

COST EFFICIENCY LEVEL OF ISLAMIC BANKS IN INDONESIA: A STOCHASTIC FRONTIER ANALYSIS

Study on Indonesian Islamic Banks (Islamic Commercial Bank and Islamic
Windows) during 2011-2014 Period



BACHELOR THESIS

Submitted as a requirement to complete Bachelor Degree (S1) at Bachelor
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MOTTO AND DEDICATIONS

And among His Signs are the ships, smooth-running through the ocean, (tall) as mountains. If it be His Will, He can still the Wind: then would they become motionless on the back of the (ocean). Verily in this are Signs for everyone who patiently perseveres and is grateful. (Q.S. Ash-Shura 42:32-33)

“I wanted to climb to the summit of challenges, attack my way through hardship as solid as granite, tempt all sorts of peril, and break through mysteries with science.

I longed to inhale all sorts of experience and then explore the labyrinthine ins and outs of life that in the end cannot be guessed.

I wanted to go faraway places and meet with endless varieties of foreign languages and people. I wished to rove, finding my direction through reading the stars of constellations.

I wanted to cross fields and deserts, to be burned by the sun until I blistered, to be shook by assaulting wind, and shrink from being gripped by cold. I wanted a life that was thrilling, filled with conquest.

I wanted to live! I wanted to feel the essence of being!”

Andrea Hirata (Edensor)

**“This thesis is dedicated to
precious people in my life who
never stops believing in me.”**

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I admit that there are still many lacks in this thesis. Therefore, I gladly accept all criticism and advices in order to improve this thesis. At last, I hope that this thesis will contribute knowledges to public, civitas academica, and for myself.

Thank you very much.

Semarang, 27th of August 2016

Deasy Maulidya Wulandari

ABSTRACT

This research aims to compare and analyze on the cost efficiency level of Islamic Commercial Bank (ICB) and Islamic Windows (IW) in Indonesia. Another purpose is to find out whether the Islamic Banks are ready to face the application of ASEAN Economic Community (AEC) based on the result of efficiency analysis. This research is conducted on eleven samples in total, which consist of seven ICB and four IW.

This research employs Stochastic Frontier Analysis (SFA) with cost function to measure the efficiency. Asset approach is selected as the approach to determine the input and output variables. The input variables used in this research are cost of profit/loss sharing and cost of labor, whereas the output variables selected are total financing channeled by Islamic banks in the sample and securities owned by them. Analysis of Variance (ANOVA) is employed to find out the difference between the efficiency level of ICB and IW.

The result of analysis by SFA shows that in average Indonesian Islamic Banks has achieved the efficiency level at 0.652188318 or 65.22% within the year of 2011 to 2014. It indicates that the Islamic banks in Indonesia have not yet achieved the cost efficiency in generating outputs using inputs available. In other words, Indonesian Islamic banks have to improve the performance in order to increase competitive advantage to face the application of AEC. Another finding reveals that Islamic Commercial Banks tend to be more efficient compared to Islamic Windows. Based on the result of regression on panel data to test the effect of input and output variables on total cost, the variables that have positive and significant impact on total cost are total financing, cost of profit/loss sharing, and cost of labor. Meanwhile owned securities have negative insignificant effect on total cost. The ANOVA result reveals that there is no significant difference between the efficiency level of Islamic Commercial Banks and Islamic Windows.

Keyword: Efficiency, SFA, Islamic Commercial Bank, Islamic Windows.

ABSTRAK

Penelitian ini bertujuan untuk membandingkan dan menganalisis efisiensi biaya Bank Umum Syariah (BUS) dan Unit Usaha Syariah (UUS). Tujuan lain dari penelitian ini adalah untuk mengetahui apakah bank-bank syariah di Indonesia siap menghadapi penerapan Masyarakat Ekonomi ASEAN (MEA). Penelitian ini dilakukan pada sebelas sampel yang terdiri dari tujuh BUS dan empat UUS.

Penelitian ini menggunakan Stochastic Frontier Analysis (SFA) dengan fungsi biaya untuk mengukur efisiensi. Penelitian ini juga menggunakan pendekatan asset untuk menentukan variable input serta output. Variabel input yang digunakan dalam penelitian ini adalah biaya bagi hasil dan biaya tenaga kerja, sementara variable output yang dipilih adalah total pembiayaan dan sekuritas yang dimiliki oleh bank. Analysis of Variance (ANOVA) digunakan untuk menemukan perbedaan antara level efisiensi BUS dan UUS.

Hasil analisis menggunakan SFA menunjukkan bahwa secara rata-rata, bank syariah di Indonesia telah mencapai level efisiensi pada 0.652188318 atau sebesar 65,22% selama tahun 2011 sampai 2014. Hasil tersebut mengindikasikan bahwa bank syariah di Indonesia belum mencapai efisiensi biaya dalam membentuk output menggunakan input yang tersedia. Dengan kata lain, bank Syariah harus lebih meningkatkan kinerja untuk meningkatkan daya saing dalam menghadapi penerapan MEA. Hasil ini juga menunjukkan bahwa BUS cenderung lebih efisien dibandingkan UUS. Berdasarkan hasil regresi pada panel data untuk menguji pengaruh variabel input dan output terhadap total biaya, variabel yang memiliki dampak positif dan signifikan terhadap total biaya adalah total pembiayaan, biaya bagi hasil, dan biaya tenaga kerja. Sementara itu, sekuritas yang dimiliki oleh bank memiliki dampak negatif tidak signifikan terhadap total biaya. Hasil ANOVA menunjukkan bahwa tidak ada perbedaan yang signifikan antara level efisiensi BUS dan UUS.

Keyword: Efficiency, SFA, Islamic Commercial Bank, Islamic Windows.

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CHAPTER I

INTRODUCTION

1.1 Research Background

AEC or ASEAN Economic Community is one of the three pillars of the ASEAN Community Council. The AEC has been formally established in 2015 and is expected to have great impact on the way the ASEAN citizens live, work, and do business in the ASEAN region. While European Union (EU) is an established form of single market, AEC is working towards the attainment of a single market across the ASEAN nations by implementing economic integration initiatives. The AEC is a representation of ASEAN's vision to form a stable, prosperous, and highly competitive ASEAN economic region in which there are free flow of goods, services, and investment, as well as the more free flow of capital, equitable economic development and reduced poverty, and socio-economic disparities (AEC Blueprint, 2007).

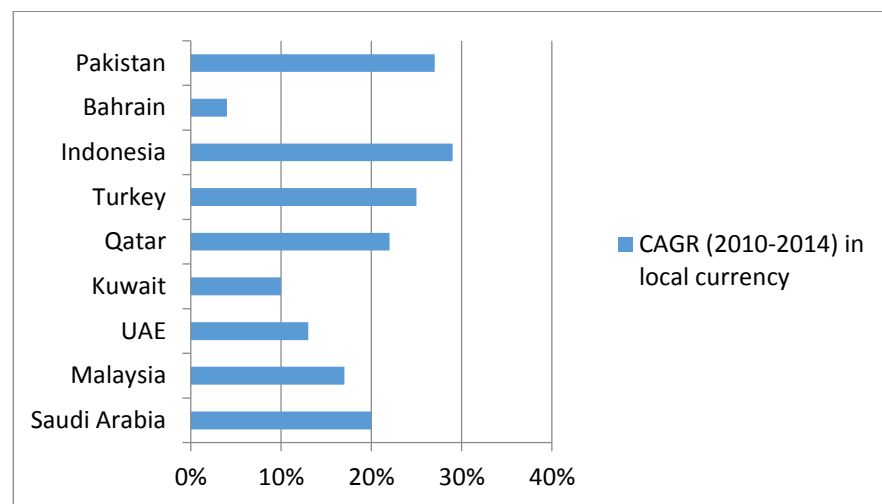
Despite having been formally established in 2015, the implementation of AEC cannot be carried out all at once due to the development gaps between and within the members of ASEAN itself. The full implementation of AEC still needs a lot of work to achieve the goal by carrying out the gradual steps of integration. However, the implementation of the single market is still potential to be established for the combined GDP of the ASEAN nations as of 2014 is US\$2.5 trillion. Also in 2014, ASEAN economy was the third largest in Asia as well as

the seventh largest in the world (AEC 2015 Progress and Key Achievements, 2015).

The market integration poses both challenges and opportunities. As an active member of ASEAN, Indonesia needs to speed up the preparation for the implementation of AEC. Indonesia has the 40% of the region's economic resources, therefore improvement in the competitive edge of its product, services, and human resources has to be accomplished. Ryan Kiryanto, a BNI economist, mentions that banks and industries in Indonesia shall continue to put domestic penetration as their priorities in order to strengthen the position as the master in their own house (www.antaranews.com). It is due to the fact that banking is regarded as one of the main components within a financial system because it has a spacious impact on the financial stability and strength of an economy.

Recently in Indonesia, Islamic banking is gaining more acknowledgements. The pioneer of Islamic banking is Bank Muamalat Indonesia (BMI) established in 1991 by Tim Perbankan MUI. BMI once operated based on the legal basis that was UU No. 7 Th 1992. Then the government issued UU No. 10 Th 1998 during the reformation era as the amendment of the previous legal basis, followed by the issue of UU No. 23 Th 1999 the following year. The new legal basis states that Bank Indonesia as the central bank allows the dual banking system. The system permits conventional banks to open Shariah-based services in their offices and branches. The Islamic banking has been starting to grow rapidly ever since.

Figure 1.1
Compound Annual Growth Rate (CAGR) of Islamic Banks in
QISMUT+3 (in Local Currency)



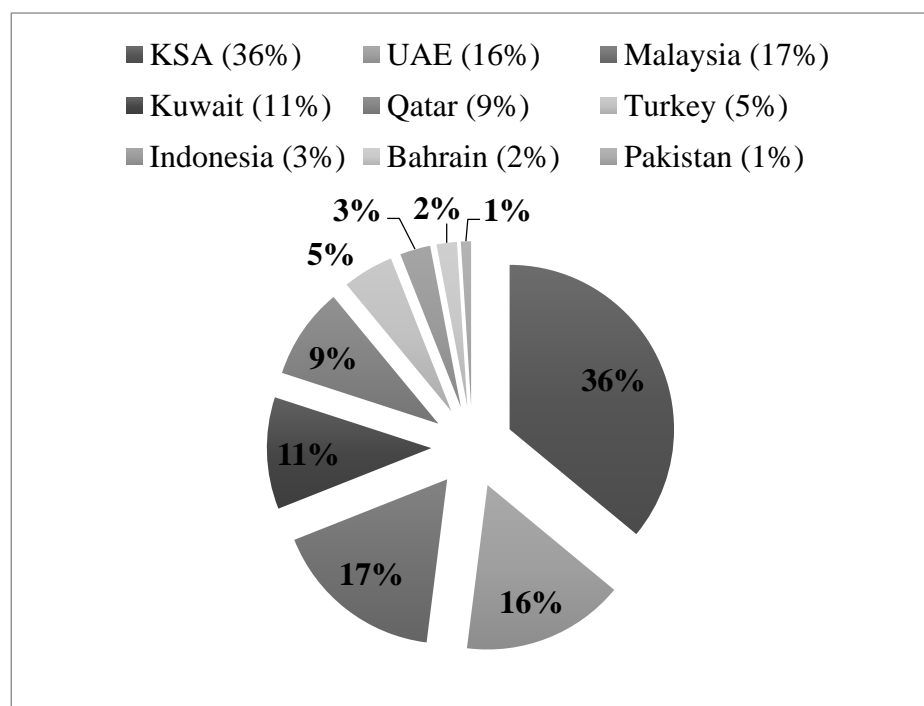
Source: E&Y's World Islamic Banking Competitiveness Report 2016

QISMUT+3 consists of Qatar, Indonesia, Saudi Arabia, Malaysia, UAE, Turkey, Pakistan, Kuwait, and Bahrain. The countries listed are the nine core markets of Islamic banking. The table above shows that Indonesia has the highest Compound Annual Growth Rate within the period of 2011-2014. It means that Indonesia has the highest mean annual growth rate of investment among QISMUT+3. The CAGR value of Indonesia is 29% followed by Pakistan placing in second with the CAGR value reaches 27% and Turkey placing in third with 25%. Another conclusion shown on the Figure is that Indonesia beats fellow ASEAN member Malaysia in terms of the CAGR value of Islamic banking. The CAGR value of Malaysia reaches 17%, which is 12% lesser than the value of Indonesia's.

In contrary to the growth of Islamic banking in Indonesia, Dr Halim Alamsyah, an ex-deputy governor of Bank Indonesia, expresses his concern regarding the effect of AEC implementation on Islamic banking in Indonesia in his speech during anniversary celebration of Ikatan Ahli Ekonomi Islam. While maintaining the overall positive growth, Indonesian Islamic banking is still unable to gather high amount of assets from domestic market. As a result, Islamic banking in Indonesia gives only little contribution to total assets among QISMUT+3 as shown on the Figure 1.2 below.

Figure 1.2

QISMUT+3 Contribution for Total Assets in 2014



Source: E&Y's World Islamic Banking Competitiveness Report 2016

Figure 1.2 notes that Indonesia places third to last in terms of the contribution for total assets among the QISMUT+3 countries in 2014. Indonesia

only gives the 3% worth of contribution for the total assets. Saudi Arabia at 36% is the main contributor in total participation banking assets followed by Malaysia which contributes 17% and UAE at 16%. On top of that, the Islamic banking competitiveness report by Ernst and Young informs that two Islamic banks from Malaysia are included in the top 10 list of banks with the highest Capital Adequacy Ratio (CAR), placed in fourth and tenth respectively.

In conclusion, economies of scale of Islamic banking in Malaysia wins over the economies of scale of Indonesian Islamic banking. Malaysia is a fellow member of ASEAN as well as the main competitor of Indonesia, hence the implementation of AEC could be a threat to the Indonesian Islamic banking. Due to the single market policy, it is possible to lose potential domestic market over the competitors if the Islamic banking in Indonesia is unable to improve the competitive advantages.

Table 1.1

**The Performance of Islamic Commercial Banks (ICB) and Islamic Windows
(IW)**

Performance Indicators	Period			
	2011	2012	2013	2014
Assets *)	145	195	242.276	272.343
Depositor funds *)	115,415	147,512	183,534	217,858
Owned Securities *)	924	1,537	1,997	279
Financing *)	102,655	147,505	174,486	199,330
Total Operational Expense *)	907	8,750	14,021	16,644
Non-Performing Financing **)	2.52	2.22	2.62	4.33
Operational Efficiency Ratio **)	78.41	74.97	78.21	79.28

Source: Indonesian Islamic Banking Statistic Report 2015, computed

Note:

*) in billion IDR

***) in percentage

Table 1.1 notes that the amount of total assets owned by Islamic Commercial Banks and Islamic Windows in Indonesia increases annually. In the span of four years, Islamic Commercial Banks and Islamic Windows collectively has earned around IDR 126,876 billion. Depositor funds also keeps increasing within the observed period. The increase in depositor funds allows Islamic Commercial Bank and Islamic Windows to allocate more for financing, which explains the growth of financing over the four years at the amount of IDR 96,675 billion. Other than total assets and depositor funds, the amount of total operational expense also shows improvement over the four years. The gap between the total operational expense in 2011 and the one in 2012 is IDR 15,737 billion, which can be considered huge. This much of a gap is understandable due to the fact that some Islamic banks in Indonesia is still in the stage of expansion. The table also

shows that the amount of owned securities fluctuates during 2011 until 2014. The amount of owned securities improves from IDR 924 billion in 2011 to IDR 1,537 billion in 2012. After improving to IDR 1,997 billion in 2013, the amount drops drastically as much as IDR 1,718 billion in 2014.

As for the financial ratio, from the Table 1.1 we can conclude that the Non-Performing Financing (NPF) ratio as well as Operational Efficiency ratio also fluctuates during the observed years. The NPF ratio in 2011 as a gap compared to the NPF ratio in 2014, which is 1.81%. It indicates that the ability of both ICB and IW in handling the risk of non-performing financing decreases in four years. Meanwhile, the operational efficiency ratio falls from 78.41% in 2011 to 74.97% in 2012. It goes up again to 78.21% in 2013 and then 79.28% in 2014. Dendawijaya (2005) states we can use the operational efficiency ratio to measure efficiency and the ability of a bank to run its activities. The higher ratio of operational efficiency ratio indicates that a bank has to endure more amount of operational expense thus causing the lower level of efficiency.

Efficiency is one of the performance parameters to find out the ability of bank to generate maximum output from the available inputs. The purpose of analyzing the banking efficiency is to allow the management of bank to identify areas of efficiency or inefficiency compared to the competitors. The identification is expected to help improving the bank's performance and market position (Alkheil, 2012). Estimating the efficiency can also assess the effect of deregulation, mergers, market structure, as well as improve managerial

performance by identifying the best practice and the worst practice (Berger and Humphrey, 1997).

The literature has two dominant approaches to determine efficiency. One of them is non-parametric approach, which can be done by using Data Envelopment Analysis (DEA). The other one is parametric approach using Stochastic Frontier Approach (SFA). In terms of method, DEA approach is related to mathematical programming, while SFA approach is linked to econometric theory (Bogetoft and Otto, 2011).

This research uses Stochastic Frontier Approach (SFA) as the analysis method. In SFA, assuming hypotheses such as deviations from the frontier like inefficiencies and the noise in the data is allowed. SFA also permits the researchers to assume the stochastic relationship between the inputs and outputs. According to Bogetoft and Otto (2011), parametric approach through SFA uses classical statistic principle, most notably the maximum likelihood principle. Those are the reasons of using the parametric approach to do this research.

Sealey and Lindley (1977) notes that estimating cost and output in banking are especially difficult because banking provides jointly-produced financial services. This research uses input-oriented approach because the provided financial services come as multi products. For the same reason, the output-oriented approach cannot be used.

Academic research on Islamic banking keeps on increasing due to the rapid growth of Islamic banking industry. In the literature, there are lots of

researches on the efficiency of Islamic banking. Some researches analyze and compare the efficiency of Islamic Commercial Banks (ICB) and Islamic Windows (IW). Analysis on the banking efficiency based on different categories enlightens which group is more efficient, thus Bank Indonesia as the central bank is able to consider some befitting policies as well as strategies in observing the inefficient banks. As for the banks, finding out the position of efficiency compared to the competitors from both the same group and the different group will help to determine the right upcoming strategies to be implemented.

Muharram and Pusvitasari (2007) analyze the relative efficiency of Indonesian Islamic banks in 2005 and compare the efficiency between Islamic Commercial Banks (ICB) and Islamic Windows (IW) by using Data Evelopment Analysis (DEA). The sample of the research consists of twelve Islamic banks that is in possession of almost the entire share of national Islamic banking in Indonesia. The result reveals that three banks are perfectly efficient for gaining perfect efficiency score of 100%. The research also shows that there is no significant difference of the efficiency level between ICB and IW.

In 2010, Maflachtun analyze the efficiency level of eleven Indonesian Islamic banks during 2005-2008 by using DEA. Bank Muamalat Indonesia (ICB) as well as Bank Niaga Syariah and Bank Permata Syariah (IW) has achieved full technical efficiency level at 100%. The other banks in the sample either has fluctuating efficiency level or reach inefficiency level. This research does not compare the difference of efficiency level between ICB and IW.

Mokhtar, et al. (2006) analyzes the efficiency level of Islamic banking in Malaysia and the finding shows that Islamic Commercial Banks are more efficient than Islamic Windows. The research by Pramuka (2011) assesses the profit efficiency level of Islamic banks in Indonesia by using Stochastic Frontier Approach (SFA). The finding shows that Islamic Commercial Banks are more efficient in producing the profit compared to Islamic Windows. Hidayat (2012), who notes that efficiency of Islamic Commercial Banks is higher than the Islamic Windows in the period of 2004-2008, supports the former finding. However, the research by Nugroho (2011) and Haqiqi (2015) reveals that there is no significant difference between the efficiency of ICB and the efficiency of IW.

Based on the brief explanation of phenomena gap and research gap above, there is a need to do research about “**Cost Efficiency Level of Islamic Banks in Indonesia: A Stochastic Frontier Analysis**”. This research aims to determine the cost efficiency level of ICB and IW in Indonesia based on the frontier cost function. This research analyzes the cost efficiency level within the recent four-year period.

1.2 Problem Statement and Research Questions

Table 1.1 on the sixth page exposes that total assets, depositor funds, and financing keeps increasing during the observed period. In contrast to those improvements in number, owned securities decreases greatly during 2014. Besides, Non-Performing Financing and Operational Efficiency ratios fluctuate each year. Financial ratio is one of efficiency indicators; hence from the fluctuating ratios we can conclude that the efficiency Islamic banks in Indonesia

have not been consistent yet. Assessing efficiency can also be done using the frontier approach. This research employs Stochastic Frontier Analysis by using frontier cost function as well as assets approach to determine input and output. Asset approach assumes financing and other owned assets such as securities as the outputs, meanwhile cost of labor and cost of profit/loss sharing fill position as the inputs.

Based on the previous researches, the findings regarding the efficiency between Islamic Commercial Bank (ICB) and Islamic Windows (IW) are different from a research and another. There are research gaps from the previous researches carried out by Mokhtar, et al. (2006), Muharram and Pusvitasari (2007), Maflachtun (2010), Pramuka (2011), Nugroho (2011), Hidayat (2012), and Haqiqi (2015). Some of the researches reveal that there is no significant difference in efficiency level of ICB and IW while some others reveal that ICB is more efficient than IW.

Based on the phenomena gap, selection of research, as well as research gap, the research questions that would be studied and observed in this research are listed as follows:

1. How is the cost efficiency level of the Islamic Commercial Bank (ICB) and Islamic Windows (IW) within the period of 2011-2014?
2. How does Cost of Profit/Loss Sharing affect the total cost of the Islamic Commercial Bank (ICB) and Islamic Windows (IW) within the period of 2011-2014?

3. How does Cost of labor affect the total cost of the Islamic Commercial Bank (ICB) and Islamic Windows (IW) within the period of 2011-2014?
4. How does total financing affect the total cost of the Islamic Commercial Bank (ICB) and Islamic Windows (IW) within the period of 2011-2014?
5. How do owned securities affect the total cost of the Islamic Commercial Bank (ICB) and Islamic Windows (IW) within the period of 2011-2014?
6. Is there any difference between the efficiency of Islamic Commercial Bank (ICB) and Islamic Windows (IW) during the period of 2011-2014?

1.3 Objectives and Benefits of the Research

1.3.1 Objectives of the Research

The objectives of this research are listed as follows:

1. To analyze the cost efficiency level of Islamic Commercial Bank and Islamic Windows during 2011-2014 period and determine whether the Islamic Banks in Indonesia are ready to face the implementation of ASEAN Economic Community.
2. To analyze the effect of cost of profit/loss Sharing on total cost of ICB and IW during 2011-2014 period.
3. To analyze the effect of cost of labor on total cost of ICB and IW during 2011-2014 period.

4. To analyze the effect of total financing on total cost of ICB and IW during 2011-2014 period.
5. To analyze the effect of owned securities on total cost of ICB and IW during 2011-2014 period.
6. To analyze the difference of cost efficiency level between Islamic Commercial Bank and Islamic Windows during 2011-2014 period.

1.3.2 The Benefits of Research

The benefits of this research are listed as follows:

1. Benefit for academic community

The results of this study are expected to contribute knowledge regarding cost efficiency level of Islamic Commercial Bank and Islamic Windows as well as the impact of cost of labor, cost of profit/loss sharing, total financing, and owned securities on the cost efficiency. Furthermore, the results of this research can hopefully add empirical research repository about financial management especially concerning about cost efficiency of banking.

2. Benefit for the readers

This research is expected to enhance reader's knowledge and information on Islamic banking and the cost efficiency concept as well as whether Islamic banks in Indonesia are ready to face the implementation of ASEAN Economic Community. Hopefully this research can also be used as reference materials to comparative study

in the future regarding the cost efficiency level of Islamic banking in Indonesia.

3. Benefit for the Islamic Banks

The final result of this research is expected to help the Islamic banks improving managerial performance based the high and low measured efficiency.

1.4 The Outline of Thesis

Outline of this bachelor thesis is described as follows:

Chapter I Introduction

Chapter I provides the research background about analysis on the cost efficiency level of Islamic Commercial Bank and Islamic Windows as well as competitive advantage of Indonesian Islamic banks in facing the implementation of AEC, problem discussion, research questions, research objectives, and research benefits.

Chapter II Literature Review

Chapter II contains underlying theories and reviews of the previous study that has the closer relationship to the subject of this study. It also contains operational and theoretical frameworks of the study and the hypotheses.

Chapter III Research Methodology

Chapter III explains the research methods. This chapter also includes definitions and operational measurements of the variables, population and sampling frames, and data type and source. This chapter also describes analysis method used in this research.

Chapter IV Result and Analysis

Chapter IV presents research objects, data analysis, and discussion of the research hypotheses.

Chapter V Conclusions

Chapter V provides the conclusions and implications drawn from the research. Research limitations and suggestions are also included in this chapter.