A good result that traceability is mandatory on configuration control as a stated for Configuration Management requirement.
      Repair center (13 responses), Inspection center (10 responses), and Sales control (8 responses) data are functions that respondents most taking into account on traceability of the article. It is explainable because Repair center is the most section that possibility of highest change the configuration.
  b. Fully control data
      The data must be controlled and written down to the log book and ARC. All business processes do it well to control the data in their own workplace.
      Repair center gets the highest with 11 responses, followed by Inspection section and Work Order (Engineering) for 8 responses. Control data is very essential for repair process due to highest possibility of change to be controlled. There are 2 unsatisfied responses in control data i.e. Repair Process and Supply Chain. It needs follow up analysis for Supply Chain in relation with their role in the business processes stream.
  c. Lifespan connected
      Lifespan is about coverage that must be connected end to end. The connection uses existing in-house IT program that ensures connection from Sales up to delivery. In addition, test cell center also keeps historical

article data that can be manage as article retention purposes. All the business processes conduct satisfied connection.

The most important processes are Repair process, Inspection, Sales control data.

d. Requirement Fulfil-ness

To fulfil the requirements not only regulation requirement but also OEM requirements are essential to be complied. It needs to be prudent in fulfilling compliance because it relates directly with strategy, capability and objective. Choosing the right license and OEM for specific market is fundamental selection that will bring the company on the high or low return respect to the market demand.

Industrial gets the highest with 13 responses, followed by Repair Center 10 responses. Sales control data has 9 responses. The next important response is Engineering and Supply Chain with 8 responses.

There are unsatisfied business processes of Sales control data, Repair center, Industrial, Test Cell, Delivery Center and Quality, but those business processes still present partial satisfied result. It needs to resolve potential problem such as pricing definition, shortage of critical facility in Repair Center, Test Cell, or how to improve TAT in order to achieve on time delivery and issue of quality.

Important to be evaluated is numbers of unsatisfied response (9 responses) for Supply Chain that makes the final result unsatisfied. This is the finding to be deeply evaluated and resolved.

e. Cost Control

Ability for cost control in the lifespan is critical in order to ensure the COGS. The outcome is ultimately on position of profit and lost. The most important result from response is price definition that has 1 unsatisfied, hence the result is partial satisfied. For all Aero Engine and Industrial operation, they have a good cost control because ability to coordinate and communicate any operation difficulties and put in disposition correctly.

f. Collected Information

Information data management is essential since the business process allow inter department communication data along with its procedure, standard and objectives. It is hard to make in unity without any alignment of strategy, communication, action and improvement.

The whole business processes has average good information data management. It is verified, because there is IT system which is a tool to communicate among the sections internally and there is log book and ARC to communicate externally.

g. Integration

Integration is about allowing people, process, and technology has a harmony stream on business process.

Repair section gets the highest with 11 responses, followed by inspection. It implies that repair section is assumed to be representation of readiness between people and procedure. There is only 1 unsatisfied for Repair section, even though the final result is satisfied.

6. Business Solution

To determine the business solution, several alternatives are developed to be then analyzed in determining one optimal solution for the Company's business issue.

a. The company needs the implementation of PLM.

the 5 key success parameters has significantly ensured the company for their need of PLM, that Repair Process and its Process Control using the Certified Facility run by Competence Workforce requires *a system linkage* to make sure Customer Encounter perform well. The linkage is PLM. Without PLM practices they will not be able to conduct the business processes, potentially disconnected, and less efficient.

The most contribution of PLM in this case are its traceability and fully control to the data, connectivity of each group from Sales to Delivery Center, integrity along the life span, requirement fulfilment, and its ability to cost control.

There is a very high risk for any potential disconnection process stated in the control span above and business process refers to Appendix A respect to the fulfilment and compliance to the requirement and fundamental services business.

ICMEM

b. Current PLM Implementation

The second analysis answer the question how deep implementation on business processes of Sales that represents customer encounter, Operation that represents internal process, repair process including Supply Chain, and Engineering that represents controlling the process and technical decision. For the implementation of business process. The analysis can determine what current business that needs to be aligned with PLM practices.

The analysis involves 3 pillars business processes in the company i.e. Sales, Operation and Engineering. From the result of analysis refers to Appendix B Table B1 and its summary in Table B2, there is a conclusion as follows:

- Every single business process has implement gratefully and satisfied for Traceability, Lifespan Connected, Collected information, and Integrate of PLM key substances.
- For Fully Control Data all business processes has been satisfied implementation except Supply Chain as partially satisfied. Cost Control has also the same situation when only price definition has partially satisfied.
- Pay attention on Requirement Fulfilment that several business processes indicate some potential minor finding on Repair Center, Industrial, Test Cell, Delivery Center (TAT, OTD) and Quality. Focus on Supply Chain that get big pressure due to its failure to satisfy business processes peers.

c. Company Strategy

Correlation between Strategy of company to maintain declined engine with scarcity of spare part emerge a problem in SCM. Aligning main function is needed time by time, the company has a flexibility to change their strategy, leaving the declined engine and open up new engine market.

To figure out the initial trade off, these are a model that can be adopted in order to coup the business issues.

Firstly the company keep niche market of declined engine with adding a marketing model as follows:

- Military market segmentation, targeting for national 5 yearly *Renstra*. Position is using political and legal environment. Differentiation concept follows Government rule of 16/2012, not only for intangible services but also added a retention value e.g. sweetener, bundling with training and across logistic visit.
- Build a network for local or regional to do a build to print concept, especially for major component that comes to obsolete.
- Using power of forecast by statistical data, getting a pattern of experience for every single component that most frequently scrap. It brings data analysis by Engineering capacity to have risk mitigation by standard deviation. The standard deviation eventually accommodates price potential overrun.

Secondly, to enter Industrial market, it can be run by the model as follows:

- Basically steam turbine for 3-5 MW has very limited market. The population is limited due to its low efficiency output. The highest demand could be on 7MW that PT. PLN (Indonesian SOE for electricity power) requires almost widest implementation in the islands in Indonesia for micro scale.
- The fact that the company does not need to improve all the capacity of facility, but it can take advantage from idle local shop capacity under industrial marketing – production collaboration.
- The competition is existed with China export product. China for internal usage has scale minimum 100 MW and up (150, 300, 400, 600, 800,1000 MW by charcoal). They export for micro and small scale turbine to Indonesia.
- In this situation, NTP has a very good chance to entering project base contract for 7MW (manufacturing and maintenance segment) as collaboration with local shop. NTP has to improve its capacity on Engineering and Project Management.
- From stream of power plant, Boiler, Turbine, and Generator, NTP can expand to next merely process in Generator. The capacity is addressed to integration capacity.

Thirdly, the company consolidate to obtain commercial contract worldwide. The model can be described as follows:

ICMEM

- License for complementary. To get sort of license, the company shall have entry level of capability and capacity, despite to get affordable financing to improve the facility especially test cell is still challenging. It must have a clear business scale for the commercial engine so then the price is acceptable by market. Considering the strength and weakness, along with competition, the company can initiate a first stage of DOF by sort of complementary license, a license only for complement shop. An extension shop of OEM's MRO or DOF. It could be as an entry stage.
- Market segment is commercial new age engine. Advantage of volume and new age engine is supply chain that plenty in the market.
- It apparently needs to be added, is open business for any collaboration with other MRO. It requires marketing team that determine the boundary for any negotiation phase.

The change of alternative proposed new strategy and goal is presented in Table 3.

Table 3 Proposed New NTP Strategy & Goal

Current		Future
Independent MRO		Independent + Complementary MRO
		Collaborative and merged MRO (ISH)
Aero Engine 80%; Industrial 20%	**To**	Aero Engine 50% + Industrial 50%
MRO Industrial		Manufacturer for Industrial Turbine & Generator by Reverse Innovation model
Partial digital processes		Fully digital modern processes (3.0 Industry)

The value of propose PLM in relation with company challenge is presented in Table 4.

Table 4. Value of the Proposed PLM to the Company

Description	Impact	Projected Value	Remark
Regulation & requirement	- Compliance to CASR/FAR/EASA	- Standard output level to OEM's maintenance, repair and overhaul. - Opportunity to become DOF. - Eligible to release product's ARC.	Subject under frequent Independent Monitoring Function (IMF – EASA)
	- Compliance to OEM requirements.	- Create capability to perform engine type services. - Opportunity to become DOF and exchange program. - Opportunity to collaborate with others MROs or DOF or OEM's MRO.	Business is connected to OEM with conditional expenses.
Competition	- Readiness of transformation to modern MRO - Readiness of all business processes	- Open business model i.e. Collaboration with others, merger (ISH). - Getting more efficient, integrated and zero misconduct. - Readiness to enter larger market.	Integrated data of sales, repair process, assembly line, engineering, test cell, and delivery center
Revenue	- Readiness to enlarge Indonesian Arm Forces market. - Readiness to enlarge industrial market.	for initial value of 60% for military And 40% for industrial with the total 2 times sales value.	50% PTDI's helicopters and 70% PTDI's fixed wing product operate by Indonesian Arm Forces.

7. Conclusions & Implementation Plan

The conclusions and recommendations of the research are as follows:

ICMEM

a) The 5 key success parameters has significantly ensured the company for the need of PLM implementation, that without PLM practices they will not be able to conduct the business processes, potentially disconnected, and less efficient.

b) Every single business process has implement satisfied of PLM substances of Traceability, Lifespan Connected, Collected information, and Integration. There is minor partially satisfied for Fully Control Data and Cost Control. Pay attention on Requirement Fulfilment that several business processes indicate some potential minor finding e.g. Repair Center, Industrial, Test Cell, Delivery Center (TAT, OTD) and Quality. Focus on Supply Chain that gets big pressure due to its failure to satisfy business processes peers.

c) Implement substance PLM practices for every single business process especially on Requirement Fulfilment.

d) Reform the organization by relocating procurement into Operations: Aero Engine and Industrial group.

e) Execution of Procurement Department to conduct:
   - Forecast analysis of purchased item.
   - Standard deviation analysis for experienced item for each type of engine overhaul.

f) Compose Ad hoc Engineering team in Aero and Industrial to do evaluation and feasibility study on higher capability builder and driving collaboration capacity, as change agent in the organization.

Table 5. Summary Before & After PLM Implementation

Description	Problem Before PLM	Coverage Function After PLM
Requirement Fulfilment	- Work on delaying time	Making sure the business processes lifespan is connected and integrate.
	- Turn Around Time delay	Early warning when a business process comes to bottle neck.
	- Limited capability on larger capacity requirement.	Understanding on Requirement Fulfilment that business process of Repair Center, Industrial and Test Cell shall comply to the requirement.
	- Scarce material, limited or no stock - Spare part readiness problem - Component late on dock	All business process especially Supply Chain shall be connected (Lifespan Connected) and Integrated. They shall interact and communicate the needs and how to fulfill it. It ensures first step of the readiness.
	- Waiting for the job	Lifespan of business processes are connected and data & information collected will ensure the upcoming job when the business process finish the assigned job.
	- Slow process of procurement	The connected lifespan of business processes will warn management for any slowing process.
	- Unclean database	Information data and traceability will ensure the cleanliness of database.
Competition	- Procurement offer alternative solution make the price up.	Traceability and Lifespan connection attain network diagram of process moving on target, including problem of procurement scheduling.
	- Processes in operation for engine development, work by delaying time, end up with rush, then overtime.	Development process shall be ensured by fully control data and lifespan connected process to obtain on time processes. It becomes first step before cost controlling.
	- Limited capability on large capacity.	Understanding on Requirement Fulfilment in order to ensure the capacity is on track to comply the requirement.
	- Price determination problem for bidding.	Cost control function will ensure any collected information and data can contribute significantly.
	- Turn Around Time exceeding.	On time process depends on precise conducting in each business process of start-finish and duration process. Fully control data function ensures every process time consume.
Revenue	- Delaying procurement support, material scarcity and spare part waiting time.	Some PLM functions ensure the problem settled of Traceability, Full Control Data, Lifespan Control and Integration.
	- Turn Around Time exceeding	Traceability and Cost control are the next step of early warning when a business process comes to bottle neck, delay
	- Un-controllable process, no estimate complete date.	Fully control function along the cross data is very important to communicate any dispute of processes.

Description	Problem Before PLM	Coverage Function After PLM
	- Sales too deep involve in internal process	All business processes shall be integrated and having lifespan control, otherwise it goes beyond the assigned task.

8. The implementation plan is consist of:

Engineering and Supply Chain Management new role

Engineering currently is on position to be agent of change. The implementation of PLM will be effectively ensured when Engineering and Procurement can answer the change. Table 6 presents implementation of assignment roles.

Table 6 Implementation of Engineering and Procurement New Roles

Function	Role & Assignment
ENGINEERING	a. Compose Adhoc team Aero Engine and Industrial Engine and consolidation.
	b. PLM selection & implementation.
	c. Alignment business processes with PLM, go life and readiness
	d. Industrial increase capacity.
SUPPLY CHAIN MANAGEMENT	a. Split and separate Procurement Department for Aero Engine under SBU Aero Engine, and for Industrial under SBU Industrial.
	b. Evaluate the new business process.
	c. alignment with PLM practices.

Company Strategy

The new global MRO business model requires independent MRO to shift their course and to change their capacity in more efficient, connected, integrated, modern digital facility, certified and high skillful talented resources, in order to create new business opportunity across the globe.

PT. NTP has a big chance to get those opportunity, however the MRO competition is very high, because PT. NTP has been standing on their own capacity and capability of Engineering, Internal Process Operation, and Sales - Marketing. PT. NTP has deep understanding on customer encounter. All business process in majority has satisfied implement PLM.

Table 7. Proposed Company Strategy and Its Implementation Plan

ICMEM

Description	Strategic Implementation Plan
Independent + Complementary MRO or Collaboration for Operation and/or for Project Base	a. Create complement model, marketing model, identify target partner and submission.
	b. Create collaboration model, marketing model, identify target partner and submission.
	c. Targeting the agreement and initiate pilot project.
	d. Establish ICA as readiness of Industrial Complement & Collaboration Agreement
Aero Engine 50% + Industrial 50%	a. Feasibility Study and Forum Group Discussion to create the planning.
	b. Establishing business framework, business network and resources readiness.
	c. Establishing industrial collaboration.
	d. Evaluation of implementation.
Manufacturer for Industrial Turbine & Generator by Reverse Innovation model	a. Assign Project Manager and Project Engineer and its engineering team to have capability on Turbine and Generator integration.
	b. Enlarge network on fabrication, special processes, to accommodate new business opportunity.
	c. Sales & marketing & financial requirement
Fully digital modern processes (3.0 Industry)	a. Initiate and conduct by Engineering ad hoc team
	b. Alignment all business processes with PLM
	c. Alignment business process for readiness, check and review business processes

ICMEM

Description	Strategic Implementation Plan
	d. Dry run and verification phase
	e. Go life the system

References

Creswell, J. (2007) Qualitative Inquiry & Research Design: Choosing Among Five Approches. 2nd ed. Thousand Oaks: Sage Publications.

Gassmann, O., Frankenberger, K., and Csik, M. (2014) The St. Gallen Business Model Navigator. Working Paper University of St. Gallen.

Hoffman, K Douglas and Bateson, John E.G. (2010) Service Marketing, Concepts, Strategies and Cases. Fouth Edition. South-Western Cengage Learning.

Loveslock, Christopher and Wirtz, Jochen (2011) Service Marketing, People, Technology, Strategy. Seventh edition. Prentice Hall.

Pande, P., Neuman, R., Cavanagh, R. (2000) The Six Sigma Way, How GE, Motorola and Other Top Companies Are Honing Their Performance. McGraw-Hill.

Quayle, Michael. (2006) Purchasing and Supply Chain Management: Strategies and Realities. University of Glamorgan, UK. IRM Press.

Richard Godfrey, Routledge, (2016). Strategic Management: A Critical Introduction. Routledge Taylor and Francis Group.

Shah, D., Rust, R.T., Parasuraman (2006) The Path to Customer Centricity. Sage Journals. Retrieved from http://journals.sagepub.com/doi/abs/10.1177/1094670506294666.

Siemens. (2016) Efficient Enterprise With PLM. Retrieved from Garcia Lopez, Javier javier.garcialopez@siemens.com. Siemens Industry Software Pte. Ltd. Product Lifecycle Management 60 MacPherson Road, Singapore 348615.

Thomas Folks (2016) Leading Service Business. Lecture material. Aalto Executive Education Academy, Helsinki.

ICMEM

Analysis of Queuing System at Teller Bank Rakyat Indonesia Cengkareng Timur Unit Office

Khitah Wirapradana[a]*, Akbar Adhiutama[b]

[a,b]*School of Business and Management Institut Teknologi Bandung, Jln Ganesa no. 10, Bandung. 40132, West Java, Indonesia*

Abstract

This study aims to analyze the effectiveness of queuing systems in Teller Bank Rakyat Indonesia Cengkareng Timur Unit Office. As for the background in this research is long queuing line that can be seen in the waiting room, where people can almost fill the entire room. This concerns the convenience of customers and it can lower customer satisfaction. This research was conducted for 10 days during March until May 2018 on weekdays, from 08.00 until 15.00. The sample is 40 first customers each day, and researcher gathered data about duration of service time and waiting time, numbers of teller that available to handle the customers, and numbers of customer served in units per time. The data then processed by Microsoft Excel 2007, and also calculated using Queuing Model B formula, so researcher can give appropriate recommendations to Bank Rakyat Indonesia Cengkareng Timur Unit Office about how to solve the queuing problem. The observation result shows that current Teller queuing system in Bank Rakyat Indonesia Cengkareng Timur Unit Office that only has 2 teller counters is severely ineffective and need improvements, especially in number of teller to serve customers.

Keywords: Teller; Queuing line; Effectiveness

1. Introduction

Qicong Zhang stated in his paper that bank queuing issue is becoming more serious each day, and the long waiting time can be one of the factors that can lower the customer satisfaction (Zhang, 2012). Ronald Anthony Nosek, Jr. and James P. Wilson also said in their paper that there are a lot of studies, text books, and articles that discuss the relationship between customer satisfaction, waiting time, and customer behavior, which indicated that waiting time clearly affects customer satisfaction (Anthony Nosek & Wilson, 2001)**.**

Long queuing line that is not offset by sufficient service time and/or enough service capacity makes people have to wait in the system until served. This can affects the convenience of the customer. The longer people wait, the lower customer satisfaction, and low customer satisfaction can be one of reasons that can cause the customer to move to other bank. The worst case is a dissatisfied customer will most likely not provide repeat business, and anyone can listen to his or her bad experience because they will be more than willing to share his or her bad experience (Brahma, 2013).

Usually, there are two queuing lines when people go to bank; Customer Service queuing line and Teller queuing line. The form of services performed at Customer Service counter usually are related to people who have account in the bank, such as opening and closing accounts, giving information about the bank's products, and handling customer's complains. Meanwhile, form of services performed in Teller counter are transactions such as such as cash deposit, cash withdrawal, transfer with amount of money that goes beyond the limit of ATM transaction, tuition fee payment, and other bill payments.

---

* Corresponding author. Tel.: (+62) 81219168711.
  E-mail address: khitah.wirapradana@sbm-itb.ac.id

ICMEM

This study will focus on Bank Rakyat Indonesia Cengkareng Timur Unit Office, which structurally is under Daan Mogot Branch Office, which structurally is under Jakarta 3 Regional Office (Bank Rakyat Indonesia). The reasons why researcher choose this location are, it has potential to has queuing problems, because it is located at Jalan Bangun Nusa Raya no. 9i/9j East Cengkareng, West Jakarta, which is a very crowded area and very near to Pasar Jaya Cengkareng (traditional market), so there are many people who do transactions here, especially sellers who sell goods in the traditional market, as well as market visitors.

Beside that, Bank Rakyat Indonesia itself is considered as one of the best banks in Indonesia. According to Anselmus Bata in his article at www.beritasatu.com, PT Bank Rakyat Indonesia Tbk (BRI) performed as the best with PT Bank Central Asia Tbk (BCA) and PT Bank Negara Indonesia Tbk (BNI) in the category of banks with total assets above 100 trillion according to Investor Magazine(Anselmus Bata, 2017). Not only that, based on data from Otoritas Jasa Keuangan, PT Bank Rakyat Indonesia (BRI) ranked in the top position as the bank with the largest amount of assets in Indonesia, with total assets equal to 964 trillion
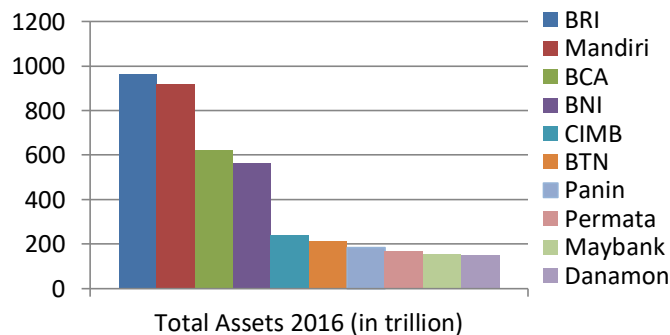
Figure 3: Rank of Bank Based on Total Assets in Indonesia (Source: OJK)

According to preliminary interview with Mrs. Eka, one of the tellers in Bank Rakyat Indonesia Cengkareng Timur Unit Office, Teller queuing line is longer than Customer Service queuing line, because the number of customer who do the transaction in Teller counter is higher than in Customer Service counter, especially in certain periods such as Monday and in the beginning of the month.

Currently, there are only two tellers available to serve customers, every Monday until Friday, from 08:00-15:00. There is no limit for number of queues, and there is only one ATM Machine and there's no Cash Recycling Machine (CRM) there that can help customers to do cash deposit transactions. According to Mrs. Eka, one of the teller there, the number of transactions served per day can reach approximately 400-500 transactions that served by 2 tellers. Given the situation, it can also be a problem if the number of teller can't handle too much customers. Figure 2 shows the teller queuing line inside the office.

Figure 4: Teller Queuing Line Inside The Office

There are 3 main types of transaction performed in Bank BRI Teller that have Service Level Agreement; Cash Deposit, Cash Withdrawal, and Debit Transfer. Based on the research conducted by the researcher, the actual service time performed at Bank Rakyat Indonesia Cengkareng Timur Unit Office is longer than the Service Level Agreement (Table 1).

Table 13: Service Level Agreement and Actual Service Time

Transaction	Service Level Agreement	Actual Service Time
Cash Deposit	00:01:30	00:02:35
Cash Withdrawal	00:01:30	
Debit Transfer	00:02:00	Not included in the research

Table 1 shows that researcher found the actual service time is longer than the service level agreement, because there are several problems during the transaction process that either caused by the system or by customers, that can slow down the duration of transaction. Although the tellers have already worked hard to perform their job as quick as possible, however, there are other problems that cause queuing line becomes long.. So, this study will focus to analyze the efficiency of queuing system in Teller of Bank Rakyat Indonesia Cengkareng Timur Unit Office, and to give appropriate recommendations to improve the current queuing system. Debit Transfer transaction is not included in this research, because it's considered not relevant anymore, since ATM card holder can do this transaction almost everywhere using ATM machine, therefore, researcher didn't find sufficient samples to analyze Debit Transfer transaction

So, there are 2 research questions:

1. How is the performance of Teller queuing system at of Bank Rakyat Indonesia Cengkareng Timur Unit?

2. What recommendation(s) can be given to improve Teller queuing system of Bank Rakyat Indonesia Cengkareng Timur Unit Office?

ICMEM

2. Literature Review

2. 1.Queuing Theory

According to Jay Heizer, Barry Render, and Chuck Munson (2017), Queuing Theory can be defined as a body of knowledge about waiting lines. It is an important part of operations, and it is a valuable tool that can be used by operation managers. Meanwhile, the waiting line itself (queue) means items or people awaiting service in a line. . Also according to them, Queuing Theory can be characterized by these three main components (Heizer, Render, & Munson, 2017):

- Arrival (Input)
  In this case, the size of arrival population is unlimited population, because everyone can just come to the office from 08:00-15:00 and there's no limit of queue. There are some behaviour of arrivals, that we may categorized into customers who wait in the queue until they get the service, customer who balk because they think the queue is too long for them, and the impatient customers who actually enter the queue, but and then leave before they get the service because the queue is too long. Arrivals pattern in this case is random pattern, because between 08:00-15:00, they can freely come to the office, and there's no exact time when will they come between those time.
- Queue Discipline
  Queue discipline used in Bank Rakyat Indonesia Cengkareng Timur Unit Office is FIFO (First In First Out). Under FIFO, each request is met by the item with the oldest shelf life at the moment (Parlar, Perry, & Stadje, 2010). It means that the teller will serve customer based on who comes first to the office.
- Service Facility
  It takes different amount of time to take care each customer. It means that service times are randomly distributed. There are actually four types of service system designs namely, Single Server – Single Phase, Single Server – Multi Phase, Multi Server – Multi Phase, and Multi Server – Multi Phase. In this case, the service system design used is Multi Server – Single Phase.

Heizer, Render, and Munson mentioned in their book that there are a lot of queuing models that can be applied in operations management, but four models that widely used most are Single-Server Queuing Model (M/M/1), Multiple-Server Queuing Model (M/M/S), Constant-Service-Time Model (M/D/1), and Finite-Population Model (M/M/1 with Finite Source). Those four models have three characteristics in common, which are, arrivals described by Poisson distribution, the queue discipline used is FIFO (First In First Out), and the service is only has single phase.
 (Heizer, Render, & Munson, 2017):

2. 2.Queuing Model (M/M/S)

Queuing Model (M/M/S) is the model that commonly used in bank, including Bank Rakyat Indonesia Cengkareng Timur Unit Office. According to Sung Shick Kim (1979), there are some characteristics in this queuing model (Kim, 1979):

- Input process: Arrivals occur one at a time and follow a Poisson probability distribution
- Service mechanism: Whenever there are an available server(s) (server that's not handling a customer), the customer at the head of the queue enters service and the server can start to handle him/her. The service times are negative exponentially distributed
- Queue discipline: "First In First Out" or "First Come First Served", where arrivals wait until they get the service, regardless the length of the queue, and the first customer gets the service first
- Number in queue: No capacity constraint

ICMEM

Queuing Model M/M/S formula (Heizer, Render, & Munson, 2017):

M = number of open lines

λ = average arrival amount per unit of time

μ = average number of customer served per unit of time

P_0 = probability there is 0 person in the system

$$= \frac{1}{[\sum_{n=0}^{M-1} \frac{1}{n!}(\frac{\lambda}{\mu})^n] + \frac{1}{M!}(\frac{\lambda}{\mu})^M \frac{M\mu}{M\mu-\lambda}} \quad \textbf{for } \boldsymbol{M\mu > \lambda} \qquad (1)$$

L_S = average number of customers in the system

$$= \frac{\lambda\mu(\frac{\lambda}{\mu})^{\wedge}M}{(M-1)!(M\mu-\lambda)^{\wedge}2} Po + \frac{\lambda}{\mu} \qquad (2)$$

W_S = average time spent by customer in the system

$$= \frac{\mu(\frac{\lambda}{\mu})^{\wedge}M}{(M-1)!(M\mu-\lambda)^{\wedge}2} Po + \frac{1}{\mu} = \frac{Ls}{\lambda} \qquad (3)$$

L_q = average number of customers waiting in the queue

$$= L_S - \frac{\lambda}{\mu} \qquad (4)$$

W_q = average time spent by to wait in the queue

$$= W_S - \frac{1}{\mu} = \frac{Lq}{\lambda} \qquad (5)$$

2. 3.Process Mapping Analysis

According to F. Robert Jacobs and Richard B. Chase, process mapping analysis approach should be the first step in analyzing the flow of the material through a production process, by using performance measures that relates to inventory investment, and also how fast the material flows through the process. This approach can also be applied in many different context (Jacobs & Chase, 2010). In this study, we analyze the flow of customer's transactions through several business process, from they enter the office until they depart from the office.

2. 4.Little's Law

According to John D. C. Little, Little's Law deals with Queuing Theory, which consists of discrete objects we shall call items, which arrive at some rate to the system (Little, 2011).

Below are several Little's Law formula used in this research:

Estimate the average Work in Process (WIP), (Jacobs & Chase, 2010):

$$= \frac{1}{2} \, x \, number \, of \, items \, wait \, in \, line \, at \, the \, end \, of \, period \qquad (6)$$

ICMEM

Measure the Cycle Time (Little, 2011):

$$= \frac{Work\ In\ Progress\ (WIP)}{Throughput\ time\ (TH)} \tag{7}$$

3. Methodology

To collect the data, researcher used in-depth interview and observation methods. The observations were conducted 10 times between March 2018 until May 2018, which are:

1. Monday, March 19th 2018
2. Monday, April 2nd 2018
3. Friday, April 13th 2018
4. Monday, April 16th 2018
5. Monday, May 14th 2018
6. Tuesday, May 15th 2018
7. Wednesday, May 16th 2018
8. Thursday, May 17th 2018
9. Friday, May 18th 2018
10. Monday, May 21st 2018

The observations were conducted during working hours at Bank Rakyat Indonesia Cengkareng Timur Unit Office from 08:00-15:00. The population of this study, according to the teller, are around 400-500 people. While, the samples of this study are 40 first customers that do cash deposit transactions or cash withdrawal transaction, because it's considered most appropriate to represent all transactions since the peak hours according to the teller are from 08:00-10:00.

The interviews were conducted with Mr. Irwan Budianto as the Head of Bank BRI Cengkareng Timur Unit Office, and Mrs. Eka as one of the teller there, and researcher asked some questions regarding the actual condition of the queuing line, the procedures about queuing system there, the customers who do the transactions there, and problems faced during the transaction process. Researcher then used Microsoft Excel to compile the data, and the data were analyzed using Process Mapping Analysis, Little's Law (Please refer to formula (6) and (7)), and Queuing M/M/S formula (Please refer to formula (1), (2), (3), (4), and (5)).

4. Findings and Discussions

4.1 Workflow and Transaction Process in Teller Bank Rakyat Indonesia Cengkareng Timur Unit Office

Based on the observation, researcher found that there is only one line, and only two available tellers (channels) to serve the customers. This figure below illustrates the scheme of queuing line in teller services of Bank BRI Cengkareng Timur Unit Office:

ICMEM
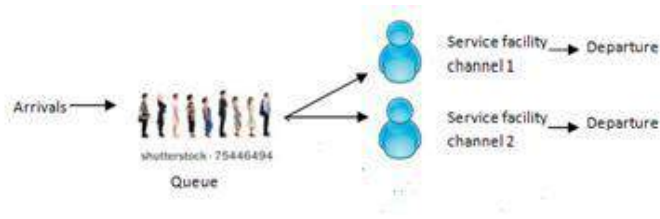
Figure 5: Queuing Model at Teller Bank BRI Cengkareng Timur Unit Office

While these following figures are the business process flow charts of Teller in Bank Rakyat Indonesia Cengkareng Timur Unit Office:
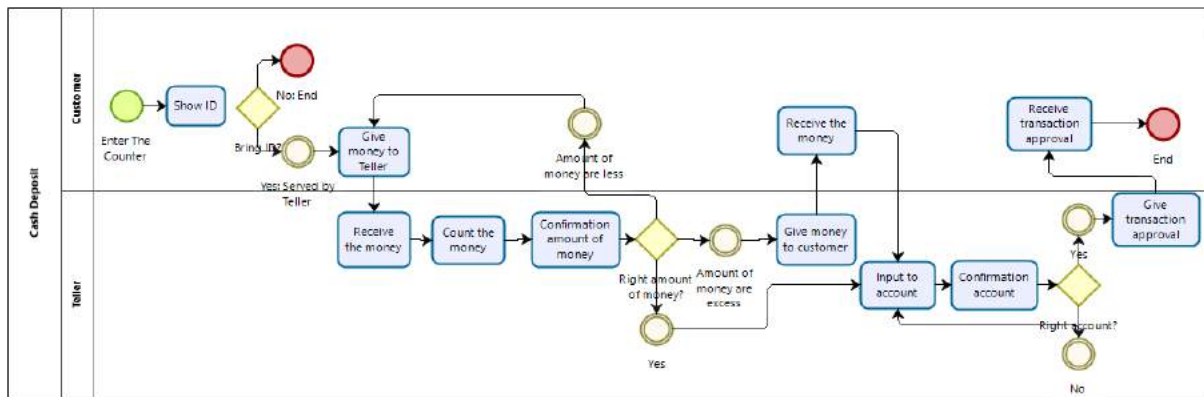
Figure 6: Cash Deposit Flow Chart

During the observation, researcher found several problems that happened during transaction process (Table 2, Table 3).
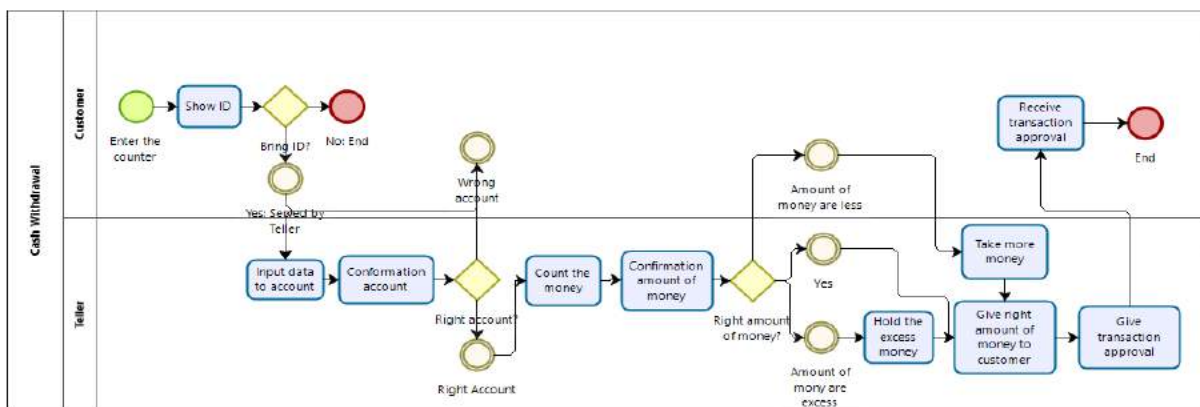
Figure 7: Cash Withdrawal Flow Chart

ICMEM

Table 14: Cash Deposit Problems

1. Process Steps	2. Problems
3. Show ID	4. Customer often doesn't know the requirements and often doesn't bring ID Card (KTP)
5. Receive money from customer	6. Money shards are too diverse; from 5000s until 100,000s 7. 8. The money given has not been tidied up; many reversed position, many folds, and messy
9. Count the money	10. The amount of money are too much 11. 12. Amount of money stated by customer different with amount of money counted (Wrong calculation)
13. Input data to account	14. Bad network connection
15. Confirmation and signed by customer	16. -
17. Give transaction approval	18. -
19. Others	20. -Added service: saving book printing, where sometimes the printer errors and there's bad network and connections 21. 22. Customer asks too many questions

Table 15: Cash Withdrawal Problems

23. Process Steps	24. Problems
25. Show ID	26. Customer often doesn't know the requirements and often doesn't bring ID Card (KTP)
27. Input data to account	28. Bad network connection
29. Confirmation	30. -
31. Count the money	32. The amount of money needed are too much
33. Give the money to customer	
34. Confirmation and signed by customer	35. -
36. Give transaction approval	37. -
38. Others	39. -Customer asks too many questions 40. - Added service performed, e.g: replacement of saving book

From Table 2 and Table 3, we can see that there are several problems in the transaction process, that either caused by the system in Bank BRI Cengkareng Timur Unit Office or even caused by the customer itself, that can slow down the duration of the transaction. For example, the transactions above 20,000,000 always take more than 2 minutes, which always excess the service time that's stated on service level agreement. The other example is the replacement of customer's saving book can slow down the duration of service time for 2.5 minutes until 3 minutes. Those problems are the reason why the average actual service time is longer than what is stated on Service Level Agreement.

ICMEM

4.2 Current Queuing System Analysis

After 10 days of observations, researcher got transaction average arrival rate (Table 4) and average service rate (Table 5) that will be explained below:

Table 16: Transaction Arrival Rate

No	Date	Arrival (Transaction)		
		Teller 1	Teller 2	Total
1	Monday, March 19th 2018	213	262	475
2	Monday, April 2nd 2018	289	226	515
3	Friday, April 13th 2018	277	169	446
4	Monday, April 16th 2018	317	233	550
5	Monday, May 14th 2018	271	279	550
6	Tuesday, May 15th 2018	189	199	388
7	Wednesday, May 16th 2018	161	141	302
8	Thursday, May 17th 2018	239	191	430
9	Friday, May 18th 2018	149	141	290
10	Monday, May 21st 2018	215	198	413
Total				**4359**
Arrival Rate per Day				**435.9**
Average Arrival Rate (λ)				**62.27**

From Table 4, we can see that The Arrival Rate per Day is 435.9, which is obtained by dividing total arrivals to 10 observation days, and the Average Arrival Rate is 62.27, which is obtained by dividing Arrival Rate per Day to 7 working hours. It means that every 1 hour, there are 62.27 arrivals (transactions).

Table 17: Average Service Rate

Day	Average Service Time per Day	
	Teller 1	Teller 2
1	0:02:35	0:02:47
2	0:02:31	0:02:57
3	0:02:59	0:02:36
4	0:02:31	0:02:52
5	0:02:34	0:02:30
6	0:02:49	0:02:24
7	0:02:22	0:02:10
8	0:02:39	0:02:21
9	0:02:29	0:02:20
10	0:02:49	0:02:28
Average Service Time	**0:02:38**	**0:02:33**
Total Average Service Time	**0:02:35**	
Average Service Rate (μ)	**23.20**	

From Table 5, we can see that Total Average Service Time (μ) is 2 minutes 35 seconds which is longer than what's stated on Service Level Agreement (1 minute 30 seconds). Average service rate showed on the table is 23.20, which means every an hour, teller can serve 23.20 transactions. Average service rate is obtained by:

$$\frac{1\ transactions}{Total\ Average\ Service\ Time}\ x\ 1{:}00{:}00 \qquad (8)$$

ICMEM

Table 4 and Table 5 shows that Average Arrival Rate(λ) is 62.27, and Average Service Rate (μ) is 23.20. The ideal condition is, Mμ (Number of counter multiplied by Average Service Rate) should be higher than λ. Meanwhile, in this case, Mμ is only 46.40 (obtained by: 2 x 23.20). This condition can't reach a steady state condition, which means the line will be longer and longer if the system continuous to open. It's also doesn't meet the assumption of Queuing Model M/M/S formula (Please refer to formula (1)): **Mμ > λ**. Therefore, it can't be processed using Queuing Model M/M/S formula.

To overcome this problem, researcher used Process Mapping Analysis and Little's Law to analyze the current system that will focus on the peak hours of Bank BRI Cengkareng Timur Unit Office, that according to Mrs. Eka, is between 08:00-10:00. After that, we can estimate the average number of transaction that are waiting in line and average time that transactions are waiting to be processed using Little's Law.
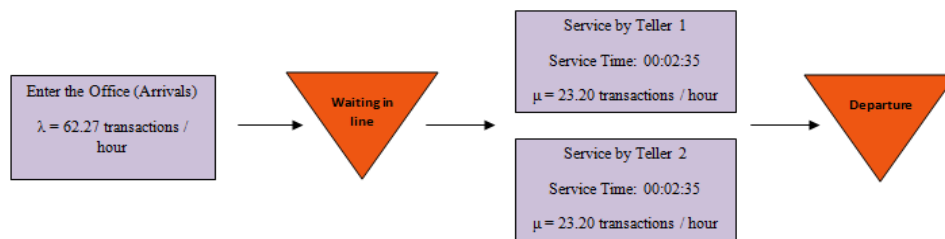
Figure 8: Business Process with 2 Tellers

From Figure 6, we can see that Service by Tellers itself is the bottleneck in the business process. With each teller can only serve 23.20 transactions per hour, their capacity combined (Mμ) is only 46.40 transactions per hour (1.99 transactions every 2 minutes 35 seconds). While, the arrivals reach 62.27 transactions per hour (2.68 transactions every 2 minutes 35 seconds).This condition makes transactions that wait in the queue becomes more and more. The figure below shows how much transactions that wait in the queue during peak hours between 08:00 – 10:00:

Number of transaction(s) wait in line
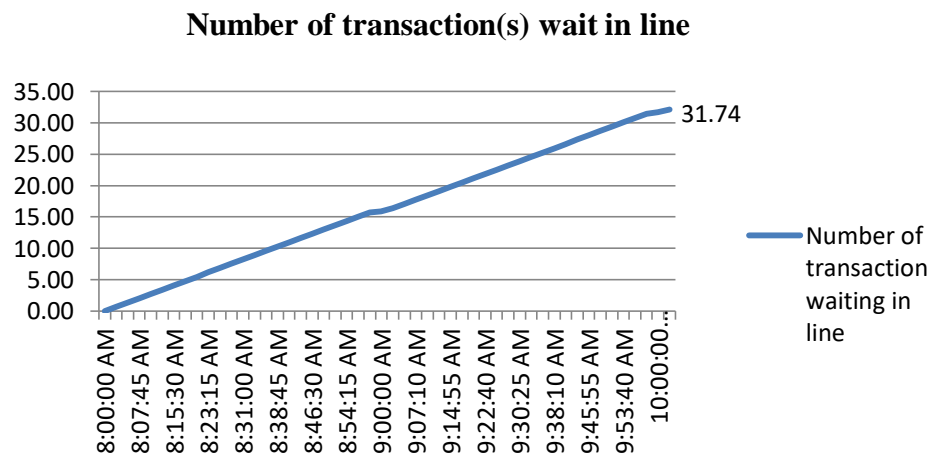
Figure 9: Number of Transactions Wait in Line from 08:00-10:00

We can see from Figure 7 that at 10:00 AM, there are still 31.74 transactions that waiting to be processed. Using Little's Law, we can estimate the average number of transaction that are waiting in line is 15.87 transactions (obtained

ICMEM

by using formula (6)), and also average time spent waiting in the queue is 20 minutes 31 seconds (obtained by using formula (7)). This condition needs improvement.

4.3 Improvement for Recommendation

To improve the current system, researcher decided to provide analysis of the new queuing model by adding 1 teller counter to overcome the problems.
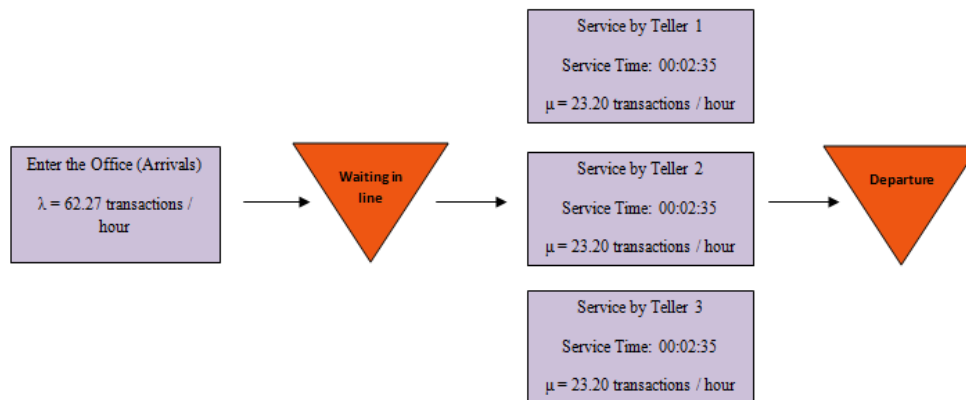
Figure 10: Business Process with 3 Tellers

Figure 8 illustrates the new queuing system that has 3 tellers. The service rate of 3 tellers combined (Mμ) is 69.60 transactions per hour (3 x 23.20). It's already more than the arrivals (λ), which is 62.27. Therefore, researcher can now use Queuing Model M/M/S formula to analyze the queuing system.

After the data analyzed using Queuing M/M/S formula, researcher got the result (Table 6):

Table 18: Queuing M/M/S Formula Result (3 Tellers)

41. Probability 0 transaction in the system (Po)	42. 0.026
43. Number of transactions in the system (Ls)	44. 9.44
45. Time spent in the system (Ws)	46. 0.15 hour (9 minutes)
47. Number of transaction in the queue (Lq)	48. 6.76
49. Time spent in the queue (Wq)	50. 0.108 hour (6 minutes 30 seconds)

The table below shows the improvement of the addition of the tellers (Table 7):

Table 19: Improvement Table from 2 Tellers to 3 Tellers

51. 2 Tellers	52. 3 Tellers
53. Capacity (46.40) is lower than arrivals (62.27).	54. Capacity (69.60) is higher than arrivals (62.27).
55. Average number of transactions waiting in queue (Lq) is 15.87. Calculated using Little's Law formula during peak hours.	58. Average number of transactions waiting in queue (Lq) is 6.76. Calculated using Queuing Model M/M/S formula.

ICMEM

56. Table 20: Improvement Table from 2 Tellers to 3 Tellers

57.

59. Average time spent in the queue (Wq) is 20 minutes 31 seconds. Calculated using Little's Law formula during peak hours between 08:00 – 10:00.

60. Average time spent in the queue (Wq) is 6 minutes 30 seconds. Calculated using Queuing Model M/M/S formula.

5. Conclusion and Recommendation

5.1 Conclusion and Recommendation

Based on the result of the observation that has been conducted, researcher makes conclusions and recommendations to answer the research questions. Below are the answers of research questions:

1. *How is the performance of Teller queuing system at of Bank Rakyat Indonesia Cengkareng Timur Unit Office?*

The current queuing system of Bank Rakyat Indonesia is proved not efficient. The current service rate performed by 2 tellers is still lower than the arrival rate, which means the system couldn't reach a steady state condition. The queuing line will become longer and longer if the system continuous to open.

After this problem analyzed using process mapping analysis, researcher found that the service by teller itself is the bottleneck of the whole process, and using Little's Law, researcher found that during peak hours between 08:00 – 15:00, there are on average 15.87 transactions waiting in the queue, and the average time spent in the queue is 20 minutes 31 seconds.

Based on that, researcher can conclude that current queuing system of Teller Bank Rakyat Indonesia Cengkareng Timur Unit Office needs improvements.

2. *What recommendation(s) can be given to improve Teller queuing system of Bank Rakyat Indonesia Cengkareng Timur Unit Office?*

To overcome queuing problems that are existing in Bank Rakyat Indonesia Cengkareng Timur Unit Office and improve the current queuing system, researcher suggest to add one more teller counter.

Queuing system with 3 tellers has higher service rate (69.60 transactions per hour) than the arrival rate (62.27 transactions per hour), compared to current system that has lower service rate (46.40 transactions per hour). Queuing system with 3 tellers can also reduces the number of transactions in the queue from 15.87 transactions (calculated using Little's law during peak hours) to 6.76 transactions (calculated using Queuing Model M/M/S formula). Then, queuing system with 3 tellers can reduces time spent in the queue too, from 20 minutes 31 seconds (calculated using Little's law during peak hours) to 6 minutes 30 seconds (calculated using Queuing Model M/M/S formula).

5.2 Further Research

There are several weaknesses in this research due to researcher's limitation. First, the real condition of Bank Rakyat Indonesia Cengkareng Timur Unit Office is they still use 2 teller counters. The results that researcher got when using 3 teller counters is purely based on formula calculation only, while researcher lack of actual results when there are actually 3 tellers. Also, researcher still couldn't give the recommendation about how to speed up the duration of service time. Therefore, researcher suggests to next researchers who are interested in this field to try to get the data when the addition of teller (server) actually happened, and also to try to find a solution about how to speed up the duration of service time, that currently still slower than what's stated on Bank Rakyat Indonesia's Service Level Agreement. In that case, manager can have a more accurate reference that can be taken into consideration for decision making in the future.

ICMEM

References

Anselmus Bata. (2017, June 13). Bisnis. Retrieved from www.beritasatu.com.

Anthony Nosek, R., & Wilson, J. P. (2001). Queuing Theory and Customer Satisfaction: A Review of Terminology, Trends, and Applications to pharmacy Practice.

Bank Rakyat Indonesia. (n.d.). unitkerja. Retrieved from www.bri.co.id.

Brahma, P. K. (2013). Queuing Theory and Customer Satisfaction: A Review of Terminology, Trends, and Applicatons to Hospital Practice. Asia Pacific Journal of Marketing & Management Review .

Heizer, J., Render, B., & Munson, C. (2017). Operations Management Sustainability and Supply chain Management Twelfth Edition. Pearson Global Edition.

Jacobs, F. R., & Chase, R. B. (2014). *Operations And Supply Chain Management.* McGraw-Hill Education.

Jacobs, F. R., & Chase, R. B. (2010). *Operations and Supply Chain Management: Global Edition With Global Cases And Alternate Problems.* McGraw-Hill/Irwin.

Kim, S. S. (1979). M/M/s QUEUEING SYSTEM WHERE CUSTOMERS DEMAND MULTIPLE.

Little, J. D. (2011). Little's Law as Viewed on Its 50th Anniversary. *Operations Research Vol. 59* , 536-549.

Otoritas Jasa Keuangan. (2016).

Parlar, M., Perry, D., & Stadje, W. (2010). FIFO Versus LIFO Issuing Policies for Stochastic Perishable Inventory Systems.

PT. Bank Rakyat Indonesia (Persero) Tbk. (2016). Tentang Kami. Retrieved from ww.bri.co.id.

Zhang, Q. (2012). Multi-agent Based Bank Queuing Model and Optimization.

ICMEM

The 3rd International Conference on Management in Emerging Markets

Quality Improvement on PT X Dyeing Department by Implementing Six Sigma (A Case Study of Indonesian Textile Company)

Christianto Aditya[a*], Yuanita Handayati[b]

[1,2]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

PT X Textile located in Majalaya is considered as one of Indonesian major textile company that capable to produce almost any kind of fabric to suit your needs. As any other manufacturing companies, operation process played a fundamental role on company's progression. Furthermore, defects in textile industry cannot be underestimated because the quality of finished goods depend almost altogether upon every process employed. The errors mostly happened in the Dyeing Department, simply because it's the most complex, tricky and required significantly more time to operate than other processes. Latest data also shows that the percentage of defective product still exceeds company's standard. Hence, the objective of this research is to help PT X overcome their problem by implementing Six Sigma quality method with DMAIC methodology. It deeply explores (1) company's operation dynamics, (2) identify the root cause(s) and (3) disclose them by providing remedial solution(s). The findings of this research are; (1) the Dyeing Department operated at 3 sigma level and yielded 6% of defects per 2017, (2) root causes are human error, power failure, broken part, inferior chemical substances, lack of quality control and formula pre-test and (3) propose improvement solutions and control plan for each identified root cause.

Keywords: Quality; Textile; Dyeing; Six Sigma; DMAIC

1. Introduction

Textile industry has always portrayed an important role in Indonesia economic growth, which involve approximately 2,869 companies, embody for almost 1,4 million workers (11% of total workforce in the entire manufacturing industry) and create export commodities valuing at 9,27 billion USD in the year of 2016. PT X Textile that located in Majalaya, West Java is considered as one of major player in the industry. Like any other manufacturing companies, production process is the foundation that has a significant impact for company's development (Heller, 2013). No exception for PT X, the production flow in order to create a single type of fabric required a strict and precise Standard Operation Procedures (SOP). By seeing these circumstances, the company expects to be as effective and efficient as possible. But unfortunately, defects still occurred regularly which eventually generated extra cost to resettle the production. Furthermore, defects in textile industry cannot be underestimated, as the quality of finished goods depend almost altogether upon every process employed (Shukla, Kantilal T., 1959).

According to their GM, defects mostly happened on the Dyeing Department, as to dye a single specific yarn with requested color, it must get through several steps that required more time to operate than other department. The causes of error are varied from time to time and yielded different types of defect. Company latest performance was not so great either because 2017 data shows that the percentage of defective products is 6%, which still exceed their maximum acceptable limit (3%). Therefore, this research aims to mitigate existing problem and improve overall quality on the

---

* Corresponding author. Tel.: +62-812-226-206-20.
  E-mail address: christianto.aditya@sbm-itb.ac.id

ICMEM

PT Dyeing Department by implementing one of the most famous quality framework: Six Sigma with DMAIC methodology. Six Sigma is a powerful strategy developed to accelerate improvement in product, process and service quality by relentlessly focusing on reducing variation and eliminating waste (Anthony; Banuelas, 2002). This method proved to be relevant and applicable for textile industry, as several previous research studies had already discussed a similar topic regarding Six Sigma in textile industry and yielded satisfying results. Hence, it's a good opportunity to widen and explore this particular topic so that Six Sigma will be more familiar and can be a great preference for any business that desire to improve their overall business.

However, this research is limited to only the Dyeing Department, which is the company's specialty that required more attention than other department. The assessment only covers last year's performance due to the data prior to 2017 being incomplete. In addition, cost-benefit analysis cannot be calculated because the financial data of PT X is confidential. Final-outcome of this research which is proposal of improvement solutions cannot also be simulated due to restricted time.

2. Literature Review

- Six Sigma

    Six Sigma is a comprehensive implementation of proven quality principles and techniques. The method's purposes are not only to improve quality management, but also to minimize the cost as low as possible. It can be a proper measurement for process performance, with 6σ level being the goal, based on the defects per million. DMAIC methodology is one of the most effective roadmap to begin implementing Six Sigma within organization. Before exploring deeper into the case, researcher briefly review the literature on successful application of Six Sigma in textile manufacturing sector:

- DMAIC

    Define (D) – describes the current state of certain company and its dynamics

    Measure (M) – calculate existing company's stability, capability and sigma level

    Analyze (A) – identify factors that affect the company's performance in a bad way (root causes)

    Improve (I) – propose alternatives to anticipate each identified root cause

    Control (C) – monitor the sustainability of proposed alternatives

- Previous Research Studies

    Anupama (2013) highlighted the application of Six Sigma on improving the Right-First-Time (RFT%) in fabric dyeing process in an Indian textile unit. The findings revealed that Six Sigma able to standardize the fabric dyeing process in a textile unit. Actions taken on critical activities improved the RFT yield by 4% thereby registering a cost saving of INR 2,951 million per month.

    Ajmera et al. (2017) discussed Lean Six Sigma implementation in textile industry to enhance the bottom-line results and win customer loyalty. The results showed that LSS able to reduce the percentage defective from 8.25% to 2.63% and shift sigma level from 2.9 to 3.1.

    Mohammed et al. (2013) applied Six Sigma methodology based on DMAIC tools to reduce production defects in textile manufacturing. The DMAIC approach has been followed to solve an underlying problem of reducing process variation and the associated high defect rate. Outcome of this research was a reduction of the overall quality level from 7.7% to 2%.

    Chansiri et al. (2016) implemented Six Sigma in Thailand textile company to improve operation process and reduce the procurement cost. The results showed an optimal implementation that the new working standard yielded no defects.

    Kumaravel et al. (2017) explained about Six Sigma practice for quality improvement in textile industry to realize an effective and efficient management. The study also intended to find out additional features and service that would make the company more profitable. Five proper improvement solutions were revealed as the outcome of this research plus the before & after the implementation.

ICMEM

Hewan Yaye (2016) focused on minimizing defects in sewing section at garment and textile factories through DMAIC methodology of Six Sigma. The study had successfully assessed the contributing factors for each defect type and maintain improvement using appropriate control charts.

Ruth Dede et al. (2016) explored Lean Six Sigma project and program success in the textile and apparel industry, revealed three successful projects, two on changeover time reduction and one on metal contamination were completed.

Sachidanand (2013) aimed to improve overall performance of textile sector by implementing both QMS and Six Sigma or Quality Six Sigma. Integration of both methods proved to be the essential need for Indian textile industries business improvement.

Jiju et al. (2009) assessed the status of Six Sigma implementation in the Indian industry by doing an exploratory empirical study. The results reflected the reasons for application of Six Sigma, the most and least commonly used tools and techniques, critical success factors and common impediments within the implementation.

Mehmet (2012) investigated the Critical Success Factors for the successful introduction of Six Sigma in Small and Medium Sized Turkish Textile Enterprises, revealed: involvement of top management, linking quality initiatives to employee & IT and innovation as the important CSFs for them.

Prasun et al. (2007) reduced the shade matching time in the fabric dyeing process by applying Six Sigma methodology to optimize the effect of the controllable parameters. Action taken successfully yielded improvement on the overall process to 82% with an improve sigma level of 2.34 and annual saving is to the tune of over $40,000.

Lee (2002) criticized about CSFs of Six Sigma implementation and its impact on operations performance. The outcome were leadership of top management and statistical/analytical tool usage are the most perceived important factors to the success of Six Sigma.

3. Methodology

Preliminary discussion by company's party performed by researcher to collect every possible information related with the topic of this research. Below are 3 methods for collecting data:

- Field Observation
  The intention of doing field observation is to achieve an initial portrayal of its actual condition.
- Interview
  Interview is conducted to gather as many information that may sometimes is not explicitly inscribed.
- Historical Data
  PT X dyeing defects data throughout 2017 is the main data (secondary) to be analyzed.

Data analysis of this research created by reflecting from DMAIC roadmap which will be explained below respectively:

- Define
  This phase describes fundamental understanding of PT X Dyeing Department current condition, consists of their operation dynamics and dyeing workflow. Methods used is Project Charter.
- Measure
  This phase assesses PT X Dyeing Department's stability and capability in producing their products and calculates current sigma level. Methods used are Statistical Process Control, Process Capability Analysis (use Minitab software) and Six Sigma Calculator.
- Analyze
  This phase identifies the main factor(s) that causing defective products in PT X Dyeing Department. Methods used is Current Reality Tree.
- Improve
  This phase proposes alternative Improvement Solutions for each identified root cause and set of Implementation Procedures for PT X Dyeing Department.
- Control

ICMEM

This phase provides Monitoring Plan to ease PT X Dyeing Department in maintaining the proposed Improvement Solutions by using FMEA approach.

4. Findings

Each phase of DMAIC methodology will be demonstrated comprehensively in this chapter so that research objective could be obtained, hereby are the finding results:

- Define

Table 1. Project Charter

Business Case In 2017, PT X Dyeing Department had dyed 3476 batches of "own" and 525 batches of "makloon" resulted: - RIGHT-FIRST-TIME: 3779 batches (94.45%) - TOPPING: 120 batches (2.99%) - REJECT: 102 batches (2.56%)	*Opportunity/Problem Statement* The company has an average rate of RFT around 94%. Since the company is both quality and profit-oriented, they desired to increase the RFT rate to 97%.
Goal Statement: Success Criteria - Reduce defects (TOP-REJ) percentage to 3%	*Project Scope* Dyeing – Core Process #Start: Dye pre-dyed yarn based on prepared formula and time schedule #Stop: Finished production corresponding with the time schedule
Project Plan	*Team Selection* - Christianto Aditya, as Researcher – Green Belts - Arifin, as GM of PT X – Master Black Belts - Sri, as Dyeing Dept. Supervisor – Black Belts

No	Activity	Month				
		3	4	5	6	7
1	Form team					
2	Finalize charter					
3	Gather data					
4	Analyze data					
5	Select solution					
6	Develop plan to implement					
7	Propose result					

*note : own – customer from non-textile companies

Makloon – customer from textile companies

RIGHT-FIRST-TIME – successful production both in color and quality

TOPPING – post-dyed yarn color is not accordance with customers' requirement (too light/dark)

REJECT – post-dyed yarn is far from the standard (strength, hairiness, elongation)

Project charter of this research composed by 6 aspects, each aspect briefly explains different extent of PT X Dyeing Department; (1) Business Case – describes 2017 production result, (2) Opportunity/Problem Statement – provides information about current situation and possible objectives, (3) Goal Statement: Success Criteria – states criteria to achieve desired goals, (4) Project Scope – addresses the initial and final activities of dyeing process, (5) Project Plan – gives timeline of research execution and (6) Team Selection – consists of individual who took part on the research.

- Measure
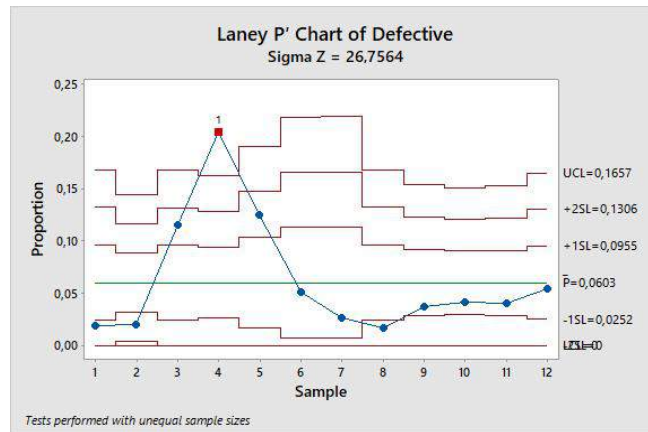
Fig. 1. Statistical Process Control of PT X Dyeing Department (based on 2017 historical data)

Laney P' Chart is used because it's the only control chart that suitable to examine "overdispersion" (defects are too volatile) data. Chart above indicates that in April (month 4), defects exceeded 3σ UCL due to "hecticness" of fulfilling orders from garment factories that pursue Ramadhan's demand in May-June of 2017. Beside April, the remained months were in control and stable.
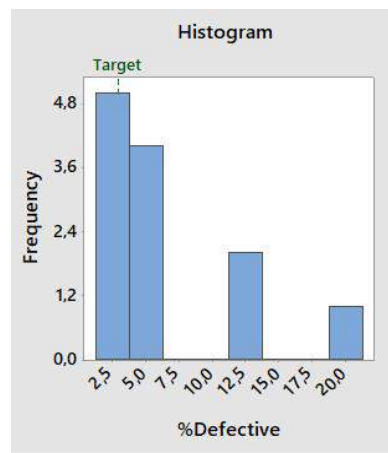
Fig. 2. Process Capability Analysis of PT X Dyeing Department (based on 2017 historical data)

PCA above indicates that the company has not fully capable to achieve the desired 3% of overall defective products, because some of the %Defective are too distinct. That's why new improvement changes are necessary.

Table 2. Sigma Level Calculation

	Current	Desired
Opportunities	413,959	413,959
Defects	23,558	12,500
DPMO	56,909	30,196
Defects (%)	5.69	3.02
Yield (%)	94.31	96.98
Process Sigma	3.08	3.38

From the total dyed-yarn in 2017 (413959 pieces), generated defective 23558 pieces. Defects Per Million Opportunities (DPMO) calculated by Six Sigma Calculator are 56909 which implies to the current sigma level at 3.08σ.

ICMEM

- Analyze
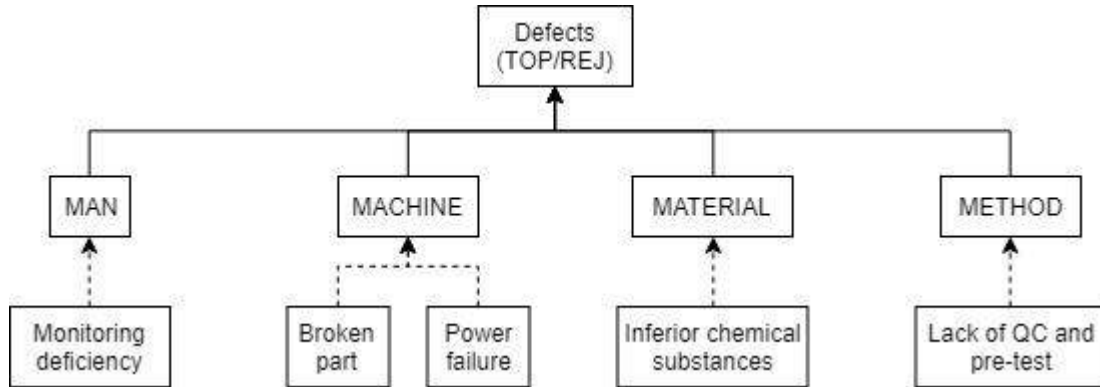
Fig. 3. Current Reality Tree of PT X Dyeing Department

From CRT above, there are 5 root causes identified from each M. Researcher have breakdown all successive possibilities that related with defects by discussing profoundly with the GM of PT X in order to validate the condition. Some technical difficulties are a significant factor that impact the progress every once in a while, but majority of them were originated from human error factors. These 5 "roots" will be the benchmark for researcher to propose several improvement solutions.

- Improve

Table below is an overview of proposed improvement solutions. Each one of the solution are created based on 2 things: (1) comprehensive data collection from the company's party (e.g. field observation, interview, historical data) and (2) literature review – the success of Six Sigma implementation on textile industry. Hence, every recommendation is fit and applicable with PT X Dyeing Department current state. Implementation procedures of each solution had also been designed so that the management could easily conduct the action.

Table 3. Improvement Solutions and Implementation Procedures

Root Cause	Proposed Solution	Explanation	Procedures
Lack of quality control	Assign additional staff	Add 1 or 2 staff to help quality checking	- Recruit new competent employee - Train employee - Perform comprehensive quality checking
Power failure	Employ generator set	Buy an appropriate genset to anticipate unexpected "force major"	- Set preferences of genset - Cost allocation - Find the suitable one - Employ genset
Broken part	Establish responsive repairing service	Arrange a mutual-relationship with vendor	- Select potential vendor - Negotiation - Set gentlemen's agreement - Create effective and efficient workflow
Monitoring deficiency	Tighten HR management system	Anticipate human monitoring error by conducting stricter supervision by HR Department	- Develop KPIs for employee performance - Appraise employee performance - Discuss and evaluate the result - Take appropriate action (Reward & Punishment)
False mixture of formula & time schedule	Do a formula pre-test	Perform preventive dyeing test	- Preparation of small dyeing machine and few basic yarn - Dye with the formula based on time schedule - Examine the post-test yarn

Inferior chemical substances	Order only from certified supplier	Supply a more guaranteed chemical products	- Sort every existing supplier - Eliminate every uncertified one

- Control

FMEA approach is used for making a detailed monitoring plan to ensure the sustainability of process improvement and evaluate the accomplished results. Rubrix of the monitoring plan divided by 3 levels (low, intermediary, high) and each condition has its own SEV, OCC and DET score. Below is the table explaining the proposed control action plan:

Table 4. Monitoring Plan

Process Funtion (Step)	Potential Failure Modes (Process Defects)	Potential Failure Effects (Y's)	SEV	Potential Causes of Failure (X's)	OCC	Current Process Controls	DET	RPN	Recommend Actions	Responsible Person & Target Time	Taken Actions
Dye color to the yarn	Low-quality of basic yarn	Faint color or inferior post-dyed yarn	1	Lack of quality control	2	Sampling quality checking	1	2	Comprehensive QC	HR Recruitment & QC Supervisor (1 month)	Recruit, Train, Perform
	Machineries factor	Faint color or inferior post-dyed yarn	3	Unexpected power failure	1	Do nothing	1	3	Employ genset	Utilities & Accounting Supervisor (1-2 month)	Cost Allocation, Set Preferences, Install
				Broken part	1	Sluggish repairing service	2	6	Establish responsive repairing service	Outsourcing Supervisor (1-2 month)	Negotiation, Agreement, Create Mutual-workflow
				Lack of monitoring	3	Loosely supervised	3	27	Tighten HR management system	Dyeing & HR Assessment Supervisor (1 month)	Develop KPIs, Appraise, Compensate
	Improper compound's effect	Faint color or inferior post-dyed yarn	2	False mixture formula & timeline	2	No formula pre-test	2	4	Do a formula pre-test	Dyeing Operator & Laboratory Staff(s) (2 weeks)	Sampling-test, Examine result
				Despicable chemical materials	1	Supply from any available supplier	1	1	Order only from certifiied supplier	Purchasing Supervisor (1 week)	Opt certified, Eliminate uncertified

From Table 4., it can be concluded that the one root cause that needs to be initially anticipated is the monitoring deficiency – means that company should prioritize the "tighten HR management system" solution as soon as possible because the rate of RPN is too high (27) compared with the second-highest (6).

5. Conclusions

In 2017, PT X Dyeing Department operated at 3σ level that yielded around 6% defects from total production. Since the company is both profit and quality-oriented, continuous improvement should always be conducted which is decreasing percentage of defective to 3% [**D**]. Reflecting from the SPC and PCA measurement, dyeing production was quite stable and indicated a good capability for achieving the objective [**M**]. The critical factors that caused defective products are; (1) MAN – monitoring deficiency, (2) MACHINE – broken part, power failure, (3) MATERIAL – inferior chemical substances and (4) METHOD – lack of quality control and pre-test [**A**]. Improvement solutions proposed for each identified root causes are; (1) MAN – tighten HR management system, (2) MACHINE – establish responsive repairing service, employ generator set, (3) MATERIAL – order only from certified supplier and (4) METHOD – assign additional staffs and do a formula pre-test [**I**]. Monitoring plan based on FMEA approach also proposed to assist the management in evaluating the results [**C**].

References

Ajmera, R., Umarani, P., & Valase, K. (2017). Lean Six Sigma Implementation in Textile Industry. *International Research Journal of Engineering and Technology (IRJET)*, (p. 1670).

Antony, J., & Desai, D. A. (2009). *Assessing the status of six sigma implementation in the Indian industry: Results from an exploratory empirical study.* Emerald Group Publishing Limited.

ICMEM

Beyene, H. T. (2016). *Minimization defects in sewing action at Garment and Textile Factories through DMAIC methodology of Six Sigma, (Case: MAA Garment and Textile Factory).* Mekelle: Ethiopian Institute of Technology.

Das, P., Roy, S., & Antony, J. (2007). An Application of Six Sigma Methodology to Reduce lot-to-lot Shade Variation of Linen Fabrics. *Journal of Industrial Textile*.

Dede, A. R., Rothenberg, L., Guillory, & Aaron. (2016). Lean Six Sigma applications in the textile industry: a case study. *International Journal of Lean Six Sigma* (p. 210). Emerald Insight.

Hayajneh, M. T., Bataineh, O., & Al-Tawil, R. (2013). Applying Six Sigma Methodology Based on "DMAIC" Tools to Reduce Production Defects in Textile Manufacturing., (p. 19).

Kumaravel, M., Boopathy, G., & Iqbal, S. M. (2017). Application of Six Sigma Practice for Quality Improvement in Textile Industry. *International Journal of ChemTech Research.* Mumbai.

Lee, K.-l. (2002). *Critical success factors of Six Sigma implementation and the impact on operations performance.* Ann Arbor: DAI-B 63/08, Dissertation Abstracts International.

More, S. S., & Pawar, M. S. (2013). Performance Improvement of Textile Sector by Implementing Quality Six Sigma (QSS). *International Journal of Application or Innovation in Engineering of Management (IJAIEM)*, (p. 352). Solapur.

Prashar, A. (2013). Right-First-Time dyeing in Textile using Six Sigma methods. *International Journal of Scientific & Engineering Research.*

Pyzdek, T. (2003). *The Six Sigma Handbook: Revised and Expanded.* New York: McGraw-Hill.

Singhtaun, C., & Imkrajang, P. (2016). Implementation of Six Sigma: A Case Study in Textile Company. *2nd International Conference on Mechanical and Production Engineering*, (p. 83). Pattaya.

Taner, M. (2012). *A Feasibility Study for Six Sigma Implementation in Turkish Textile SMEs.* Istanbul: South East European Journal of Economics and Business.

POSTER

ICMEM   IBEC

ICMEM

The 3rd International Conference on Management in Emerging Markets

Consumer Based Brand Equity of New Launched Brand
(Case Study: GoWell Cereal Powder Drink)

Recki Reinhart[a], Atik Aprianingsih[a]

[a]School of Business and Management, Institut Teknologi Bandung, Indonesia

Abstract

PT. Indofood CBP Sukses Makmur Tbk. Nutrition and Special Foods Division (ICBP NSF) is a private company in the field of Food and Beverages in Indonesia. In 2017, ICBP NSF has launched a practical breakfast solution product, under the name GoWell, a nutritious yet easy-to-serve cereal milk as a practical breakfast for children. However, current market leader, Energen cereal powder drink, manufactured by PT. Mayora Indah Tbk., still dominating the market with 98% market share. Consumer Based Brand Equity (CBBE) method is performed to analyze six criteria of brand elements in order to evaluate its brand equity: 1) memorable, 2) meaningful, 3) likeable, 4) transferable, 5) adaptable, and 6) protectable. The result shows that Energen cereal powder drink, as the market leader, has a significantly stronger brand equity ($\alpha < 0.05$), compared to GoWell cereal powder drink as the new entrance.

Keywords: GoWell, Brand Elements, Consumer Based Brand Equity

ICMEM
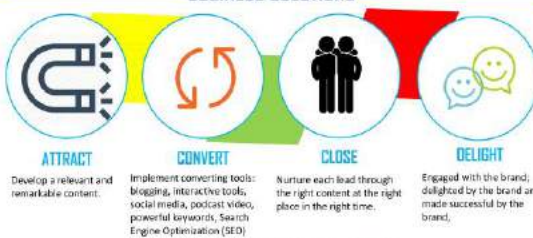
ICMEM

The 3rd International Conference on Management in Emerging Markets

Social Marketing Campaign to Inspire Generation Z as Donors of the International Non-profit Organisation: a Critical Analysis of World Wildlife Fund, Indonesia

Davin Kurniawan[a,b*] , Mr. Philip F. Robinson[b]

[a]*School of Business and Management, Institut Teknologi Bandung, Jalan Ganesha no.10, Bandung 40132, Indonesia*
[b]*Hull University Business School, the University of Hull, Cottingham Road, Hull HU6 7RX, United Kingdom*

Abstract

Generation Z as digital natives has become the potential fastest-growing market segments after millennials. Number of population and the characteristic personality of generation Z as an I-generation have become a big challenge for non-profit organisation especially in determining marketing strategy for the future on emerging markets. The study aimed to identify the way to inspire generation Z as potential donors of non-profit organisation and to explore generation Z perspectives related to the usage of interactive media as marketing communication of social marketing campaign conducted by World Wildlife Fund-Indonesia.

With a critical and comparative analysis of #SOSharks and #BeliYangBaik as social marketing campaign conducted by World Wildlife Fund-Indonesia, this research used quantitative approach to analyse responses of generation Z by using structured questionnaire with a simple random sample size of 385 generation Z respondents in Jakarta and Bandung, Indonesia. The researcher used a comparative-descriptive analysis in the study and an analysis of variance hypothesis testing tools. The result of the research shows that the implementation of interactive media as marketing communication channels of social marketing campaign conducted by World Wildlife Fund-Indonesia has a positive impact on inspiring generation Z as the potential donors of an international non-profit organisation. In the other side, the finding also shows that there are several consideration factors and existing actors influencing generation Z decision-making process toward social marketing campaign. An integration and collaboration between each element that influence generation Z decision considerably needed, so it could optimise value creation and inspire generation Z as potential donors of the international non-profit organisation.

Keywords: Social Marketing Campaign; Generation Z; Interactive Media; Decision-making

---

* Corresponding author. Tel.: +62 85890 997717
E-mail address: davin.kurniawan@sbm-itb.ac.id

ICMEM
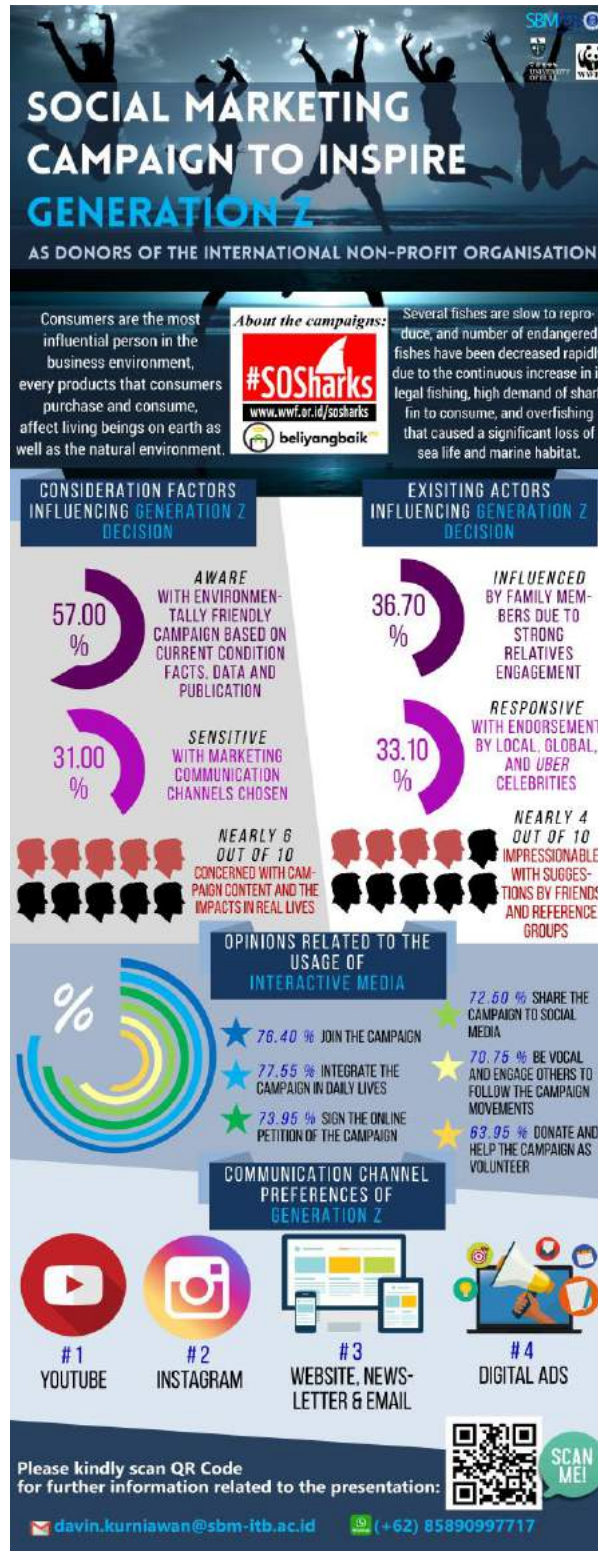
ICMEM

The 3rd International Conference on Management in Emerging Markets

A Managerial Perspective of Collaboration Strategy in Indonesian Photography Industry

Syahravi Dewanda[a*], Yulianto Suharto[b]

*a,b*Institut Teknologi Bandung; Jalan Ganesha 10; Bandung 40132; Indonesia

Abstract

The photography industry of Indonesia is showing a high growth. Along with the development of creative economy, the photographers in photography industry evolves to take part in creating one of the most effective way in visually conveying the value and message of a business. With the lacking number of collaboration that is being faced by photographic industry, the author finds number of exemplary successful collaboration that can be very useful for the rest of the industry to study and analyze in order to perform more successful collaboration in the future. This research used qualitative data method to study the process, motivation and challenges of doing a photographic collaboration and ways to overcome them. The study finds that need for stimulation and special facilities are the main motivation of doing collaboration. The process of collaboration begins with a discussion of problem settings, continued with reference searching as direction setting and implementation. Based on the analysis of this research, it is recommended for the photographers that want to perform collaboration to differentiate himself by finding a personal edge. It is also important to exercise creativity and embrace the ability of expressing idealism and ideas by through collaboration. The successful output of collaboration also depends on the ability to be complementary to the other collaborator. Lastly, it is recommended to ensure career future by dedicating oneself to current project.

Keywords: Indonesian Photography Industry, Creative Economy, Collaboration

---

* Corresponding author. Tel.: +681295222045.
  E-mail address: Syahravi.dewanda@sbm-itb.ac.id

ICMEM

A MANAGERIAL PERSPECTIVE
OF COLLABORATION STRATEGY
IN INDONESIAN PHOTOGRAPHY INDUSTRY

1. INTRODUCTION

Creative Economy is perceived as the future of
-Indonesia.
-Cross-Industry collaboration is stated as one
of the important strategy in Increasing
Creative Business Value.
-The existence of successful collaboration
case that can be an exemplary case of study.

Problem Statement

Photography Industry is not maximizing the o
pportunity of doing a cross industry
collaboration.

Research Objective

To gain a deep understanding of the
exemplary collaboration case and gain a
key success factor for the industry player
to perform more collaboration in the future.

2. LITERATURE REVIEW

3. METHODOLOGY

Qualitative Research Method, In depth
interview on selected exemplary case study
& Cross case comparative analysis to gain
Key Success Factor.

4. DATA ANALYSIS & FINDING

Motivation in doing Collaboration
- Need for Stimulation, Access to Serendipity
and Access to Special Facility.
Process of Collaboration
- Problem Setting: Discussion of ideals & issue
- Direction Setting: Reference searching
-Implementation: The importance of creativity
approach in executing photographic process.

Challenge in doing Collaboration
- Internal Challenge: Miss Comunication &
Other collaborator issue.
- External Challenge: External Organization &
Physical setting of collaboration.

How To Overcome Challenge in Collaboration
Realistic & Creativity approach throughout the
Course of collaboration.

5. Recommendation
Exercise creativity, find a personal edge,
Be cimplimentary & Maximize work output.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of Benefits of Loyalty Program towards Customer Satisfaction and Customer Loyalty of GO-JEK

Sellena Halim[a]*, Prawira F. Belgiawan[b]

School of Business and Management, Institrut Teknologi Bandung, Jalan Ganesha No. 10, Bandung 40132, Indonesia

Abstract

Online transportation service has gained its popularity in Indonesia in the last couple of years. GO-JEK Indonesia is one of the leading online transportation company in Indonesia. They have more than 40 million downloads of their apps and claimed to have the largest market share in the country. However, other online transportation companies from other countries immediately launched their service to Indonesian market shortly after online motorcycle bike service from GO-JEK is very well accepted in the country. This cause an increase the competition level of online transportation service in Indonesia and threaten GO-JEK to lose their customers to the competitors. Therefore, in facing this threat, GO-JEK conducted a loyalty program called GO-POINTS, as loyalty program has increased popularity among industries to increase customer loyalty to the firm. According to previous study, loyalty program is shown to increase customer satisfaction and customer satisfaction leads positively to customer loyalty. However, it is still debatable whether loyalty program drives customer to repeat their purchases with the firm and become significantly loyal. Thus, the focus of this study is to examine the relationship between the benefit of loyalty program with customer satisfaction, and customer loyalty. This research will use quantitative approach, the data collection method will use questionnaire and distribute it to 400 respondents. The result will be analyzed using multiple linear regression. The research result shows that two of three benefits of loyalty program significantly and positively affect customer loyalty. Utilitarian benefit is found to be the strongest significant influence for both dependent variables, while symbolic benefit does not have significant influence towards both variables. In addition, customer satisfaction positively and significantly influences customer loyalty

Keywords: Benefits of Loyalty Program; Customer Satisfaction; Customer Loyalty

---

* Corresponding author. Tel.: +62-812-9870-5645.
  E-mail address: sellena@sbm-itb.ac.id

ICMEM

THE IMPACT OF BENEFITS OF LOYALTY PROGRAM TOWARDS CUSTOMER SATISFFACTION AND CUSTOMER LOYALTY OF GO-JEK

Transportation industry has been the 4th biggest contributor to Indonesian GDP for the past 7 years, with motorcycle having the highest anual usage growth. One of current trends in transportation industry is Online Transportation.

Online transportation pairs passengers with drivers using mobile application. The trend was first introduced to Indonesia by Grab and Uber in 2014. The product launched was online car taxi

GO-JEK is an Indonesian leading online transportation company

According to the CEO, GO-JEK is currently winning the industry market share

Est. in 2011 and launched theri application and GO-RIDE in 2015

GO-JEK is an Indonesian leading online transportation company

in 2018 GO-JEK provides 17 service types and operates in 50 cities

However, everytime GO-JEK launched new products, their competitors (Grab & Uber) launched similar product in the following months or year. The high competition level in the industry that push the company to create a program that can strengthen customer loyalty.

Therefore, according to GO-JEK's CEO, loyalty program called GO-POINTS is introduced to increase:

Customer Satisfaction
GO-PAY Transaction

Therefore, this reseacrh focused on the relationship between loyalty program using Benefits of Loyalty Program (Donto et al., 2011) with Customer Satisfation and Customer Loyalty

Quantitative Approach → Online Questionnaire → 400 Respondents → Multiple Linear Regression
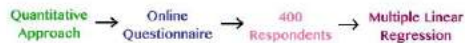
The research result shows that only two Benefits of Loyalty Program that have significant impact, which are:

Utilitarian Benefit
Monetary savings has the most significant impact towards customer satisfaction and loyalty. Therefore, GO-JEK should keep searching for new reward partners and new rewards in order to be more attractive

Hedonic Benefit
Fun experience in collecting and redeeming points has significant impact towards customer satisfaction and loyalty. Therefore, GO-JEK should improve the game to be more attractive so the customers will not be bored

However, Symbolic benefit that represents social status and recognition does not have any significant impact since GO-JEK is not a luxury brand. Therefore, rather than fousing on social recognition, GO-JEK should focus on company recognition, using **Usage Frequency System** that allows customers to get **special rewards** only based on their usage frequency in certion period of time, not based on their collected points.

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of Migration to Saving Rate: Case in Selected Universities of North Bandung

Cynthia Magda Ekasaputra[a*], Ahmad Danu Prasetyo[b]

[a,b]*School of Business and Management, Institut Teknologi Bandung, Jl. Ganesha No. 10, 40132, Indonesia*

Abstract

Saving is one of important key determinants of financial success. However, people were found to be likely to spend their income immediately on consumption goods. In fact, lack of money and savings may lead to negative long term financial problems such as bankruptcy, delaying marriage, postponing having children. Therefore, this study is conducted to examine the determinants that influence saving rate. Five determinants are identified which are migration, financial literacy, parental influence, peer influence, and self-control The data was taken by distributing questionnaires to 200 university students in four selected universities of North Bandung. By using SEM-PLS, this research found that migration, parental influence, peer influence, and self-control have significant positive relationship with saving rate. Moreover, the most significant variable that influence saving rate is parental influence. While, financial literacy has no significant impact to saving rate.

Keywords: savings rate, migration, financial literacy, parental influence, peer influence, self-control, SEM-PLS

[*] *Corresponding author. Tel.: +62 818 0978 6047*
  Email address: cynthia.magda@sbm-itb.ac.id

ICMEM

© 2018 The 3rd International Conference on Management in Emerging Markets (ICMEM 2018) Page | 1210

ICMEM

The 3rd International Conference on Management in Emerging Markets

Capital Structure Policy and Firm Value of Micro, Small, and Medium Enterprises: a Case Study of Culinary Sector

Adiguna Triraharjo[a]*, Taufik Faturohman[b]

[a,b]*School of Business and Management Bandung Institute of Technology, Jl. Ganesha No. 10, Bandung 40132, Indonesia*

Abstract

GDP growth is usually related to the economic standing of a country. In the past several years, Indonesia GDP growth has been declining. However the economic bounce back can be seen after having fluctuated growth in 2016, indicates that more of its populations have higher purchasing power. Following previous researches that state GDP growth is closely related to the growth of MSMEs, which in Indonesia itself, the contribution is Rp 7.005,950 trillion or about 62.57% of total GDP. This research aims to find the correlation between the capital structure and the valuation of the MSMEs.

This study used Discounted Cash Flow method to conduct valuation to the MSMEs and utilized multiple linear regression to see the correlation between capital structure and value of the firm. The data in this research are based on the primary data of financial records gathered from thirty MSMEs in the food sector.

The result shows debt ratio has a positive relationship with the value of the firm. This indicates, taking a loan is preferable and will make the MSMEs more valuable. Therefore, this study recommends MSMEs to use more debt when funding is necessary to grow the business and reach higher valuation.

Keywords: Capital Structure, Debt Ratio, Firm Size, Firm Value, Multiple Linear Regression, Micro Small and Medium Enterprise

---

* Corresponding author. Tel.:+62-857-2100-1807
   E-mail address: adiguna@sbm-itb.ac.id

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

The Impact of Co-Branding Measurement Fit on Purchase Intention of Local Brand Co-Branded Product

Gera Mutaqin[a], Dina Dellyana[b]

[a,b]*School of Business and Management, Bandung Institute of Technology, Jl. Ganesha no. 10, Bandung 40132, Indonesia*

Abstract

The growth of the creative industry in Indonesia increase the competition between local brands and makes the market become more dynamics. In this era where consumers treated by massive advertising and aggressive campaigns, it has become important to build strong brands and get the consumer attention with creativity. One of the popular strategy that used by Indonesia local brands is co-branding strategy. Through this strategy local brand believed it can strengthen company reputation, overall quality, and awareness of the participating brands. Unfortunately the lack perspective of customer preferences in co-branding strategy makes local brand use co-branding strategy based on their internal desire and choosing collaborated brand based on owner relationship. This affect failures and not meet the sales objectives from the strategy. This research is focusing on finding the perspective of customer about co-branding strategy especially fit aspect between the collaborated brands.

This research conducted in Multiple Regression Analysis. The population observed is a potential consumers of local brand in Bandung, West Java with sample size of 400 respondents. The results of this research showed a significant influence of product fit, brand fit, and familiarity to the customer's purchase intention. Researcher recommend local brand that will use co-branding strategy to measure the product fit, brand fit, and familiarity before choosing collaborated brands, because the research shows that the fit aspect has a strong effect on consumer purchase intention of co-branded product.

Keywords; Local Brand, Co-Branding, Co-Branding Fit, Purhcase Intentions

ICMEM

THE IMPACT OF CO-BRANDING FIT TOWARDS PURCHASE INTENTION OF LOCAL BRAND CO-BRANDED PRODUCT.

X

Gera Mutaqin
Dr. Dina Dellyana

School of Business and Management ITB

BACKGROUND

COMPETITION
INCREASING COMPETITION IN CREATIVE INDUSTRY

LOCAL CHOOSE CO-BRAND
LEVERAGE BRAND AND INCREASE THE PURCHASES OF PRODUCT

LACK OF PERSPECTIVE
INEFFECTIVE CO-BRANDING, CHOOSING BRAND BASED ON OWNER RELATIONSHIP

FRAMEWORK

Product Fit — H1
Brand Fit — H2 — Purchase Intention
Familiarity — H3

In this research, the variable is used based on previous research from (Simonin and Ruth, 1998). This research consist of three variable co-branding fit which is product fit, brand fit, and familiarity. This variable fit is could beused for general co-branding strategy.

METHODOLOGY

Problem Identification → Literature Review → Conceptual Framework → Survey → Data Analysis → Result → Conclusion → Recommendation

Bandung 20-35   Validity and Readibility
Classical Assumption
Multiple Linear Regression

RESEARCH RESULT

Hypothesis	Unstandardized Coefficient Beta	t-value	Significant Level	Result
H1: Product fit has a positive influence on consumer purchase intention towards local brand co-branded product	.188	5.747	.000	Accepted
H2: Brand fit has a positive influence on consumer purchase intention towards local brand co-branded product	.201	6.255	.000	Accepted
H3: Familiarity has a positive influence on consumer purchase intention towards local brand co-branded product	.298	6.720	.000	Accepted

R Square .721

CONCLUSION AND RECOMMENDATION

Increase Familiarity or Choose Familiar Brand

Brand Value and Perspective

Product Relatedness

This research prove that co-branding fit has significant influence toward purchase intention of local brand co-branded product. The co-branding fit is including the product fit, brand fit, and familiarity. Therefore, researcher suggest local brand that will use co-branding strategy to considerate this variable fit to make the strategy effective.

© 2018 The 3rd International Conference on Management in Emerging Markets (ICMEM 2018)   Page | 1214

ICMEM

The 3rd International Conference on Management in Emerging Markets

Creating Brand Image in Fashion Start-up: The impact of Virtual Community Based Marketing

Selma Khairunnisa[a*], Rendra Chaerudin[b]

[a,b]*School of Business and Management, Bandung Institute of Technology, Bandung 40132, Indonesia*

Abstract

Tipping point of fashion industry 2018 for first time reached when more than half of apparel comes from developing countries that make competition getting tighter. Start-up fashion industry usually fail get the suitable marketing channels to deliver brand identity since lack of resources. Virtual community based marketing can be a strategy for start-up in fashion industry increase brand image of company because virtual marketing give independent time and location for both of marketer and customer to access information and community based suitable in Indonesia since they tended to create community as their culture. Thus, the company can deliver their brand identity to customers via virtual community especially social media group. The purpose of this research is to see effect and factor of virtual community based marketing that influence to the brand image. The result found that virtual community based marketing give positive impact to brand image with 0.558 coefficient determination and the most affected factor of virtual community based marketing is customer support where the company can get feedback from both positive and negative experience with the product from customer in community.

Keywords: Virtual community based marketing; brand image; fashion

---

* Corresponding author. Tel.: +62-822-180-11270.
  E-mail address: selma.khairunnisa@sbm-itb.ac.id

ICMEM

CREATING BRAND IMAGE IN FASHION START-UP:
THE IMPACT OF VIRTUAL COMMUNITY BASED
MARKETING

Selma Khairunnisa[a]*, Rendra Chaerudin[b]

[ab]School of Business and Management, Bandung Institute of Technology, Bandung 40132, Indonesia
* selma.khairunnisa@sbm-itb.ac.id*; rendra.chaerudin@sbm-itb.ac.id[b]

BACKGROUND

Tipping point of fashion industry in 2018 (McKinsey & Company, 2017)	18.15% creative economy in Indonesia are in fashion (Bekraf, 2017)	Start-up hard to get right marketing channel	Community based marketing (Hoffman & Novak, 1996)
Indonesian like to gathered in community (Hoffman & Novak, 1996)	Virtual marketing trends and flexible to access information (Harsono, 2006)	Social media effective for youth people (Taprial & Kanwar, 2012)	Community help increase brand image (Bhattata, Bagozzi, & Pearo, 2004)

RESEARCH OBJECTIVES

1. To analyze the influence of virtual community based marketing towards fashion start-up brand image based on customer perspective.

2. To explore factors of virtual community based marketing that give biggest to the fashion start-up brand image based on customer perspective.

THEORETICAL FOUNDATION

Virtual community based marketing is the community in form of group that gather brand of the company with customers and prospect customers inside the specific platform, make them naturally interact and affected the brand to make the brand easily become famous and the customer will be loyal (Sexi, Parola, & Ranani, 2016).

Brand image is the associations that reflect in customer memory about the brand perception, what come's in customer mind when name of the brand mentioned (Keller, 1993).

METHODOLOGY

Explanatory and descriptive analysis, Quantitative by questionnaire, Purposive (non-probability sampling) using Slovin with 100 respondents, Simple Linear Regression and Rank Order Analysis

RESEARCH FRAMEWORK

Independent Variable		Dependent Variable
Virtual Community Based Marketing • Access to market (Tekhlet, 2010) • Community trust (Tekhlet, 2003) • Customer support (Sexi, 2016) • Emotional attachment (Ravi, 2014) • Brand reputation (Ravi, 2016) • Experienced the product (Schiffman, 2007)	H1	**Brand Image** • Emotional associations: intimacy (Keller, 1999) • Personality of the company (Biel&Lacher, 2017) • Positive present experiences (Roberts, 2003)

FINDINGS

$r^2 = 0.558$ or 55.8% $Y = 0.630 + 0.858x$

Value of Dimension Virtual Community Based Marketing

Access to market	Community trust	Customer support	Emotional attachment	Brand Reputation	Experienced the product
76.%	70%	80%	68%	72%	78%

Virtual Community Group

Line grup	Whatsapp grup	Facebook grup	Following the community account on Instagram	Following the community account on Twitter
99	82	22	79	25
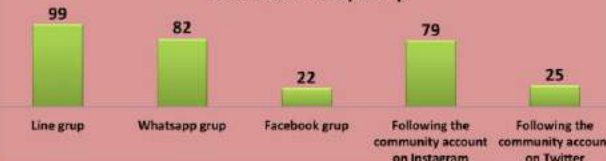
ICMEM

The 3rd International Conference on Management in Emerging Markets

Waiting time improvement by queue system optimization in outpatient clinic

Dinda Permata Suhadanie[a*], Gatot Yudoko[b]

[ab]*School of Business and Management, Institut Teknologi Bandung*
Jalan Ganesha no.10, Bandung 40132, Indonesia

Abstract

Some form of waiting in line to receive service is inevitable in daily activities when the demand for that particular service is known as stochastic. Queue is normal, but unreasonably long queue can be a symptom of a problematic queueing system. This is the case for many healthcare service facilities across Indonesia, where a lengthy waiting time for service has long been an unsatisfactory feature. Nowadays, number of customers visiting Dr. Suzie's 24 Hours Clinic has increased as the result of well spread information within the society regarding low cost service provided by the clinic. The situation has been pretty troublesome to the clinic since the waiting line becomes significantly long and they started receiving some complaints. This research aims to analyze their queueing system performance, data inputs for the calculation are obtained from direct observation on the site and historical data of the clinic. The data then calculated using Monte Carlo Simulation. From the calculation result, it showed that adding one more general practitioner will significantly reduce the number of customer that have to wait more than 10 minutes from 283 customers to 33 customers.

Keywords: Queueing Theory; Queue System; Queue Discipline; Waiting Line; Service Facility; Multichanel Multiphase; Simuolation; Monte Carlo Simulation.

---

* Corresponding author. Tel.: +62-857-9510-3103 ; fax: +62-21-7471-1577 .
  *E-mail address:*dinda.permata@sbm-itb.ac.id

ICMEM
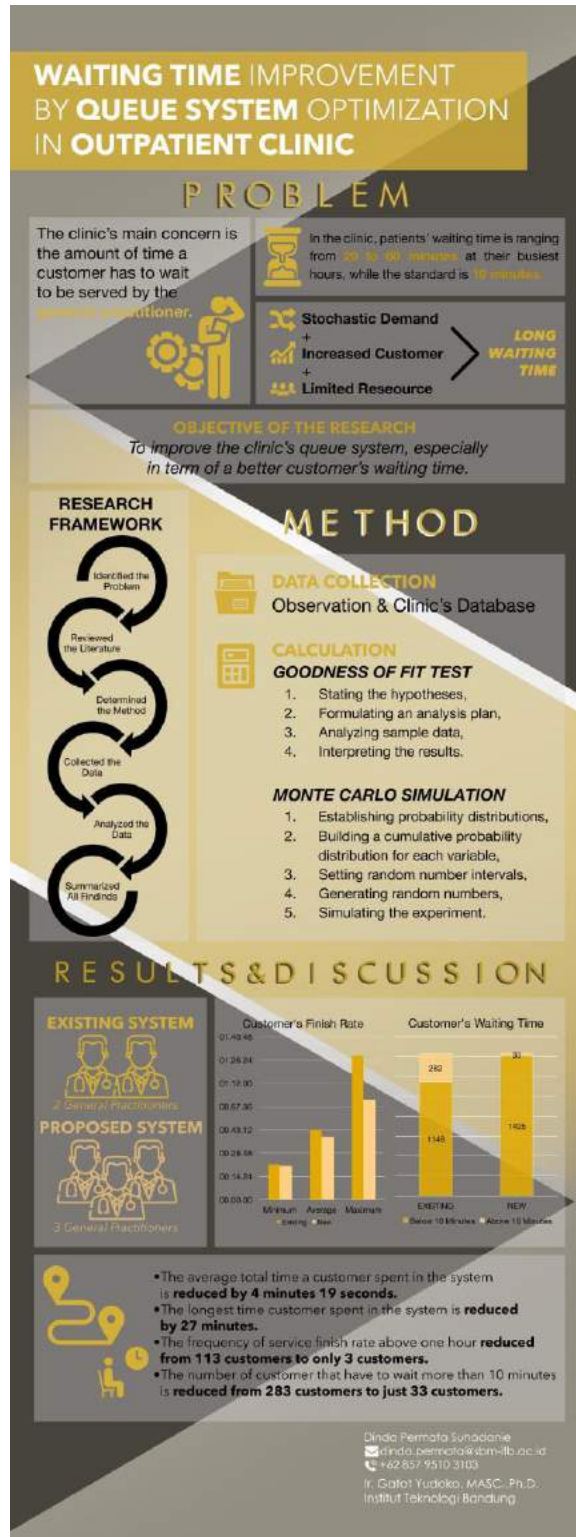
ICMEM

The 3rd International Conference on Management in Emerging Markets

Analysis of Brand Image in Influencing Instagram Shopping Intention of Notebook Product: the case of Kutulis Kata Brand

Shifa Triannisa[a], Evy Rachmawati Chaldun[b]

[a,b]School of Business and Management, Bandung Institute of Technology, Jl. Ganesha no. 10, Bandung 40132, Indonesia

Abstract

In Indonesia, nowadays people are often looking for online shopping accounts on Instagram. While mostly Indonesia's local brand is used Instagram as their media to introduce and sell the product. Thus, the Instagram is become the common media to find an online shopping account. Brand image has an important role for a brand in gives a first impression of the brand to the customer. However, building a good brand image is one of the branding strategies to give a good message about the brand on Instagram. Surveys are conducted and the questionnaire distributed to Instagram followers one of the local brands of notebook product from Bandung, and 250 respondents were collected. The result indicated that online shopping intention is affected the customer of notebook brand by its brand image.

Keywords: Corporate image, Instagram, Online shopping intention, Product image, User image

ICMEM

ANALYSIS OF BRAND IMAGE IN INFLUENCING INSTAGRAM SHOPPING INTENTION OF NOTEBOOK PRODUCT : THE CASE OF BRAND KUTULIS KATA

SHIFA TRIANNISA AND EVY RACHMAWATI CH
SCHOOL OF BUSINESS AND MANAGEMENT ITB

BACKGROUND

Trend of Online shopping

business opportunities arise from the habits of people shopping online

Kutulis kata is notebook Local brand that use Instagram as their selling platform

Instagram is the most popular social media

many businesses are trying to create a good brand image in a competitive environment

Indonesia's Instagram users mostly search for online shopping in Instagram

brand image is a point to give a good impression about a brand

FRAMEWORK

In this research, the dimension of brand image used the suggestion from (Biel A. L., 1992) and based on previous study there are three dimension of brand image which to know about the brand image from all aspect.

BRAND IMAGE

Corporate image

Product image

User image

Online shopping intention

METHODOLOGY

Problem identification → Questionnaire

Data validation (validity test & Reliability test) ← Data analysis (SLR & Correlation analysis)

FINDINGS

Recommendation:

ICMEM

The 3rd International Conference on Management in Emerging Markets

A Feasibility Study of Improved Business Model to Optimize PT Bukit Asam Peranap Mine

Kemas Dzaky Andhika Fachroeddin[a*], Harimukti Wandebori[b]

[a,b]Institut Teknologi Bandung, Jl. Ganeca no 10, Bandung 40132, Indonesia

Abstract

PT Bukit Asam TBK (PTBA) is an Indonesia-based company primarily engaged in coal mining industry. Despite its position as number one coal-based company in Indonesia in terms of reserves possessed, PTBA ranked fourth in terms of production. The gap between production rate and amount of reserves is caused by number of mines that contains low-rank coal. The low selling price and demand in the market made low-rank coal generates only small amount of profit margin. One of the strategy to optimize its reserves is to create a downstream processing plant from low-rank coal in Peranap. Hence, its business model should be revised. As the new business model is constructed, one method to evaluate it is to see the feasibility of the strategy.

This research is conducted to improve the business model in Peranap, and to find strategic partner that can help overcome the challenge in Peranap. Its feasibility is analysed to conclude the evaluation of strategy. The feasibility will analyse three aspects; strategic, financial, and environment.

The improved business plan shows that creating a Synthetic Natural Gas (SNG) in Peranap is possible. It also needs a strategic partner which is a company that owns gas infrastructure nearby the location. Moreover, based on this study, creating a SNG in Peranap is feasible.

Keywords: PT Bukit Asam, Peranap, Business Model, Feasibility Study, Strategic, Economic, Environmental Impact.

---

* Corresponding author. Tel.: +628561700001
  E-mail address: kemas.dzaky@sbm-itb.ac.id

ICMEM
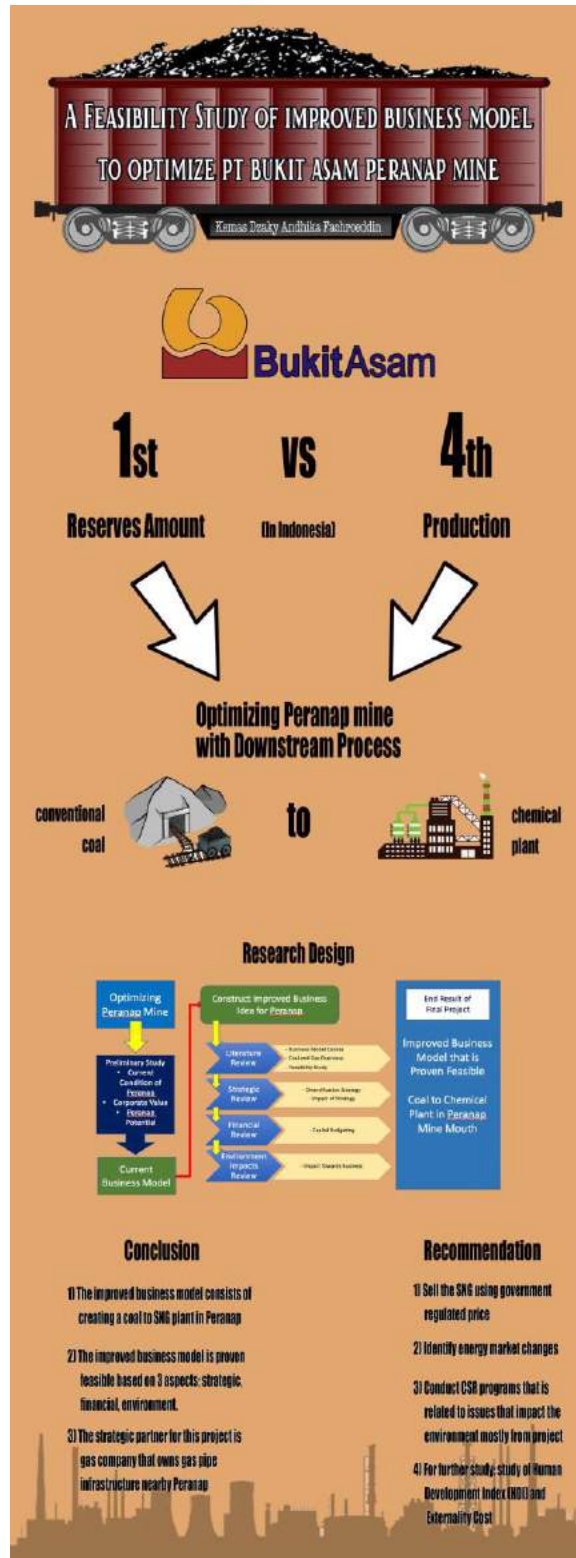
ICMEM

The 3rd International Conference on Management in Emerging Markets

Building Brand Trust Through Customer Engagement in Creative Industry

Firdha Ramashanti[a*], Rendra Chaerudin[b]

[ab]*School of Business and Management, Bandung Institute of Technology, Bandung 40132, Indonesia*

Abstract

Customer relationship management becomes a strategy to maintain the relationship between the customer and the company, and also to engage the customer that influences the company. Social media is one of the tools to engage the customer. Mutual engagement can stimulate trust between the company and the customer. In Indonesia, MSMEs has an essential role in the Indonesian economy. The creative industry as the part of MSMEs also begins to contribute to the Indonesian economy. This research aims to analyze the influence of customer engagement to brand trust in the creative industry. This research use quantitative method, survey as the tool in the form of a questionnaire. Simple linear regression method and descriptive analysis are used to analyze the effect of customer engagement and brand trust. The findings show that the customer engagement has a positive influence 45,9% to brand trust. Customer engagement should be implemented with the focus on following the suitable target market and use instagram ads that fit with the target market.

Keywords: brand trust; creative industry; customer engagement; MSMEs

* Corresponding author.
  E-mail address: firdha.ramashanti@sbm-itb.ac.id

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

Determinants of Stock Prices on Public Listed of Commercial Banks in Indonesia during the Period of 2008-2017

Fatia Shafira[a]*, Achmad Herlanto Anggono[b]

[a,b]*School of Business and Management, Bandung Institute of Technology*

Abstract

The Investors' collective evaluation of the firm's current performance and future prospects is reflected in stock prices (Bodie, Kane, & Marcus, Investments, 2014). It means stock prices can illustrate the condition of the company. In this case, the problem is the stock price average of 15 banks tends to increase while the performance of those banks is weakening. That situation is contrary to the theory which states the stock price reflects the bank performance. Therefore, this research objective is to discover the relationship of bank-specific variables such as LDR, NPL, CAR, and NIM toward stock prices for the period of 2008-2017. This research uses panel data regression to analyze the data collected from secondary data such as website, journals, and books. The sample of this research is public listed banks that belong to the classification of BACB 3 and BACB 4. The total amount of the sample is 15 banks. The result shows that the independent variables that have significant positive relationship towards stock prices are Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR) and Net Interest Margin (NIM). Furthermore, the independent variable that has significant negative relationship towards stock prices is Non-Performing Loan (NPL).

Keywords: Stock Price; Banking

---

* Corresponding Author.
  E-mail address: fatia.shafira@sbm-itb.ac.id

ICMEM

DETERMINANT OF STOCK PRICES ON PUBLIC LISTED OF COMMERCIAL BANKS IN INDONESIA DURING THE PERIOD OF 2008-2017

FATIA SHAFIRA
DR. IR. ACHMAD HERLANTO ANGGONO, MBA
School of Business and Management, Bandung Institute of Technology

Background

1 THERE ARE MORE PEOPLE INTERESTED IN THE CAPITAL MARKET, ESPECIALLY IN STOCK. IN 2017, INDONESIA ALREADY HAS MORE THAN 1 MILLION INVESTORS WHO INCREASE FROM 2016 AT 25.24%

2 THE PERFORMANCE OF THE BANK IS WEAKENING BUT THE AVERAGE OF THE BANK STOCK PRICE IS STILL INCREASING.. THAT SITUATION IS IN CONTRAST TO THE THEORY WHICH STATES THE STOCK PRICE REFLECTS THE BANK PERFORMANCE
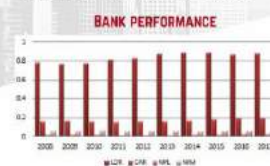
Framework

THIS RESEARCH AIMS TO FIND OUT WHAT THE RELATIONSHIP BETWEEN THE INDEPENDENT VARIABLES AND THE DEPENDENT VARIABLE BY USING LOAN TO DEPOSIT RATIO (LDR), NON-PERFORMING LOAN (NPL), CAPITAL ADEQUACY RATIO (CAR), AND NET INTEREST MARGIN (NIM) AS INDEPENDENT VARIABLE, WHILE THE DEPENDENT VARIAVBLE IS STOCK PRICES

Data & Methodology

TYPE OF DATA
Quantitative data

SAMPLE
15 banks
(the banks that are listed in Indonesia Stock Exchange (IDX) that belong to BUBA 3 and BUBA 4 classification)

RESEARCH PERIOD
Quarterly data from January 2008 to December 2017

SOURCE OF DATA
Quarterly financial report which is presented on the official website OJK

DATA ANALYSIS
Panel Data Regression

HYPOTHESIS
· H0: There is an insignificant relationship between Independent Variable X and Bank Stock Prices
· H1: There is a significant relationship between Independent Variable X and Bank Stock Prices

Research Result

R-squared = 0.322582
COEFFICIENT OF DETERMINATION

CAR +
NIM +
NPL -
LDR +
SIGNIFICANT RELATIONSHIP

The bank should prioritize to generate a good result in those variables
RECOMMENDATION

ICMEM

The 3rd International Conference on Management in Emerging Markets

Relationship of Employee Job Satisfaction towards Employee Performance with Individual Innovativeness as Moderating Variable. Study Case at Mining Industry in Indonesia

Keshia Aferina Siregar[a]*, Achmad Fajar Hendarman[b]

School of Business and Management, Bandung Institute of Technology, Bandung 40132, Indonesia

Abstract

Employee Job satisfaction and Employee performance is a relationship that relates to each other in every company. Company tends to expecting their employee to perform well to support company to reach their goals. The purpose of this study was to determine the relationship of job satisfaction towards employee performance with individual innovativeness as a moderating variable. This research held in PT XYZ, company that works in mining industry in Indonesia. The sampling method using judgemental sampling method by taking 778 respondents from the employee with the total population 7.031 employee. The data of this research has been collected from the respondents and it has been analysed by using multi linear regression, model feasibility test, coefficient determination, t-test and path analysis. The result of this research shows that job satisfaction has direct relationship to the employee performance positively and significant and individual innovativeness is a moderation variable that can connect between the relationship of job satisfaction and employee performance stronger or weaker. It means that high employee satisfaction level will lead to high employee performance with individual innovativeness as moderating variable that makes the relationship even stronger.

Keywords: Employee Job Satisfaction, Employee Performer, Individual Innovativeness, Mining Industry.

* Corresponding Author.
  E-mail address: keshia.aferina@sbm-itb.ac.id

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

Asessment of Youtube Web Series Effectiveness as an Advertising Strategy in Indonesia

Ridho Singgih Setiawan[a]*, Fitri Aprilianty [b]

[a,b]School of Business and Management, Bandung Institute of Technology, Jl Ganesha No.10 Bandung 40132,, Indonesia

Abstract

Nowadays, there are many developments happened especially in digital media and social media. For example, many companies now using Youtube as their platform to deliver creative advertising strategy. In Indonesia, it started by Axe Indonesia that has made new breakthrough of advertising, they made web series format as their campaign, it called 'Axelerate The Series' and after that some of other brand started to createweb series as well, like Traveloka came up with 'Ada Apa dengan Bakso', Tropicanaslim with 'Sore – Istri dari Masa Depan', etc. Those web series had become viral in Indonesia. Based on that situation, this research objective is to know the effectiveness of using web series in Youtube platform as an advertising strategy. In this research, the researcher will use a qualitative and quantitative research approach. By using content analysis and survey methods. The researcher will use AIDA model to analyze the effectiveness of the web series through The assessment of Attention, Interest, Desire, and Action.

Keywords: Youtube, advertising, web series, AIDA model

---

* Corresponding author. Tel.: 085780774014
  E-mail address: ridho.singgih@sbm-itb.ac.id

ICMEM

ASSESSMENT OF YOUTUBE WEB SERIES AS AN ADVERTISING STRATEGY IN INDONESIA

RIDHO SINGGIH S. &
FITRI APRILIANTY

RESERACH BACKGROUND

web series ads as MARKETING COMMUNICATION

large companies using YOUTUBE to run the ads

WEB SERIES trend in indonesia

LITERATURE REVIEW

correlation of web series and CONSUMER PERCEPTION

(perceived quality, perceived usefulness, perceived truthfulness)

AIDA MODEL

(attention, interest, desire, action)

METHODOLOGY

QUANTITATIVE
survey of
250 respondents
analyzed using
pearson correlation & manova

QUALITATIVE
content analysis

of top 10 web series ad in indonesia

FINDINGS

1. The highest viewers will be on the first episode. thus, giving a good FIRST IMPRESSION is necessary

2. NEW SERIES is preferable rather than new episode, since audience like something new

3. Choosing the RIGHT CAST is a siginificant key to boost up the web series

4. PAID PROMOTE have a high impact to boost up the viewers

5. Give the last episode FINAL EPISODE label and make an additional SPECIAL EPISODE to boost up viewers

RECOMMENDATION

Future research can map the web series based on the genre and map the audience based on the demographic

YouTube

ICMEM

The 3rd International Conference on Management in Emerging Markets

Exploration of Leather Waste Materials into Accessories and Toys for Fresh Entrepreneurs Skills Enhancement

Bambang Iskandriawan[a], Waluyohadi[b], Jatmiko[c]

[a,b]*Department of Industrial Design, Institut Teknologi Sepuluh Nopember, Keputih Sukolilo, Surabaya 60111, Indonesia*
[c]*Department of Architecture Interior, Universitas Ciputra, Sambikerep, Surabaya 60219, Indonesia*

Abstract

Small and Medium Enterprises (SMEs) in Indonesia proved able to survive among the competition of the business world to meet a demand of the community. However, SMEs should continue to improve their skills, especially from skills, business, along with production and business management so that they can compete with their competitors especially in the era of free trade of Asian Economic Community that has been going on at this time. Likewise SMEs industry fashion products such as accessories and toys must continue to improve the ability both in terms of quality and design. The new entrepreneurship development program needs to be continuously improved as an alternative to work for university students and alumni. The Entrepreneurship Development program of training and assistance in the manufacture of accessories and toys by utilizing leather waste materials for the upgrading of new entrepreneurial skills is expected to contribute significantly to the improvement of skills and business management of students and alumni. On a large industrial scale that has been of high standard and law-abiding, the impact of leather waste may already be under control. But on the scale of SME production waste processing is still far from environmentally friendly standards. Besides the geographical factor of the craftsmen distribution that is not stabilized, it will be difficult to do waste management measures that are centralized.

The objective of the program is to help new entrepreneurs in campus to improve the quality and design of accessories and toys in addition to the implementation of production and business management so that the process of skill improvement and business management can be more significant and sustainable. The method used in this community service is to provide direct training and mentoring to new entrepreneurs with the latest accessories and toys design, production and business management. Also invites new entrepreneurs to exhibit products in commercially strategic places that could improve the sales aspects of new entrepreneurship products. In accordance with the available budget will be given to new entrepreneurs are the materials production and utilization of facilities and equipment work. The study creates the method and design process of the leather waste materials utilization into accessories and toys as the partly of training material for the student entrepreneurial development program.

Keywords: Exploration; accessories and toys; utilization; leather waste materials; skills and new entrepreneurship.

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

Employer Branding in Small and Medium Enterprises (Case Study: PT Qwords Company International)

Dian Putri Muliasari[a], Achmad Ghazali[b]

[a,b] *School of Business and Management Institut Teknologi Bandung, Jl. Ganesha 10, Bandung 40132, Indonesia*

Abstract

This article explains about strategy of employer branding in PT Qwords Company International (Qwords). Qwords was founded in July 2005 by Rendy Maulana. Qwords is one of small and medium enterprises (SMEs) in Indonesia that engaged in IT Industry. Qwords established in 2005 as a service company in making website. This company is facing a situation that difficult to attract new talent. This makes difficulties for the company in the process of recruiting new employees. This problem affect to the company performance, because they can't achieved the targets. The fulfillment of the needs of the employee should be done by the company so that the company can meet the targets that have been determined. To solve the problem, the company should have recruitment strategy to attract the prospective talent to apply the job vacancy in Qwords. One of the recruitment strategy that can be use is employer branding. Employer branding is basically a process of creating organizational image and making organizational identity. It also helps in recruiting talent saving time and budget and helps to overcome the shortage of talent. There are two steps of employer branding, those are build and communicate the employer value proposition. Recommendations are given based on employer branding that has been done.

Keywords: Employer Branding; Employer Attractiveness; Recruitment Strategy

ICMEM

ICMEM

The 3rd International Conference on Management in Emerging Markets

Auction Technology Commercialization Model: A New Perspective

Angy Sonia[a*], Adi Asmariadi Budi [b]

*a,b*School of Business and Management Institut Teknologi Bandung

Abstract

There are some technology commercialization model which has already modeled by scholars. Some of it like Goldsmith Commercialization Model, Nawaz Sharif Commercialization Model, Touhill Commercialization Model, etc. Most of those commercialization model put innovation, research and development, until product and market testing as losses budget for company. This losses budget phase called as valley of death, or incubation process. Inspired by stem joint on agriculture science or called as "stek" in Indonesian language, where the existing stem above the root of the tree are cut then joined with the new plant will creating new plant without growing it from the seed. Just like it, existing laggard busines could be replaced with the new product/technology without facing valley of death phase. Innovation, research and development will be conducted by profiling an organization called as "Technology Auction House". We elaborate on the similarities and differences begins identified the problem by reduce time and needs a small group people to check the feasibility. Some business incubator commonly as non profit organization, by using this model they could gainning profit by change their incubation model.

Keywords: Technology Commercialization Model, Valley of Death, Technology Auction House

---

*Corresponding Author.
  E-mail address:* angy_sonia@sbm-itb.ac.id

ICMEM