TREND ANALYSIS OF DEVELOPING FINANCIAL TRANSACTION USING BUSINESS INTELLIGENCE

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Thematic Paper
entitled

TREND ANALYSIS OF DEVELOPING FINANCIAL TRANSACTION USING BUSINESS INTELLIGENCE

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TREND ANALYSIS OF DEVELOPING FINANCIAL TRANSACTION USING BUSINESS INTELLIGENCE

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ABSTRACT

The objective of this research was to analyze the trend of financial transaction, performed by humans with no or very little Information Technology enhancement, such as the services in physical bank branches, analyze the same during the Information Technology age when the major role of processing financial transactions is through Internet Banking or Mobile Banking. All data was collected from the Bank of Thailand (BOT) in the fiscal year 2012 to 2015. All data were orderly arranged and represented by Business Intelligence Tool (BI), through various type of diagrams, and charts drawn using relevant data on various aspects and same interest, to form a trend analysis picture called the Business Dashboard. The 8 Business Dashboards were follows: The financial transactions via various channels, the financial transactions via branches, the financial transactions via ATM, the financial transactions via both the Electronic Data Capture (EDC) and Electronic Funds Transfer at Point of Sale (EFTPOS), the financial transactions via Internet Banking, the financial transactions via Mobile Banking, the financial transactions via plastic cards and the financial transactions via E-Money. The analysis showed that the transactions through the Internet Banking and Mobile Banking had grown significantly in importance and was likely to grow dramatically in the future. The use of business intelligence tools gave a more clearer total visual of the trends of the transactions.

KEY WORDS: FINANCIAL TREND / FINANCIAL TRANSACTION / BUSINESS INTELLIGENCE / INTERNET BANKING / MOBILE BANKING

41 pages

การวิเคราะห์แนวโน้มการพัฒนาธุรกรรมทางด้านการเงินโดยใช้ธุรกิจอัจฉริยะ

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บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อวิเคราะห์แนวโน้มการทำธุรกรรมการเงิน ตั้งแต่ยุคการทำธุรกรรมแบบเก่าที่ยังไม่มีเทคโนโลยีสารสนเทศเข้ามาช่วย เช่น เคาน์เตอร์สาขา จนถึงการทำธุรกรรมผ่านเทคโนโลยีสารสนเทศ ไม่ว่าจะเป็นการทำธุรกรรมผ่าน Internet Banking หรือ Mobile Banking ซึ่งข้อมูลหลักที่นำมาใช้ในงานวิจัยมาจากธนาคารแห่งประเทศไทย (BOT) ตั้งแต่ปี 2553 – 2558 โดยนำเสนอผ่านเครื่องมือธุรกิจอัจฉริยะ (Business Intelligence) ซึ่งจะประกอบไปด้วยแผนภาพต่างๆ โดยนำแผนภาพต่างๆที่สัมพันธ์กันมานำเสนอผ่านแผนภาพรวม หรือที่เรียกว่า Business Dashboard

งานวิจัยนี้นำเสนอมุมมองการทำธุรกรรมผ่าน Business Dashboard 8 เรื่อง คือ การธุรกรรมผ่านช่องทางต่างๆ, การทำธุรกรรมผ่านเคาน์เตอร์สาขา, การทำธุรกรรมผ่านเครื่องเอทีเอ็ม, การทำธุรกรรมผ่านเครื่องรับบัตร EDC/EFTPOS, การทำธุรกรรมผ่านอินเตอร์เน็ตแบงค์กิ้ง, การทำธุรกรรมผ่านโทรศัพท์เคลื่อนที่, การทำธุรกรรมผ่านบัตรพลาสติก และการทำธุรกรรมผ่าน E-Money ซึ่งผลการวิเคราะห์แสดงให้เห็นว่าการทำธุรกรรมผ่านช่องทาง Internet Banking และ Mobile Banking มีการเติบโตอย่างมีนัยยะที่สำคัญ และมีแนวโน้มเติบโตสูงขึ้นอย่างมากในอนาคต การใช้เครื่องมือธุรกิจอัจฉริยะ ทำให้มองภาพรวมของแนวโน้มการทำธุรกรรมที่เปลี่ยนไปได้อย่างชัดเจนมากยิ่งขึ้น

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CHAPTER I
INTRODUCTION

1.1 Background information and the significance of the problem

Nowadays, Information Technology is very popular in Thailand. It is already become more acceptable and likely considered necessary for Thai people's lifestyle (Thailand Internet User Profile 2015 By ETDA, 2015), caused by the growing up of the Internet that has made dramatically changes to the whole Thai's social this day. Initially, Information Technology has been used for facilitate human's simple activities and solved some basic calculations. However, since then, those tasks including Financial Transaction, Payment and a great number of monetary related services had great improved. From then, until this era, this trend is called "Digital Economy" (European Commission. "Working Paper: Digital Economy - Facts & Figures, 2014). Digital Economy is a term which means of bringing information technology to help develop the financial system services, to facilitate both service providers and service consumers. It also allows to perform the financial transactions more efficiently, respectively.

In the era before technology becomes influencing the life of people, cash is a primary medium of payment for financial transactions or bill payment services. Apparently, in order to transfer the money to recipients, people goes to the bank branches. However, there are still a lot of people who find this inconvenience. For example, long queue of waiting for services, inconvenience on travelling to the branch, or in worse case, if the closest branch is located in the remote areas, some amount of expense is required for the trip's cost. However, after the information technology has incrementally begun to play a significant role in the country, the financial transaction gained impact in the same way. A number of new financial methods and channels were introduced, thus benefited to bank's customers constantly afterward.

In 1983, Siam Commercial Bank is the first commercial bank of Thailand provided the ATM (Automatic Teller Machine) for convenient transaction, especially cash deposit, cash withdraw and inquiry services. In 1985, the evolution of computer and communication technologies resulted innovation and development of banking services of ATM. Thereafter, ATM has become the major channel for electronic transactions over the branches. Customers, by themselves, can perform deposit/withdraw money, payment of public utilities and transfer money between their own accounts or to other's accounts (Thai Bank Museum, 2010).

In 2000, technology began to play a major role in daily life even more. As a result, the competitiveness among banks also increased more tense. The new transaction channels, by applying information technology in banking business, had been introduced. The term "E-Banking" (Electronic Banking) is initially defined. Its goal is to provide services over any digital medium to customers. For example, web applications of Financial Transaction by using Computer (Leeyathipkul, 2001).

During 2010, mobile phone market has a dramatic movement. Introducing of the IPhone by Apple Inc., the mobile device adopted several extremely powerful capabilities, and new term "Smart Phone", has been coined thereafter. It has been used widely from then until now (Thailand Internet User Profile 2015 By ETDA, 2015). The Smart Phone is one of a new emerged transaction channel, on which the development of financial applications were wildly built and used within smart phone. This new channel has introduced a new term "Mobile Banking", on which customer can transfer money and make bill payment by using mobile phone via the application made from the deposit bank. Meanwhile, the Financial Technology (FinTech) has gained more interests in public. It is a technology that is specially designed and developed specifically for financial transactions, targeting to improve efficiency of services, provides more convenience and more secured transaction. This trend made many banks to switch on the alert, and competitively attempt adopting Financial Technology into their services (Chainajitr, 2016).

As discussed above, Information technology has been brought to help improve the banking services system, which result in performing financial transactions conveniently and effectively. Since these changes have been increased actively in the

last few years, it is interesting to bring these information to study the trend of development rate of financial transactions. This research uses volume and value data of transactions occurred in Thailand from 2010 to 2015. Then compare such data among various forms of money transaction such as transactions via ATM, Plastic Card, E-Money, Internet Banking, Mobile Banking, to determine the rate of development of financial transactions. The final result of this study is a summarized of the legit trend in more detail, which could benefit on readers on conforming their business plan and lifestyle and to better manage their financial more effectively and conveniently. The tools used for data analysis on this research is Business intelligence (BI).

Business Intelligence is a methodology of collecting all data of any interest topic, then bring them into the process of thinking and analyzing using computer visualized technology. The results are computer graphic provisioning such as Dashboard and Charts. As such, this tool is suitable for using in the field of information systems management decisions, particularly for company's executive level. The information obtained will help analyze trends in various data, depending on the needs of the organization, for example, analysis of competitors in the enterprise market, diagnostic product sales in each period, analysis of factors affecting the sales of goods and etc. The changing trends of the overall situation will be more clearly to see.

This research also represents the idea of applying the Business Intelligence to analyze the trend of financial transactions, which could provide the picture on the growth of financial transactions that were made in a certain duration. Both the growth in payment value and amount will be easier to analyze through data visualization. The duration picked for this research is from the time that transactions were simply performed by human, until when transaction services were mainly driven by the Information Technology.

1.2 Objectives of study

This research develops visualizations for analyzing the trends of the growth of Financial Transaction, from the period of non-electronic banking services to the

period when the information technology has been used to provide banking service. The data brought to analyze are transactions that occurred from 2010 to 2015.

1.3 Scope of work

The scope of work is to create a Business Intelligent report to analyze trends of Financial Technology, which consists of 8 dashboards those are composed from following data.

1) In this research, the data for analysis are given as:-

a. Type of Financial Transaction

b. Transaction Volume

c. Transaction Value, and

d. Time of transaction.

2) Analyzes the growth ratio of Financial Transaction in Thailand.

3) Utilizes the available data of open data from Bank of Thailand, which also brought from database of Electronic Government Agency (Public Organization) (data.go.th: Bank of Thailand, 2015).

4) The transaction amount transmitted electronically or transmitted from devices, between year 2010 and 2015. Sources are from Bank of Thailand.

5) The transaction value transmitted electronically or transmitted from devices, between year 2010 and 2015. Sources are from Bank of Thailand.

6) Payment transactions via Internet banking and Mobile banking between 2010 and 2015. Sources are from Bank of Thailand.

7) Number of plastic cards data between 2010 and 2015. Sources are from Bank of Thailand

8) The data of transactions via electronic money (e-Money) between 2010 and 2015. Sources are from Bank of Thailand

1.4 Expected result

This research will provide a result of a solid picture and analyze the trend of financial transaction development in Thailand, in order to study the number of population who are confident with financial technology. This can give the thought provoking ideas for the development of any new cutting-edge money instrument or technology in the future.

CHAPTER II
LITERATURE REVIEW

This chapter presents the related background, theories, and relevant research which are Technology transactions in the past, Technology transactions in the modern era (Fintech), Definition of Business intelligence and Related Research.

2.1 Technology transactions in the past

Financial Transaction are activities related to the financial agreements between two parties. It has set the terms and conditions of the activities shared by both parties, such as money transfers, view transaction history, cash deposit - withdraw, purchasing services, and so on. (Jaisin, 2015)

Information Technology (IT) is a state-of-the-art scheme in last few decades. It comprises of storing, writing data into the computer program which can be enquired and distributed the same information to other computers via computer's network. This makes IT very useful to people's life.

Internet is a gigantic scale of computer network. It links computers around the world through telecommunications networks. Those computer linkages use the same standard protocol, called "TCP/IP" (Transmission Control Protocol / Internet Protocol). From the past until now, the Internet has developed continuously in extraordinary speed. The evolution of the internet can be classified in to three generations as follow. (Chatee, 2012)

1) Internet 1.0, the Internet is used for communications between people. They exchanged message by using technology available in such period e.g. e-mail and Usenet.

2) Internet 2.0, the Internet is used for communication between people and computer. In this era, the World Wide Web (www) protocol is introduced. The concept

is to publish articles or news, and display them on the web page, which can be accessible through the Internet. Users can use a web browser to access the web page to digest such information published on the Internet.

3) Internet 3.0, the Internet is used for connectivity between computers. This era computers are instructed to exchange data to each other automatically over the Internet. Therefore, users can easier search for information that comes into their interest, such as online shopping, online learning, online meetings, online community (Social Media).

ATM (Automatic Teller Machine) is a financial service machine which can provide an automatic cash deposit – withdraw service, money transfer, payment services. The ATM service will be offered to customers with some conditions as written in the contract agreement from the bank. The ATM machine is considered as an early FinTech, since it introduced the adoption of technology to financial transactions. The Siam Commercial Bank is the first bank that brings ATM machine to Thailand. That is the beginning of change in the electronics banking service and also the change in behavior of transaction in Thailand. In the past, as there is no ATM machine, to find the bank branch in some suburban area is not easy, or in an urgent case when the bank is already closed but money is needed. By these reasons, people have to withdraw large amount of money which could be dangerous. When ATM has come, there is no need to carry such large amount of money. They can withdraw only a necessary amount from the closest ATM machine 24 hours a day. There is no reason to carry a lot of cash anymore, thus reduces crime. (Thai Bank Museum, 2010).

2.2 Technology transactions in the modern era (Fintech)

Fintech (Financial Technology) (Noviscape, 2016) is a technology of the financial transactions that impacts the traditional way of doing business for banking and investing. Accelerated by computer technology, Fintech can process transactions with light-speed. The software, as designed and tested by the bank, provide more security, reduce vulnerability and cost. In the meantime, several groups of Fintech owner have expanded its services in order to meet the demands and the change of behavior in

technology such as bill payment, fund raising, loans, money transfers, tax management, stock analysis and so on.

Internet banking is a way of utilizing banking service via the Internet. Rather than wasting the time traveling to the bank branches, Internet banking allows customers to use banking services by just accessing the Internet. During 1999, the Bank of Thailand approved the opening of Internet banking services for Thai's commercial banks. Since then, Bank of Asia Limited Company was the first bank to offer Internet banking. In 2000, the Siam Commercial Bank, Kasikorn Bank and Krung Thai Bank launched Internet banking services respectively in the same year. In the following year, 2001, Bangkok Bank Public Company Limited, Bank of Ayudhya Public Company Limited, TMB Bank Public Company Limited and Krungthai Bank Public Company Limited (Thai encyclopedia for youth, 2008) offered the Internet banking services. Currently, commercial banks that provide Internet banking services are follows:-

1) Bangkok Bank Public Company Limited provides "Bualuang i-Banking"

2) Kasikorn Bank Public Company Limited provides "K-Cyber Banking"

3) Krungthai Bank Public Company Limited provides "KTB online"

4) TMB Bank Public Company Limited provides "TMB Internet Banking"

5) Siam Commercial Bank Public Company Limited provides "SCB Easy Net"

6) Standard Chartered Bank Public Company Limited provides "Standard Chartered Online Banking"

7) CIMB Thai Bank Public Company Limited provides "CIMB Clicks"

8) United Overseas Bank (Thai) Public Company Limited provides "UOB Personal Internet Banking"

9) Bank of Ayudhya Public Company Limited provides "Krungsri Online"

10) Government Savings Bank provides "GSB Internet Banking"

11) Thanachart Bank Public Company Limited provides "Thanachart i-Net"

12) TISCO Bank Public Company Limited provides "TISCO e Statement"

13) Kiatnakin Bank Public Company Limited provides “KK e-Banking”

14) Industrial and Commercial Bank of China (Thai) Public Company Limited provides “ICBC E-Banking”

15) Land and Houses Bank Public Company Limited provides “LH Bank Speedy”

16) Citi Bank provides “Citi Bank Online”

Mobile Banking is banking transactions via mobile such as Smart phone and tablet. It makes banking even more accessible since the transactions can be done anywhere and anytime. Most mobile banking provides the same functionalities to the Internet banking. The main differences is the format of the display which are specifically designed and developed to support the browser on smartphone and tablet. Currently, commercial banks that provide Mobile Banking are follows:-

1) Bangkok Bank Public Company Limited provides “Bualuang mBanking”

2) Kasikorn Bank Public Company Limited provides “K-Mobile Banking PLUS”

3) Krungthai Bank Public Company Limited provides “KTB netbank”

4) TMB Bank Public Company Limited provides “TMB Touch”

5) Siam Commercial Bank Public Company Limited provides “SCB Easy”

6) Standard Chartered Bank Public Company Limited provides “Standard Chartered Mobile Banking”

7) CIMB Thai Bank Public Company Limited provides “CIMB Clicks”

8) United Overseas Bank (Thai) Public Company Limited provides “UOB Mobile”

9) Bank of Ayudhya Public Company Limited provides “Krungsri”

10) Government Savings Bank provides “MyMo By GSB”

11) Thanachart Bank Public Company Limited provides “Thanachart Connect”

12) Kiatnakin Bank Public Company Limited provides “KK e-Banking”

13) Industrial and Commercial Bank of China (Thai) Public Company Limited provides “ICBC Mobile Banking”

14) Land and Houses Bank Public Company Limited provides “LH Bank M Choice”

15) Citi Bank provides “Citi Mobile”

Crowdfunding is a new way of fund raising in public that use the website to exhibit the business plan of a project. The project starter is mostly a group of people who are creative. They have some interesting ideas to make a product or invention, but cannot find funding to start the project. Owner must present a detailed plan of the project on their website to raise funds from the public those who are interested to invest in the project. Upon the project completion, investors will receive any kind of return as promised in the website. When target fund is met, the money will be sent to the owner of the project. A certain amount of money may be charged for the website who provides the crowdfunding service. However, if the funding does not reach the project’s required target, those money will be returned to all investors. (2015, FORBES THAILAND)

Bitcoin is an online currency that was developed for online transaction. It was first released in 2009 by Japanease developer named “Satoshi Nakamoto”. However, his identity is unidentified on which who he really is and where he lives. The idea of this kind of currency is that it is not and cannot, at least in today, controlled by the central bank. The application that controls bitcoin transaction has Peer-to-Peer architecture and it is built on open source platform. The algorithm of the coin’s encryption is extremely sophisticated which result in very high security. It is designed to encourage the macro-economy by having a limited supply. It can be regenerated (coin minting) up to only 21 million units, and predicted to finish by the year of 2140. By using bitcoin, the owner will be able to shop online with merchants those who accept bitcoin. The currency can be traded up to 8 fraction digits in decimal or 0.00000001 bitcoin. Another advantages of using bitcoin is that it reduces the fee for transactions. The transfer cost is very low since it is only to enter the amount of bitcoin to send and the recipient identification number, the software will process the rests

without insertion from any bank. Therefore, the cost for doing transaction is almost zero.

2.3 Definition of Business Intelligence

Wittaya (2012) stated that the Business Intelligence is a software that uses existing data to create reports in various formats suitable for the analysis that can predict a potential probability. It meets the needs of organizations for the purpose of strategic planning areas. Moreover, IT02-BI (2015) stated that the BI is the process of increasing the competitiveness of business. Based on the information available to assist in decision making. The data is divided into two categories.

1) Internal Data Source
   a. Operation Transaction
   b. Legacy Data
2) External Data Source
   a. Statistics from various institutions
   b. Data of other project information
   c. Analysis and various articles

Phannack and Sodanil (2006) said, the Business Intelligence is a software that is used to create reports from combination of available information and render the outputs in various formats that are suitable and meet the needs of report users. It is usually brought to analyze in the perspective of the user's interest, such as planning, analysis, marketing analysis, cost, profit and loss, analysis of factors affecting sales, analysis of operation within the company and etc.

Inthuchanyong (2013) said, the Business Intelligence is a tool that brings information technology to analyze large amount of data that come from multiple sources, and renders the output into standard formats that can easily understand. It also supports the administration and help to decide in many aspects such as marketing, finance, manufacturing and so on.

From the above definition, it can be concluded that Business Intelligence is a tool used to analyze existing data, and creates a report in an appropriate format

according to the requirement of users. They can have a clearer overview of the trend, and analyze such results to forecast the future trends. Therefore, they can initiate a plan that greatly supports the organization's operations in the future.

2.4 Related Research

Tethsawatwong (2010) studied the attitudes and behavior of the mobile financial services on consumers in Bangkok with the sample of 385 people. Most users of financial services on mobile phones are male who have the ages between of 25 and 34 years old, single and mostly are in bachelor's degree. The majority's career in the samples are staff / private employees with revenues up to 30,001 baht. Research has found that most users have a positive attitude towards the process of implementation of a financial transaction, the image of the financial transactions, security of financial transactions, the ease of use of a financial transaction, and the accuracy of financial transactions. The behavior of using mobile service, majorly are to enquire their account balance. The second is money transfer. The services they use in the next less frequent respectively are: payment for products or services, top-up for prepaid mobile, enquire for account statement, credit card services, stop cheque, loan, other services related to loan and payment for income tax. Attitudes towards the use of mobile financial services is high because time-saving convenience and no transactions fee. It can be used on mobile without the need to purchase additional equipment. Also they find that the transaction on mobile is safe. This research analyzes that users have a positive attitude towards financial transactions on mobile. However, there are still some those who have a bad attitude. This could be further explored to the concerns of users those who still fear to use financial services on mobile.

Maneelhek (2011) studied the attitudes and satisfaction of K- Mobile Banking Plus service, in 50 people in both staffs and students of a university. Samples are mostly female aging between 21 and 25 years old. Most students are bachelor's degree. The average income between 5000 and 9000 baht per month. Monthly household income are between 30000 and 40001 baht. The majority of the sample knows K- Mobile Banking Plus service from the staff's recommendation and having moderate knowledge on the service. Most users use K- Mobile Banking Plus service for

balance enquiry. The second frequent use is for money transfer. The satisfaction survey showed that the majority of users do not have a problem to use the services K- Mobile Banking Plus but always have a problem with complicated process of services. Users are moderate satisfied with the service. Their suggestions for improvement is: the network is too slow and the software does not support WIFI, merchants who accept K-Mobile Banking Plus payment services are too few. The number of bank accounts that are allowed to tie to phone number is limited. For the attitude of K- Mobile Banking Plus service, they satisfy on that it helps to reduce costs and time on travelling to the bank. Furthermore, the accuracy is good and the service notifies every time there is any change in the balance. This research analyzes that the samples were mostly students who have earn money not enough to create financial transactions that frequent. It is hard to get a practical feedback from the samples those who are students. There should be a survey of a wider group of users. The satisfaction survey should be produced both before and after using the K- Mobile Banking Plus service.

Sansiripan (2012) studied the factors that are related to the attitude of financial transactions via Internet Banking of 400 middle-aged people in Bang Kapi, Bangkok. A majority of the sample are female aging between 46 and 50 years, mostly in bachelor's degree. The majority of career of the sample are the staff of companies. The purpose of using the Internet banking users use to balance check. The marketing mix product factors are the product factor, the price Factor, The Distribution Channels Factor, Promoting the Market Factor, Human Factor, Service Presented Factor and Process Factor. Factors related to the analysis of the attitudes of service are The Attitudes factors with knowledge, The Attitude of faith, The Attitude of experience. However, the marketing mix product factors of people does not relate to the attitude of financial transactions. This research analyzes that the samples are too niche. The research is specifically focused only middle aged population that could not be seen in relation to other population groups.

Thipayos (2014) studied of factors that influence the decision to use online financial transaction of CIMB Thai Bank Public Company Limited of customer 200 people in Bangkok that have not been trained, never received inquiries about the use of online banking services and do not to use online banking services. Factors that influence decision to use online financial transaction are The Behavior of financial

transaction factor, The Marketing mix factor, Product factor, Service cost factor, Service channels factor, Promoting the market Factor, Service factor, Service of process factor and Environment factor. This Research analyzes that marketing mix factor related for significant decisions for usage online financial transaction. The Research must have a problem and need of online banking for improve and, developing financial transaction system for the benefit of bank and increase in customer.

CHAPTER III
RESEARCH METHODOLOGY

This chapter describes the methodology used in this research. In order to get the correct result, researcher has adopted the processes as shown in Figure 3.1.

3.1 Preliminary Study

3.2 Data Collection

3.3 Business Intelligence Dashboard Design

3.4 Result Analysis

3.5 Research Schedule

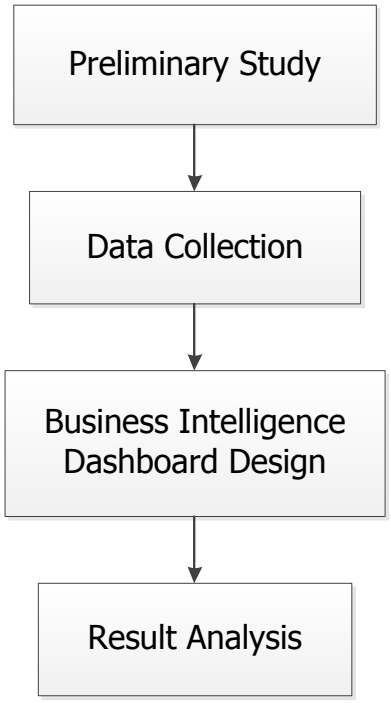

Figure 3.1 Research methodology frameworks.

3.1 Preliminary Study

Researcher studies the volume of bank's transactions those occurred in the past compared to the today's transactions. As a result, it appears that the transaction volume has changed actively time by time. The cause of such change points straight to the application of the IT that was highly influencing in Thailand in the last few decades. Electronic banking provides much convenience of usage and becomes friendlier to customers nowadays. Here are transaction methods that will be evaluated in this research.

- Branch
- ATM
- EDC/EFTPOS
- E-Money
- Internet Banking
- Mobile Banking
- Plastic Card

3.2 Data Collection

Researcher studies the data of financial transaction from several kinds and sources of information such as internet, reports and researches in order to create a framework of thoughts and to draft the structure of the project. All sources are trustworthy, have a well related information and can provide a fine quality for research. Researcher collects the financial transaction data that have relationship between volume and value as follows.

1) The amount of electronic transaction via personal devices or, via any other branch channels for both Bank and Non-bank between 2010 and 2015. The data shows in a unit of thousand records. The table lists the data on various channels such as Branches, ATM, EDC, Internet, Mobile and other (Bank of Thailand, 2016) as shown in Figure 3.2.

ธนาคารแห่งประเทศไทย PS_PT_011 : ปริมาณการชำระเงินทางอิเล็กทรอนิกส์ผ่านอุปกรณ์อย่างหนึ่งอย่างใด หรือผ่านทางเครือข่าย (e-Payment) 1/ (หน่วย : พันรายการ) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557 p	2558 p
1	ผู้ให้บริการที่เป็นสถาบันการเงิน						
2	เคาน์เตอร์สาขา	9,159.14	10,010.10	10,272.96	9,160.23	9,145.18	9,791.04
3	เครื่องเอทีเอ็ม	290,488.92	325,740.90	368,482.49	362,658.79	417,462.17	399,417.12
4	เครื่องรับบัตร (EDC/EFTPOS)	182,738.21	213,808.99	235,870.12	268,731.20	289,908.90	312,909.56
5	อินเตอร์เน็ต	62,259.51	85,778.63	127,926.08	173,568.48	200,385.33	220,081.42
6	โทรศัพท์เคลื่อนที่	16,041.81	19,941.53	36,285.08	57,198.60	109,349.73	248,127.74
7	Leased Line	10,866.22	10,356.76	9,602.13	9,396.21	8,042.18	6,128.14
8	โทรศัพท์	3,442.86	3,107.95	3,869.02	2,535.85	1,762.23	1,153.56
9	อื่น ๆ	8,291.31	13,234.85	47.93	97.96	93.41	50.51
10	รวมผู้ให้บริการที่เป็นสถาบันการเงิน	583,287.98	681,979.71	792,355.81	883,347.32	1,036,149.13	1,197,659.09
11	ผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)						
12	เคาน์เตอร์สาขา	12,264.84	10,735.59	9,780.02	8,501.92	7,459.39	6,619.01
13	เครื่องรับบัตร (EDC/EFTPOS)	85,653.05	96,152.76	110,063.18	120,189.78	128,228.43	129,819.94
14	อินเตอร์เน็ต	99,708.17	138,294.89	144,376.93	166,899.67	157,416.90	58,057.17
15	โทรศัพท์เคลื่อนที่	342.53	508.53	1,188.24	1,660.19	1,598.25	3,952.59
16	อื่น ๆ	20,316.34	13,371.65	10,367.71	10,670.33	54,082.81	472,391.72
17	รวมผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)	218,284.93	259,063.42	275,776.08	307,921.89	348,785.78	670,840.43
18	รวมทั้งสิ้น	801,572.91	941,043.13	1,068,131.89	1,191,269.21	1,384,934.91	1,868,499.52

Figure 3.2 The amount of Transaction executed via personal devices or, via any other branch channels.

2) The transaction value executed via personal devices or, via any other branch channels for both Bank and Non-bank between 2010 and 2015. The data shows in a unit of billion baht. The table lists the data in various channels such as Branches, ATM, EDC, Internet, Mobile and other (Bank of Thailand, 2016) as shown in Figure 3.3.

ธนาคารแห่งประเทศไทย PS_PT_012 : มูลค่าการชำระเงินทางอิเล็กทรอนิกส์ผ่านอุปกรณ์อย่างหนึ่งอย่างใด หรือผ่านทางเครือข่าย (e-Payment) 1/ (หน่วย : พันล้านบาท) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557 p	2558 p
1	ผู้ให้บริการที่เป็นสถาบันการเงิน						
2	เคาน์เตอร์สาขา	172.05	213.15	227.45	201.82	190.78	188.78
3	เครื่องเอทีเอ็ม	2,795.43	3,408.44	4,025.38	4,325.85	4,434.73	4,116.79
4	เครื่องรับบัตร (EDC/EFTPOS)	556.58	689.89	898.01	1,018.63	1,088.77	1,161.17
5	อินเตอร์เน็ต	7,907.08	8,798.74	13,411.30	19,604.58	19,924.98	23,952.58
6	โทรศัพท์เคลื่อนที่	110.11	186.51	439.96	751.56	1,364.02	2,569.92
7	Leased Line	4,494.34	4,679.07	4,320.57	6,852.73	6,398.76	4,816.39
8	โทรศัพท์	548.85	585.03	626.38	580.21	502.78	110.38
9	อื่น ๆ	69.13	104.96	0.14	0.01	0.02	0.44
10	รวมผู้ให้บริการที่เป็นสถาบันการเงิน	16,653.57	18,665.79	23,949.19	33,335.39	33,904.84	36,916.45
11	ผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)						
12	เคาน์เตอร์สาขา	39.51	37.04	35.25	31.29	26.99	22.37
13	เครื่องรับบัตร (EDC/EFTPOS)	223.76	262.19	312.57	366.73	391.08	411.32
14	อินเตอร์เน็ต	11.11	15.09	17.42	24.31	33.13	41.80
15	โทรศัพท์เคลื่อนที่	0.24	0.45	1.82	2.67	2.73	4.69
16	อื่น ๆ	40.44	22.87	14.29	15.92	21.22	63.31
17	รวมผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)	315.06	337.64	381.35	440.92	475.15	543.49
18	รวมทั้งสิ้น	16,968.63	19,003.43	24,330.54	33,776.31	34,379.99	37,459.94

Figure 3.3 The transaction value executed via personal devices or, via any other branch channels.

3) Figure 3.4 shows the amount and value of payment service via Mobile Banking and Internet Banking including transactions that were transferred within the same bank and different bank, and via payment service between 2010 and 2015. The table lists the data in two channels e.g. Mobile Banking and Internet Banking. Each channel comprises the following components: amount of accounts, amount of transactions (unit of billion baht) and value of transactions (unit of billion baht).

ธนาคารแห่งประเทศไทย PS_PT_009 : ธุรกรรมการชำระเงินผ่านบริการ Mobile banking และ Internet banking 1/ (หน่วย : ตามระบุ) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557	2558 p
1	ธุรกรรมการชำระเงินผ่าน internet banking						
2	จำนวนบัญชีลูกค้าที่ใช้บริการ 2/	4,822,947	5,626,192	6,645,161	8,033,061	10,159,971	11,964,561
3	ปริมาณรายการ (พันรายการ)	60,794	83,841	125,277	161,784	188,409	203,321
4	มูลค่ารายการ (พันล้านบาท)	7,892	8,780	14,112	19,548	20,500	23,882
5	ธุรกรรมการชำระเงินผ่าน mobile banking						
6	จำนวนบัญชีลูกค้าที่ใช้บริการ 2/	519,450	706,439	864,312	1,164,796	6,229,960	10,428,721
7	ปริมาณรายการ (พันรายการ)	15,885	19,942	36,285	57,199	109,350	248,112
8	มูลค่ารายการ (พันล้านบาท)	110	187	440	752	1,364	2,570

Figure 3.4 Financial transaction service by using Mobile banking and Internet banking.

4) The transaction of electronic money (Bank and Non-Bank) between 2010 and 2015. The data shows in a unit of million. The components of the table are: amount of e-money card/accounts, value of prepaid top-up and value of other expenses (2016, Bank Of Thailand). Figure 3.5 illustrates this.

ธนาคารแห่งประเทศไทย PS_PT_015 : เงินอิเล็กทรอนิกส์ (e-Money) 1/ (หน่วย : ตามระบุ) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557 p	2558 p
1	จำนวนบัตร/บัญชี (ล้านบัตร/ล้านบัญชี) 2/						
2	ผู้ให้บริการที่เป็นสถาบันการเงิน	0.54	0.45	1.00	1.68	1.45	1.78
3	ผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)	10.95	13.36	19.22	22.61	25.40	29.29
4	รวมทั้งสิ้น	11.49	13.81	20.22	24.29	26.85	31.07
5	มูลค่าการเติมเงิน (ล้านบาท)						
6	ผู้ให้บริการที่เป็นสถาบันการเงิน	359.43	471.15	929.65	2,393.51	2,462.51	4,409.99
7	ผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)	17,650.26	24,239.12	34,798.76	45,935.53	53,564.19	63,625.91
8	รวมทั้งสิ้น	18,009.70	24,710.28	35,728.46	48,329.03	56,019.79	68,035.90
9	มูลค่าการใช้จ่าย (ล้านบาท)						
10	ผู้ให้บริการที่เป็นสถาบันการเงิน	349.01	455.29	813.65	2,122.32	2,534.71	4,286.44
11	ผู้ให้บริการที่มิใช่สถาบันการเงิน (non-bank)	17,393.89	24,277.54	34,562.15	45,909.57	53,266.98	63,330.17
12	รวมทั้งสิ้น	17,742.92	24,732.83	35,375.81	48,031.90	55,801.69	67,616.61

Figure 3.5 Data of Electronic Money.

5) The amount of expense from plastic card (ATM, Credit, and Debit) that were issued by local Banks, foreign bank branches and credit card companies (Non-Bank). The data was collected between 2010 and 2015 and shows in a unit of thousand records. The components of the table are: volume by ATM Card, Debit Card and Credit Card (2016, Bank Of Thailand). The figure 3.6 illustrates this.

ธนาคารแห่งประเทศไทย PS_PT_004 : ปริมาณการใช้บัตรพลาสติกเพื่อการชำระเงิน (หน่วย : พันรายการ) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557	2558
1	บัตรเอทีเอ็ม 1/	491,264	479,553	449,196	438,927	424,207	391,208
2	ถอนเงินสด	385,192	368,124	359,101	347,052	327,286	303,709
3	เพื่อวัตถุประสงค์อื่น 2/	106,073	111,429	90,095	91,875	96,921	87,499
4	บัตรเดบิต 3/	1,085,356	1,231,241	1,405,617	1,542,658	1,655,143	1,777,393
5	ถอนเงินสด	828,607	920,029	1,026,909	1,132,148	1,206,079	1,319,554
6	ชำระค่าสินค้าและบริการ ณ จุดขาย	13,802	25,057	30,748	36,747	43,375	55,460
7	เพื่อวัตถุประสงค์อื่น 2/	242,948	286,155	347,960	373,763	405,689	402,379
8	บัตรเครดิต 4/	314,873	339,864	369,920	401,118	425,782	456,737
9	ชำระค่าสินค้าและบริการ ณ จุดขาย	254,395	284,558	324,715	349,176	371,947	380,766
10	เพื่อวัตถุประสงค์อื่น 5/	60,478	55,306	45,204	51,942	53,835	75,971
11	รวมทั้งสิ้น	1,891,494	2,050,657	2,224,733	2,382,703	2,505,132	2,625,338

Figure 3.6 Amount of plastic card used for payment.

6) The value of expense from plastic card (ATM, Credit, and Debit) that were issued by local banks, foreign bank branches and credit card companies (Non-Bank). The data were collected between 2010 and 2015 and shows in a unit of billion

baht. The components of the table are: volume by ATM Card, Debit Card and Credit Card (2016, Bank Of Thailand). The figure 3.7 illustrates this.

ธนาคารแห่งประเทศไทย PS_PT_005 : มูลค่าการใช้บัตรพลาสติกเพื่อการชำระเงิน (หน่วย : พันล้านบาท) ปรับปรุงล่าสุด : วันที่เรียกข้อมูล :							
		2553	2554	2555	2556	2557	2558 p
1	บัตรเอทีเอ็ม 1/	2,283	2,357	2,065	2,054	2,003	1,788
2	ถอนเงินสด	1,508	1,502	1,505	1,478	1,404	1,294
3	เพื่อวัตถุประสงค์อื่น 2/	775	856	560	576	600	494
4	บัตรเดบิต 3/	6,294	7,620	9,324	10,307	10,820	10,984
5	ถอนเงินสด	3,670	4,275	4,972	5,576	5,905	6,281
6	ชำระค่าสินค้าและบริการ ณ จุดขาย	30	81	93	98	106	133
7	เพื่อวัตถุประสงค์อื่น 2/	2,593	3,264	4,259	4,632	4,809	4,570
8	บัตรเครดิต 4/	1,052	1,174	1,390	1,524	1,626	1,724
9	ชำระค่าสินค้าและบริการ ณ จุดขาย	748	866	1,100	1,205	1,297	1,334
10	เพื่อวัตถุประสงค์อื่น 5/	304	308	290	318	329	389
11	รวมทั้งสิ้น	9,628	11,151	12,779	13,885	14,450	14,497

Figure 3.7 Value of plastic card used for payment.

From the above financial transactions data of various types, they can be analyzed to find correlation and the trend of financial transactions in a changing pattern of transactions each year. These data will be investigated and presented by various styles of presentation, as will be shown in next topic.

3.3 Business Intelligence Dashboard Design

This step is to define a visualized presentation pattern by finding the correlation between amount/value of financial transaction and behavior of the transactions via various channels. This will be presented as follows:

1) Presents the relationship between amount and value of financial transaction. The transaction amounts are from various channels, classified by transaction channels of Bank and Non-Bank, then compares with the transaction values. This will present the changing trends of each transaction type over six year period during 2010 – 2015. The transaction channels in this presentation are :

Transaction performed via:

- Branches

- ATM

- EDC/EFTPOS

- Internet

- Mobile

- E-Money

- Other

2) Presents the relationship between transaction amount and value via Branch channel for both Bank and Non-Bank. The visualization will present an overview of traditional transaction and its changing during 2010 – 2015.

3) Presents the relationship between amount and value of financial transactions via ATM channel of Bank and Non-Bank. The visualization will present an overview of the changing trends of transactions via ATM channel during 2010 – 2015.

4) Presents the relationship between amount and value of financial transactions via EDC/EFTPOS channel for both Bank and Non-Bank. The visualization will present an overview of the changing trends of financial transactions via EDC/EFTPOS channel during 2010 – 2015.

5) Presents the relationship between amount and value of financial transactions via Internet Banking channel for both Bank and Non-Bank. The visualization will present an overview of the changing trends of financial transactions via Internet Banking channel during 2010 – 2015.

6) Presents the relationship between amount and value of financial transactions via Mobile Banking channel for Bank and Non-Bank. The visualization will present an overview of the changing trends of financial transactions via Mobile Banking channel during 2010 – 2015.

7) Presents the relationship between amount and value of financial transactions via E-Money for both Bank and Non-Bank. The visualization will present an overview of the changing trends of financial transactions via E-Money during 2010 – 2015.

8) Presents the relationship between amount and value of financial transactions via Plastic Card for both Bank and Non-Bank. The visualization will

present an overview of the changing trends of financial transactions via Plastic Card during 2010 – 2015.

3.4 Result Analysis

The amount and value of different transaction types will be investigated and analyzed for trend changed on each year, in order to determine their relationship of each transaction type and channel.

3.5 Research Schedule

Research schedule of this study is shown in Figure 3.8.

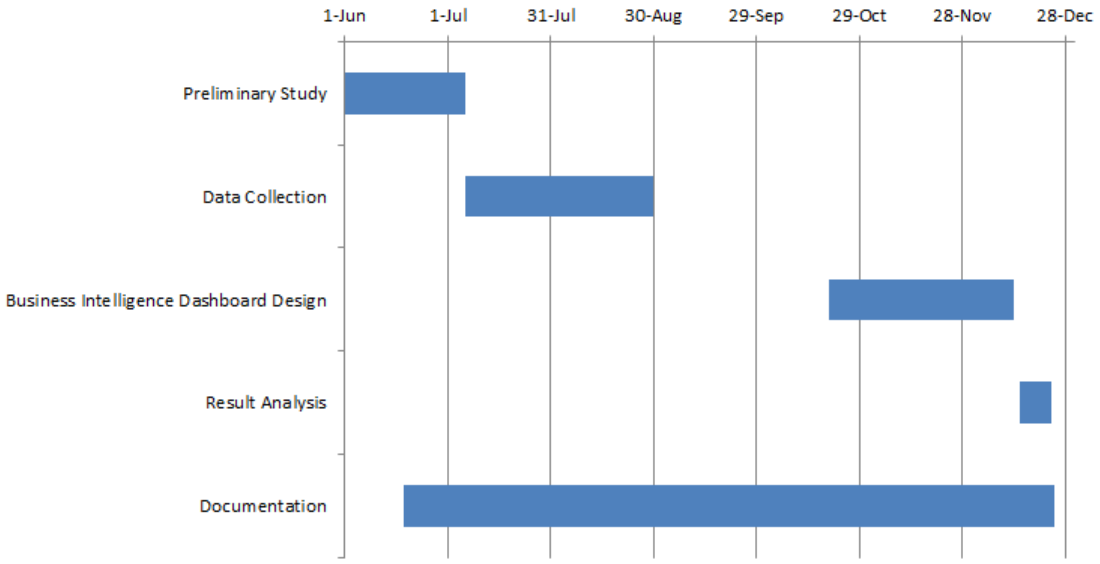

Figure 3.8 Research Schedule.

CHAPTER IV
RESULTS AND DISCUSSION

The study analyzes data on the behavior of financial transactions of Thailand during 2010 – 2015, in order to visualize the changing trends in each period and category that have significant affinities. The analysis gathers the quantity and value of financial transactions to create 8 different visualization dashboards, which are described as follows:

4.1 Visualization of financial transactions via various channels.

Figure 4.1 Visualization of financial transactions via various channels.

Figure 4.1 shows growth rate and trends of financial transactions via various channels for both Bank and Non-bank during 2010 - 2015. It demonstrates that the transactions of financial institution has growth by Mobile Banking transactions over

both the amount and value. Its growth rate, moreover, increased consecutively year by year. By 2015 Mobile Banking grew up more obviously, while other transactions channel such as Branches and ATM, the amount is relatively small and declined. Some statistical data for Internet Banking shows that its growth rate also increased constantly, though unmatched with the Mobile Banking. However, on the other hand, its transaction value has dramatically increased far above the other channels.

For the Non-Bank, the growth rate of transactions through Mobile Banking and E-Money has risen, compared to other transaction's channels. From figure 4.1, the transaction amount performed through Internet is well above the others, even though it has declined on 2010 – 2015. On the other hand, for E-money, the value of transaction has obviously increased continually.

From Table 4.1,the figure shows the impact of content marketing applied during a period of 3 months from October to December, 2014. The number of users who liked the page increased from 27,873 to 72,272 people at the end of year 2014 which equates to about 159% increase. Figure 4.1 shows an increasing trend as per 5-day basis.

4.2 Visualization of financial transactions via branches.

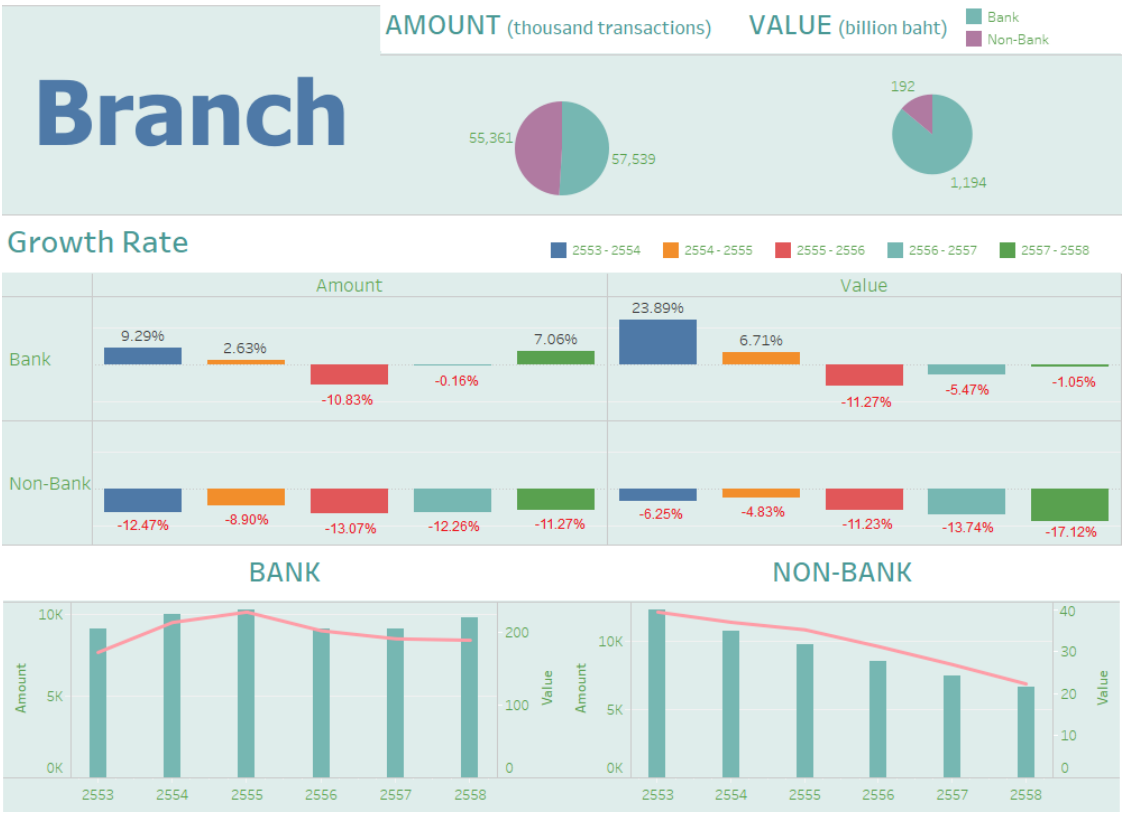

Figure 4.2 Visualization of financial transactions via branches.

Figure 4.2 shows growth rate and trends of financial transactions via branches channel for both Bank and Non-bank between 2010 and 2015. Despite the proportion of transactions amount for Bank and Non-Bank are nearly the same, the value for Bank is almost 7-fold over Non-Bank's. That is the value of 1.194 trillion baht for Bank and, merely 192 billion baht for Non-Bank. For the branch channel, the growth rate of the amount and value were declined each year. Particularly for Non-Bank, the growth rate continued to decline significantly.

The analysis of factors that make transactions' amount and value through branches dropped significantly is that, since the Information Technology has greatly influenced the money transaction activities, the transaction via smart phones and the Internet have gained a lot of fames. It's not hard to understand that not only for those new transaction mediums are super easy to use but, people also gains convenience on

not having to spend time queuing at the physical branches. As a result, the amount and value of transactions through physical branches declined logically and steadily.

It is expected that in the future, transaction services through branches could be greatly reduced due to the customers change to the transaction is digital. Branches may be more likely to turn provider in consulting and financial services, credit, investment banking. The customer cannot find the information or directly through a smart phone or the Internet.

4.3 Visualization of financial transactions via ATM.

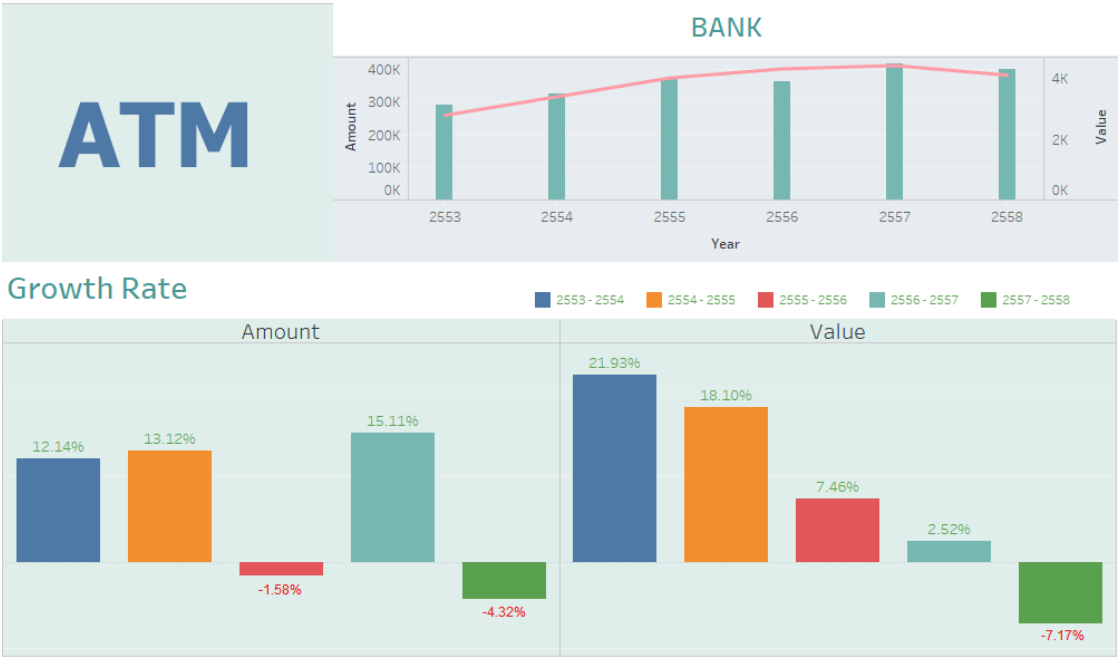

Figure 4.3 Visualization of financial transactions via ATM.

Figure 4.3 shows growth rate and trends of financial transactions via ATM channel for Bank during 2010 - 2015. It can be seen that the growth of transactions through ATMs in 2015, has amount and value decreased significantly. The figure depicts that the value of transaction growth rate increased less than the previous year consecutively. Until the year of 2015, the growth rate of volume falls to minus 4.32%

from 2014 or declined 19.43%, and the transaction value fell to minus 7.17% or count as 9.69% dropped.

The reason that make transactions' amount and value through ATMs dropped significantly is probably due to the year 2015, transactions via smart phones and the internet had gained popularity. As they are convenient and, easy to use, making transactions through ATMs decreased accordingly.

It is expected that in the future, transaction services through ATM are running lower, but still in use constantly. Transactions through ATMs may be used for cash deposit, cash withdraw only. The transaction does not involve any other cash deposit, cash withdraw, the customers can make transactions via smart phone or Internet on their own.

4.4 Visualization of financial transactions via EDC/EFTPOS

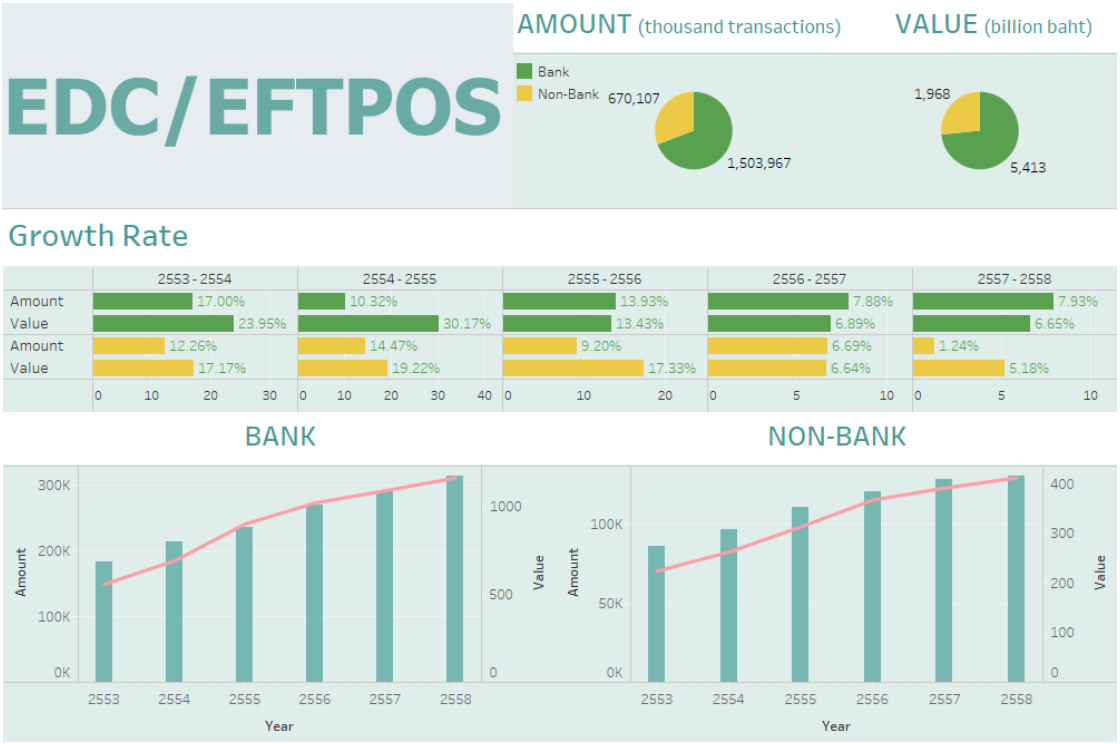

Figure 4.4 Visualization of financial transactions via EDC/EFTPOS

Figure 4.4 shows growth rate and trends of financial transactions via cards EDC / EFTPOS channel for both Bank and Non-bank during 2010 - 2015. The chart overall illustrates that the providers who are financial institution have the higher amount in both amount and value than non-financial institution. The growth rate of transactions via cards EDC / EFTPOS has increased steadily every year. Probably because of the plastic card has been increasingly used as it is secured in a level of acceptance. People do not have to carry big amount of cash. As a consequence, the transactions through cards EDC / EFTPOS has increased every year. In near future, the volume of usage on EDC/EFTPOS machines tends to be stabilized. This is a result from the booming of online shopping, as people basically pay at the website instantly.

4.5 Visualization of financial transactions via Internet

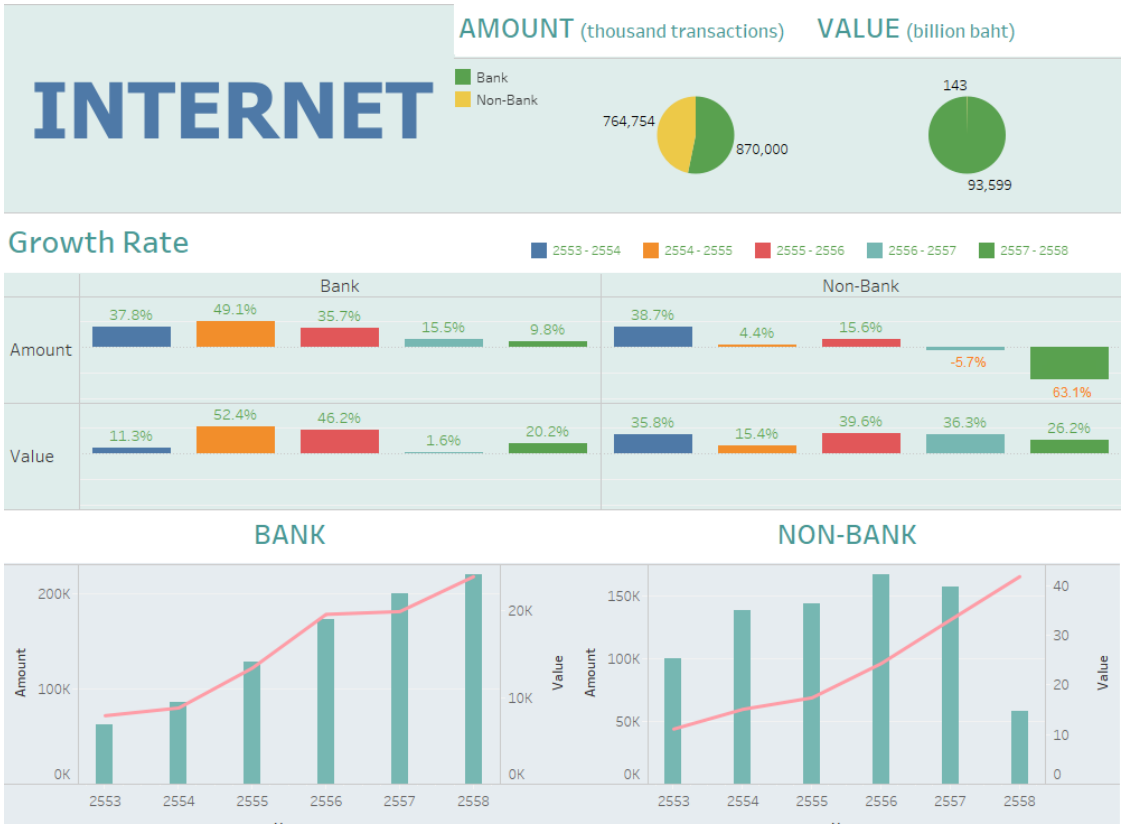

Figure 4.5 Visualization of financial transactions via Internet

Figure 4.5 shows growth rate and trends of financial transactions via Internet channel for both Bank and Non-bank during 2010 - 2015. Overall, the Bank sector's value transactions has up to 93.599 trillion baht over the period of 6 years. The proportion of the market share between Bank and Non-Bank are nearly half each. The growth rate of transactions over the Internet has increased year after year consecutively. By the year of 2012, the data shows that the growth rate for Bank has increased to 49.1% in amount, and for value had gone up to 52.4%. In contrast, for the amount of transactions on Non-Bank, the growth rate has dropped to minus 63.1% from 2014, while the value has gone up constantly. This probably due to the amount for per transaction has greater in value. The reason behind this is that most transactions in Non-Bank are from personal loan and credit card expense. Another culprit is that the volume of transactions occurred through digital channels are greatly expanding e.g. from Mobile Banking, E-Money and Instant Cash card. As the trend showed, it is expected that the transaction through Internet Banking seems to grow in constant rate.

4.6 Visualization of financial transactions via Mobile Banking

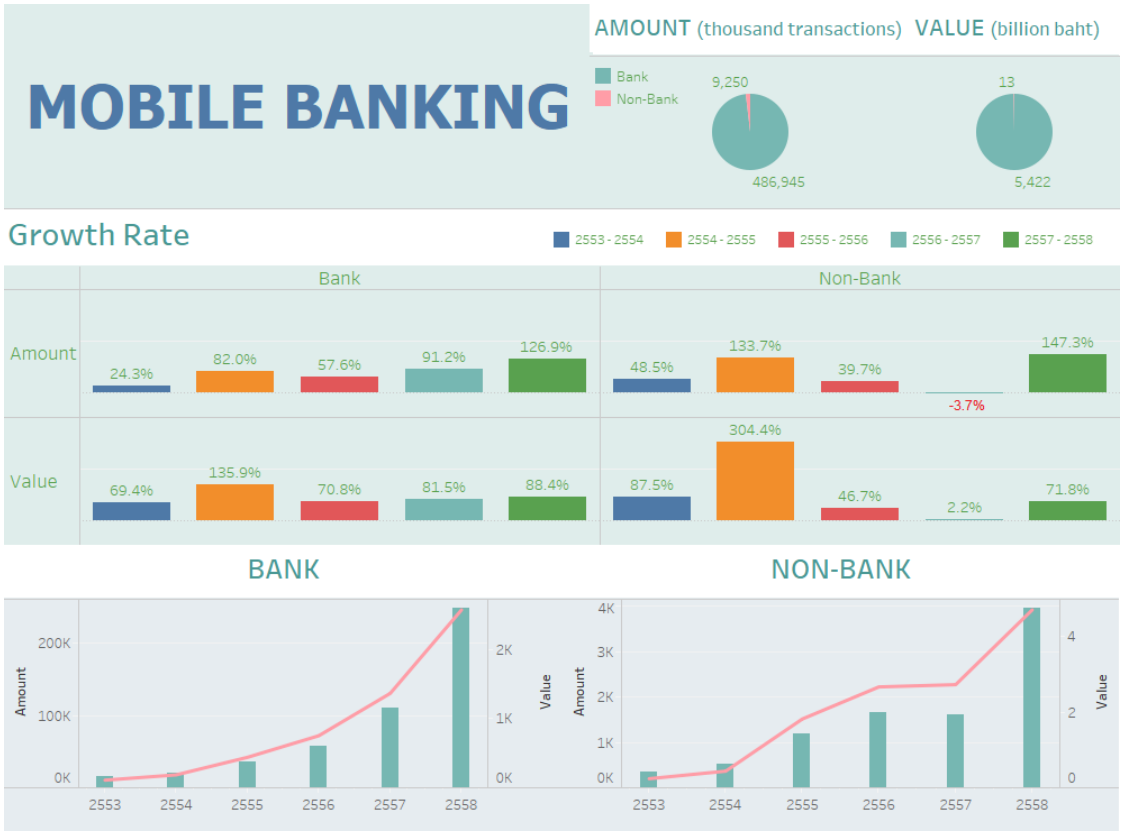

Figure 4.6 Visualization of financial transactions via Mobile Banking

Figure 4.6 shows growth rate and trends of financial transactions via Mobile Banking channel for both Bank and Non-bank between 2010 and 2015. Mobile Banking transactions of Bank has been increasing steadily, constantly, both in terms of amount and value of transactions. The transaction service via Mobile Banking are providing mostly from Bank or financial institution. As the pie chart on proportion of market share depicts, the bank part (green piece) almost overwhelms the non-bank part (pink piece). However, the transaction on Non-Bank via Mobile has increased in both amount and value as well, although growth fell in 2014, but recovered strongly in 2015 to 147.3%. The growth of mobile banking has continually increased until now. This financial service channel is considered to be the highest growth at present. This figure can be predicted that both volume and value for the transaction via Mobile Banking should increase significantly and distinctively compared to other channels due to the

aggressive expanding of e-commerce and Fintech businesses. Therefore, the transactions via mobile would be expected to grow remarkably. Besides, as the government's campaign on Digital Economy is still in a main current, this could be another big factor that influences many businesses and companies to change their strategies and methodologies to become more digital. Mobile applications, therefore, is a primary target that can promptly respond to the needs of digital transactions.

4.7 Visualization of financial transactions via Plastic Card

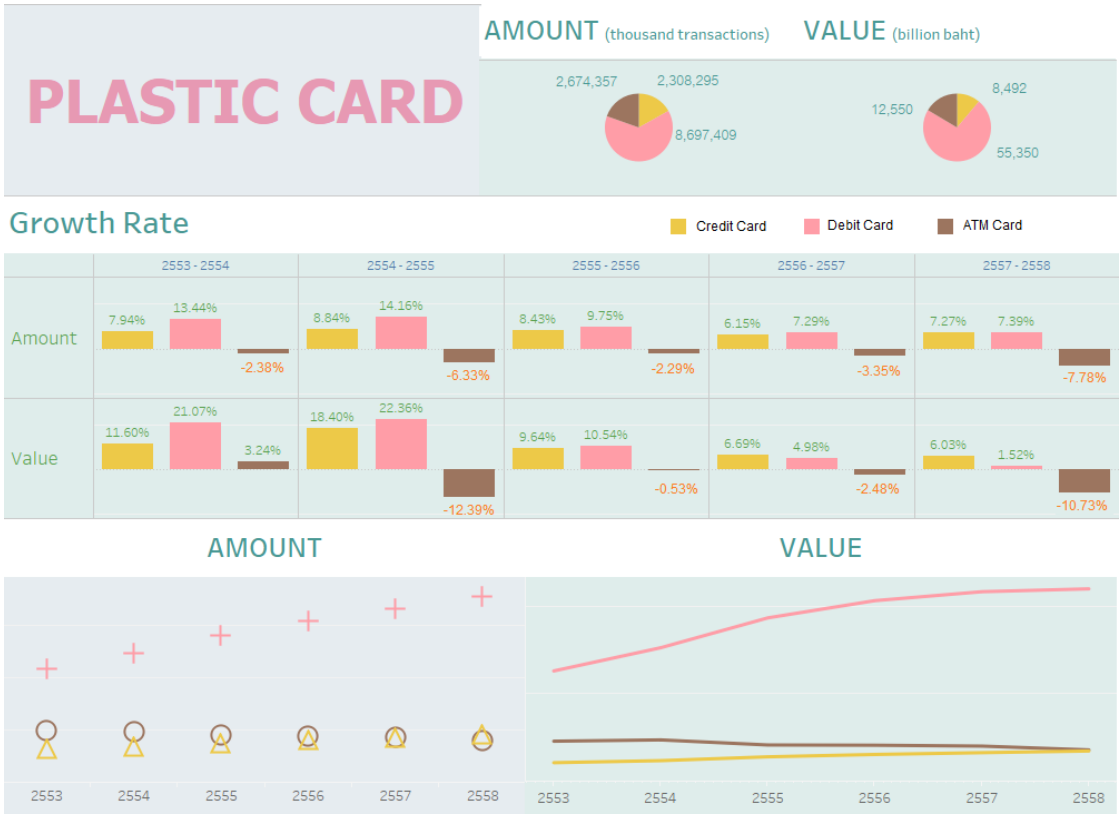

Figure 4.7 Visualization of financial transactions via Plastic Card

Figure 4.7 shows growth rate and trends of financial transactions via Plastic Card channel for both Bank and Non-bank between 2010 and 2015. From the figure, it can be seen that the total amount and value debit cards usage are far more than other plastic cards. It also has a high growth rate grew five consecutive years. On the other

hand, amount and value of ATM card usage has decreased every year obviously. While the proportion of credit card usage is similar to ATM card, but differ in the amount and value. Its growth seems gained some certain level of fame as, despite very far lower growth rate than debit card, but still had increased steadily every year.

As discussed, it is apparent that debit card is about to replace a simple ATM card. This because of both the ATM and debit card even have the same functionalities whetherfor bank account identification and uses for cash deposit and withdraw, the Debit card, however, has an ability to pay for goods and services and let the bank system deducts money from the account instantly, while the ATM card is lack of this ability. Therefore, unlike ATM card, debit card owners get comfortable without having to withdraw cash for payment. Since the transactions through E-Money and Mobile banking have significantly increased in both volume and value, the amount on plastic card usage will also share the same figure on both in the future. This is because of most online payment, whether via E-Money or Mobile banking, will always welcome for credit card and debit card payment. Plastic card, therefore, should gain more attractive from such behavior as well.

4.8 Visualization of financial transactions via E-Money

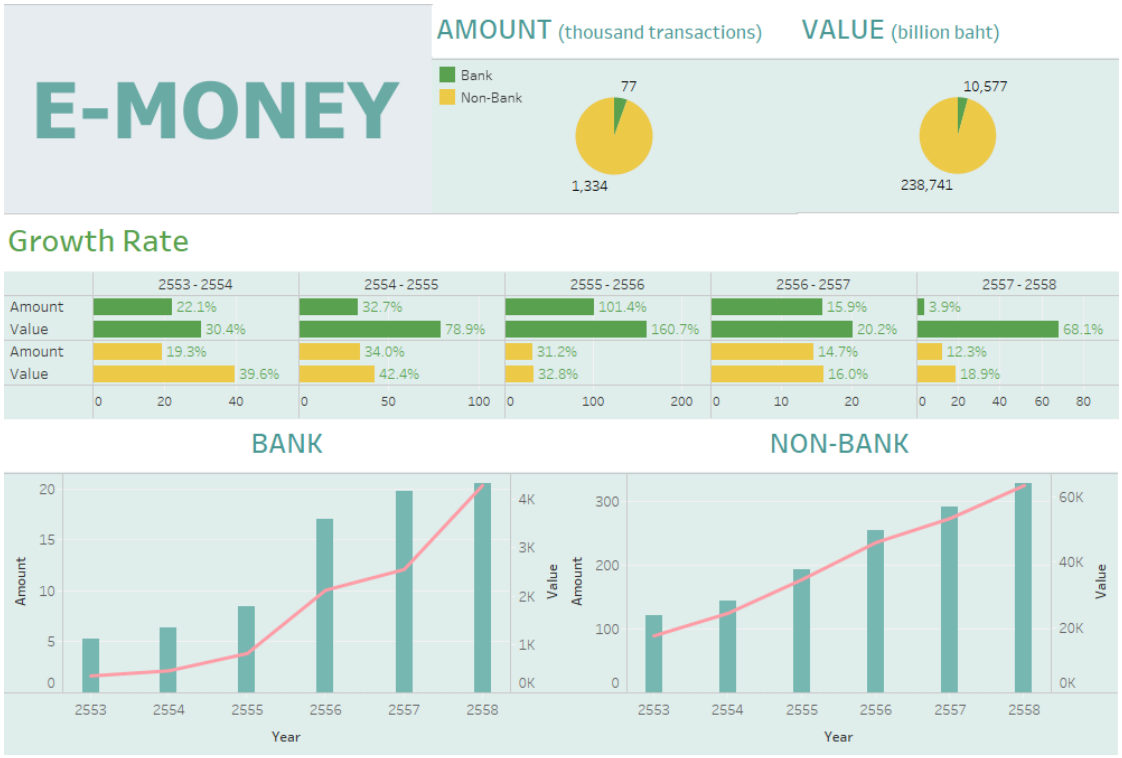

Figure 4.8 Visualization of financial transactions via E-Money

Figure 4.8 shows growth rate and trends of financial transactions via E-Money channel for both Bank and Non-bank between 2010 and 2015. The proportion pie chart shows that Non-Bank has market share both amount and value more than Bank. For the growth rates in both amount and value for both Bank and Non-Bank, have obviously made actively new-high every year. It clearly shows that the growth rate of the amount and value of transactions of Bank increased significantly over 100% during the year 2013.

The picture also shows explicitly that the growth of E-money on financial institutions has increased by leaps and bounds when compare with Non-Bank, which the transactions grew strongly and steadily every year. From the figure, it has represented some significant trends and picture on that, most e-money providers are non-bank. This seems to be a major challenge to most banks, since e-money is one and only one legit medium which purposes for purchasing goods and services by substitute

a real money, without needing of transferring money through the middle man such as banks. This trend is seemed to still continue into the next 5 – 10 years and more. It could probably cast a new era of trading medium.

4.9 Summary of analysis and explanation of the probability of trend changing for financial transaction in Thailand.

Analysis data of financial transactions for each transaction channels during 2010-2015 shows that the volume of transaction amount through branches continued to decline drastically from the year 2013 until the year 2015. The primary reason for the low amount of transactions via branches is probably due to the Internet technology that has been widely used. In the year 2015 and later, the trend on Fintech has shown some bold move in Thailand. The transaction became based on a variety of digital mediums even more. As such, this caused the current physical bank branches closed down in several areas. The transactions via ATMs began to decline drastically in the year 2015 due to the gaining popularity of modern smart phone usage, which making transactions easier and more convenient. The amount of transactions via EDC / EFTPOS had increased year by year, due to the plastic cards are becoming more commonly used in general. Not only user also can use this type of card to pay for goods and services, but also for Credit card that people can have a credit limit to make a payment thus allow buying beyond their purchasing power. The amount of transactions through Internet and Mobile Banking had increased steadily. However, as Internet Banking technology has been into Thailand since 2000. From there until the present, the traffic of internet banking in both amount and value of transactions was apparently higher than other transaction channels. While Mobile Banking came into Thailand later in 2010, the amount of transactions has skyrocketed in growth rate every year, and will be more likely to keep growing strongly than other types of transactions.

From all above data, it can be projected that in the future, Thailand's trend on transactions is likely to focus on all forms of Digital whether a process or service channel. Also, as the Thai's government issued the Digital Economy campaign, this could positively affect the acceleration of digital transactions on both volume and

value. The transactions service and processes in the traditional way or Non-Digitally that utilizes excessively in human resources could be gradually vanished, and All-Digitally could occupy all areas in financial transactions.

CHAPTER V
CONCLUSION

This research studies behaviors of financial transactions via various channels for both Bank and Non-bank during 2010 and 2015. The purpose is to analyze the changing of the way people adopting financial transactions, from the past to the present where technology has come to help influencing people's lifestyle on financial transactions. The transaction data alone is not likely to see an overview of transactions in each period and each type of transaction. It requires a business intelligence tool to assist in data analysis. This research demonstrates data on types of transaction, time, amount, value and growth rate that occurs each year. This makes establishing the view of overall outlook of the trend of transactions clearer.

5.1 Conclusions

From the study in this research, the conclusion can be drawn as follows.

1) For the dashboard of financial transactions via various channels of Banks, Mobile Banking has the highest growth rate, while the bank's branches accounted for lowest growth rate. On the other hand, transaction via ATM has the highest amount on volume while Internet Banking gained the highest on transaction's value.

2) For the dashboard of financial transactions via branches, the rate of growth in amount and value of transactions in Bank sector has gone lower since 2013. While the amount and value of the growth rate of Non-Bank has gone lower since 2011, and even lower afterward.

3) The dashboard of financial transactions via ATM showed that the growth rate of both amount and value on Bank sector, has dropped significantly in year 2016.

4) For the dashboard of financial transactions via cards EDC / EFTPOS channels, the growth rate of both amount and value for both Bank and Non-bank during 2010 - 2015 have increased steadily.

5) For the dashboard of financial transactions via Internet Banking channels, the high growth rate of both amount and value on Banks have started to shine during 2011. However, the growth rate has sudden dropped in 2014. In addition, the amount of transactions on Non-Banks has gained negative growth since 2014.

6) For the dashboard of financial transactions via Mobile Banking, the growth rate of the amount and value for both Banks and Non-Banks during 2010 - 2015, have risen significantly.

7) The dashboard of financial transactions via Plastic Card shows that both debit and credit card on both transaction amount and transaction value have been risen steadily and consecutively from 2010 to 2015, while the growth rate of the ATM usage has gone into red constantly.

8) For the dashboard of financial transactions via E-Money, the growth rate for both Banks and Non-Banks between 2010 and 2015, have risen significantly.

As a result of the analysis, it can be concluded that the development trend of financial transactions during the year 2010-2015, the channel on mobile banking grew far much stronger than the others for both Bank and Non-bank. While the financial transaction via branches is in the downturn with continuous negative growth for both Bank and Non-bank.

The digital technology in today has overwhelmed the way people manage their financial transactions with the rate of skyrocket. As a result, it makes transactions in traditional way, or as known as non-digital banking, fading away steadily from Thai's lifestyle. From all the data and dashboards totally, as presented, it could be forecasted into the next 5 to10 years and more that, financial transactions over physical branches and the transaction processes that requires massive human workforce for operating are likely to be gradually dismissed. The way on performing transactions in the future are likely to be in the form of fully digital. It is expected that more high-technology and more studies in advanced technology will be more excessively and aggressively on financial world.

5.2 Suggestion on further research

Researcher would like to take this section to suggest to those who may find this research useful and wish to make the further explore of the topic. The suggestions are as follows.

1) Data of this research is based on the transaction channels existed on the period of completing this research, including digital and non-digital banking, but not as well as digital currency e.g. Bitcoin. In near future, researcher expects that the transaction through digital currency will be more receptive. The new data on such channel can be brought to analyze for studying the trends of doing business such as payment method that business could accept.

2) The data from the Bank of Thailand (BOT) is a quantitative classification of transactions, collected and arranged by subject matter expert (SME) persons. However, researcher could not determine the details of a survey on, for example, how such SMEs have defined the data set, and how they defined the classification of each data. It would be clearer on the condition that the data are collected by the researchers themselves. This will make it possible to detect the defect of the data that are to be analyzed.

3) This research used only six years of data collected consecutively, ranged from 2010 to 2015. It is impossible to visualize the growth rate prior to the first year of the data. As the reader may notice that the data has no initial growth or gradual increase in data, but has gone high since the first year (2010). Researcher suggests that the future study should base on information back to at least 10 years in order to study the gradual growth of the trend which, could establish more thoroughly results.

4) The adopting of new information's aspects and more business parameter inputs could benefit the analysis of the trend of financial transactions in the future more effectively.

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