FACTORS AFFECTING INTERNET BANKING ADOPTION IN THAILAND

By

Mantana Intana

Doctor of Philosophy in Management Science

School of Management

Shinawatra University

SIU THE: SOM-PhD-MS-2014-04

FACTORS AFFECTING INTERNET BANKING ADOPTION IN THAILAND

A Thesis Presented

By

Mantana Intana

Doctor of Philosophy in Management Science

School of Management

Shinawatra University

Academic Year 2013

Acknowledgements

I would like to express my sincere thanks to everyone who has contributed to the success of this study, especially the generous research scholarship from Shinawatra International University that makes this Thesis possible.

Firstly, I have extremely expressed my sincere appreciation to my supervisor, Associate Professor Dr. Chuvej Chansa-ngavej, Director of Ph.D (Management) program at Shinawatra International University who accepted me in this Ph.D program and gave me a lot of valuable advices over the past several years until I completed this Thesis. Secondly, Associate Professor Dr. Pacapol Anurit, Associated Director of Ph.D (Management) program at Shinawatra International University had supported me when I had some specific problems. Next, I would like to take this opportunity to thank Dr. Chuleeporn Changchit for her valuable suggestions on the analysis section. Without her guidance, I would not have been able to gain such valuable experience in research subject. Then, I would like to thank those executives and employees in my office who completed the first draft of the questionnaire. Supat Utitasarn, and his colleague, especially Pacharida Wisaigate, and Komsan Pitayaporn at Suan Sunandha Rajabhat University (Office of General Education and Innovation Electronic Learning) gave me a hand on the questionnaires distribution. Limpiyakorn family (Kamol, Jaruwan, Kamolchanok, Montarat & Piyurach, and Kulasek) encouraged me to do the best when I was in trouble, especially giving me their moral support. Wilaiporn Loahakosol, Achara Satayapaisal, and Thanakorn Chaithirapinyo are my friends whose comments are beneficial to this research.

The last group is Manas – my father; Manee - my mother; Manoon; Malinee & Supat; and Munthanee & Chaiya - my family who have been waiting patiently for my graduation. Finally, Supat Saetia – my nephew and Arporn Bowornkriengkri – my friend are in some part of English grammar correction.

Mantana Intana

Abstract

Title: Factors Affecting Internet Banking Adoption in Thailand
Author: Mantana Intana
Program: Doctor of Philosophy in Management Science
Academic Year: 2013

Although the number of Internet Banking users has grown rapidly in recent years, not all customers are ready to accept such banking services. It remains a challenge to the banks on how to attract more customers to adopt the use of banking services via an Internet channel. This study proposes an extended Technological Acceptance Model (TAM) to explain Internet Banking adoption and to test the ability in explanatory power of an extended version of TAM model by being accentuated in developing the extent to which two primary significant elements of the TAM supplement – Perceived Privacy and Normative Belief and three original utilized constructs of TAM.

By using empirical Internet Banking users in Thailand, a total of 697 subjects participated in this study. Data was collected via both interview and survey. Structural Equation Modeling (SEM) technique was used to analyze the data suggests the results that an extended TAM purpose is better explained the adoption of Internet Banking. The findings suggest factors that banks should consider when implementing Internet services, thus allowing them to design an Internet service that meets the needs of their customers.

Keywords: Technology Acceptance Model (TAM)
Theory of Reasoned Action
Perceived Privacy
Normative Belief
Internet Banking
Thailand

Table of Contents

Title	Page
Acknowledgements	i
Abstract	ii
Table of Contents	iii
List of Figures	vi
List of Tables	vii
Chapter 1 Introduction	
1.1 Introduction	1
1.2 Research Background	4
1.3 Review of Internet Banking Acceptance	30
1.4 Research Problems	36
1.5 Motivation and Rationale of Research	37
1.6 Research Objectives	38
1.7 Research Approach	39
1.8 Conclusions	40
Chapter 2 Literature Review	
2.1 Introduction	41
2.2 Technology Acceptance Model (TAM)	42
2.3 Extended TAM	51
2.4 Example of Internet Banking Related to TAM	55
2.5 Perceived Privacy	57
2.6 Normative Believes	58
2.7 Conclusions	60
Chapter 3 Research Design and Methodology of the Study	
3.1 Introduction	65
3.2 Conceptual Framework	67
3.3 Research Hypothesis	70

3.4 Research Design and Methodology 73
3.5 Conclusions 97

Chapter 4 Results and Discussion
4.1 Introduction 99
4.2 Respondents User's Profile 99
4.3 Overall Assessment of Results 100
4.4 Hypothesis Testing Results Using SEM (H1 – H6) 110
4.5 Expected Prediction Results of the SEM 111
4.6 Summary of Hypothesis Testing Using SEM (H1 – H6) 112
4.7 Summary of Hypothesis Testing Using T-test (H71 – H10) 113
4.8 Comparison Results with Past Research Works 114
4.9 Behavior in Using Internet Banking 121
4.10 Problem Encountered when Using Internet Banking 124
4.11 Discussion 126
4.12 Conclusions 128

Chapter 5 Conclusions and Recommendation
5.1 Introduction 129
5.2 Conclusion of the Study 133
5.3 Limitations for Further Research 137
5.4 Contributions and Suggestions 137
5.5 Contribution on Analysis with SEM 141
5.6 Viewpoints about Technology Replacement 142

References 145

Appendices
Appendix A Figures of Extended Technology Accepted Model 160
Appendix B Figures of Example of Internet Banking Related to TAM 163
Appendix C Method of Data Analysis Summary 166
Appendix D Summary of Questions for Each Constructs 170
Appendix E VALS II 183

Biography 185

List of Figures

Title		Page
Figure 1.1	The summary of the term related Internet Banking	4
Figure 2.1	Technology Acceptance Model (TAM)	43
Figure 3.1	The proposed conceptual framework model of IB adoption	67
Figure 3.2	The research process adapted from Sekaran (2003)	73
Figure 3.3	The research design adapted from Cooper and Schindler (2008)	74
Figure 3.4	Form of testing goodness of measures	78
Figure 3.5	Data collection method	80
Figure 3.6	Data analysis & interpretation	87
Figure 3.7	The proposed research model with hypotheses	97
Figure 3.8	The proposed research model with hypotheses between two groups	97
Figure 4.1	Structural Equation Model results summary	109
Figure 4.2	Summary results of structural modeling analysis for IB users	110
Figure 4.3	Summary results of structural modeling analysis for non-IB users	110
Figure 4.4	Summary results of T-Test analysis between two groups	113
Figure 4.5	Summary results of IB users	126
Figure 4.6	Summary results of non-IB users	126
Figure 5.1	Conceptual framework of research model	130
Figure 5.2	T-Test results between two groups – use IB and do not use IB	136

List of Tables

Title	Page
Table 1.1 Internet Banking Definition from many Researchers	5
Table 1.2 Online Banking Definition from many Researchers	10
Table 1.3 Electronic Banking Definitions from many Researchers	13
Table 1.4 Electronic Commerce Definition from Researchers	15
Table 1.5 Thailand Population Capacities (Estimated)	15
Table 1.6 Thailand Population Capacities	16
Table 1.7 Thailand Population Estated (2011 – 2020)	17
Table 1.8 Thailand Computer Capacity	18
Table 1.9 Technological Infrastructure	18
Table 1.10 Thailand Internet Users Capacity	19
Table 1.11 Thailand Internet Users Capacity 2011 by Area	19
Table 1.12 Thailand Internet Access Capacity (% Of penetrate)	20
Table 1.13 Use of Internet Banking by Year	20
Table 1.14 Use of Internet Banking by Month	21
Table 1.15 Volume of Internet Banking Transactions	22
Table 1.16 Internet Banking Industries in Thailand	22
Table 1.17 Evolution of Banking Industry in Thailand	24
Table 1.18 Evolution of Banking Industry in Thailand (1985-Late 1990s)	25
Table 1.19 Commercial Bank in Thailand	26
Table 1.20 Review of Prior Studies on Internet Banking	33
Table 1.21 Fraud Through Specific Payment Channels and Payment Instruments	37
Table 2.1 TAM Studies Example of Variables	44
Table 2.2 The Constructs from Previous Internet Banking Researches	61
Table 3.1 Definition of Research Design on the Purpose of the Study	75
Table 3.2 Data Collection Approach	81
Table 3.3 Number of Respondent	81
Table 3.4 Sample Demographers	82
Table 3.5 Summary of Research Designed Questionnaire	83

Table 3.6 Summary of Research Questionnaire 84
Table 3.7 Missing Approaches Summary 88
Table 3.8 Outlier Summary 91
Table 3.9 Assessment of Normality (697 cases) 92
Table 3.10 Reliability 94
Table 3.11 Fit Indices (Acceptable Level) and Explanatory Power for Additional TAM 96
Table 4.1 Respondents in the Research Study 100
Table 4.2 Mean and Standard Deviation in the Research Study: Perceived Ease of Use 101
Table 4.3 Mean and Standard Deviation in the Research Study: Perceived Usefulness 102
Table 4.4 Mean and Standard Deviation in the Research Study: Perceived Privacy 104
Table 4.5 Mean and Standard Deviation in the Research Study: Normative Belief 106
Table 4.6 Reliability Statistics 108
Table 4.7 Correlations between Measured Variables 109
Table 4.8 Hypothesis Testing Summary 111
Table 4.9 Summary of T-Test Analysis of Hypotheses of Two Groups 113
Table 4.10 Comparison Effects of Constructs in this Study on Internet Banking 115
Table 4.11 Behavior in Using Internet Banking 122
Table 4.12 Problem Encountered when Using Internet Banking from Questionnaire. 125
Table 5.1 SEM Results between IB Users and Non- IB Users 133
Table 5.2 The Number of Branches of Commercial Banks 143

Chapter 1
Introduction

This chapter provides a wide background on Internet Banking starting with its definition and related issues on Internet Banking in Thailand from year 1985 onwards or the evolution of banking industry including its capacity for population, the number of computer, computer users, Internet users, and Internet access. Moreover, previous researches related to the topic are also exemplified. Finally is the thesis of the research the current problems, the motivation, the objectives, and the approach.

1.1 Introduction

Nowadays, technology tends to serve as a driving force for the advancement of economic systems and the quality of life. The world's economic productivity is based much more on technology than other factors. In a workplace, technology plays a major role in improving productivity and efficiency, reducing costs, and enriching customer services. Technology has also changed the way customers do their businesses. Businesses have used information technology to develop new strategies and improve services providing to their customers (Lee, 2009; Kalakota & Whinston, 1997), for allowing them to buy goods or services at their own pace.

As with other types of businesses, banking services also realize the need to run their businesses to suit the convenience of their customers. Advances in Electronic Banking technology have created novel ways for handling daily banking affairs (Pikkarainen, Pikkarainen, Karjaluoto & Pahnila, 2004). Several banks are competing with each other by implementing new and modern electronic systems via the Internet connectivity which is shifting usage from desktops to laptops and mobile devices such as iPhones or iPads (Pu¨schel, Mazzon & Hernandez, 2010).

Internet is the technology that becomes the common thing and a part of daily life – to everyone who is interested. It is more well-known and more beneficial not only at one place but around the world and not penetrates only in one group but 6 to 60 up. According to the world Internet usage and population statistics as at Jun 30, 2012 (www.Internetworldstats.com), the world total Internet users' growth from 2000

to 2011 is 556.4 %. The majority users are in Asia equal to 44.8 % of the world which is the same figure as previous year.

In Thailand, the current banking business is highly competitive. Many business banks provide more an alternative banking channel to customers from not only the old way - face to face counter branch, but also many invented technologies such as automatic deposits box, ATM (Automatic machine), Micro branch, or Internet Banking. The most useful tool for customers is an ATM which almost all of people use it as the BOT Report 2011 (www.bot.or.th) informs that the number of ATMs in 2011 grew 117% from 2006 and 7% from last year. ATM is a machine located outside a bank that most the customers use to withdraw money from their accounts. Due to its convenience and useful function, customers prefer to conduct banking transaction by nothing to use the traditional way of face-to-face contact at a bank's counter. In another hand, it was due to the realization of bank services that run to suit the convenience of the customers beside cost reduction.

Micro branch is one of the alternatives banking channel that now becomes the most popular due to its convenience of different time and place and is the whereabouts of the all coming people for shopping or relaxation. People can do their banking transactions when they go shopping after work or on weekend in the Department store or in Supermarket. People find it easier to do banking transactions whether by using automated machine or facing contact a bank's counter at that micro branch.

The other banking channel becoming a useful tool for some potential customers is Electronic Banking on the Internet. Due to the current economic globalization with social network, companies are trying to be the first in their business by using new modern electronic system via the Internet. Currently, Internet in Thailand reported by Bank of Thailand has become increasingly popular among consumers, with total Internet users having risen 600 percent by Year 2000, up from 2.3 to 18.3 million in 2009 - updated on Aug 2012 (Table 1.9), and Internet user transactions were ranking the tenth of Asia Top 10 Internet Countries 2009 Q2, according to the Internet World Stats (updated on Sep 2009).

Due to the increase of Internet users, this is also true with the commercial bank since the bank started Internet Banking in mid-2003. It has consistently been ranked the most popular channel by the bank's customers. The customers' base grew by 30% from year 2006 and double by the end of 2004 (Bangkok Post, April 10,

2007). Also it was the BOT's Payment Systems Report 2011 reporting that Internet Banking users' growth increased 11 percent from 4,822,947 agreements in 2010 to 5,626,233 agreements in 2011. This is because of the security and reliability of the system or its convenience and useful (Table 1.13).

Meanwhile, Internet Banking service provides customer with convenient and reliable. Customers can do almost all their personal banking transactions online 24 hours a day at anywhere by getting start with Internet connection, Internet Explorer and then Bank Web site. People can find and view their account information on the Web. People also can pay bills to more than 300 companies and transfer money between bank accounts anywhere in Thailand at their leisure time. Moreover, many companies and banks have an agreement for transferring the employee's salary to his or her account so that people can view or do their any business banking all the time.

Although the number of Internet Banking users has grown rapidly in recent years, there is still some evidence showing that not all banking customers accept the Internet Banking services (Robinson, 2000). The study found that half of the people who have tried Internet Banking services did not become active users. Additional studies also reported that a large group of customers were still reluctant to adopt the online services because of their concerns of uncertainty and security (Kuisma, Laukkamen & Hiltunen, 2007; Lee, 2009). In addition, the information from Bank of Thailand in 2012 (Table 1.14) shown the evidence that number of agreement of Internet Banking slightly grew up only 1% - 3% along in the late 2012 - Sep12 = 6,377,733; Oct12 = 6,468,322; Nov12 = 6,564,803; Dec12 = 6,645,161).

This study, therefore, aims at examining what factors affecting the adoption of Internet Banking in Thailand. The result found in this study should help the banking services understand the needs of their customers and they will be able to develop and deliver the online services to meet their customers' expectation. Moreover, the research model should be an appropriate application providing the benefit for the business due to its TAM (Technology Acceptance Model) which was a big hit for modeling user acceptance of information systems.

With a view to Internet Banking is not popular among bank customers as it should be. This is lead to the study of "Factors affecting Internet Banking adoption in Thailand". Also, many people lack of knowledge on Internet Banking to understand what it is useful or what it can be done for their banking transaction. It might due to

the limited information available. This research study will include the barriers of Internet Banking adoption from an interview that bring to the influence of customer churn to identifies the customer satisfaction or intention in order to reduce the number of customer churn or churn rate.

1.2 Research Background

Following to many confusion about the term related Internet Banking definition, for example Online Banking or Electronic Banking, this study must define each of these terms for not misunderstanding as once the time was gone by. The terms have a variety of meanings; therefore, this study will provide many other studies of those definitions to compare. The terms from many researches were collected, and the definitions summary is as figure 1.1 below:

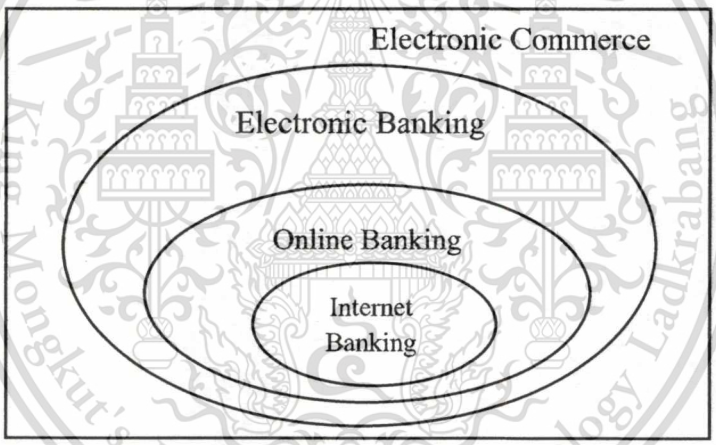


Figure 1.1 The summary of the term related Internet Banking

1.2.1 Definition of Internet Banking, Online Banking, Electronic Banking, Electronic Commerce

Definition of Internet Banking

Internet Banking is a term used for doing banking transaction via the Internet. Instead of having financial transaction by directing to the counter at any branches, bank customers can do their another way of financial transactions such as pay bills or transfer money via the Internet at home or anywhere the computer existing and connecting to the network at any time – 24 hours.

With Internet Banking, bank customers can check their balance, transfer funds to all bank accounts in Thailand and other countries, pay bills, set up direct debits and buy or sell mutual funds. Internet Banking in Thailand is also available in English.

Bank customers can access it from anywhere and anytime by using their mobile phone or PDA besides computer. It is now easier than ever to do their financial banking. Internet Banking meets all their daily transaction needs.

New services of Internet Banking are offered including pay credit card bills for their family or friends, make a payment to a friend or family member's bank credit card, notify them via SMS when the payment has been made, and now can pay their Provincial Electricity Authority (PEA) bills online via Internet Banking. The table 1.1 below is the Internet Banking definitions from many researchers.

Table 1.1

Internet Banking Definition from Many Researchers

Researchers	Internet Banking descriptions	Study
2013 Ajam and Nor	IB is defined as "the use of technology to communicate instructions and receive information from a financial institution where an account is held. This service includes the system that enables financial institution customers, individuals or business to access accounts transact business, or obtain information on financial products and services through a public or private network" (p.182).	Adoption of Internet Banking by Yemeni consumers: An empirical investigation
2011 Rouibah, Ramayah and May	Internet Banking named E-Banking refer to this concept as the provision of banking services via Internet. Offered services may include, but not limited to, account information and balance enquiry, electronic bill payments, summary reports of transactions, funds transfer, check cancellation, check book application, financial planning and analysis, loan application, share margin trading account (p.2).	Modeling user acceptance of Internet Banking in Malaysia: A Partial Least Square (PLS) approach

Table 1.1 (Continued, p.2)

Researchers	Internet Banking descriptions	Study
2010 Chang and Hamid	Internet Banking offers a self-service channel. The acceleration of Internet Banking can be attributing to consume dissatisfaction with the time and effort required for conventional banking (p.39).	An empirical investigation of Internet Banking in Taiwan
2009 Arezou, Mohammad, Wallstrom and Omid	One of the delivery channels introduced for financial serviced is Internet Banking (IB) or online E-Banking. It is well accepted that IB is a useful tool in banking system that offers less waiting time and is more convenient than traditional branch banking (p.2567).	Adoption of Internet Banking by Iranian consumers: Empirical investigation
2007 Xu, Shao, Lin and Shi	Internet Banking (IB) is one of the most important and valuable forms of online business, which reinforces Internet-based banking transactions between organizations, or between an organization and an individual. IB allows enterprise users to access banking services without traditional temporal and spatial limitations (p.7).	Enterprise adoption of Internet Banking in China
2007 Hernandez and Mazzon	Access via proprietary software installed on PCs (p.76).	Adoption of Internet Banking: Proposition and implementation of an integrated methodology approach

Table 1.1 (Continued, p.3)

Researchers	Internet Banking descriptions	Study
2007 Lallmahamood	Internet Banking or Online Banking has created new ways of handling banking transactions for banking related serviced and for E-Commerce related transactions such as online shopping. Internet Banking is defined as banking services over the public network (the Internet), through which customers can use different kinds of banking services ranging from the payment of bills to making investments (p.2).	An examination of individual's Perceived security and Privacy of the Internet in Malaysia and influence of this or their Intention to Use E-Commerce: Using an extension of the Technology Acceptance Model
2007 Leelapongprasut, Praneetpolgrang and Paopun	Internet Banking service is available 24 hours. Customers do not have to pay traveling charge to do any transaction because it is accessible via Internet system from the user's house or office (p.6.2).	A Quality study of Internet Banking in Thailand
2006 Cheng, Lam and Yeung	Use the terms Internet Banking (IB) and Online Banking (OB) interchangeably. IB/OB is different from Electronic Banking (E-Banking) in that the latter is a higher level activity that encompasses not only IB/OB, but also Telephone Banking, ATM, WAP-banking and other electronic payment systems that are not operated through the Internet (p.1559).	Adoption of Internet Banking: An empirical study in Hong Kong

Table 1.1 (Continued, p.4)

Researchers	Internet Banking descriptions	Study
2005 Jaruwachirathanakul and Fink	Internet Banking service allows users to control their accounts from anywhere at their own convenient time at lower cost, it provides numerous advantages to the user in terms of price and convenience (p. 299).	Internet Banking adoption strategies for a developing country: The case of Thailand.
2004 Kumra and Mittal	Internet Banking is the use of electronic channels to communicate and transact business with both domestic and international customers, primarily through the use of the Internet and the World Wide Web. Bank use a variety of names for Internet Banking services, such as Telephone Banking, Home Banking, Online Banking and non-branch banking (p.74).	Trust and its Determinants in Internet Banking: A study of private sector banks in India
2003 Rotchanakitumnuai and Speece	Internet Banking allows customers to have direct access to their financial information and to undertake financial transactions with no need to go to the bank (p.312).	Barriers to Internet Banking adoption: a qualitative study among corporate customers in Thailand
2002 Ongkasuwan and Tantichattanon	Internet Banking service is defined as banking service that allows customers to access and perform financial transactions on their bank accounts from their computers with Internet connection to banks' Web sites using Web browser software (p.3).	A comparative study of Internet Banking in Thailand

Table 1.1 (Continued, p.5)

Researchers	Internet Banking descriptions	Study
1999 Sathye	Internet Banking involves consumers using the Internet to access their bank and account, to undertake banking transactions. At the basic level, Internet Banking can mean the setting up of a Web page by a bank to give information about its product and services. At an advance level, it involves provision of facilities such as accessing accounts, funds transfer, and buying financial products or services online (p.324).	Adoption of Internet Banking by Australian consumers: An empirical investigation

Definition of Online Banking

Online Banking in this study is the same means as Internet Banking for doing banking transaction via the Internet but Online Banking has many features and capabilities in common which not found on Internet Banking. The common features are divided broadly into several categories include:

- Transactional (e.g. performing a financial transaction such as an account to account transfer, paying a bill, wire transfer... and applications... apply for a loan, new account, etc.)
- Electronic bill presentment and payment – EBPP
- Funds transfer between a customer's own checking and savings accounts, or to another customer's account
- Investment purchase or sale
- Loan applications and transactions, such as repayments of enrollments
- Non-transactional (e.g. online statements, check links, co-browsing, chat)
- Bank statements
- Financial Institution Administration - Support of multiple users having varying levels of authority

- Transaction approval process
- Wire transfer

Online systems allow customers to plug into a host of banking services from a personal computer by connecting with the bank's computers over telephone wires. The convenience can be compelling. Not only is travelling time reduced, but also sometimes ATM machines, Telephone Banking or banking by mail are often unnecessary. Further, technology continues to make Online Banking, once attempted only by computer enthusiasts, easier for the average consumer.

Even that may not be easy enough, though. Many systems that offer greater financial control also require more work. Online bill payment is an example of an effort that requires setting up which leads to ultimate convenience. Banks use a variety of names for Online Banking services, such as Telephone Banking, Home Banking, Electronic Banking or Internet Banking. Regardless of the name, these systems offer certain advantages over traditional banking methods.

Some Online Banking platforms support account aggregation to allow the customers to monitor all of their accounts in one place whether they are with their main bank or with other institutions.

Features commonly unique to Online Banking include; Personal financial management support, such as importing data into personal accounting software.

In other words, Internet Banking is one of the members in Online Banking. Whereas many researches define Online Banking the same as Internet Banking, some define in difference as follows:

Table 1.2

Online Banking Definitions from Many Researchers

Researchers	Online Banking definitions	Study
2009 Lee	Online Banking has played an important and central role in the E-payment area which provides an online transaction platform to support many E-Commerce applications such as online shopping, online auction, Internet stock trading, and so on (p.130).	Factors influencing the adoption of Internet Banking: An integration of TAM and TPB with Perceived risk and Perceived benefit

Table 1.2 (Continued, p.2)

Researchers	Online Banking definitions	Study
2007 Hamid, Amin, Lada and Ahmad	Online Banking is another term used for Internet Banking. Both share the similar meaning Internet Banking or Online Banking is defined as the use of Internet as a remote delivery channel of banking system services via the WWW. This system enable customers to access their accounts and general information of bank products and services 24 hours a day and 7 days a week through PC or other intelligent device using web browser software (p.2).	A comparative analysis of Internet Banking in Malaysia and Thailand
2006 Alsajjan and Dennis	Online Banking was introduced as a channel where bank customer could perform their financial transactions electronically via their banks' Web sites. An Online Banking user is expected to perform at least one of the following transaction: 1. Checking account balance and transaction history 2. Paying bills 3. Transferring funds between accounts 4. Requesting credit card advances 5. Ordering checks 6. Managing investments and stocks trading (p.28).	The impact of trust on acceptance of Online Banking

Table 1.2 (Continued, p.3)

Researchers	Online Banking definitions	Study
2004 Pikkarainen T., Pikkarainen K., Karjaluoto and Pahnila	Online Banking in this study is defined as an Internet portal, through which customers can use different kinds of banking services ranging from bill payment of making investments. Therefore banks' Web sites that offer only information on their pages without possibility to do any transactions are not qualified as Online Banking services (p.224).	Consumer acceptance of Online Banking: an extension of the Technology Acceptance Model

Definition of Electronic Banking

Advances in Electronic Banking technology have created novel ways of handling daily banking affairs, especially via the Online Banking channel (Pikkarainen et al., 2004). Since the mid-1990s, there has been a fundamental shift in banking delivery channels toward using self-service channels such as Online Banking services (Pikkarainen et al., 2004). Companies find that this suits the convenience of their customers as well as provides an "Ease of Use" for online self-service.

Electronic Banking in this study is defined as doing banking transaction with the electronic machines such as Automatic Teller Machine (ATM) which is the emergence of ATM service in the smart automation regime. Electronic Banking was a technology push that pressurized all the banks to enter into a high degree of competition to survive in the banking industry (Wonglimpiyarat, 2007). Other examples of Electronic machine are Deposit Auto Machine, Tele Banking or Telephone Banking, Internet Banking, Office Banking (Banking services in a bank office) / Telephone Banking, Mobile Banking that need not to be operated through the Internet.

Services are available varies from bank to bank. Virtually all banks that offer electronic services allow consumers to check the balances in their accounts, transfer funds among accounts, and order electronic bill payments. More sophisticated systems allow customers to apply for loans, download information about their accounts into their own computers, trade stocks or mutual funds, and look at images of their checks and deposit slips.

Table 1.3

Electronic Banking Definitions from Researchers

Researchers	Electronic Banking definitions	Study
2013 Barbole and Parakh	Nowadays, every transaction is done electronically through various E-Channels like ATM's, Credit/Debit cards, Internet Banking, Mobile Banking, Tele Banking etc. which is known as E-Banking (p.1).	The study of consumer's perspective about Internet Banking: empirical evidence from Western Maharashtra
2012 Khanifar, Molavi, Jandaghi and Niya	E-Banking services such as ATM, Internet Banking, Phone banking and Mobile Banking (p.1845).	Factors influencing the intendancy of E-Banking: An integration of TAM and TPB with eservice quality
2008 Kaleem and Ahmad	Electronic Banking is the latest in the series of technological wonders of the recent past. ATMs, Tele Banking, Internet Banking, Credit cards and Debit cards have emerged as effective delivery channels for traditional banking products (p.5).	Bankers' perceptions of Electronic Banking in Pakistan
2006 Country Commerce, www.eiu.com, Thailand.	Electronic Banking is developing, with all the major banks now offering transaction and account checking services online (p.1240).	E-Commerce The Economist Intelligence Unit Limited

Table 1.3 (Continued.)

Researchers	Electronic Banking definitions	Study
2001 Rojanachaichanin	E-Banking is the new generation tool of banks launched for maximum convenience and efficiency in generating bank transactions via the Internet. It is thus called "Online Banking". There are many major Online Banking services as new marketing tools to convince new Internet visitors to be the bank's clients, and indirectly promote the bank's status.	eThailand

Definition of Electronic Commerce (E-Commerce)

Bank of Thailand (BOT) defines Electronic commerce as follows:

Electronic commerce involves the conduct of economic transactions through electronic means such as the purchase and sale of products and services, the advertising of merchandise, and the electronic transfer of funds. E-Commerce provides potential cost-savings and efficiency gains for businesses as it reduces the importance of having visible and physical infrastructure. This includes, for example, office buildings, show rooms, warehouses, sales people, and customer service staff. Therefore, geographic limitations namely distance and different operating hours have no longer become obstacles in operating businesses.

E-Commerce is used to communicate with customers at various levels, such as business-to-customer, business-to-business, business-to-government, and others. The content used in communication covers 4-5 main areas as the following:

Sales – advertising, product displays, price quotes, purchase orders, and price calculations

Payment – payment means agreement, money transfer orders, bank account information, and new forms of digital money

Transportation – delivery notice, transportation costs, contact point and tracking system

After-Sales Service – internal company communication such as accounting system, warehouse, purchasing system, and after-sales customer service.

Table 1.4

Electronic Commerce Definitions from Researchers

Researchers	E-Commerce definitions	Study
2008 Puangwattanawong, Plansoongnern, Anurit and Bunchapattanasakda	E-Commerce brings the universal access of the Internet, which is the business process of buying and selling goods and services (p.27).	Factors influencing Internet user's behavior not of purchase through E-Commerce in Thailand
2006 Country Commerce	E-Commerce offers goods or services for sale or purchase via the Internet (p.125).	E-Commerce
2004 Grandon and Pearson 2000 Schneider and Perry	"Business activities conducted using electronic data transmission via the Internet and the WWW" (p.81).	E-Commerce adoption: Perceptions of managers/owners of small and medium sized firms in Chile

1.2.2 Internet Banking in Thailand. This subsection provides a broad view of Internet Banking in Thailand and then specific into a narrow view of its situation since the Internet in Thailand was introduced in 1991 reported by NECTEC (The National Electronics and Computer Technology Center).

Table 1.5

Thailand Population Capacities (Estimated)

Thailand	Jul 2013 estimated	Jul 2012 estimated	Male Jul 12 est.	Female Jul 12 est.
Population	67,448,120	67,091,089	33,433,xxx	34,658,xxx
Population growth rate	n.a.	0.543%	n.a.	n.a.
Median age:	n.a.	34.7 years	33.7 years	35.6 years

Table 1.5 (Continued.)

Thailand	Jul 2013 estimated	Jul 2012 estimated	Male Jul 12 est.	Female Jul 12 est.
Age				
• 0-14 years	19.2%	19.9%	6,779,723	6,466,625
• 15-64 years	71.0%	70.9%	23,410,091	23,913,499
• 65 and over	9.8%	9.2%	2,778,012	3,372,203
Urbanization:				
• Urban population:	34% of total population (2010)			
• Rate of urbanization:	1.8% annual rate of change (2010-15 est.)			

Source. Central Intelligence Agency: last updated on Apr 7, 2013

Central Intelligence Agency estimated that population in Thailand in July 2013 (Table 1.5) would be 67.4 million with the growth rate of 0.543% from July 2012. The estimated median age was 34.7 years with 33.7 years for male and 35.6 years for female. For the age structure which classified into three groups-: 0-14 years, 15-64 years, and 65 up, the majority of population were aged between 15 to 64 years while only 19.2% and 9.2% were 0-14 years and 65 and over, respectively. In addition, the estimated urban population in Jul 2012 was about 34% of total population or 23 Million.

Table 1.6

Thailand Population Capacities

Year	2011/2554	2010/2553	2009/2552	2008/2551	2007/2550
Population	64,076,033	63,878,267	63,525,062	63,389,730	63,038,247
Bangkok and Urban	n.a	10,326,093	10,237,179	10,161,694	10,065,126
Bangkok Only	5,674,843	5,701,394	5,702,595	5,710,883	5,716,248
Bangkok / Population	8.86	8.93	8.98	9.01	9.07

Table 1.6 (Continued.)

Year	2011/2554	2010/2553	2009/2552	2008/2551	2007/2550
Age					
• 0-14 years	n.a.	19.4%	19.8%	21.2%	20.5%
• 15-64 years	n.a.	70.7%	70.3%	70.3%	69.6%
• 65 up	n.a.	7.9%	7.8%	8.5%	7.5%
Gender					
• Male	31,529,148	31,451,801	31,293,096	31,255,869	31,095,942
• Female	32,546,885	32,426,466	32,231,966	32,133,861	31,942,305
Population (BOT source)	64.1 M	63.88 M	63.53 M	63.39 M	63.04 M

Source. National Statistical Office (NSO)

Reported by the NSO shown in Table 1.6 above, - during 2007 to 2011, the population growth has increased continuously. In 2010, population in Bangkok and Urban was about 10 million whereas population - in Bangkok was only 5.7 Million equal to 9 percent of total Thailand population. Thailand's total population as of Dec 2011 was 64.1 million (compared to 63.0 million in 2007).

In 2010, NSO reported that female population was more than male 2%. People in age between 15 and 64 years were about 70%. The figure is slightly changed compared to the estimated figure in Jul 2013.

Table 1.7

Thailand Population Estimated (2011 – 2020)

Estimated (Million)	2020	2017	2014	2011	*Source*
Population	70.5	69.6	68.9	67.7	National Economic and Social Development Board
Age					
• 0-14 years	13.9	14.2	14.7	14.9	
• 15-64 years	49.6	49.2	48.6	47.6	
• 65 up	7.1	6.2	5.6	5.2	
Actual Est.: 2011	66.7	65.9	65.2	64.1	
Adjusted to actual 2011 = 64.1					

The National Economic and Social Development Board estimated the population in Thailand in the nearly next decade years (2020 – Table 1.7) would increase 2.8 million from 2011.

Table 1.8

Thailand Computer Capacities

Year	2011	2010	2009	2008	2007	*Source*
Number of Computers	9.9 M	4.5 M	3.9 M	3.6 M	3.2 M	NSO
Computer users (6 years up)	19.9 M	19.1 M	17.9 M	17.0 M	16.0 M	
% of Population	31.0%	30.0%	28.2%	26.8%	25.4%	
Population	64.1 M	63.9 M	63.5 M	63.4 M	63.0 M	

Computer is the first main equipment that can link to Internet Banking. NSO (Table 1.8) reported that Thai people who were over 6 years use computer 19.9 million or 31.0% of population in 2011. Computer users have slightly increased in each year since 2007.

Table 1.9

Technological Infrastructure (Million)

	2011	2010	2009	2008	2007	2006	2005
Total fixed network telephone subscribers	6.43	6.65	6.85	6.97	7.02	7.04	7.00
Total Internet users	n.a.	n.a.	18.30	16.10	13.42	11.41	9.91
Penetration rates Fixed network telephone (%)	10.03	10.41	10.78	10.99	11.14	11.21	11.21
Internet (%)	n.a.	n.a.	28.81	25.40	21.28	18.17	15.87

Source. Bank of Thailand– Payment Systems Report 2011 as at Jun 2012

The Penetration rates presented in Table 1.9 above reveals an increase in the penetration rates of Internet from 15.87% in 2005 to 28.81% in 2009.

Table 1.10

Thailand Internet Users Capacity

2011	2010	2009	2008	*Source*
14.8 M	n.a.	n.a.	n.a.	NSO
18.3 M	17.5 M	16.1 M	n.a.	Internet World Stats as at Sep 2012
n.a.	n.a.	18.30 M	16.10 M	Bank of Thailand Jun 2010

Many sources of data related to Internet users in Thailand are given the difference figure. The Internet World Stats updated in September 2012 (Table 1.10) said that Internet users in Thailand equal to 18.3 million in 2011 growth from 2009 by 14%. However, Bank of Thailand reported in Payment Systems report 2010 that Internet users in Thailand equal to 18.3 million in 2009. Moreover, NSO collected information refers to 2011 that Internet user in Thailand equal to 14.8 million.

Table 1.11

Thailand Internet Users Capacity 2011 by Area

	2011 (Million)	Bangkok		Central		North		N.E.		South	
Computer users	19.9	3.1	16%	4.8	24%	3.5	17%	6.0	30%	2.5	13%
Internet users	14.8	2.6	18%	3.5	23%	2.6	18%	4.3	29%	1.8	12%

Source. NSO

Table 1.11 shows that people who were using Internet in 2011 is 14.8 million or a 59 percent increase from 9.3 million in 2007. The report found that people in Bangkok use Internet only 18% which equal to North region whereas the highest and the higher of Internet users were in Northeast (29%) and Central region (23%). The lowest computer users and Internet users were at the south which equal to 13% and 12% respectively.

Table 1.12

Thailand Internet Access Capacity (% of Penetrate)

Thailand	Jun 2012	2010	2009	2007	2000	By
Internet Usage	20.1 M	17.5 M	16.1 M	8.5 M	2.3 M	Internet
Population	67.1 M	66.4 M	66.0 M	67.2 M	61.5 M	World Stat
% of Penetrate	30.0	26.3	24.4	12.6	3.7	

Internet Access data by Internet World Stat (Table 1.12), data as of Sep 2012 reported that percent of Internet penetrate equal to12.6% in 2007 and rise to 30.0% in Jun 2012.

Thailand Internet Banking Capacity

Internet Banking users and transactions in each bank are unpublished data by Bank of Thailand (The Central Bank). However, Internet users have increased continuously in the current. Moreover, Thai government has issued the policy to increase a number of people using the Internet Banking to reduce cost to both customers and bankers. Many Thai banks also have been driving force to compete with each other by launching many better services to meet the new Internet Banking service challenges.

Table 1.13

Use of Internet Banking[1] *by Year*

	2011	2010	2009[P]
No. of agreements	5,626,192	4,822,947	3,165,663
Volume of transactions[2]	83,841,394	60,793,740	49,368,820
Value of transactions (billion baht)	8,779.7	7,891.7	5,692.6
	2008	**2007**	**2006**
No. of agreements	4,009,907	3,135,502	2,139,325
Volume of transactions[2]	31,375,931	21,220,469	15,488,741
Value of transactions (billion baht)	5,073.0	4,896.5	3,584.0

Source. Bank of Thailand (Annual Report 2011, Statistical Data 2012) as at June 2012

[1] Data collected since 2000

[P] Preliminary data

Table 1.14

Use of Internet Banking[1] by Month

2012-2013	Mar13	Feb13	Jan13	Dec12	Nov12	Oct12	Sep12
No. of agreements	6,918,054	6,810,097	6,731,388	6,645,161	6,564,803	6,468,322	6,377,733
Volume of transactions[2]	12,603	11,472	11,754	11,693	11,499	11,575	10,778
Value of transactions (billion baht)	1,338	1,289	1,241	1,233	1,190	1,233	1,177

Source. Bank of Thailand (Annual Report 2011, Statistical Data 2012) as at May 2013

Remark:

[1]/ Include In-house and interbank funds transfer and purchasing goods and services.

[2]/ Thousand transaction.

The number of Internet Banking users started in 2001 was only 97,101 and grew up into 254,989 in 2002 and then rapidly jumped to 1,581,877 in 2004. In 2008 the users increased to double in 2006 which was equivalent to 2.1 million. In 2011, number of agreements of Internet Banking usage was about 5.6 million (Table 1.13). The same volume of transactions in 2001 started from 6.2 million jumped to about double in 2006 at 15.5 million and jumped to double again in 2008 to about 31.4 million. The trend seems to be jumping to double in every two years; therefore, in 2010 the volume of transactions has increase to 60.8 million. As of Jun 2012 reported the volume of 2011 is increased to 83.8 million. For the value of transactions, there was a dramatically increase from 8.6 billion baht in 2001 to 3,584 billion baht in 2006 but a double increase to about 7,891 billion baht in 2010 and to 8,780 billion baht in 2011.

From Table 1.14, the latest BOT's report shows that the number of agreements of Internet Banking usage in Mar 2013 has increased about 6.9 million from 1.2 million in Dec 2011 which equals to 18.7%.

Table 1.15

Volumes of Internet Banking Transactions

Transactions	2011	2010	2009	2008	2007	2006	2005	2004
In-house transfer / Intra-bank	60.5%	58.2%	44%	43%	37%	31%	26%	33%
Goods and Services Payment	27.1%	28.2%	25%	28%	30%	32%	36%	31%
Salaries & Wages	0.9%	1.3%	10%	15%	20%	24%	27%	23%
Others / Inter-bank transfer	11.5%	12.3%	21%	15%	13%	13%	11%	13%

Source. Bank of Thailand

Table 1.15 shows the breakdown of the usage of Internet Banking services from 2004 to 2011 which composed of funds transfers within the same banks, payments for goods and services, payments for salary and wages, and others. It is obviously that In-house transfer volume was increasing every year whereas salary was dramatic declining every year. For the payments for goods and services was a slight decrease and up in 2010 and the payments for others were a fluctuation.

Table 1.16

Internet Banking Industries in Thailand

Year	18 Banks
2000	*Five banks started Internet Banking:* Krung Thai Bank, Kasikorn Bank, Bank of Asia, Tokyo-Mitsubishi Bank, and Deutsche Bank

Table 1.16 (Continued.)

Year	18 Banks
2002	*Six more commercial banks:*
	Bangkok Bank,
	Bank of Ayudhya,
	Siam commercial Bank,
	Citibank,
	Hong Kong Shanghai Bank,
	and Mizuho Corporate Bank
	Seven commercial banks following:
	Thai Military Bank,
	Bank Thai,
	BNP Paribas,
	Standard Chartered,
	JP Morgan Chase,
	ABN AMRO NV
	and Bank of American

Source. Bank of Thailand

Table 1.16 Bank of Thailand reported that five banks: Krung Thai Bank, Kasikorn Bank, Bank of Asia, Tokyo-Mitsubishi Bank, and Deutsche Bank started Internet Banking in 2000 to seek approval in offering the service through the Internet.

In 2002, increasing in the Thai economy and positive growth prospects brought about a clear growth of Internet Banking by the business sector. Also 6 more commercial banks; Bangkok Bank, Bank of Ayudhya, Siam commercial Bank, Citibank, Hong Kong Shanghai Bank, and Mizuho Corporate Bank sought approval for Internet Banking offered, bringing total to 18 banks with seven commercial banks includes Thai Military Bank, Bank Thai, BNP Paribas, Standard Chartered, JP Morgan Chase, ABN AMRO NV, and Bank of American.

Table 1.17

Evolution of Banking Industry in Thailand

Year	Reported
2005	Early 2005 the ministry introduced a trust mark to set standards for I-Commerce websites in order to boost customer confidence when making online purchases. All commercial banks, led by Kasikorn Bank, Siam Commercial Bank and Bangkok Bank, offer a wide variety of online services for their customers. Customer can transfer money through the Internet in a secure environment known as the "E-Payment gateway". Kasikorn Bank, which handles around 30% of online payments, forecasts to process Bt 1.2 bn in online payments in 2006, rising to Bt 3 bn in 2007.
2004	CAT and the SMEs Development Bank provided a low-cost software-on-demand service for small firms to use information technology to improve their business processes.
2003	E-Commerce operators registered the following E-Commerce activities: offering goods or services for sale or purchase via the Internet; providing Internet service provider (ISP) services; provide web-hosting services; and providing electronic-marketplace services.
2002	With the exception of multinational companies, business in Thailand limited most of their Internet involvement to basic electronic data interchange (EDI), process networks and messaging systems. Some customs procedures were conducted online, and the Stock Exchange of Thailand has permitted online trading since April 2002. Electronic Banking was developing, with all the major banks now offering transaction and account checking services online. Websites were increasingly offering interactive transactions, but most were static information outlets. The government was offering more services online.

Source. Country Commerce, 2006

Table 1.18

Evolution of Banking Industry in Thailand (1985 – Late 1990s)

Year	Reported
Late 1990s	Internet Banking services initiated by Siam Commercial Bank. Follow by Thai Farmers Bank, Bank of Asia and Krung Thai Bank respectively to attract customers in the Internet market.
1998-1999	Mergers, acquisitions and takeovers to prevent the Thai financial system from breaking down.
1997	The fixed-exchange rate system replaced by a managed floating system, the International Monetary Fund's (IMF) assistance to the Thailand's financial system.
1996	Deteriorating economic indicators: collapsed capital market, rising current account deficit of 8.2% of GDP.
1995	The Bank of Thailand's policy of financial liberalization came into place.
1994	Competitive pressure in the banking industry from new market entry of foreign banks.
1993	The opening of the Bangkok International Banking Facility (BIBF) to make Bangkok the center of financial services.
Early 1990s	The need for foreign investment flows led to the liberalization of Thailand's financial system.
1990	Thailand's acceptance of the obligations under Article 8 of the International Monetary Fund.
1985	Electronic Fund Transfer at the Point-of-Sale (EFTPOS) established by the major banks – Bangkok Bank, Siam Commercial Bank, Thai Farmers Bank, Thai Military Bank.

Source. Wonglimpiyarat (2006)

Internet Banking in Thailand was offered in 1995 (Ongkasuwan & Tantichattanon, 2002). The first Internet Banking services provider was the Siam commercial Bank PLC (SCB) in 1999 (Hamid, Amin, Lada & Ahmad, 2007).

Supported by NECTEC reports in 2006, the content saying that paying bill system by Internet Banking has been still popular with customers who buy goods and services. The proportion of paying bill by Internet Banking equals to 20.28% which is - similar to paying bill online by credit card (20.15%). Moreover, paying bill online by nominee such as Paysbuy and Paypal have a higher proportion at 19.72% which the previous goods and services get only 5%. Therefore, trend to pay bill by Internet is expected higher.

The growth of Internet Banking has been very encouraging and consequently financial institutions are actively pursuing Internet Banking business. The number of customers banking online is expected to increase significantly over the next few years in the developing countries of all area in Asia, United States, Western Europe, and the rest of the world.

Thirteen commercial banks out of 16 banks in Thailand are offering Internet Banking services excluding 15 foreign banks which 6 of them are Internet Banking services.

- Number of Thai commercial banks 16 with 6,183 branches
- Number of foreign commercial banks 15 with 18 branches

Table 1.19

Commercial Banks in Thailand

	16 Local banks	**Internet Banking name**	**Web site – www.**
1	Bank of Ayudhya	Krungsri online	krungsri.com
2	Bangkok Bank	Ibanking	bangkokbank.com
3	CIMB Thai Bank	CIMB Thai Internet Banking	Cimbthai.com
4	Krung Thai Bank	Internet Banking	ktb.co.th
5	Kasikorn Bank	TFB E-Banking	kasikornbank.com
6	Siam Commercial Bank	SCB easy Net	scb.co.th
7	Thai Military Bank	TMB Online Banking	tmbbank.com

Table 1.19 (Continued, p.2)

	16 Local banks	Internet Banking name	Web site – www.
8	ICBC Bank	-	icbcthai.com
9	United Overseas Bank (Thai)	UOB CyberBanking	uob.co.th
10	Thanachart Bank	Thanachart SmartWeb	thanachartbank.co.th
11	Standard Chartered Bank	Online Banking	standardchartered.co.th
12	Tisco Bank	e Banking	tisco.co.th
13	Kiatnakin Bank	KK-eBanking	Kiatnakin.co.th
14	Land and Houses Retail Bank	-	lhbank.co.th
15	Thai Credit Retail Bank	-	tcrbank.com
16	Mega International Commercial Bank	-	overseasweb.megabank.com.tw/osib/
	15 Foreign banks	**Internet Banking name**	**Web site**
1	Bank of Ameirca	Online Banking	bankofamerica.com/th
2	Citibank	City bank Online	citibank.co.th
3	Hongkong and Shanghai Bank	Internet Banking	hsbc.co.th
4	RHB Bank Berhad	-	rhb.com.my/branches/Thailand/main.html
5	Credit Agrical Corporate & Investment Bank	-	ca-cib.com/global-presence/Thailand.htm
6	JP Morgan Chase Bank	-	th.jpmorgan.com
7	Over Sea-Chinese Banking	-	ocbc.com/global/countries/Gco_Internetional.shtm

Table 1.19 (Continued, p.3)

	15 Foreign banks	Internet Banking name	Web site
8	Bank Of Tokyo-Mitsubishi UFJ	-	th.bk.mufg.jp/
9	Sumitomo Mitsui Banking	-	smbc.co.jp/global/bangkok
10	Indian Oversea Bank	-	iob.co.th
11	Deutsche Bank	-	db.com/thailand
12	Mizuho Corporate Bank	-	mizuhocbk.com.thailand
13	BNP Paribas	-	bnpparibas.co.th
14	Bank Of China (BOCBKK)	-	boc.cn/mangu/index.htm
15	RBS	-	Rbs.com/customers/our-services/our-locations/Thailand.ashx

Source. Payment Systems Report 2011 as at Jun 2012 and BOT as of Jun 2012

Evolution of Each Thai Bank

After a significant reduction in the number of Thai commercial banks during 1997 to 2004, many policies which were largely supportive of the new growth with the structural reforms and new developments in the Thai financial sector are implemented by the BOT. These policies are in terms of the progress of the information technology. The strategies of Thai banks have focused more on the automated processing of transactions besides early retirement programs or downsizing in order to increase efficiency and reduce operation costs and so generate higher long-term profits. Since November 2000, commercial banks in Thailand have been allowed to provide on-line activities as the same kinds of transactions they do in branches. Therefore, during 2000 – 2003, most commercial banks in Thailand started to launch the basic standard services to customers who connect the Internet and access to the Website such as viewing their account balances, requesting bank statement, money transferring, and bill payment. These services are expected to be a basic bank transaction to convince that every customer can do anywhere and anytime. More

importantly, it helps commercial banks to reduce cost at the counter branches. In addition, these services are the aspect to improve efficiency of banking services.

The examples of Bank in Thailand that have a service with Internet Banking are as follows:

K-Cyber Banking is a new platform from KBank (Thai Farmer Bank) providing their personal customers with a powerful and versatile tool to manage their finances over the Internet in a secure manner. K-Cyber Banking is available wherever customers are in the world. They can make financial transactions such as balance enquiries, transaction reports and requests for new cheque books. Customers now are able to configure the system to set up their account to cater for regular payments to utilities, credit card companies or to other accounts both within KBank or other institutions. Moreover, the system will send customers an e-mail notification for each transaction made via K-Cyber Banking.

With Bualuang iBanking (Bangkok Bank), customers can check their balance, transfer funds to all banks in Thailand, pay bills, set up direct debits and buy & sell mutual funds. Bualuang iBanking is also available to access from anywhere via their mobile phones. Free Anti-Phishing and Banking Security Software Anti-virus and online security software are available.

Alert! For SCB Easy Net users (Siam Commercial Bank) informs that to make sure that customer financial transactions are safe, customers are supposed to read the content in the OTP before proceeding. Virus scanning on a regular basis is strongly recommended to help customers avoid Trojans and phishing attempts. Do not click any link contained in e-mail messages; go directly to SCB Easy Net.

1.2.3 Advantages of Internet Banking. Internet Banking brings advantages both to customers and service providers. The first, Internet Banking provides customers with a fast and convenient way to undertake various banking transactions from the comfort of their home, office or wherever customers are, during and after banking hours. Customers can avoid traveling time and the need to wait in queues to access banking services or to pay bills. Cheng, Lam and Yeung (2006) also described the benefits of customers that they will get the convenient speed and round-the-clock availability of IB services.

The second, in the workplace, Internet Banking has improved productivity and efficiency, reduced costs, and enhanced customer service. Cheng et al., (2006)

described the benefits of providers that banks can benefit from much lower operating costs by offering IB services, which require less staff and fewer physical branches.

Moreover, Lee (2009) said in another view that Online Banking (Internet Banking) has emerged as one of the most profitable E-Commerce applications over the last decade. Online Banking provides many advantages, such as faster transaction speed and lower handling fees (Kalakota & Whinston, 1997).

In addition, Ongkasuwan and Tantichattanon (2002) summarized the advantages of Internet Banking services as follows: (1) cost savings, (2) increase customers, (3) enable mass customization for E-Business services, (4) extend marketing and communication channel, (5) search for new innovation services, (6) explore and development of non-core business.

1.3 Review of Internet Banking Acceptance

1.3.1 Internet Banking. Internet Banking has emerged as one of the most profitable E-Commerce applications over the last decade (Lee, 2009). This application provides many advantages, such as faster transaction speed and lower handling fees (Kalakota & Whinston, 1997; Patil, 2012). Internet Banking brings advantages both to customers and banks. It provides customers with a fast and convenient way to undertake various banking transactions from the comfort of their home, office, or wherever they prefer, during and after banking hours. Customers can avoid traveling time and the need to wait in queues to access banking services. For the banks, Internet Banking has improved productivity and efficiency, reduced costs, and enhanced customer service. The Internet Banking usually requires less staff and fewer physical branches resulting in much lower operating costs (Cheng et al., 2006). In a study performed by Ahmad Khan and Khan (2012), Internet Banking was compared to Mobile Banking in Pakistan; it found that the worldwide improvement in technology has greatly affected the banking industry.

The acceptance of Internet Banking has gained special attention in academic studies during the past five years (Pikkarainen et al., 2004; Singh, 2012). A large number of empirical works addressing various aspects of Internet Banking have been studied. For instance, Amin (2007) studied technology acceptance of Internet Banking among undergraduate students in Malaysia based on modified version of Technology Acceptance Model(TAM). This study explained the factors influencing undergraduate students' acceptance of Internet Banking.

Guriting, Chunwen and Ndubisi (2007) reported that Perceived Usefulness and Perceived Ease of Use were strong determinants of the behavioral intention to adopt Internet Banking. A study of private banking companies in India by Kumra and Mittal (2004) attempted to empirically test the identified customers' trust variables in the context of Internet Banking in India. A recent study by Moghadam, Behboudi and Jafari (2012) found that by using Internet advertising to increase customers' awareness of Internet Banking, the customers' attitude is increased toward the Online Banking services in a positive manner and therefore, makes Internet Banking more effective. Another study conducted by Khare, Mishra and Singh (2012) also found that the use of Internet Banking in India is largely dependent on convenient attributes.

Several prior studies examined users' behavior to understand how users behave when using Internet Banking (Raza & Hanif, 2013; Sharma & Singh, 2011; Zhang, Chen, Lee & Yang, 2012). Nor, Sutanonpaiboon and Mastor (2010) studied Malaysian and Chinese population in adopting Internet Banking. The results showed that Perceived usefulness, Perceived Ease of Use, and trust has a significant effect on customers' Intention to Use Internet Banking. Further cultural traits may explain the influence factors that affect the Intention to Use. Rotchanalitumnuai and Speece (2009) studied modeling electronic service acceptance of an E-Securities trading system. The findings show five antecedents that have a positive impact on Perceived usefulness. These factors are ease-of-use, information quality, accessibility, trust, and flow control of the securities trading process. Respondents identify the highest benefit as the flow control of the securities trading processes via the Internet channel.

Njuguna, Ritho, Olweny and Wanderi (2012) studied factors that influence Internet Banking adoption in Kenya and found that despite the high Internet access, the Internet Banking usage was very low. The results suggested that using promotions and possible training classes can help entice the customers to adopt Internet Banking. Moreira, Rocha and Almeida (2012) studied the adoption and usage of Internet Banking by college students in Portugal and found that the majority of college students use it, mostly for money transfers. The study concluded that the longer a student used the banking services, the more they found them to be safe.

Munusamy, De Run, Chelliah and Annamalah (2012) studied retail Internet Banking among customers in Malaysia and found that the majority of users were under the age of 25, suggesting that the younger generations were more likely to adopt Internet Banking than older generations. The findings suggested that Internet

Banking services and Internet retailers adopt the strategies that will appeal to other age demographics to ensure the successful and effectiveness of Internet Banking by all age groups. Kumra and Mittal (2004) studied trust and Internet Banking in India and pointed out that the growth in the usage of Internet Banking depends upon the generation of customers' trust in the medium of banking. Jun and Cai (2001) conducted a content analysis to study the key determinants of Internet Banking service quality. The study revealed that the most frequently mentioned dimensions as the main sources of satisfaction or dissatisfaction were reliability, responsiveness, access, and accuracy.

1.3.2 Internet Banking in Thailand. Internet in Thailand going back to 1987, the first Internet email services were operated under an agreement made by the Asian Institute of Technology (AIT) and the Department of Computer Science of the University of Melbourne in Australia (Thailand Chapter of Internet Society, 2012). Nowadays, over one third of the population in Thailand has regular access to the Internet with over 17 Internet providers (National Statistical Office of Thailand, 2011).

As Internet usage grows, the availability of Internet Banking services increases as well. Recently, the Bank of Thailand reported that the volume of Internet Banking transactions has grown from 60,794 in 2010 to 83,837 in 2011; and 90,508 in September 2012 (Bank of Thailand, 2012). Ongkasuwan and Tantichattanon (2002) summarized the advantages of Internet Banking services as follows: (1) cost saving, (2) increased customers, (3) enabling of mass customization for E-Business services, (4) extended marketing and communication channel, (5) search for new innovation services, and (6) exploration and development of non-core businesses. Esichaikul and Janecek (2009) indicated that Thai people found the security to be insufficient and holding them back from adopting Internet Banking. They also listed the lacking of customer service as a reason preventing them from adopting the service as well.

Even though the volume of Internet Banking users has grown over the recent years, its acceptance is still facing some problems. It is a challenge for banking businesses to revise their strategies to attract more customers for Internet Banking. One study reported that the major reason for a low use of Internet services was due to a low level of trust on electronic payment both in terms of security and Privacy (Isarangkul, 1999). Rotchanalitumnuai and Speece (2003) studied about the barriers to Internet Banking adoption. The research findings from interviews with Thai firms

suggested that the security of the Internet was a major factor inhibiting a wider adoption of Internet Banking. Subjects revealed that they did not trust making financial transactions via Internet channels. The management also had negative attitudes toward Internet Banking adoption and usually cited the reason as being lacking resources.

In another study, Jaruwachirathanakul and Fink (2005) applied the decomposed planned behavior to identify the factors that encourage customers to adopt Internet Banking services in Thailand. The research findings revealed that the *Features of the Web Site* and the *Perceived Usefulness* were the two factors that encourage the adoption of Internet Banking in Thailand. They also reported that the factor that inhibited the adoption was the *Perceived Behavioral Control*. Other studies found that convenience, accessibility, and feature availability were the key factors in getting the Taiwanese public to adopt Internet Banking services while concerns about Privacy and security played highly important roles in discouraging the public from adopting Internet Banking (Chao Chao & Fu-Ling, 2012).

With a rapid growth in technology, smart phone applications become popular in this era, with more advanced computing ability and connectivity. In Thailand, 77.31% of people in Bangkok are using smart phones while only 39.64% are using Internet (National Statistical Office of Thailand, 2011). It is a high likelihood that more customers may be willing to use the Internet Banking once it is integrated as a smart phone application.

The evidence in Table below shows summary the large number of empirical work about Internet Banking which addresses many features.

Table 1.20

Review of Prior Studies on Internet Banking

Studies	Finding
2010 Jordan Khalil, Sutanonpaiboon, and Hamimah Malay, Chinese, and Internet Banking	The results showed that Perceived usefulness, Perceived Ease of Use, and trust, all have significant effect on the Intention to Use Internet Banking. Further the cultural traits may explain the extent to which influence factors that affect the Intention to Use.

Table 1.20 (Continued, p.2)

Studies	Finding
2009 Thailand Rotchanakitumnuai and Speece Modeling electronic service acceptance of an E-Securities trading system.	The findings show five antecedents have a positive impact on Perceived usefulness. These are Ease of Use, information quality, accessibility, trust, and flow control of the securities trading process. Respondents identify the highest benefit as the flow control of the securities trading processes via the Internet channel.
2007 Thailand Srijumpa, Chiarakul and Speece Satisfaction and dissatisfaction in service encounters retail stockbrokerage and corporate banking in Thailand.	Results in each case show that customers actually have slightly higher satisfaction on the Internet than with interpersonal encounters, but dissatisfaction on the Internet is much greater. The net is that they still largely view the interpersonal mode as superior.
2005 Thailand Jaruwachirathanakul and Fink Internet Banking adoption strategies for a developing country: The case of Thailand.	The attitudinal factors that appear to encourage the adoption of Internet Banking in Thailand most are *Features of the web site* and *Perceived Usefulness*, while the most significant impediment to adoption is a Perceived behavioral control, namely *External environment*. The significant moderating factors are gender, educational level, income, Internet experience and Internet Banking experience, but not age.

Table 1.20 (Continued, p.3)

Studies	Finding
2004 India Kumra and Mittal Trust and its determinants in Internet Banking: A study of private sector banks in India	The growth in the usage of Internet Banking depends upon the generation of customer' trust in the medium of banking.
2003 Thailand Rotchanakitumnuai and Speece Barriers to Internet Banking adoption: A qualitative study among corporate customers in Thailand Many Issues are as follows: 1. Organizational barriers 2. Trust of the system 3. Legal support issues	Qualitative interviews with Thai firms suggest that security of the Internet is a major factor inhibiting wider adoption which affect to users have more confident and reliable in the system. Non-users are much more service conscious, and do not trust financial transactions made via Internet channels. Non-Internet Banking users tend to have more negative management attitudes toward adoption and are more likely to claim lack of resources. Legal support is also a major barrier to Internet Banking adoption for corporate customers.
2001 USA Jun and Cai The key determinants of Internet Banking service quality: A content analysis	The most frequently mentioned dimensions, as the main sources of satisfaction or dissatisfaction were reliability, responsiveness, access, and accuracy. Some suggestions and recommendations were provided to improve the Internet Banking service quality and, in turn, customer satisfaction.
1999 Australia Sathye Adoption of Internet Banking by Australian consumers: An empirical investigation	Shows that security concerns and lack of awareness about Internet Banking and its benefits stand out as being the obstacles to the adoption of Internet Banking in Australia.

1.4 Research Problems

Due to the number of Internet Banking users has grown constantly about 1 Million a year, the evidence shown that not all customers are ready to accept these banking services.

According to Davis (1989), "*Performance gains are often obstructed by users' unwillingness to accept and use available systems*" (Bowen, 1986; Young, 1984), some customers have not yet taken to adopting Internet Banking.

In reference to Rotchanaktiumnuai and Speece (2003), this is trying to turn the opportunity into reality in the bank sector. Some research shows that most consumer banking customers rank Internet Banking as less important than other technology-based delivery channels, such as ATMs and Tele Banking (Aladwani, 2001; Suganthi, Balachandher & Balachandran, 2001). Similarly, Thai bank customers still hesitate to adopt Internet Banking (Larpsiri, Rotchanakitumnuai, Chaisrakeo & Speece, 2002; Ongkasuwan & Tantichattanon, 2002; Rotchanalitumnuai & Speece, 2003). These important big volume customers have not adopted Internet Banking to any great extent, the potential value to be gained by customer adoption of Web-based service delivery seems to depend on overcoming some important barriers to the usage.

The benefits from Internet Banking do not seem to materialize in every case, as the value of web technology cannot be realized if barriers are too high. Barriers to electronic commerce in general have been classified in various ways. One issue is about trust in the Internet Banking system and the banks that implement it. The few studies of Internet Banking that examine barriers mention drawbacks such as security, Privacy, and trust of Web system (Gerrard & Cunningham, 2003; Polatoglu & Ekin, 2001; Rotchanakitumnuai & Speece, 2003; Sathye, 1999). In addition, the legal support cannot be implemented efficiently to assist customer trust in Internet Banking (Larpsiri et al., 2002).

Moreover, Internet Banking fraud occurs every year. Although Bank of Thailand reported that the fraud has dramatically decreased since 2006 to 150 MB in 2011 not only Internet Banking channel (Table 1.22), the report has not referred to the money loss of each time. If the victim lost their money at least 300,000 baht from transferring the money to the third party, it is a big figure for someone who earns a long for their life.

As the list of problems above, it is still a challenge to the banks to attract more customers to adopt the use of banking services via an Internet channel.

Table 1.21

Fraud Through Specific Payment Channels and Payment Instruments[1] (MB)

Fraud	2011	2010	2009	2008	2007	2006
Total fraud	150	186	793	519	620	345
Payment channels[2]	34	44	561	315	389	90
Payment insturments[3]	116	142	232	204	231	254

Source. Bank of Thailand

[1] Data collect from banks, some special financial institutions and some credit card companies since 2006.

[2] Banks report only final result. Frauds through specific payment channels include phone banking, Mobile Banking, Internet Banking, pass book, and other channels.

[3] Banks report only final result. Fraud via specific payment instruments include Cheque, credit card, ATM card, debit card, prepaid card and other cards.

1.5 Motivation and Rationale of Research

Based on personal observation, it is noticeable that people have not use Internet Banking which it is very useful for them, for instance, faster, save time, and not to wait in queue. Moreover, due to the prior survey, there are a huge of users who have potential to do business on Internet about 20 million people in 2012 and recently the Bank of Thailand reported that the number of agreements has grown from 4.8 million in 2010 to 5.6 in 2011; and 6.6 in December 2012. It is far away from Internet users. Therefore, it is a time that bankers have to run their business directly to customers giving them information to adopt Internet Banking. Internet is the most important role for bankers to reduce more operation cost while the service will be benefit in a short time to customer.

Currently, it was due to lacking of Internet Banking information; customers in Thailand tend not to adopt Internet Banking. Although many banks in Thailand have expanded electronic commerce to their business, some customers still have an awareness of some factors of using Internet Banking or they have other channels to do their business easier. Bank of Thailand has also realized in benefit of cost saving. They have encouraged all banks to promote Internet Banking to customer to use more

facilities in Internet Banking. This study will address the proposed conceptual model to predict adoption behavior of Internet Banking users in Thailand.

In the study, Venkatesh and Davis (1996) applied the development of the Technology Acceptance Model (TAM) in term of concept and theories which has been popularly used for predicting user acceptance and user adoption to use information technologies. As Igbaria, Guimaraes and Davis (1995) stated, MIS researchers used TAM as a theoretical foundation on the factors affecting the user acceptance of computer technology. This investigation will focus on TAM which is appropriate for basic assessing the influences of Perceived Usefulness and Perceived Ease of Use on using electronic services that could be leveraged into the Internet Banking environment. Moreover, this research are attempting to fulfill the drivers of the acceptance and adoption of Internet Banking in Thailand by providing a theoretical model with an increase explanatory power to the bankers not only for a better, more precise but also understanding the adoption behavior especially in Thailand where Internet Banking has not been fully adopted. Furthermore, it may provide effective guidance to the banking industry in developing strategic plans to promote products and services over the Internet Banking in the future or to researchers who interested in the study of system implementation.

1.6 Research Objectives

Technology is highly relevant to online consumer's behavior. A combination of many factors relevant to technology is the obstacle to the willingness of online customer to adopt the new technology such as, Internet Banking. Therefore, the purpose of this study is to investigate the underlying Perceived usefulness, Perceived Ease of Use, Perceived Privacy, and Normative Belief which affect the behavior of Internet users for not adopting Internet Banking and not accepting that online transaction are simply more convenience than going directly to branches. Moreover, many local banks have been eager to encourage customers to use Internet Banking to help reduce operating cost to companies. As we have known, customers still have the concern about security issues or any other issues from prior studies, such as strong human relationship orientation, socialization characteristics in Thai culture, reputation of service providers, and insufficiency of legal support. This study will further investigate the two reasons for customers who frequently do not trust Internet technology with Perceived Privacy. Further, the goal is to build on the relatively few

research studies which addressed the issue of barriers to Internet Banking adoption. Prior studies frequently focus on positive aspects of Internet Banking such as trust (Suh & Han, 2002). The findings will continue to build on the research for the extension of Technology Acceptance Model. This new model has provided further identification of the critical factor of Normative Belief, for analyzing Internet Banking success.

Furthermore, the goal of this article is to increase our current understanding of the reasons why some people have not adopted Internet Banking. More precisely, the lack of adoption of Internet Banking will be studied from the information systems acceptance point of view referring to the idea that consumers are not using banks information system directly and hence more knowledge on the factors that affect to the customer. Moreover, the model should be the appropriate application that provides the benefit for the business due to the fact that its TAM adaptation from TRA and TAM was a big hit for modeling user acceptance of information systems.

In addition, the rising of oil prices in recently years and highly traffic on the road is highly affecting Internet use because it causes people to stay home more. The Internet may become a significant part of daily life for both customers and business enterprises. Thus, using the Internet can save time and provide no dependence on location (Suh & Han, 2002; Vijayasarathy, 2004).

1.7 Research Approach

Data for this study was collected by the means of a survey conducted in Thailand in April to Jul, 2010. Two step processes were used to develop the candidate items for each construct. Pre-test questionnaire was then conducted to 90 participants who are staff in one bank in Bangkok, Thailand in order to select those items that best fit the content of the model. The final questionnaire was performed by refinement some constructs and then subjected to apply real situations. The data was collected through 560 survey questionnaires and 150 interviews in many areas of education, business, and government. A little bit surveys were gotten from online by Internet. The most of areas to collect the response is in Bangkok, a little number from at least one of the provinces in each part of Thailand. The surveys statistical analysis included descriptive statistics, Factor Analysis, R^2, T-Test, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and the Structural Equation Modeling (SEM) techniques; also the reliability and the validity of the data were included.

1.8 Conclusions

The chapter 1 provides a wide introduction, background of Internet Banking, research problem, review of Internet Banking acceptance, motivation and rationale of research, research objectives, and research approach. To modernize the business and cost-benefit approach, it suggests that Internet Banking should be a product of technology advantages which offers convenience to customers to conduct their transactions towards the network connected regardless when and where. It is found that the demand of using Internet Banking is less than the potential of Internet users existing. How to make the number of Internet Banking users increasing? This study aims to help bankers to know how to manage the customer acceptance and the customer churn.

Chapter 2

Literature Review

The Technology Acceptance Model or TAM (Davis, 1986), derived from Fishbein and Ajzen's Theory of Reasoned Action (TRA) (1975), is the most widely accepted theory of information systems and has been used by many Internet Banking researchers since being introduced by Davis in 1989. In the TAM, two main determinants of user acceptance of information systems are Perceived Usefulness and Perceived Ease of Use.

2.1 Introduction

In this study the researcher makes use of the Technology Acceptance Model (TAM) to explain user behavior in Internet Banking adoption. The purpose of this chapter is to review existing literature on technology acceptance, in particular, the development and evolution of the Technology Acceptance Model (TAM), which has remained one of the most dominant theories in the prediction of user acceptance and adoption of information technology (Venkatesh & Davis, 1996). According to an observation made by Igbaria et al. (1995), many studies conducted by MIS researchers have used the TAM as their theoretical foundation to investigate factors that influence user acceptance of computer technology. In Huber's (2001) view, knowledge will become increasingly recognized as a key asset to maintaining organizational competitiveness in the market place (Xu & Quaddus, 2007). Agreeing with this view is Xu, Shao, Lin and Shi (2007), who have stated in their paper that, "The need to effectively and systematically manage the knowledge will not diminish" (p. 57). In his formulation of the TAM (1989), Davis has also developed measurement scales to measure, predict, and explain user adoption of technology. The theory and measurement scales of the TAM can prove to be a useful and practical tool for businesses to analyze user demand for new products or services or for managers who would like to assess their company's business offerings.

Finally, the researcher aims to use this section to examine how the TAM can be applied to study user acceptance and adoption of Internet Banking in Thailand. While the primary focus will be on Perceived Usefulness and Perceived Ease of Use,

which are the key determinants of system use or user acceptance (Davis, 1989), two additional constructs as well as other previously published research papers on TAM, extended TAM and TAM and banking services, and other relevant TAM studies, will be explored in order to give a broader view and provide empirical evidence on the subject.

2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a derivative of Fishbein and Ajzen's (1975) Theory of Reasoned Action. Developed by Davis in 1986, the TAM quickly gained ground and became a go-to model for analysis of user acceptance of information systems (Bagozzi, 2007; Davis, Bagozzi & Warshaw, 1989), and after nearly two decades its popularity remains strong. According to Y.Lee, Kozar and Larsen (2003), the TAM is considered the most influential and commonly employed theory for describing an individual's acceptance of information systems.

The model was introduced in 1986 as an alternative to examine why users accept or reject information technology and trace the impact of external variables on internal beliefs, attitudes, and intentions. The two main factors to explain system use, proposed by Davis, are Perceived Usefulness and Perceived Ease of Use.

The strengths of the TAM are its specific focus on information system use as well as its roots in social psychology and instruments that are valid and reliable. A statistical meta-analysis of 22 articles is a testament to widespread support of the TAM while its rate of successful prediction is estimated at 40% (Legris, Ingham & Collerette, 2003).

2.2.1 Concept of TAM. In an effort to understand and predict user acceptance of information technology in business, Davis has based his development the Technology Acceptance Model (TAM) (1989), on TRA (Fishbein & Ajzen, 1975). In his research he proposes using four related constructs in TRA - belief, attitude, intention, and behavior, to explain how attitudes affect user adoption of a particular technology or information system. To analyze and predict user acceptance of system use, Davis has developed measurement scales, which consists of two specific variables, Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Perceived Usefulness (PU) is defined as "*the degree to which a person believes that using a particular system would enhance his or her job performance*" while Perceived Ease of Use is (PE) – "*the degree to which a person believes that using a particular system*

would be free of effort". According to Davis (1989), PU and PEU are "theorized to be fundamental determinants of system use (p. 320)". Excerpted below is Davis's explanation of both variables in more detail;

> *First, people tend to use or not use an application to the extent they believe it will help them perform their job better. We refer to this first variable as Perceived usefulness. Second, even if potential users believe that a given application is useful, they may, at the same time, believe that the systems is too hard to use and that the performance benefits of usage are outweighed by the effort of using the application. That is, in addition to usefulness, usage is theorized to be influenced by Perceived Ease of Use* (p.320).

Put another way, according to Davis, PU addresses user adoption of a particular technology in terms of utility - how tasks are accomplished and whether the process is easier and if productivity, performance and effectiveness are increased, as well as whether users find the system useful. Conversely, PEU focuses on the system's user-friendliness, clarity, flexibility, openness, and learning curve (David, 1989). Figure 1 shown below is the original model of TAM.

TAM Conclusion by Davis (1989)

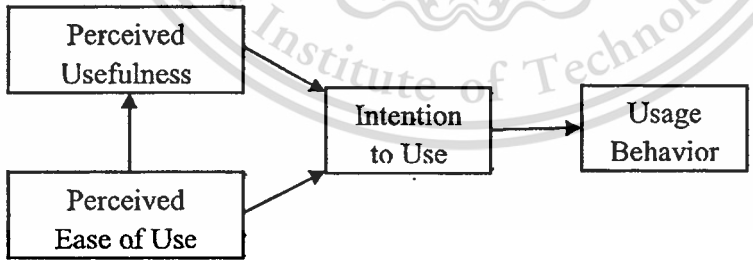


Figure 2.1 Technology Acceptance Model (TAM)

2.2.2 Usefulness of the TAM. From his findings, Davis attributed the success of the TAM's measurement scales in analyzing computer usage to the following qualities (Davis, 1989);

1) Have strong psychometric properties;

2) Exhibit significant empirical relationships with self-reported system measures of usage behavior;

3) Characterize the nature of Perceived Usefulness and Ease of Use;

4) Establish determinants of user acceptance of technology.

Based on Davis's conclusions above, it is clear that although the model has been widely used by researchers to study and predict an individual's behavior in technology acceptance other variables must also be included to establish connection with usefulness, Ease of Use, and acceptance.

A review of prior studies has confirmed the popularity of the Technology Acceptance Model (TAM) in studying user acceptance of new technology. There are a large number of research papers found in many countries, which have utilized the TAM to analyze user behaviors in online shopping and Online Banking, including Malaysia by Amin (2007) and by Nor et al. (2010), the UK by Chau and Ngai (2010), Spain by Manzano, Mafe and Blas (2009), Turkey by Ozdemir, Trott and Hoecht (2008), and Celik (2008), Greece by Gounaris and Koritos (2008), Taiwan by Ho and Ko (2008) and S.Wang, M.Wang, Lin and Tang (2003), Brazil by Hernandez and Mazzon (2007), Estonia by Eriksson, Kerem and Nilsson (2005), Hong Kong by Lai and Li (2005), Chan and Lu (2004), and Chau and Lai (2003) and New Zealand by Podder (2005). A short summary of these studies is presented in Table 2.1 below.

Table 2.1

TAM Studies Example of Variables

Researcher	Year	Study
Khanifar, Molavi, Jandaghi and Niya	2012	Factors influencing the intendancy of E-Banking: An integration of TAM and TPB with eservice quality *The results from path analysis show that Perceived E-Service quality (availability, Privacy, efficiency, and fulfillment) and subjective norm have significantly direct influences on Intention to Use. Perceived behavior control and E-Service quality have significantly indirect influence on Intention to Use. Other variables of models - Perceived Ease of Use, Perceived usefulness, and Attitude have non-significant influence on Intention to Use.*

Table 2.1 (Continued, p.2)

Researcher	Year	Study
Teo and Noyes	2010	Exploring attitudes towards computer use among pre-service teachers from Singapore and the UK: A multi-group invariance test of the technology acceptance model (TAM) *This paper contributes to the interest in expanding and extending the TAM to explain users' attitude towards computer use. Although much research has been conducted using the TAM, comparisons across different cultural users are few. This paper shows the similarities and differences of two culturally diverse technology users in Singapore and the UK. The result found that pre-service teachers' attitudes towards computer use in the UK are less affected by PU compared to their counterparts in Singapore.*
Wong and Hsu	2008	A confidence-based framework for business to consumer (B2C) mobile commerce adoption *TAM may not fully explain the consumers' behavior in an emerging environment, such as mobile commerce (m-commerce). TAM has been adopted and extended to analyze successful m-commerce adoption. The key elements of the proposed confidence-based framework for B2C m-commerce adoption include psychological and behavioral factors. Psychological factors include history-based confidence, institution-based confidence and personality-based confidence. Behavioral factors include Perceived Ease of Use and Perceived Usefulness of the mobile application and technology.*

Table 2.1 (Continued, p.3)

Researcher	Year	Study
Hernandez and Mazzon	2007	Adoption of Internet Banking: Proposition and implementation of an integrated methodology approach *This study proposes a new method to investigate innovation adoption of new technologies and tests the factors that influence adoption by looking into the determinants of Internet Banking adoption in Brazil. The adoption determinants are based on beliefs, attitudes, subjective norm, and perceptions of behavioral control. The results proved that the variables that influence adoption are determined through analyzing not only intention measures but also actual adoption. Results have also led to the identification of a broad set of variables that proved significant in influencing both the Intention to Use or continue to use Internet Banking and actual Internet Banking adoption in Brazil.*
Guriting, Chunwen and Ndubisi	2007	Computer self-efficacy levels, perceptions and adoption of Online Banking *The research examines the role of Computer Self-Efficacy (CSE) at three distinct levels of user perceptions (low, mid and high) and the adoption of Online Banking. The study employs the extended Technology Acceptance Model (TAM) as the theoretical framework. It was found that Perceived Usefulness and Perceived Ease of Use were strong determinants of the behavioral intention to adopt Internet Banking, CSE was more important at low and mid-levels of user-Perceived Usefulness and Ease of Use than at high level of perception.*

Table 2.1 (Continued, p.4)

Researcher	Year	Study
Xu and Quaddus	2007	Exploring the Factors Influencing End Users' Acceptance of Knowledge Management Systems: Development of a Research Model of Adoption and Continued Use *This research develops a model of adoption and continued use of knowledge management systems (KMSs), which is primarily built on Rogers' innovation stages model along with two very important social psychology theories – Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) and Davis's (1986) Technology Acceptance Model (TAM). KMSs presents various factors and variables including individual differences factor, organizational factors, task complexity factors, organic growth factors, Perceived Benefits, Perceived User Friendliness, Perceived Voluntariness, Subject Norm, adoption of KMS, organizational facilitation, realized benefits, and realized user friendliness. The proposed model has both theoretical and practical implications. It can be adapted for application in various organizations in national and international arena: communication with knowledge holders; knowledge sharing; contribution to the systems; codifying and storing knowledge; knowledge creation; and KMS use habit.*

Table 2.1 (Continued, p.5)

Researcher	Year	Study
Amin	2007	Internet Banking adoption among young intellectuals *Amin study technology acceptance of Internet Banking among undergraduate students in Malaysia based on modified version of Technology Acceptance Model (TAM) to explain the factors influencing undergraduate students' acceptance of Internet Banking. All four measures: Perceived Usefulness (PU); Perceived Ease of Use (PE); Perceived Credibility (PC); and Computer Self-Efficacy (CSE) included in the model that better reflects the students' view. The result suggests that PU, PE and PC had a significant relationship with behavioral intention and PU and PE had a significant relationship with CSE. On the contrary, CSE did not associate with PC. Also PE had a significant relationship with PU and PC that indicate these scales are related to PE in explaining undergraduate preference*
Elwood, Changchit and Cutshall	2006	Investigating students' perceptions on laptop initiative in higher education: An extension of the Technology Acceptance Model *This research aims to examine students' perceptions and their acceptance towards implementing a laptop program. The research has been carried out on the Technology Acceptance Model (TAM) – PU and PE with two additional factors - Perceived Requirements and Perceived Change to better understand the behavioral intention of individuals to accept and use technology. The results revealed the existence of two new factors in addition to the two factors proposed by the TAM, but only one of these two factors, Perceived Change, provides a significant impact on students' acceptance of a laptop initiative.*

Table 2.1 (Continued, p.6)

Researcher	Year	Study
Pijpers and Montfort	2006	An investigation of factors that influence senior executives to accept innovations in information technology *This research need to present the successfully and effectively use of innovations by the role of acceptance especially for innovations in the field of Information Technology (IT). TAM is used as the key measure of success to investigate empirically the factors which influence the IT acceptance and actual IT use of senior executives. The study results provide support for the core TAM model as an adequate and parsimonious conceptualization of acceptance behavior and the salience of usefulness and Ease of Use beliefs. The conclusion suggests that computer anxiety of senior executives can be diminished and computer self-efficacy improved.*
Jones and Hubona	2006	The mediation of external variables in the TAM *The research tested one of its assumptions that the 'Perceived Ease of Use' and 'Perceived Usefulness' constructs fully mediate the influence of external variables on usage behaviors. The result of TAM is significantly and consistently better at predicting frequency than volume of usage.*

Table 2.1 (Continued, p.7)

Researcher	Year	Study
Grandon and Pearson	2003	Strategic value and adoption of Electronic commerce: An empirical study of Chilean small and medium business *This research attempts to identify specific relationships between a manager's perceptions of the strategic value of E-Commerce and the variables that may influence E-Commerce adoption. Four different sub-constructs were set including Organizational Readiness, External Pressure, Perceived Ease of Use, and Perceived Usefulness. The conclusion implies that managers must believe that E-Commerce can add strategic value to their organization before they undertake an E-Commerce initiative. That is critical components to its success.*

2.2.3 Criticism of the TAM. Davis admitted in his paper that further research would be needed to establish the relationship between other variables or external variables and Usefulness, Ease of Use, and Acceptance and listed the following as the shortcomings of the TAM;

1) Reliance on self-reporting as usage measures;

2) Insufficient evidence on how accurately self-reports can reflect actual behavior;

3) Possible halo effects;

4) Lack of research on the relationship between the constructs and objectively measured use.

Among researchers such as Igbaria et al. (1995), the TAM is considered a simple but powerful model which produces satisfactory results in predicting intentions and usage. However, there are others who have found the TAM lacking and incomplete. For example, Wang et al. (2003) argue that although PU and PE constructs prove to be fundamental to determining the acceptance and use of information technology, the results they produce may not be conclusive and user behavior in adopting emerging technology, such as Internet Banking, cannot be fully explained by using the TAM's measurement scales. Meanwhile, Legris et al. (2003)

have found findings in many empirical studies inconsistent or unclear while significant factors or variables relating to the adoption of the innovation model have also been excluded (see also Pikkarainen et al., 2004). Meanwhile, usefulness may not have a correlation to user acceptance of Internet shopping as indicated in Monsuwe', Perea, Dellaert and Ruyter (2004)'s findings. In the studies carried out by Xu and Quaddus (2007) the researchers have pointed out the lack of research on the role of external variables in the TAM while Bagozzi (2007) concluded that in spite of numerous empirical studies on the TAM, due to exclusion of many important variables and processes, the model is deemed too simple. Meanwhile, the limitations in the research conducted by Lee et al. (2003) are addressed by Teo and Noyes (2010)'s paper on the validity of the TAM in educational settings. Of the 101 published articles analyzed, Teo and Noyes (2010) have found that in addition to using the same sample and opted for low validity measures such as single-item scales, many studies failed to consider whether usage was voluntary or obligatory, or excluded cultural differences at the beginning but subsequently inserted attitudes towards computer use into the TAM. Similarly, Calisir, Gumussoy and Bayram (2009) have pointed out that despite being flexible and applicable to analysis of different technologies, the model has come under criticism for giving insufficient information regarding individuals' opinions about new and emerging technologies (cited with Moon & Kim, 2001). In conclusion, it is agreed that additional factors should be incorporated to extend the construct to overcome the limitations of the TAM.

2.3 Extended TAM

For decades, researchers have been using the TAM to predict usage behavior and explain individual acceptance of information system (Pikkarainen et al., 2004). However, when studying user acceptance of future technologies such as Internet Banking, it is important that researchers consider other variables relating to the TAM (Davis, 1989) in order to address and surpass its limitations which have discussed in the previous section. Below are the examples of instrumental extensions of the TAM used by researchers to predict user acceptance and adoption of Information System.

A Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies or TAM2 (Venkatesh & Davis, 2000) (Figure 2.2 at Appendix A). TAM 2 Model aims to develop and test a theoretical extension of the

TAM that explains Perceived Usefulness and Usage Intentions in terms of Social Influence and Cognitive Instrumental Processes. Both Social Influence Processes including Subjective Norm, Voluntariness, and Image and Cognitive Instrumental Processes including Job Relevance, Output Quality, Result Demonstrability, and Perceived Ease of Use significantly influenced user acceptance.

In the paper, the researchers found user perceptions of Result Demonstrability and Ease of Use to be significant, while Social Influence Processes were not. However, the effects of Cognitive Instrumental Processes remained significant over time.

The term Social Influences is defined as *"influence to accept information from another as evidence about reality affecting Perceived Usefulness and usage intention."*

Subjective Norm is defined as a *"person's perception that most people who are important to him think he should or should not perform the behavior in question."*

Voluntariness as a moderating variable is defined as *"the extent to which potential adopters perceived the adoption decision to be non-mandatory."*

Image is defined as *"the degree to which use of an innovation is Perceived to enhance one's status in one's social system."*

Job_Relevance is defined as *"an individual's perception regarding the degree to which the target system is applicable to his or her job."*

Output Quality is defined as *"people will take into consideration how well the system performs the tasks."*

Result Demonstrability is defined as the *"tangibility of the results of using the innovation."*

Augmented TAM for online shopping (Vijayasarathy, 2004) (Figure 2.3 at Appendix A). In Vijayasarathy's (2004) introduction of an augmented TAM shown in figure 2.3, new variables, Privacy and Security, have been added to the model. While the former is defined as *"the degree to which personal information is protected"*, the researcher's definition of Security is described as "*the extent to which a consumer believes that making payments online is secure*; *Compatibility, Normative Belief, and Self- Efficacy"*. The findings indicated that Compatibility, Usefulness, Ease of Use, and Security, were found to be significant predictors of attitude towards online shopping, but Privacy was not. In addition, the study found attitude toward online

shopping, Normative Belief, and Self-Efficacy, strongly affected Intention to Use online shopping.

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis & Davis, 2003) (Figure 2.4 at Appendix A). This research traces on individual acceptance of information technology into a unified theoretical model that captures the essential elements of eight prominent established models: the Theory of Reasoned Action; the Technology Acceptance Model; the motivational mode; the theory of planned behavior; a model combining the Technology Acceptance Model and the theory of planned behavior; the model of PC utilization; the innovation diffusion theory; and the social cognitive theory. The conceptual and empirical similarities across the eight models are used to formulate the UTAUT with four core determinants of intention and usage behavior: Performance Expectancy; Effort Expectancy; Social Influence; and Facilitation Conditions, and up to four moderators (gender, age, voluntariness, and experience) of key relationships. The findings indicated that attitude toward using technology, Self-Efficacy, and Anxiety, were not direct determinants of intention. In addition, a usual tool for managers needing to assess the likelihood of success for new technology introductions has been provided by the researcher, to help managers understand the drivers of acceptance in order to proactively design interventions (including training, marketing, etc.) targeted at populations of users that may be less inclined to adopt and use new systems.

Trust enhanced TAM for mobile payment (Dahlberg, Mallet & Oorni, 2003) (Figure 2.5 at Appendix A). Dahlberg et al. (2003) introduced a trust-enhanced TAM, shown in Figure 2.5, to explain mobile payment solutions. The trust factors are Perceived Trust and Disposition to Trust. Perceived Trust is the degree to which a person perceived a particular technology solution as secure and trustworthy while Disposition to Trust is defined as the extent to which a person is willing to trust others. The finding showed that the proposed trust factors played an important role in customer adoption of mobile payment solutions.

Extended TAM for online purchasing at an E-Commerce website (Hejjden, Verhagen & Creemers, 2003) (Figure 2.6 at Appendix A). An extended TAM shown in Figure 2.6 has been used to explore factors that influence consumer's intentions in consumer markets to make online purchase at an electronic commerce website. This extended TAM adopted the trust-oriented perspective which implies 'the willingness of a consumer to be vulnerable to the actions of an online store based on the

expectation that the online store will perform a particular action important to the consumer, irrespective of the ability to monitor or control the online store'. Based on existing empirical evidence, the study suggests that trust in the company can negatively influence the Perceived Risk associated with buying something on the Internet. Perceived Risk, in this case, can be regarded as a consumer's subjective function of the magnitude of adverse consequences and the probabilities that these consequences may occur if the product is acquired. The key finding suggested Perceived Risk and Perceived Ease of Use to be antecedents of attitude towards online purchasing. The study found the effect of Perceived Risk to be strongly negative in both cases, and the effect of Perceived Ease of Use positive in one case. According to the research finding, trust in store appeared to be indirectly related to a positive attitude through its direct negative effect of Perceived Risk.

Extended TAM for Internet Banking (Ndubisi, 2007) (Figure 2.7 at Appendix A). In this research, Perceived Usefulness and Perceived Ease of Use in the TAM as well as Perceived Reliability and Usage Intention of Internet Banking in the extended TAM, are employed to scrutinize the moderation effect of Computer Self-Efficacy (CSE) on perception-intention relationship. User perception of reliability relating to Constancy, Trustworthiness, and Privacy matters can influence the two additions, Perceived Reliability and Usage Intention of Internet Banking. The study found the majority of users of computer systems to be relatively ignorant or careless about the reliability of the system they used. In addition, Ndubisi (2007) also makes use of CSE in his extended TAM. CSE, which is defined as the judgment of one's ability to use computer, according to his analysis of other studies, has been confirmed to have important effect in understanding individual responses to IT. The finding also revealed that there was a positive relationship between experience with computing technology, perceived outcome and usage.

Extension of TAM for Online Banking Acceptance (Pikkarainen et al., 2004) (Figure 2.8 at Appendix A). In the research paper of Pikkarainen et al. (2004), five factors are introduced in the extended TAM, including Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Information on Online Banking, and Security and Privacy. The study found all five factors to have impact on acceptance of Online Banking. However, the factor concerning the quality of Internet connection became irrelevant, as access to reliable Internet connection was common among the respondents. While confirming information about Online Banking services and its

benefits as the critical factor influencing user acceptance, the research only found a relatively weak relationship between user acceptance and Security and Privacy. This finding is contrary to many researches during the past years.

2.4 Example of Internet Banking related to TAM

Determinants of user acceptance of Internet Banking: An empirical study in Taiwan (Wang et al., 2003) (Figure 2.9 at Appendix B). In their paper, Wang et al. (2003) explained that due to the explosion of Internet usage and substantial funding initiatives in Electronic Banking, many researchers have been drawn to study the acceptance of Internet Banking. While millions of dollars have been spent on building Internet Banking systems to make the service available, it is found that potential users may not use the systems. In their attempt to identify factors that determine user acceptance of Internet Banking, these researchers use an extended TAM to conduct the analysis of Internet-based banking system. While they agree that the TAM serves as a fundamental tool in determining user acceptance of new technologies they introduce two new variables, Perceived Credibility and Computer Self-Efficacy. Perceived Credibility reflects the user concerns about security and Privacy in Internet Banking, whereas Computer Self-Efficacy is used to study the effect on user intentions to use Internet Banking. The findings strongly supported the usefulness of the extended TAM in predicting user intention to adopt Internet Banking and showed that Computer Self-Efficacy, through PE, PU, and Perceived Credibility, had significant effect on behavioral intention.

Malay, Chinese, and Internet Banking (Nor et al., 2010) (Figure 2.10 at Appendix B). Internet Banking provides great convenience in financial transaction and banking activities. When these activities can be performed at home and in the workplace it eliminates inconveniences, such as having to drive to the bank, fuel costs and parking charges. The research conducted by Nor et al. (2010) focuses on how cultural traits impact the intentions of Malay and Chinese ethnic groups' acceptance of Internet Banking. Through the use of the TAM and trust literature, the research findings from both ethnic groups showed that PE, PU, and Trust, had significant influence on user Intention to use Online Banking.

Key drivers of Internet Banking services use in Spain (Manzano et al., 2009) (Figure 2.11 at Appendix B). In addition to PU and PE in the TAM, Manzano et al. (2009) gives special attention to financial services involvement and Perceived risk

and trust, when analyzing the determinants of user acceptance of Internet Banking. The researchers explain that the objective of banking portals or Online Banking is to create a working environment where customers can easily and quickly navigate to find the information they require for performing financial transactions which banking would provide them. Due to potential risks associated with losses from Online Banking transactions, the importance of increasing consumer trust in virtual environments has been highlighted while the study also found consumers who work or are involved in financial services are more likely to have higher level of engagement in searching for information online. In addition, the findings showed that PU and PE and Perceived Risks (Security, Privacy, Performance and Social) had direct influence on E-Banking adoption, whereas trust appeared to be a key variable that reduced Perceived Risk. However, all factors, including financial services involvement, were found to have played an important role in increasing Perceived Ease of Use.

What determines Turkish customers' acceptance of Internet Banking? (Celik, 2008) (Figure 2.12 at Appendix B). In Celik's study (2008), the researcher uses the inclusion of contextual factors to demonstrate the need of an extended TAM while addressing the limitations of the TAM. The contextual factors Celik uses are Perceived Behavioral Control (PBC) from the Theory of Planned Behavior, Perceived Playfulness (PPL) – the degree of pleasant feeling experienced with the interaction of a system, and Perceived Risk (PR) - the Perceived possibility of exposure to adverse consequences in the persuasion of desired outcomes which, in turn, result in physical loss, financial loss, psychological loss, time loss, performance risk and social risk by using IB (Cunningham, Gerlach & Harper, 2005). The findings indicated that PU and PR had immediate and direct influence on customers' attitudes towards using IB (ATT). However, the main determinant of user Intention to Use IB was ATT. The researcher concluded that despite its direct effect on PE and PU, PBC only had indirect impact on PU and ATT and only PPL had positive influence on PE.

The youth market for Internet Banking services: perceptions, attitude and behavior in the UK (Chau & Ngai, 2010) (Figure 2.13 at Appendix B). Chau and Ngai (2010) use their paper to investigate the perceptions, attitude and behavior of the youth market in Internet Banking Services (IBS). Besides employing the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM), their study also includes Self-Efficacy, Perceived Risk, and Social Influence in the analysis. With

the focus on a specific segment such as young people, the research found that young people between the ages of 16-29 had more positive attitude and positive behavioral intentions towards IBS than other age groups. The information will prove useful to banks when developing their marketing of bank services as the finding indicated that once websites and Online Banking services reach maturation in the future young people are likely to become Online Banking's most important segment.

2.5 Perceived Privacy

From the responses of 94 Internet Banking users in the preliminary study Privacy was ranked second after usage. In addition to recent news on Online Banking attacks in Thailand, there have been cases where customers had lost money from their accounts after transferring funds to a third party. With privacy at risk, bank customers grew more concerned about potential losses as well as wary of providing sensitive information when using Online Banking services. In light of this trend, this research will incorporate perceived into the TAM to expand the scope of analysis and ensure greater relevance.

According to the definition given by Forcht (1994) Privacy is *"a security principle that protects individuals from the collection, storage, and dissemination of information about themselves and the possible compromises resulting from unauthorized release of that information"*. Invasion of privacy is a situation in which someone tries to obtain personal information often through illegal means. In Internet Banking, forms of invasion of privacy may include but not limit to computer hacking and spying. Nowadays, as technological improvements make it easy and possible for hackers to gain access to personal records, concern over privacy has become a public issue and it is the responsibility of business operators to safeguard online consumer privacy. In their study, Flavian and Guinaliu (2006) found that over 40 percent of consumers felt their privacy might have been jeopardized. While concerned over online transaction, vulnerabilities are considered a major obstacle to the spread of E-Commerce (Lardner, 1999). According to Westin (1967) and Galanxhi and Fui (2004), Privacy refers to an individual's ability to control the terms by which his personal information is acquired and used, and Roca, Garcı´a and Vega (2009) regards Perceived Privacy as the possibility that companies may collect and use individual data inappropriately (Jarvenpaa & Toad, 1996). In regards to individual decision-making, Efraimidis, Drosatos, Nalbadis and Tasidou (2009) argues that Polis

has detailed an extreme approach for personal data management and provided evidence that personal data management can be fair, secure and effective.

In their explanation of Privacy, Yousafzai, Pallister and Foxall (2009) and Myerscough, Lowe and Alpert (2006) return to the definition given by Goodwin (1991) who has suggested that *"Privacy is defined in terms of the consumer's control over their information and the environment in which the transaction or consumption takes place"(p. 149).* However, Privacy according to Yousafzai et al. (2009) is the *"customers' perception regarding their ability to monitor and control the collection, use, disclosure, and subsequent access of their information provided to the bank during an online transaction (p. 596)."* In their research findings of Yousafzai et al. (2009) in New Zealand and Chung and Paynter (2002) Privacy and Security were the two key factors that could deter customers from using Internet Banking (Podder, 2005). This is supported by Forrester (Emaketer, 2004) who has said Security and Privacy are the main obstacle to widespread adoption of Internet Banking, apart from persistent preference for in-person services at physical branches and ATMs or via phone. More recently are Zorotheos and Kafeza (2009) who suggest that willingness to perform online transaction may depend on user's Perceived Privacy Control (PPC).

2.6 Normative Belief

According to the Theory of Reasoned Action (Fishbein & Ajzen, 1975), a person's intention is one function of two basic determinants, one of which reflects social influence. Because of its association with perceived prescriptions, a person's intention is termed subjective norm. Subjective norm represents a person's normative belief about any particular referent as well as a multiplication of one's normative belief and motivation to comply. One example is electronic bill payment. People who are important to us may or may not think that we should pay the bills electronically. The decision depends on personal attitude either positive or negative regarding electronic bill payment as well as subjective norm. In Thai culture, Jaruwachirathanakul and Fink (2005) point out that subjective norm can pose a barrier to technology adoption such as Internet Banking. Attitude and subjective norm are a function of beliefs while normative belief refer to perceived behavioral expectations imposed by specific individuals or a group who think that we should or should not perform particular behavior. Subjective norms are influenced and formed by Normative Belief. For instance, "I pay my bills online because it would please my

family," is a Subjective Norm while "my family thinks I should pay my bills online is a Normative Belief.

Hence, Normative Beliefs are one of the factors that influence individual belief to use Internet Banking. Shih and Fang (2004) have said that in the case of Internet Banking adoption, Normative Beliefs refer to one's perception of using Internet Banking by friends or colleagues. This perception plays a key role in influencing a reference group's opinion. In addition, Sprott, Spangenberg and Fisher (2003) have made an observation that in an individual's Normative Belief will be taken as a socially desirable behavior in a specific situation. Normative Belief should be enhanced to the extent that people access and use these beliefs when behavioral opportunity arises. In their findings, Shi, Shambare and Wang (2007), found Normative Belief to have significant influence on one's Intention to use Internet Banking, which is contrary to a study by Zolait (2010). Zolait's results from the trimmed model analysis showed that the behavior intention in the adoption of Internet Banking in Yemen was not affected by Normative Belief.

In spite of contradicting findings among researchers regarding the relationship between Normative Belief and Intentions, Normative Belief should remain an essential component in the prediction of behavioral intentions. According to Sprott et al. (2003) Normative Belief are likely to be activated when a person is faced with a question about whether they will undertake a socially desirable behavior in a specific circumstance. Meanwhile, Bright, Fishbein, Manfredo and Bath (1993) offer the following view on the subject that attitude towards a behavior and the degree of Normative support is assumed to jointly determine behavioral intention although their relative importance will vary with the situation.

Dawkins and Frass (2005) describe Normative Belief in their research as *"the degree of social pressure from other important persons toward performance or non-performance of the behavior* (p.513)." While Hernandez and Mazzon (2007) state that Normative Belief are related to disagreement among the opinions of key reference groups such as peers or friends or colleagues, superiors, and subordinates in an organizational environment.

To sum things up, Normative Belief are the person's beliefs that referents think he should or should not perform a behavior as well as the individual's perception about particular behavior, which is influenced by the judgment of significant others such as parents, spouse, friends, teachers, coworkers and bosses.

Therefore, it is important to integrate Normative Belief into the original TAM, as Fishbien (1967) has explained, in his research "*an attitude toward an object could be identified by measuring relevant beliefs and evaluations of the object because they are perceived characteristics inherent in their target object* (p.478)." This view implies that through using Online Banking potential adopters will be exposed to different levels of beliefs.

In this time and age, the desire among Thais to copy and follow people who are close to them has never been so discernible. An obvious example that reflects this behavior would be the rush to obtain coveted devices such as mobile phones or iPads. Despite Internet Banking availability on mobile phones and computers, when analyzing Internet Banking in Thailand most researchers have not included Normative Belief in their studies and often overlooked the impact of fast-growing technological innovation on Thai culture. To address this gap, the researcher will also look at Normative Belief and their relationship with user acceptance in the analysis model.

2.7 Conclusions

From reviewing relevant literature, it can be concluded that the prevailing Technology Acceptance Model (TAM) and its many derivatives proved to be not only fundamental to developing a better understanding of Internet Banking adoption and predicting user intention, but also served as a springboard to further investigate the rationale that have led users to the adoption. To produce a comprehensive study of Internet Banking users' behavior in Thailand in the present day, this paper proposes to introduce an addition of two constructs, Perceived Privacy and Normative Belief. The researcher believes that all four constructs, Perceived Usefulness, Perceived Ease of Use, Perceived Privacy, and Normative Belief, are the key elements in the TAM that can help to increase acceptance of Internet Banking among target customers. In the next chapter, the new analysis model will be discussed in further detail.

In the table below is a list of constructs found in each previous Internet Banking research;

Table 2.2

The Constructs from Previous Internet Banking Researches

Year	Authors	Constructs	Title
2013	Ajam and Nor	Relative Advantage, Perceived Ease of Use, Perceived Compatibility, and Perceived Trialability	Adoption of Internet Banking by Yemeni consumers: An empirical investigation
2012	Saeednia and Abdollahi	Perceived Security, Perceived Privacy, Perceived Usability, and Perceived Reputation	Factors affecting client trust in Online Banking - a case study of Saman bank
2011	Manzano, Mafe, Blas and Navarre	Satisfaction, Trust, Frequency of Use, and Perceived Risk	Internet Banking loyalty: evaluating the role of trust, satisfaction, Perceived risk and frequency of use
2010	Nor, Sutanonpaiboon and Mastor	Perceived Ease of Use, Perceived Usefulness, and Trust	Malay, Chinese, and Internet Banking
2010	Zhao, Lewis, Lloyd and Ward	Perceived Risk, Trust, and Competence	Adoption of Internet Banking services in China: Is it all about trust?
2010	Chau and Ngai	Self-Efficacy, Perceived Risk, Social Influence, Perceived Ease of Use, and Perceived Usefulness	The youth market for Internet Banking services: Perceptions, attitude and behavior

Table 2.2 (Continued, p.2)

Year	Authors	Constructs	Title
2009	Manzano, Navarre, Mafe and Blas	Perceived Ease of Use, Perceived Usefulness, Financial Services Involvement, Trust, and Perceived Risk (Performance, Time Loss, Social, Privacy, Security)	Key drivers of Internet Banking services use
2008	Kra¨uter and Faullant	Internet Trust	Consumer acceptance of Internet Banking: The influence of Internet trust (Austria)
2008	Celik	Perceived Ease of Use, Perceived Usefulness, Attitudes, Perceived Behavioral Control, Perceived Playfulness, and Perceived Risk	What determines Turkish customers' acceptance of Internet Banking?
2007	Hernandez and Mazzon	Relative Advantage, Visibility, Result Demonstrability, Compatibility With Lifestyle, Ease of Use, Trialability, Image, Self-Efficacy, Technology Support, and Government Support	Adoption of Internet Banking: Proposition and implementation of an integrated methodology approach
2007	AbuShanab and Pearson	Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions	Internet Banking in Jordan: The unified theory of acceptance and use of technology (UTAUT) perspective

Table 2.2 (Continued, p.3)

Year	Authors	Constructs	Title
2006	Ndubisi and Sinti	Importance to banking needs * Compatibility * Complexity * Trialability * Risk IB Site Features * Utilitarian Orientation * Hedonic Orientation	Consumer attitudes, system's characteristics and Internet Banking adoption in Malaysia
2005	Eriksson, Kerem and Nilsson	Trust, Perceived Ease of Use, Perceived Usefulness, and Use	Customer acceptance of Internet Banking in Estonia
2005	Lu, Liu, Jing and Huang	External Pressures, Perceived Benefits, It Maturity, and Bank Size	Internet Banking: Strategic responses to the accession of WTO by Chinese banks
2005	Jaruwachirathanakul and Fink	Features of the web site, Perceived Usefulness, Risk and Privacy, Adoption, Personal Preference Perceived Behavioral Control, and Subjective Norm	Internet Banking adoption strategies for a developing country: The case of Thailand

Table 2.2 (Continued, p.4)

Year	Authors	Constructs	Title
2004	Shih and Fang	Relative Advantage, Compatibility, Complexity, Normative Influences, Efficacy, and Facilitating Conditions	The use of a decomposed theory of planned behavior to study Internet Banking in Taiwan
2003	Yi-Shun, Yu-Min, Lin and Tang	Computer Self-Efficacy, Perceived Ease of Use, Perceived Usefulness, and Perceived Credibility	Determinants of user acceptance of Internet Banking: An empirical study
2003	Chau and Lai	Perceived Usefulness, Perceived Ease of Use, Personalization, Alliance Services, Task Familiarity, and Accessibility	An empirical investigation of the determinants of user acceptance of Internet Banking
2002	Nielsen	IT Knowledge, Inter-Firm Cooperation, Willingness to Cannibalize, and Organizational Size	Internet technology and customer linking in Nordic banking
1999	Sathye	No Security Concern, Ease of Use, Awareness of Service and its Benefits, Reasonable Price, No Resistance to Change, and A Viability of Infrastructure	Adoption of Internet Banking by Australian consumers: An empirical investigation

Chapter 3
Research Design and Methodology of Study

3.1 Introduction

The previous chapter have shown a study on literature review for the relevant theories of Internet Banking adoption and critically discussed the entire environment related to Internet Banking which is necessary for further development of hypotheses in this chapter. This chapter proposes to establish a conceptual framework that leads to the Internet Banking acceptance model used to explain and predict the acceptance and adoption behavior of Internet Banking users in Thailand, also the research design and methodology of the study.

As summarized in chapter 2 of Theoretical background – TAM alone is not enough to predict user acceptance of new technology using only the variables in the original framework of TAM as there are some important variables missing in view of Internet Banking users. Moreover, the revision of Internet Banking behavior explained in many researchers studied about Internet Banking behaviors that should be included or added to current TAM Framework. Additional with cases in Thailand, Jaruwachirathanakul and Fink (2005) suggest that the factors of behavior selected with previous adoption studies may not cover all the factors that could influence the adoption of the Internet Banking. Therefore, this proposed research model has to modify the construction of TAM Framework described in chapter 2 that are needed to be extended by additional factors.

The first factor is "Privacy". Lardner (1999) reported that regarding the possible lack of Privacy in online transactions, this concern is becoming a major obstacle to the spread of E-Commerce. Pikkarainen et al. (2004) added Privacy to be one of an extension of TAM for Online Banking acceptance found that Privacy has a relatively weak relationship with the acceptance. This phenomenon is the contrary to many researches during the past years such as Suh and Han (2002) reported that Privacy protection has a significant impact on E-Commerce acceptance. Forrester (Emarketer, 2004) expressed security and Privacy is the main barriers to Internet Banking diffusion apart from preference of branches, ATMs, and phone banking. In 2012, Omariba, Masese and Wanyembi studied Privacy for the challenges that oppose

Electronic Banking are concerns. Saeednia and Abdollahi (2012) studied Privacy and found that the results present that Privacy influences directly and significantly and trust as a mediator variable to promote affective commitment of the clients of Online Banking. Virk (2013) research finding reveals that a majority of the customers replied that Privacy has always been their major concern as the news of fake websites asking for login details which make a customer think twice before opting for Internet Banking. Also Changchit (2008) supported in her editorial preface that in the digital age today, Internet users are concerned with many privacy issues as this digital age continue to affect a daily personal financial information. This study realizes in privacy, and wants to prove the significance described above, and then adds Privacy into the model.

The second behavior factor is "customer's beliefs", that is, an individual belief lead to use Internet Banking called Normative Belief which people.umass.edu/aizen/nb.html describes as a Perceived behavioral expectations of such important referent individuals or groups as the person's spouse, family, and friends depending on the behavior studied, e.g. Sprott et al. (2003) studied the Normative Belief to evaluate what is socially desirable or appropriate - underlie manifestation of the self-prophecy effect. In addition, Ashraf, Alam and Noor (2010) belief analysis illustrated that beliefs about trust and Privacy positively affect attitudes toward Internet Banking. With referent individuals or group, people in Thai society nowadays, have wished to imitate people who are next to them. They want to have the same thing as what their friends have, for example, mobile phone or iPad which is considered as the technology booming in this era. Therefore, Normative Belief might be an important influential factor that may persuade customer to use Internet Banking. Moreover, Internet Banking is available for use on either mobile phone or in PC at home or at work. Supplementary question, not many researchers have Normative Belief construct in their researches on Internet Banking and Thai culture has changed with the booming of new technologies. Therefore, this model will include the Normative Belief in order to prove that Normative Belief is playing an important role on Internet Banking.

In the proposed research model as shown in Figure 3.1 consist of the two main factors that have been derived from the original TAM into this conceptual framework because of its consistent in explaining an individual's acceptance of various information systems; Perceived Usefulness (PU) and Perceived Ease of Use (PE).

This study will further modified the TAM model to include two additional factors: (1) Perceived Privacy (PP), and (2) Normative Belief (PN), that have been empirically found to have some influence on usage of Internet Banking (IB) in order to enhance the prediction of TAM capabilities. All of these constructs are hypothesized that the Intention to Use which represent the usage of Internet Banking behavior to be influenced by all constructs.

3.2 Conceptual Framework

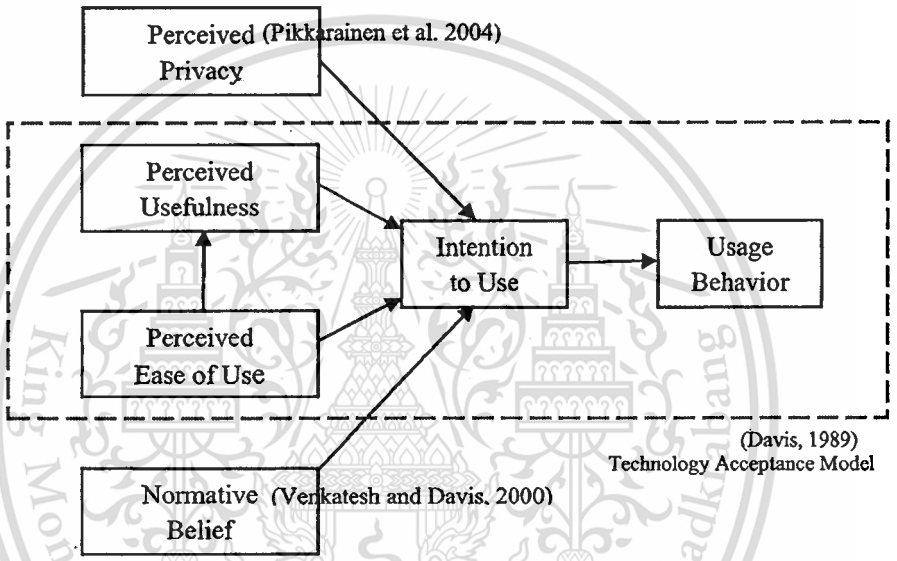


Figure 3.1 The proposed conceptual framework model of Internet Banking adoption

3.2.1 Perceived usefulness. Perceived Usefulness is defined as the prospective users' subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis et al., 1989). This factor has a significant effect on usage intention (Agarwal & Prasad, 1999; Davis et al., 1989; Venkatesh, 2000; Venkatesh & Davis, 2000). The following scale questions, ranging from a 1 (strongly disagree) to 5 (strongly agree), were used to measure this construct.

- Using Internet Banking enables me to accomplish my banking transactions more quickly.
- Using Internet Banking makes it easier for me to do my banking transactions.
- Using Internet Banking enables the effective use of my time.

- Using Internet Banking enables me to get a wide range of my banking information with only "on click".
- I find Internet Banking useful in my banking transactions.

3.2.2 Perceived Ease of Use. Perceived Ease of Use is defined as the degree to which the prospective user expects the target system to be free of effort (Davis et al., 1989). This factor plays a crucial role in understanding individual responses to information technology (Agarwal & Karahanna, 2000; Chau & Hu, 2001; Hong, Thong, Wong & Tam, 2001). Research over the past decade provides evidence of the significant effect Perceived Ease of Use has had on usage intention (Agarwal & Prasad, 1999; Venkatesh, 2000; Venkatesh & Davis, 2000). The following scale questions, ranging from a 1 (strongly disagree) to 5 (strongly agree), were used to measure this construct.

- I find Internet Banking flexible to interact with.
- Learning to use Internet Banking is easy for me.
- I find it easy to get Internet Banking to do what I want it to do for my banking purposes.
- My interaction with Internet Banking is clear and understandable.
- I find Internet Banking easy to use.

3.2.3 Perceived Privacy. Forcht (1994) defined the concept of Privacy as a security principle that protects individuals from the collection, storage, and dissemination of information about themselves and the possible compromises resulting from unauthorized release of that information. Invasion of Privacy is a situation in which someone tries to find out details about another person's private affairs in a way that is upsetting and often illegal. With Internet Banking, invasion of Privacy can occur in the form of hacking. With the advance in technology, it allows illegal hackers to access personal records faster and easier than before.

It is the responsibility of organization to protect the consumer's Privacy. Flavia'n and Guinali'u (2006) reported that over 40 percent of consumers feel their Privacy is jeopardized. The Privacy concern becomes a major obstacle to the spread of E-Commerce (Lardner, 1999). Perceived Privacy can be defined as the possibility that each company collect the data about individuals and use them inappropriately (Jarvenpaa & Todd, 1996; Roca et al., 2009). Zorotheos and Kafeza (2009) stated that a customers' willingness to transact online depended on their Perceived Privacy control (PPC). Several prior studies also found that Privacy and security are the most

important issues that inhibit customers from using Internet Banking (Chung & Paynter, 2002; Podder, 2005). The following scale questions, ranging from a 1 (strongly disagree) to 5 (strongly agree), were used to measure this construct.

- I am able to trust the ability of the Internet Banking system to protect the Privacy of my personal banking data.
- I am able to trust the Internet Banking systems will not disclose my personal banking data.
- I am able to trust that banks can keep customer data securely.
- I am able to trust that the Internet Banking I am using is safe.
- I am able to trust that making transactions through Internet Banking is just like going to the bank.

3.2.4 Normative Belief. According to a recent public opinion boom and a widespread use of new technology such as smartphones or tablet devices, people are influenced to adopt new technologies used by their relatives and friends. Normative Belief becomes an important factor shaping the direction on how to do business. Sprott et al. (2003) stated that Normative Belief can lead to a socially desirable behavior in a specific situation, thus should be included as a fundamental component of any predictive variables.

Normative Beliefs represent the social pressures to perform certain behaviors (Ajzen, 1991). It can also be defined as an individual's perception about the particular behavior, which is influenced by the judgment of significant others such as parents, spouse, friends, teachers, coworkers, and a boss. Hernandez and Mazzon (2007) stated that Normative Beliefs can be defined as the degree of disagreement among the opinions of key reference groups such as friends, peers or colleagues, superiors, and subordinates in an organizational environment.

Normative Beliefs are likely to be activated when a person is faced with a question about whether they will undertake a socially desirable behavior in a specific circumstance (Sprott et al., 2003). The attitude towards a behavior and the degree of Normative support is assumed to jointly determine behavioral intention although their relative importance will vary with the situation (Bright et al., 1993).

The following scale questions, ranging from a 1 (strongly disagree) to 5 (strongly agree), were used to measure this construct.

- People in my organization think that I should use Internet Banking.
- My family thinks that I should use Internet Banking.

- My friends influence my decision to use Internet Banking.
- The image of the bank has influence on my using Internet Banking.
- Internet Banking's special promotion has influence on my using Internet Banking.

3.3 Research Hypothesis

This section continues to the proposed model with relevant Internet Banking adoption to delineate the research hypotheses. The research includes Internet Banking users and non-Internet Banking users with relating to all factors discussed above, the following is the hypotheses for testing the relationship among these factors as proposed in the research model.

3.3.1 Relationship between Perceived Ease of Use (PE) and Internet Banking usage. Unlike most people going to the counter in the bank, the use of Internet Banking which customers have to do their transaction by themselves may raise the concerns of customers. The screen at first sight before accessing into the system should be Perceived comfortable feeling then making them willingly use the Internet Banking. If the first screen is too complex and difficult to use, it is likely that customers will have difficulty in recognizing the usefulness of the new technology. According to TAM, PE is a major factor that affects acceptance of information system (Davis et al., 1989). Hence, Internet Banking perceives to be easier to use is more likely to be accepted by users. Then, Perceived Ease of Use should play a major role in behavior of Internet Banking usage. Thus, it can be hypothesized that:

- *H1: Perceived Ease of Use (PE) has significant influence Intention to Use of the IB.*

3.3.2 Relationship of Perceived Usefulness (PU) and Internet Banking usage. Stated in TAM by Davis et al. (1989), PU is a significant factor affecting the acceptance of an information system. If Internet Banking has more facilities that are useful for user's transaction, there is no doubt that the more useful to accomplish their transaction, the more it will be used and the more tasks will be enhanced. Moreover, their behavior of usage of Internet Banking will be increased. PU factor is common in technology-usage settings and can be applied widely and directly toward solving the acceptance of the new system (Lee, 2009; Taylor & Todd, 1995). Then, Perceived Usefulness should be a major role in behavior of Internet Banking usage. Therefore, it can be hypothesized that:

- *H2: Perceived Usefulness (PU) has significant influence Intention to Use of the IB.*

3.3.3 Relationship between Perceived Privacy (PP) and Internet Banking usage. Recently reported cases of Trojans in customer computer have highlighted the need for licensed software and anti-virus solution. Due to fraud or a hacker compromising the security of an online bank user by attempting to fraudulently acquire sensitive information as a trustworthy entity; users have higher opportunity to lose money in their account while having transaction to the third party. So many banking studies have emphasized in the importance of security and Privacy for the acceptance of Online Banking (Jahangir & Begum, 2007; Hernandez & Mazzon, 2007; Sathye, 1999; Tan & Teo, 2000). Moreover, it is also violating users' Privacy. This is a major concern of many Internet users (Lee, 2009; Jahangir & Begum, 2007; Hernandez & Mazzon, 2007; Reagle & Cranor, 1999) supported that the important barrier of using online services is Privacy issue. Hence, Perceived Privacy should be a major role in behavior of Internet Banking usage. Therefore, the following hypotheses have been formulated.

- *H3: Perceived Privacy (PP) has significant influence Intention to Use of the IB.*

3.3.4 Relationship between Normative Belief (PN) and Internet Banking usage. Based on TRA, Fishbein and Ajzen (1975) reported that a person's intentions are a function of certain beliefs. One belief relevant for a behavioral intention is belief of a normative nature. Vijayasarathy (2004) introduced Intention to Use on-line shopping was strongly influenced by attitude toward Normative Beliefs. Therefore, it can be predicted that customers would be willing to do their bank transactions on Internet Banking if their Normative Belief perceptions by themselves were high. Hence, Normative Beliefs should be a major role in behavior of Internet Banking usage. Thus the hypotheses have been formulated as follow:

- *H4: Normative Belief (PN) has significant influence Intention to Use of the IB.*

3.3.5 Relationship between Perceived Ease of Use (PE) and Perceived Usefulness (PU). According to Davis et al. (1989), his major conclusion of the study is the extent to which a consumer believes a system is easy to learn or easy to use that PU is a strong correlate of user acceptance. With Internet Banking context PE can be

the degree of ease the user's encounter when they access and use the service. Derived from TAM, PE is one of determinants of PU and acceptance or PU is influenced by PE. It has proven to have significant effects on PU. Thus, it can be assumed that:

- *H5: Perceived Ease of Use (PE) has significant influence Perceived Usefulness (PU) of the IB.*

3.3.6 Hypotheses of Perceived Ease of Use (PE) via Perceived Usefulness (PU). According to Davis (1989), one of his conclusion of the study is a Perceived Ease of Use may actually be a causal antecedent to Perceived usefulness, as opposed to a parallel, direct determinant of system usage. Study of Heijden et al. (2003) found the lack of effect of Perceived Usefulness and Perceived Ease of Use but on attitudes towards online purchasing. However, Sukkar and Hasan (2005) found that the correlations among PE, PU, and Intention to Use are likely to be stronger when the use of the technology is optional rather than mandatory, as is often the case in the workplace. Therefore, this study tests hypothesis of PE via PU as follows:

- *H6: Perceived Ease of Use (PE) has indirect influence Intention to Use of the IB via Perceived Usefulness (PU).*

Additional hypotheses by T-Test. The following are the hypotheses for testing the difference between 2 groups who are using Internet Banking and who do not use Internet Banking on the perceptions among these factors as proposed in the research model.

- *H7: There is a significant difference on the perceptions about the Perceived Ease of Use (PE) between the subjects who use Internet Banking and those who do not use Internet Banking.*

- *H8: There is a significant difference on the perceptions about the Perceived Usefulness (PU) between the subjects who use Internet Banking and those who do not use Internet Banking.*

- *H9: There is a significant difference on the perceptions about the Perceived Privacy (PP) between the subjects who use Internet Banking and those who do not use Internet Banking.*

- *H10: There is a significant difference on the perceptions about the Normative Beliefs (PN) between the subjects who use Internet Banking and those who do not use Internet Banking.*

3.4 Research Design and Methodology

The questionnaire consists of 29 questions. Twenty-five questions with the 5 points Likert scale were design to measure subjects' perceptions on Internet Banking and their intention to adopt it. The other four questions were asked to gather some demographic data of the subject.

3.4.1 Research design. To achieve objective of this research in an analytical way to arrive at a solution of rational decision-making choices (Sekaran, 2003), the purpose of this part is to discuss the research design to strengthen the research quality. Before research design, Sekaran (2003) has 5 design research processes that are observation by identification the interesting of the broad problem area, preliminary data gathering by interviewing and literature survey, problem definition by research problem delineated, theoretical framework by variables clearly identified and labeled, and generation of hypotheses for testing an acceptance or rejection which all of 5 processes reported in Chapter 1, 2, and 3. Summary is as per Figure 3.2 below.

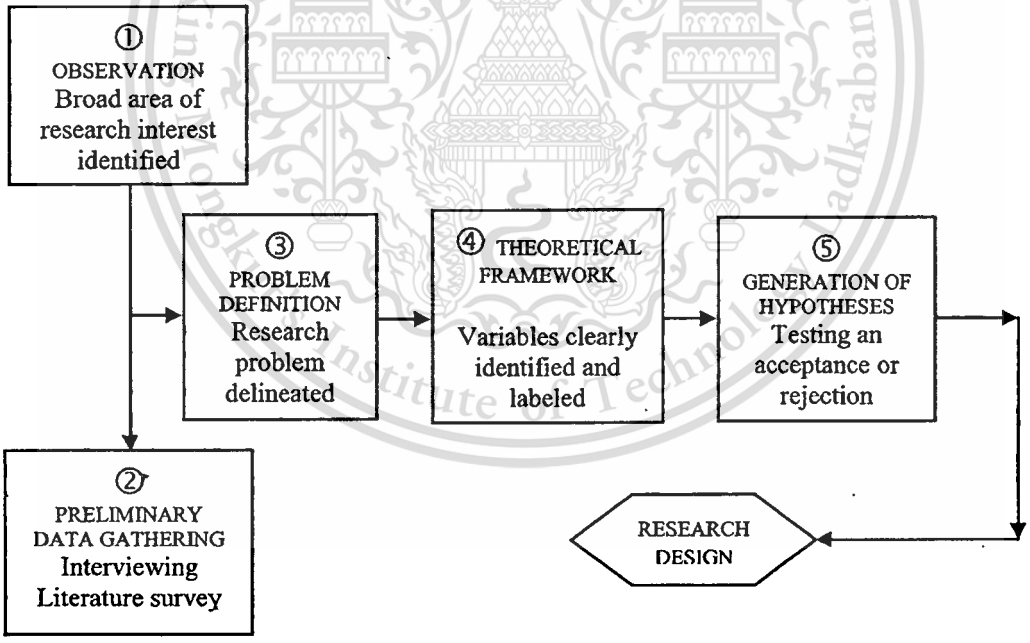


Figure 3.2 The research process adapted from Sekaran (2003)

The next step is research design that required gathering data and analyzed whether it is arrive at a target solution or not.

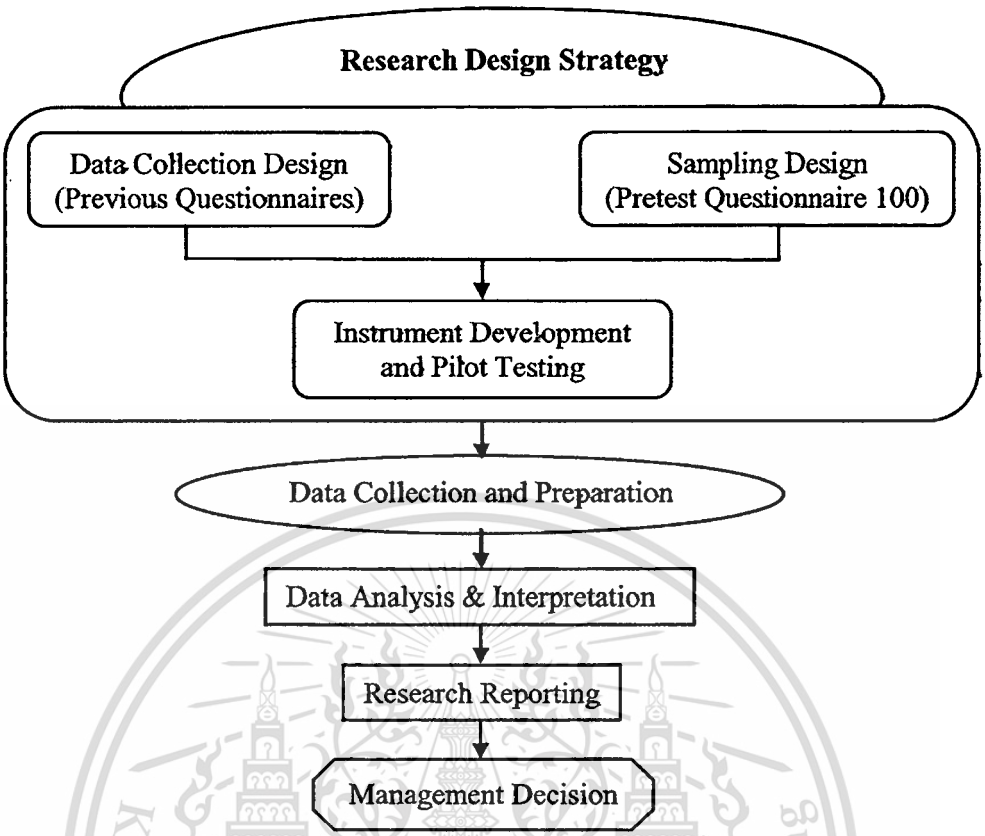


Figure 3.3 The research design adapted from Cooper and Schindler (2008).

Figure 3.3 illustrates the Cooper and Schindler (2008) describe in their book that there are no single definition of research design, but the essentials of research design which is different in detail are a guide or a plan or a framework or a procedural outline for every research activity. Sekaran (2003) additionally described that six basic aspects are integral to research design but the important thing is a purpose for the study that are exploration, description, and hypothesis testing or causal of Cooper and Schindler (2008). Each research can be either exploratory in nature or descriptive, or can be conducted to test hypotheses (Sekaran, 2003) which depends on the stage to the research topic has advanced. Detail as per Table 3.1 below.

Table 3.1

Definition of Research Design on the Purpose of the Study

Purpose of the study	**Characteristics**	**Activities**
Exploratory	- Not much is known about the situation - The similar information in the past is not available - Some facts are known but more information is needed for developing - Lack a clear idea of the problems	- Get a grip on the characteristic of the phenomena of interest - Explore new areas interested to become more rigorous - Extensive preliminary work - Understand what is occurring for comprehensive investigation - Qualitative data by extensive interviews with many people
Descriptive	- Characteristics or the phenomena to be tapped in a situation are known to exist - Typically structured with clearly stated hypothesis or investigative questions	Describe certain characteristics of the phenomena on which interested - Understand the characteristics of a group and think systematically about aspects in a given situation - Offer ideas for further probe and research - Make certain simple decisions - Qualitative data by figure of frequencies, or mean and standard deviations is necessary for descriptive

Table 3.1 (Continued.)

Purpose of the study	Characteristics	Activities
Hypothesis testing (Sekaran, 2003) or Causal (Cooper & Schindler, 2008)	- Engage in hypothesis testing - Enhance understanding of the relationship that exists among variables - One variable always causes another and no other variable has the same causal effect - Seek to discover the effect that a variable has on another or why certain outcomes are obtained	Examine whether the conjectured relationships have been substantiated and has obtained an answer of the research question - explain the variance in the dependent variable - predict organizational outcomes - explain the nature of certain relationships - establish the differences among groups or the independence of two and more factors in a situation - using both qualitative and quantitative data

*Sources. A*dapted from Sekaran (2003) and Cooper and Schindler (2008)

3.4.2 Research strategy. This study applied all type of research designs in order to achieve the research objective. At the beginning, using **exploratory** by behavioral observation of people who are using electronic payment to identify the problem in the area of Internet Banking - people who are reluctant to adopt Internet Banking have still less amount of consumers (5.6 M per 14.8 M of Internet users in 2011 – see Table 1.13 and Table 1.11). Furthermore, more interviews will help to understand what are the exact or relate to the problem are or what the concept of related theories is using or what any the banker should know. Moreover, to understand the background information of Internet Banking in Thailand and detail in consumer, exploratory research is needed and appropriately applied in this stage will help to develop the questionnaire distributed to the consumer.

Further, better describe and understand the characteristics of the construct of the framework, a descriptive research is also undertaken in this study. Descriptive in nature, for instance, a study of Internet Banking in terms of the percentage of users who have been using Internet Banking and user who have never used. Frequently, descriptive studies are undertaken in a framework to describe about the characteristics of age, sex, education, occupation, income, etc.

To fill the gap of insufficient research examining customers' behavioral intention for adopting Internet Banking services in Thailand, this research conducts a survey study for hypothesis testing using the framework of the original TAM as the foundation to determine the predictors of customers' Intention to Use Internet Banking in Thailand, for example, if Privacy is increased, then the consumer will go up.

3.4.3 Measurement development. It is very necessary to measure some manner in research to know that each method used in research operate defining dimensions and a variable.

3.4.3.1 Likert scale. The Likert scale of interval measurement is the most commonly used scale to measure attitudes and behaviors in analysis questionnaire and is one type of measure in this study by choosing only 5 points Likert scale. It is consider more suitable for Thai people who have negative thinking in answering a questionnaire. It is too difficult for them to give an accurate their feeling if it is 7 points Likert scale. Moreover, Dawns (2008) research suggested that either 5-points or 7-points are affected of the same mean scores and it is quite simple with a 5-points scale for the respondents to read out and complete the list of questionnaire. The ranking 5 points Likert scale are from "1 for Agreed strongly", "2 for Agreed moderately", "3 for Neutral", "4 for Disagreed moderately", "5 for Disagreed strongly".

3.4.3.2 Goodness of measures. According to Sekaran and Bougie (2009), the "goodness" of the measures has been developed to ensure that the data and the questionnaire the research used are accurate, related, and suitable for the concept of the research and do indeed measure what are supposed to. The figure 3.4 below is form of testing goodness of measures.

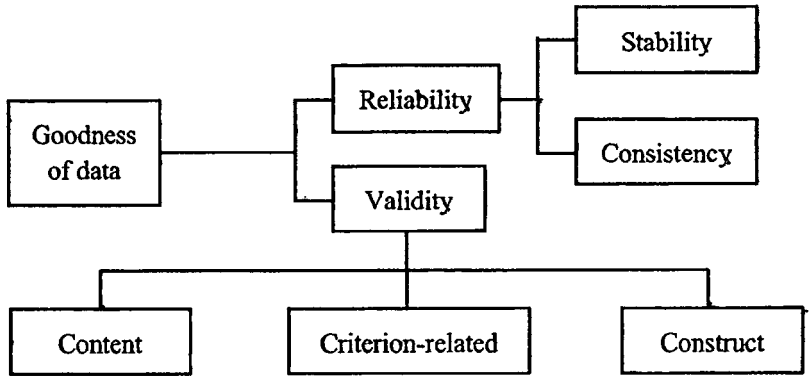


Figure 3.4 Form of testing goodness of measures.
*Sources. A*dapted from Sekaran and Bougie (2009)

Reliability. Both reliable and valid are essential to analyze scores in SEM (Kline, 2005; 2011). Sekaran and Bougie (2009) briefed reliability that *"is a test of how consistently a measuring instrument measures whatever concept it is measuring (p.157)."* To measure reliability, it means that all of the respondents have the same understanding in the content of questionnaire. Blunch (2008) raised reliable issue that the instrument must be reliable if repetition of the measurement under identical situations ends up with nearly the same result. Sekaran and Bougie (2009) described reliability with the word "consistency" that the items in the questionnaire should be having the same concept in order to the respondents assess the same meaning to each of items and will be correlated with one another. Cooper and Schindler (2008) summarized "consistency" as *"degree to which instrument items are homogeneous and reflect the same underlying constructs (p.293)"* and *"reliability has do with the accuracy and precision of a measurement procedure (p.289)."* Another reliability meaning of Sekaran and Bougie (2009) is the word "stability", which means *"the ability of measure to remain the same over time (p.162)"*. Kline (2005; 2011) offered his reliability concern *"the degree to which the scores are free from random measurement error (p.69)."*

Validity. Sekaran and Bougie (2009) noted that validity is not sufficient necessary but reliability. On the contrary, Blunch (2008) argued that it is not sufficient to measure reliable, it is also be valid and notifies that reliability and validity are the two main standards for a measuring instrument evaluation.

As insufficiency in only reliability score measure, Kline (2005) suggested validity which cannot be valid for unreliable scores. Sekaran and Bougie (2009) very

brief validity that *"is a test of how well an instrument that is developed measures the particular concept it is intended to measure (p.127)"*. Blunch (2010) also stated validity that is *"the instrument shall measure exactly what it is intended to measure and nothing else" (p.27)*. Cooper and Schindler (2008) described validity that is "*the extent to which a test measures what we actually wish to measure (p.289)"* and convergent validity that is *"the degree to which scores on one scale correlate with scores on other scales designed to assess the same construct (p.291)"* and divergent validity that is *"the degree to which scores on a scale do not correlate with scores from scales designed to measure different construct (p.291)"*. If it is shown poor convergent validity within sets of indicators of the same factor, it is suggest that the model may have too few factors. On the other hand, if it is shown poor discriminant validity by very high factor correlations, it is indicated that the model may have too many factors (Kline, 2011). Lee, Sang, David and Soong (2010) stated *"Validity refers to the accuracy of a measure (p.275)"*. Therefore, validity tests apply for examining the validity of the measuring instrument itself. The concept of Internet Banking questions in this study could be reasonably certain set to measure what the researcher claims it to be and straight to the point. Anyway, Sekaran and Bougie (2009) grouped validity tests into three headings: content validity, criterion-related validity, and construct validity (figure 3). Only content validity and construct validity are described in this study.

According to Davis (1986) defined content validity as *"the degree that the score or the scale being used represents the concept about which the generalizations are to be made" (p. 80)*. Therefore, content validity means the measure of all the questions which ask respondents whether straight to content and have the same meaning or not. Hence, the questionnaire for this research was performing the content validity by testing the understanding from many executives' staff of bankers and also has been approved by professional at SIU International. Moreover, most the questions followed previous researchers such as Davis (1989) for Perceived Usefulness and Perceived Ease of Use which were confirmed by content validity. Although the questionnaire was translated into Thai, the questionnaire in Thai version has tested for understanding and the meaning of English to Thai as mentioned above.

As Davis (1986) advised, *"a predominant perspective views a measure's construct validity as the degree to which the measure's true score corresponds to the conceptual variable that the measure is intended to operationalize"(p. 75)*. Also,

according to Sekaran and Bougie (2009), construct validity means "*how well the results obtained from the use of the measure fit the theories around which the test is designed (p.160)*". It is concerned with the question tap the concept as the instrument want to measures. The same as content validity, the Internet Banking questionnaire was tailing previous researchers which have the theories provided such as TAM (Davis, 1989) that have been already tested construct validity.

3.4.4 Data collection method

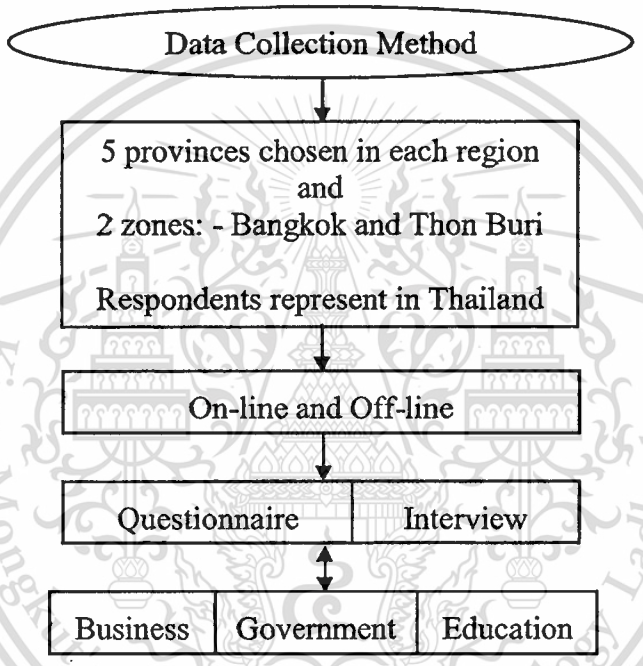


Figure 3.5 Data collection method

Figure 3.5 illustrates data collection method. To attain the best questionnaire quality, the example for building the model comes from 94 employees or customers (from 100) in one famous bank only in Bangkok. Decision in selecting the example is only in Bangkok because of higher opportunities and people knowing with more information technology about Internet Banking.

Additional for forecasting all the outcomes from primary sources of data by the scope of respondents are covered all area in Thailand in order to have a wide variety of the answers to depict the result as the topic "Internet Banking adoption in Thailand". North includes Chiang Mai, Chiang Rai, Nakhon Sawan, Phitsanulok, and Uttaradit. Northeast includes Khon Kaen, Udon Thani, Ubon Ratchathani, Sakon Nakhon, and Maha Sarakham. Eastern includes Trat, Chanthaburi, Chon Buri,

Rayong, and Chachoengsao. South includes Had Yai Songkhla, Surat Thani, Phuket, Trang and Nakhon Si Thammarat. Most of respondents are in Bangkok divided into two zones: Bangkok and Thon Buri.

Seven hundred and three (703) subjects participated in this study. However, only 697 responses are valid (Table 3.3). The data was collected via both channel, online and offline (via face-to-face or phone) – Table 3.2. Of the 697 subjects, 342 of them are Internet Banking customers. The remaining 355 subjects have never used Internet Banking before. Subjects' demographics are shown in the Table 3.4 below.

Table 3.2

Data Collection Approach

Approach	On-line	Pros	Cons	Off-line	Pros	Cons
Question-naire	- Website - E-mail	- Any time, any place - Convenience - Public Ad - Basic compute	blind	- One by one	- Without delay	-
Interview	- Phone - MSN	- At once	-	- Front ATM - Institute	- At once - Face to face	-

Table 3.3

Number of Respondent

Respondent	Approach	On-line	Off-line	Total	B*	G*	E*
Internet Banking	Questionnaire	127	143	Total 346	80	44	222
	Interview	63	13	Valid 342			
Non-Internet Banking	Questionnaire	89	197	Total 357	88	48	221
	Interview	52	19	Valid 355			
	Total	331	372	Total 703 Valid 697	168	92	443

* B = Business, G = government, E = Education

Table 3.4

Sample Demographers

INTERNET BANKING DEMOGRAPHIC DATA

Compare to National Statistic

Category	Sub Category	Demographic data						National Statistic	
		Total		Internet User		Non - Internet User		Population Year 2010	
	All	697	100%	342	49%	355	51%	62.4 Mil	100%
Gender	Male	246	35%	149	44%	97	27%	31.3	50%
	Female	451	65%	193	56%	258	73%	31.1	50%
Location	Metro	567	81%	263	77%	304	86%	n/a	9%
	Provincial	130	19%	79	23%	51	14%	n/a	91%
Age	<= 35	491	70%	220	64%	271	76%	n/a	52%
	> 35	206	30%	122	36%	84	24%	n/a	48%
Education	<Bachelor	87	12%	50	15%	37	11%	y2000	29%
	Bachelor	488	70%	206	60%	282	79%	n/a	66%
	>Bachelor	122	18%	86	25%	36	10%	n/a	5%
Occupation	Govt.	245	35%	132	39%	113	32%	y2000	8%
	Private	259	37%	153	45%	106	30%	n/a	52%
	Student	170	25%	46	13%	124	35%	n/a	11%
	Other	23	3%	11	3%	12	3%	n/a	29%

For questionnaire development, there are many concepts from many text books or from many researches drawn to their researches such as Malhotra and Peterson (2006) – 10 steps, Hair, Bush and David (2006) – 11 steps, Malhotra and Birks (2000), Churchill (1995), Churchill and Lacobucci (2002), Baines and Chansarkar (2002), Peterson (2000), Backstrom and Hursh-Csar (1981), Proctor (1997), Erdos (1983), Labau (1981), Schuman and Presser (1981), and Sudman and Bradburn (1983) – 9 steps.

Nine steps procedure from Churchill (1995) were used by Chareonsuk (2009) to develop and construct the questionnaire for an appropriate design of his questionnaire.

Step 1 is "Specify what information will be sought".

Step 2 is "Determine type of questionnaire and method of administration".

Step 3 is "Determine content of individual questions".

Step 4 is "Determine form of response to each question".

Step 5 is "Determine wording of each question".

Step 6 is "Determine sequence of questions".

Step 7 is "Determine physical characteristics of questionnaire".

Step 8 is "Re-examine step 1-7 and revise if necessary".

Step 9 is "Pre-test questionnaire and revise if necessary".

The questionnaire is very crucial to serve the success of the study. Questionnaire also is as a basement and very important for the model. Thereafter, after specifying what information suitable to the topic, the questionnaire designed for this study adapted the instrument and scales developed from TAM (as many researchers using, see Table 2.1) with additional constructs as described in the proposed research model. The questions used to measure the Perceived Privacy constructed were adapted from prior studies (Pikkarainen et al., 2004; Venkatesh & Davis, 2000; Vijayasarathy, 2004; Wong & Hsu, 2008). The questions used to measure the Normative Belief were adapted from prior research conducted by Venkatesh and Davis (2000) and Venkatesh et al. (2003). Details are as per Table 3.5 and Table 3.6.

Table 3.5

Summary of Research Designed Questionnaire

Constructs	From Researchers
Perceived Usefulness	Davis (1989), Venkatesh and Davis (2000), Pikkarainen et al. (2004)
Perceived Ease of Use	
Perceived Privacy	Pikkarainen et al. (2004), Venkatesh and Davis (2000), Vijayasarathy (2004), Wong and Hsu (2008), Ndubisi (2007)
Perceived Normative Believe	Venkatesh and Davis (2000), Venkatesh et al. (2003)

For the code of conduct or ethical issues, with confidentiality, this research cannot reveal the name of the bank the study using to be some of respondents. This study also emphasize the respondents to inform that "All information will be treated as confidential" at the end of questionnaire.

Table 3.6

Summary of Research Questionnaire

Section 1	**Perceived usefulness**
1	Using Internet Banking enables me to accomplish my banking transactions more quickly.
2	Using Internet Banking makes it easier for me to do my banking transactions.
3	Using Internet Banking enables the effective use of my time.
4	Using Internet Banking enables me to get a wide range of my banking information with only "on click".
5	I find Internet Banking useful in my banking transactions.
Section 2	**Perceived Ease of Use**
1	I find Internet Banking flexible to interact with.
2	Learning to use Internet Banking is easy for me.
3	I find it easy to get Internet Banking to do what I want it to do for my banking purposes.
4	My interaction with Internet Banking is clear and understandable.
5	I find Internet Banking easy to use.
Section 3	**Perceived Privacy**
1	I am able to trust the ability of the Internet Banking system to protect the Privacy of my personal banking data.
2	I am able to trust the Internet Banking systems not to disclose my personal banking data.
3	I am able to trust banks to keep customer data securely.
4	I am able to trust that the Internet Banking I am using is safe.
5	I am able to trust that making transactions through Internet Banking is just like going to the bank.

Table 3.6 (Continued.)

Section 4	Perceived normative believe
1	People in my organization think that I should use Internet Banking.
2	My family thinks that I should use Internet Banking.
3	My friends influence my decision to use Internet Banking.
4	The image of the bank has influence on my using Internet Banking.
5	Internet Banking's special promotion has influence on my using Internet Banking.
Section 5	**Perceived Intention to Use**
1	Wherever I access the bank's web page, I intend to use it for Internet Banking.
2	Wherever I access the Internet Banking (IB), I intend to make financial transactions through the Internet Banking.
3	I would continue to use Internet Banking to carry out my financial transactions.
4	I am interested in new Internet Banking services.
5	All things considered, using Internet Banking in the future for me will be positive or negative.

3.4.5 Data preparation. After getting the data through questionnaires, the outcomes from respondents should be checked to overlook whether the data is to reflect the actual data or not. The response data may be occurred by un-intending to respond the question or responding with an abnormal data, inconsistencies, missing data, outliers or intending to answer but having a bias. For example, the respondent answered every question by choosing "neutral". Researcher should consider whether to eliminate this entire item.

3.4.5.1 Cleaning data. Due to no perfectly answer from some responses, one or two items are not to be answered. Cleaning data help to ensure that the data are suitable for start analyzing by checking error in data entry. The errors occurred when the responses answer the questionnaire such as missing data or outlier. There are some researcher's advices for cleaning data.

Sekaran and Bougie (2009) stressed that *"it is important for all the negatively worded items in the questionnaire should first be reversed before the items are*

*submitted for reliability testes" (*p.325). If not, the reliability measure will be incorrect.

In case, the reliability alpha is above 0.70 then do not to take any remedial actions. It means that do not take out of a Cronbach's alpha if item deleted, which is high score because it affects the validity of the measure in a negative way although it is improving the reliability (Sekaran & Bougie, 2009).

Cooper and Schindler (2008) suggested that "*outliers that are entry mistakes should be corrected or removed during editing. It is important to separate legitimate outliers from errors in measurement* (p.456)."

3.4.5.2 Missing data. Some information from respondents are not available for one or more interest called "Missing data" (Cooper & Schindler, 2008). "*Missing or incomplete data is an almost inevitable occurrence in social science research* (Byrne, 2010, p.353)." Hair, Black, Babin and Andrson (2010) supported that missing data like a nuisance to researchers to have a primarily result of an error in data entry. Missing data normally occurs when respondents unintentionally skip, or intentionally refuses as the question might be difficult to make a decision to answer. Although Byrne (2010) noted that missing data is beyond the research's control, this research has a little missing data (less than 5% of the data) due to almost all the questionnaires were controlled by checking the data hand by hand after submitting from the respondents. Byrne (2010) referred to Kline (1998) who suggested a large amount of missing data should constitute less than 10% of the data. Anyway, this research throws out the missing data before analyzing the data due to a complexity of data if analyzing. Likewise, it is not affect to the research sample size because the amount of sample size of this research is about 700 cases.

3.4.5.3 Outliers data. Blunch (2008) described *"the outliers are observations, which take on values that are very different from the main part of the data" (p.95).* Outliers or extreme responses may not influence the outcome of any multivariate analysis "*is an observation that is substantially different from other observations"* (Hair et al., 2010, p.36; Sekaran and Bougie, 2009, p.309). Sekaran and Bougie (2009) also supported that an outlier is not always an error, but having a large impact to the research results. Therefore, researchers should be carefully underlying the data to make sure that it is exactly correct. Blunch (2008) advocated state control of all outliers being severely influenced if data not being multivariate normal and recommend to examine the raw data very closely before doing any calculation.

Cooper and Schindler (2008) confirmed that outliers are displayed on the special statistical treatment. Typically, outliers are an unusually high or low value of several variables value, which stand it out of the others (Hair et al., 2010). Kline (2005) easily explained outliers that are cases with scores that are very different or extreme from the rest. The example is about salary data. If one respondent has an income 200,000 baht, meanwhile, the average is only 20,000 baht. Obviously, the outlier 200,000 should be considering eliminating.

3.4.6 Data analysis methodology. It is vital importance to consider which techniques will be used to measure data (Figure 3.6 and Appendix C).

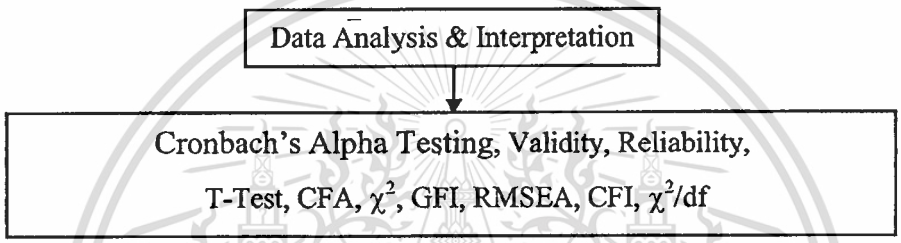


Figure 3.6 Data Analysis and Interpretation

*3.4.6.1 **Missing data.*** Missing data "*is more the rule than the exception in empirical research*" (Blunch, 2008, p. 217) and is the most serious if estimate a model include missing data due to it is easily run out of degrees of freedom. Byrne (2010) suggested that a wide variety of reasons can be aroused for missing data either by researcher uncontrolled, failure to answer one item, or in researcher total control, incomplete data by design. Byrne (2010) also argued that missing data must be addressed the issue, regardless of missing reason. Table 3.7 is shown many approaches of coping with missing data problem (Byrne, 2010; Blunch, 2008). This research chooses Listwise Deletion (LD) approach to delete 6 missing data which is very low number due to keeping under control before getting back the questionnaire.

Table 3.7

Missing Approaches Summary

#	Approach	Description	Remark
1	Listwise Deletion (LD) (Byrne, 2010)	- Delete all observations that have missing values on any variable. - All cases having a missing value for any of the variables in the data are excluded from computation.	- Default in many applications including SPSS. - Easily reduce the sample size. - The most popular method for dealing with missing data. - The fastest and simplest answer to the problem. - The disadvantage is the loss of information resulting from the reduced sample size.
2	Pairwise Deletion (PD) (Byrne, 2010)	- Use LD for all pairs of variables. - Only cases having missing values on variables tagged for a particular computation are excluded from the analysis.	- Calculation of variance and covariance are based on all observations are not missing. - The various sample moments are based on different sample sizes. - Five majors problems (1) the sample covariance can fail to be non-positive definite (2) the choice of which sample size to use in obtaining appropriate parameter estimates is equivocal (3) goodness of fit indices can be substantially biased as a result of interaction between the percentage of missing data and the sample size (4) given that parameters are estimated from different sets of units (5) consistent with Listwise deletion of missing data.

Table 3.7 (Continued, p.2)

#	Approach	Description	Remark
3	Mean Imputation (MI) (Byrne, 2010)	- Replace the missing value with the mean of the variable. - Replace the unobserved score with some estimated value.	- Reduce the sample variance and covariance. - Seem to be a bad solution to the problem. - Be problematic in at least 2 ways: the standard errors will be biased; the frequency distribution of the imputed variable may be misleading.
4	Regression Imputation (RI) (Byrne, 2010)	- Estimate the value of the missing observation by regression the variable on other variables. - Cases having complete data are used to generate the regression equation that is subsequently used to postulate missing values for the cases having incomplete data.	- Reduce estimates of variance and covariance, but to a lesser degree than MI - Three difficulties: (1) nevertheless suffers from the same limitation of inappropriately restricting variance (2) spuriously inflate the covariance (3) caution that this procedure may not be feasible in the case where the variable having the missing value does not cover, at least moderately with other variables in the data.
5	Full information maximum likelihood (FIML) (Blunch, 2008)	With missing data	- Procedure as implemented in AMOS gives the best results, but the model evaluation is a bit more complicated and has fewer global fit measures.

Table 3.7 (Continued, p.3)

#	Approach	Description	Remark
6	Pattern matching imputation (Byrne, 2010)	Replace missing data with an observed score from another case in the data for which the response pattern across all variables is similar.	- SEM statistical package within which it is embedded is so widely used (LISREL). - Limitation: in the event that no matching case is determined, no imputation is performed.
7	1.FIML and 2.Expectation maximization estimation (EM) (Byrne, 2010)	EM differs from FIML approach in that it involves two steps in achieving the criterion.	- At present time, both of Model based on ML (Maximum likelihood) algorithm. - In SEM, the most widely used criterion is the maximum likelihood algorithm (ML).

Sources. Adapted from Blunch (2008) and Byrne (2010)

3.4.6.2 Outliers. A conservative outlier level of statistical significance has been recommended for Mahalanobis distance (D) which indicates the distance between an individual case and all variables is $p<.001$ (Kline, 2005).

One general rule about treating outliers - based on Albright, Winston and Zappe (2009), a popular textbook on data analysis - is as follows:

> *If an outlier is clearly not a member of the population of interest, then it is probably best to delete it from the analysis. Now, if it is not clear whether the outliers are members of the relevant population, the analysis could be run with them and without them. If the results are practically the same in both cases, then it is probably best to report the results with the outliers included. Otherwise, both sets of results should be reported with a verbal explanation of the outliers. Therefore, if either the pieces of data or demographic profile of the particular case, or both, are clearly out of sync with the data of interest, it is wise to delete them from further consideration early on in the analysis (p. 580-581).*

Additional information can be obtained from Bollen (1987) who not to suggest that outliers are the prime cause of improper solutions. If researchers included in the study, they should have ignored an outcome of negative variances or correlations greater than one. However, it is wise to screen the data before estimating a structural equation model.

Outlier of this study reports result with the outlier as it is not relevant population and it is only 7% of all cases which can be ignorable – Table 3.8.

Table 3.8

Outlier Summary

Observ-ation number	Mahala-nobis d-squared	p1	p2	Observ-ation number	Mahala-nobis d-squared	p1	p2
91	177.279	.000	.000	164	85.278	.000	.000
443	142.568	.000	.000	603	82.611	.000	.000
246	131.424	.000	.000	426	82.219	.000	.000
59	129.732	.000	.000	364	79.827	.000	.000
57	124.521	.000	.000	587	79.163	.000	.000
343	120.266	.000	.000	159	78.737	.000	.000
695	112.167	.000	.000	319	78.671	.000	.000
247	104.435	.000	.000	311	78.075	.000	.000
73	102.506	.000	.000	120	77.788	.000	.000
54	101.840	.000	.000	177	77.190	.000	.000
135	99.128	.000	.000	108	74.003	.000	.000
31	98.844	.000	.000	67	73.435	.000	.000
262	98.609	.000	.000	324	72.349	.000	.000
158	96.651	.000	.000	441	71.863	.000	.000
157	96.425	.000	.000	214	71.520	.000	.000
96	94.028	.000	.000	333	71.137	.000	.000
448	93.074	.000	.000	368	70.549	.000	.000
128	92.290	.000	.000	207	69.655	.000	.000

Table 3.8 (Continued.)

Observ-ation number	Mahala-nobis d-squared	p1	p2	Observ-ation number	Mahala-nobis d-squared	p1	p2
427	91.998	.000	.000	56	68.510	.000	.000
167	90.598	.000	.000	312	68.304	.000	.000
64	90.031	.000	.000	615	68.281	.000	.000
46	88.048	.000	.000	371	67.505	.000	.000
529	85.967	.000	.000	49	67.324	.000	.000
-				536	66.736	.000	.000

Observations farthest from the centroid (Mahalanobis distance - D) (47 from 697 = 7%)

3.4.6.3 Normality. If a distribution of sample is in a shape of a bell, it is a normal distribution. Two ways that a distribution can be non-normal are skew and kurtosis (Kline, 2011). Kline (2011) defined skew that *"the shape of a unimodel distribution is asymmetrical about its mean (p 60)"* and kurtosis is normal curve that not indicates heavier or lighter tails and a higher peak or a lower peak. Kline (2011) also suggested *"Variables with absolute values of Skew Index > 3.0 are described as "extremely'. Absolute values of Kurtosis Index from about 8.0 to over 20.0 of this index are described as indicating "extreme" kurtosis. If absolute values of Kurtosis Index > 20.0, these data indicate a more serious one as severely "non-normal."* Detail is as Table 3.9.

Table 3.9

Assessment of Normality (697 Cases)

Variable	Min	Max	Skew	Kurtosis
PU1	1.000	5.000	-1.345	1.755
PU2	1.000	5.000	-1.714	3.431
PU3	1.000	5.000	-1.466	1.929
PU4	1.000	5.000	-1.490	2.271
PU5	1.000	5.000	-1.265	1.721

Table 3.9 (Continued.)

Variable	Min	Max	Skew	Kurtosis
PE1	1.000	5.000	-1.166	1.385
PE2	1.000	5.000	-1.217	1.429
PE3	1.000	5.000	-1.182	1.289
PE4	1.000	5.000	-1.238	1.282
PE5	1.000	5.000	-1.158	1.239
PP1	1.000	5.000	-.693	.117
PP2	1.000	5.000	-.781	.319
PP3	1.000	5.000	-.871	-.519
PP4	1.000	5.000	-.656	-.011
PP5	1.000	5.000	-.789	.269
PN1	1.000	5.000	-.560	.292
PN2	1.000	5.000	-.380	-.299
PN3	1.000	5.000	-.641	-.020
PN4	1.000	5.000	-1.237	1.626
PN5	1.000	5.000	-.953	.684
IU1	1.000	5.000	-.580	.088
IU2	1.000	5.000	-.624	.179
IU3	1.000	5.000	-.667	.284
IU4	1.000	5.000	-.520	.107
IU5	1.000	5.000	-.662	.433

3.4.6.4 Measurement analysis. *Reliability and Validity.* According to Sekaran and bougie (2009), the "goodness" of the measures has been developed to ensure that the data and the questionnaire the research used are accurate, related, and suitable for the concept of the research and do indeed measure what are supposed to. Firstly, the reliability by Cronbrach's alpha and validity with Convergent validity by the measurement model of AMOS are form of testing goodness of measures. Sekaran and Bougie (2009) noted that Cronbach's alpha is a popular test of inter-item consistency, and is a reliability coefficient that indicates how well the items in a set are positively

correlated to one another. Especially, with discriminant validity, Bagozzi, Yi and Phillips (1991) reported that a concept and the construct indicators should be differs from another concept and its indicators measured by average variance extracted and square root of the average variance shared by items within a construct. Kline (2011) indicated in his book that "*the analysis of measures with poor score reliability or validity can jeopardize the integrity of the results (p.72).*

For reliability measuring, in general, if reliabilities less than 0.60 are considered to be poor, if it is 0.70 are considered to be acceptable, and if it is over 0.80 are considered to be good (Sekaran & Bougie, 2009; Kline, 2005; Hair et al., 2010).

For validity measuring, as described above, the questionnaire for this research was adapted from many previous researchers and approved by professional at SIU International after testing the understanding from many executives' staff of bankers.

In order to examine the internal consistency of the research instrument, a reliability test was conducted. The test confirmed the reliability of the research items with Cronbach's alpha coefficient of 0.93 for the responses from the Internet Banking users and 0.92 for the Non-Internet Banking users. Reliability measurement results in this study are shown in Table 3.10.

Table 3.10

Reliability

Reliability	**Cronbach's alpha (Exceed 0.7)**	
Accepted Level	***Sekaran and Bougie (2009), Kline (2005), Hair et al. (2011)***	
Constructs	**N of IB Users = 342**	**N of Non-IB Users = 355**
Perceived Usefulness (PU1 – PU5)	.91	.87
Perceived Ease of Use (PE1 – PE5)	.87	.82
Perceived Normative Belief (PN1 – PN5)	.76	.76

Table 3.10 (Continued)

Reliability	**Cronbach's alpha (Exceed 0.7)**	
Accepted Level	***Sekaran and Bougie (2009), Kline (2005), Hair et al. (2011)***	
Constructs	**N of IB Users = 342**	**N of Non-IB Users = 355**
Perceived Privacy (PP1 – PP5)	.92	.85
Intention to Use (IU1 – IU5)	.84	.86

3.4.6.5 Structural analysis. Structural equation modeling (SEM) is a statistical methodology to take a confirmatory approach to the analysis a structural theory which represents "causal" processes on multiple variables (Byrne, 2010). This study is using AMOS – one application of SEM to assess the overall goodness-of-fit. If goodness-of-fit is adequate, the model has been plausibility of postulated that the relations among variables is reflected the variance and covariance of the data. Many criterions of goodness-of-fit statistic that SEM provides summarized at appendix C. This study model by Table 3.11 shows a good fit of the data with SEM. The followings are many basically value of fit indexes indicates the goodness-of-fit (Kline, 2005; 2011).

1) *Chi-Square/df* is also known as the likelihood ratio chi-square or generalized likelihood ratio must be between 1.0 and 3.0 - the model is 2.219 for IB users and 2.596 for Non-IB users.

2) *RMSEA (Root Mean Square Error of Approximation)* is the degree of falseness of the null hypothesis. A rule of thumb is that RMSEA between .05 and .08 suggest reasonable error of approximation – the model is .060 for IB users and 0.67 for Non-IB users.

3) *GFI (Goodness-of-Fit Index)* estimates the proportion of covariance in the sample data matrix explained by the model. A rule of thumb is that value greater than roughly .90 – the model is .9 for IB users and Non-IB users.

4) *CFI (Comparative Fit Index)* assess the relative improvement in fit of the researcher's model compared with a baseline model. A rule of thumb is that value greater than roughly .90 – the model is .94 for IB users and .91 for Non-IB users.

5) *NFI (Normed Fit Index)* provides a measure of complete covariance in the data. A value greater than 0.9 was originally considered representative of a well-fitting model. Currently a revised cutoff value close to .95 has been advised. – the model is .90 for IB users and Non-IB users.

Table 3.11

Fit Indices (Acceptable level) and Explanatory Power for Additional TAM

Fit Indices and R^2	Acceptable level	Additional TAM	
		Internet users	Non-Internet users
Chi-Square	between 1.0 and 3.0	2.219	2.596
RMSEA	between .05 and .08	.060	.067
GFI	>= 0.9	.9	.9
CFI	>= 0.9	.94	.91
NFI	>= 0.9	.90	.9
R^2 (PU)	approach 1	.591	.360
R^2 (INT)	approach 1	.682	.769

3.4.7 Hypotheses testing. The subjects were divided into two groups; the subjects who use the IB and the subjects who do not use the IB. There are 342 IB and 355 Non-IB. SEM is conducted to test the hypotheses (H1 – H6) on the relationship among these constructs to Intention to Use (Figure 3.7). Moreover, T-Tests were conducted to test the hypotheses (H7 – H10) on the perceptions of the Internet Banking between these two groups (Figure 3.8).

3.4.7.1 Hypotheses testing of IB users and Non – IB users (H1 – H6)

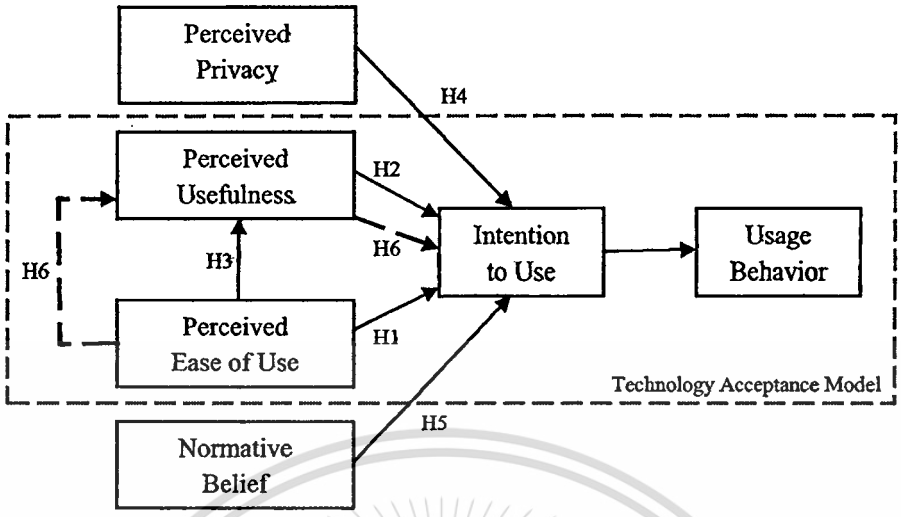


Figure 3.7 The proposed research model with hypotheses

3.4.7.2 Hypotheses testing between IB users and Non – IB users (H7 – H10)

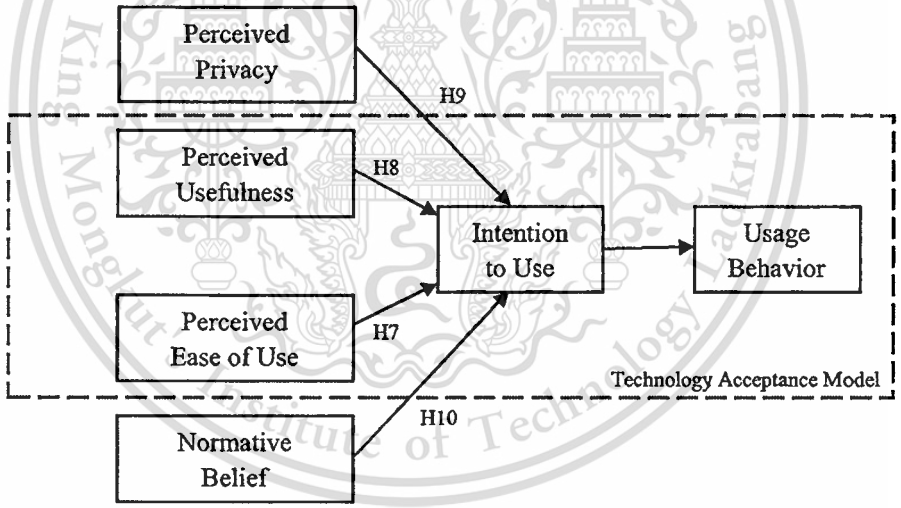


Figure 3.8 The proposed research model with hypotheses between two groups

3.5 Conclusions

The chapter 3 provides a new revision model by having a conceptual framework, a research hypotheses and research design and methodology. Especially in research design and methodology consists of a lot of details: research design in details, research strategy, measurement development, data collection method, data preparation, data analysis method (see appendix C), measurement analysis and structural analysis, also hypothesis testing using SEM and T-Test measurement. Reliability is tested by using Cronbach's alpha extracted by SPSS. It is found that all

constructs in the conceptual framework of the model are over the accepted level. Also, structural model measurement is shown the goodness of fit at accepted level. It means that all the constructs; Perceived usefulness, Perceived Ease of Use, Perceived Privacy, and Normative Belief are believed that it can be predicted as the important and significant constructs toward Technology Acceptance Model.

Chapter 4
Results and Discussion

4.1 Introductions

In the previous chapter, a conceptual framework has been provided to explain and predict the acceptance and adoption behavior of Internet Banking users in Thailand. Moreover, the hypothesis relationships between each constructs are also explored. Also the important of profile of respondents are described in Appendix with details. This chapter proposes to demonstrate how the objectives of this study were achieved and what the research questions were answered, such as what all of constructs are hypothesized that the usage of Internet Banking to be influenced by all constructs.

Therefore, this chapter begins with the summarization on the profile of respondents which has the necessary effect on the results and summarization for the development of valid and reliable measurement to ensure that the model is ready for the prediction results analysis. Followed by a discussion on the key research finding, it is the explanation of the analytical procedures that have been employed by focusing mainly on how the research questions presented or the key factors finding are to be answered.

4.2 Respondents User's Profile

Concerning of the factors affecting the Internet Banking adoption in Thailand, 81% of the research respondents consist of population in Bangkok and 19% in provincial. This is because Bangkok is the capital city of Thailand which has high density and diversity of people and businesses with an economy that is fully integrated with the usage of Internet. Moreover, most of respondents are female (65%). 70% of total respondents are under or equal 35 years old with Bachelor degree and will be the prominent consumers in the future. Summarization is in a table 4.1 and its detail is in chapter 3.

Table 4.1

Respondents in the Research Study

Respon-dents	On - line	Off - line	Total	B*	G*	E*	Valid Metro	Valid Provin -cial
Internet Banking	190 55%	156 42%	346 = 49% Valid 342	80 23%	44 13%	222 64%	263 77%	79 23%
Non-Internet Banking	141 45%	216 58%	357 = 51% Valid 355	88 25%	48 13%	221 62%	304 86%	51 14%
Total	331	372	703 Missing 6 Valid 697	168	92	443	567 81%	130 19%

* B = Business, G = government, E = Education

4.3 Overall Assessment of Results

4.3.1 Scale measurement - mean and standard deviation. Measures of Mean and Standard Deviation offer a general picture of the data and might offer the researchers and managers a good idea of a variation of responses. Also, Table 4.2 below shows the distribution of a majority of positive response compared to the neural in each variable. All variables were measured by using five point Likert's scale rating the responses from 5 to 1 as strongly agreed, moderately agreed, neutral, moderately disagreed, and strongly disagreed.

(* is the most positive believe in each construct)

Table 4.2

Mean and Standard Deviation in the Research Study: Perceived Ease of Use (PE)

		Internet Banking User				Non-Internet Banking User			
Varia-ble	**Measure-ment**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**
PE1	Flexible to interact with	88%	9%	4.28	.756	84%	13%	4.34	.846
PE2	Easy learning	87%	9%	4.23	.806	82%	12%	4.24	.928
PE3	Easy to do what I want	88%	7%	4.24	.840	82%	12%	4.20	.885
PE4	Clear and under-standable	84%	10%	4.18	.827	*90%	8%	4.50	.761
PE5	Overall easy to use	*90%	6%	4.28	.753	82%	15%	4.34	.850
PE	Average of Mean			4.24		Average of Mean		4.33	

The results from the survey of 5 variables of the Perceived Ease of Use are summarized as follows:

1) 97% of the total believe that Internet Banking is flexible to interact with (PE1: Mean = 4.28 and S.D. = .76).

For Non-Internet Banking User, 97% of the total believe that Internet Banking is flexible to interact with (PE1: Mean = 4.34 and S.D. = .85).

2) 96% of the total believe that learning to use Internet Banking is easy (PE2: Mean = 4.23 and S.D. = .81).

For Non-Internet Banking User, 94% of the total believe that learning to use Internet Banking is easy (PE2: Mean = 4.24 and S.D. = .93).

3) 95% of the total believe that it is easy to get Internet Banking doing what they want it to do for banking purposes (PE3: Mean = 4.24 and S.D. = .84).

For Non-Internet Banking User, 94% of the total believe that it is easy to get Internet Banking doing what they want it to do for banking purposes (PE3: Mean = 4.20 and S.D. = .89).

4) 94% of the total believe that interaction with Internet Banking is clear and understandable (PE4: Mean = 4.18 and S.D. = .83).

For Non-Internet Banking User, *98% of the total believe that interaction with Internet Banking is clear and understandable (PE4: Mean = 4.50 and S.D. = .76).

5) *96% of the total believe that Internet Banking is easy to use (PE5: Mean = 4.28 and S.D. = .75).

For Non-Internet Banking User, 97% of the total believe that Internet Banking is easy to use (PE5: Mean = 4.34 and S.D. = .85).

6) Non-IB users even responded with higher average for the "Ease of Use" than the responses from subjects in the IB users (4.33 > 4.24)

Table 4.3

Mean and Standard Deviation in the Research Study: Perceived Usefulness

		Internet Banking User				Non-Internet Banking User			
Varia -ble	**Measure -ment**	**Posi- tive (5,4)**	**Neu- ral (3)**	**Mean**	**S.D.**	**Posi- tive (5,4)**	**Neu- ral (3)**	**Mean**	**S.D.**
PU1	Conduct more quickly	91%	7%	4.49	.741	84%	13%	4.29	.846
PU2	Conduct easily	*94%	4%	4.55	.695	*86%	11%	4.37	.862
PU3	Conduct effective time	*94%	4%	4.45	.771	81%	13%	4.26	.958

Table 4.3 (Continued.)

		Internet Banking User				Non-Internet Banking User			
Varia-ble	**Measure-ment**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**
PU4	Conduct wide banking informa-tion	91%	6%	4.42	.798	83%	13%	4.31	.902
PU5	Overall conduct useful-ness	93%	6%	4.46	.669	85%	13%	4.34	.826
PU	Average of Mean			4.47		Average of Mean		4.31	

The results from the survey of 5 variables of the Perceived Usefulness are summarized as follows:

1) 98% of the total believe that using Internet Banking enables them to accomplish their banking transactions more quickly (PU1: Mean = 4.49 and S.D. = .74).

For Non-Internet Banking User, 97% of the total believe that using Internet Banking enables them to accomplish their banking transactions more quickly (PU1: Mean = 4.29 and S.D. = .85).

2) *98% of the total believe that using Internet Banking makes it easier to do banking transactions (PU2: Mean = 4.55 and S.D. = .70).

For Non-Internet Banking User, *97% of the total believe that using Internet Banking makes it easier to do banking transactions (PU2: Mean = 4.37 and S.D. = .86).

3) *98% of the total believe that that using Internet Banking enables the effective use of time (PU3: Mean = 4.45 and S.D. = .77).

For Non-Internet Banking User, 94% of the total believe that using Internet Banking enables the effective use of time (PU3: Mean = 4.26 and S.D. = .96).

4) 97% of the total believe that using Internet Banking enables them to get a wide range of banking information with only "on click" (PU4: Mean = 4.42 and S.D. = .80).

For Non-Internet Banking User, 96% of the total believe that using Internet Banking enables them to get a wide range of banking information with only "on click" (PU4: Mean = 4.31 and S.D. = .90).

5) 99% of the total believe that Internet Banking is useful in banking transactions (PU5: Mean = 4.46 and S.D. = .67).

For Non-Internet Banking User, 98% of the total believe that Internet Banking is useful in banking transactions (PU5: Mean = 4.34 and S.D. = .83).

6) IB users responded with higher average for the "Usefulness" than the responses from subjects in the Non-IB users (4.47 > 4.31)

Table 4.4

Mean and Standard Deviation in the Research Study: Perceived Privacy

		Internet Banking User				**Non-Internet Banking User**			
Vari -able	**Measure -ment**	**Posi- tive (5,4)**	**Neu- ral (3)**	**Mean**	**S.D.**	**Posi- tive (5,4)**	**Neu- ral (3)**	**Mean**	**S.D.**
PP1	Trust ability of the system	71%	25%	3.87	.836	*76%	19%	4.17	.938
PP2	Trust in disclose personal data	71%	25%	3.90	.857	73%	21%	4.12	1.004
PP3	Trust in keep data securely	76%	20%	4.00	.855	75%	17%	4.08	.984

Table 4.4 (Continued.)

		Internet Banking User				Non-Internet Banking User			
Vari -able	**Measure -ment**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**
PP4	Trust in using IB is safe	75%	21%	3.96	.813	70%	21%	3.97	1.001
PP5	Trust like going to the Bank	*80%	16%	4.03	.786	72%	18%	3.98	1.010
PP	Average of Mean			3.95		Average of Mean		4.06	

The results from the survey of 5 variables of the Perceived Privacy are summarized as follows:

1) 96% of the total believe that the ability of the Internet Banking system protects the Privacy of their personal banking data (PP1: Mean = 3.87 and S.D. = .84).

For Non-Internet Banking User, *95% of the total believe that the ability of the Internet Banking system protects the Privacy of their personal banking data (PP1: Mean = 4.17 and S.D. = .94).

2) 96% of the total believe that the Internet Banking system should not disclose their personal banking data (PP2: Mean = 3.90 and S.D. = .86).

For Non-Internet Banking User, 94% of the total believe that the Internet Banking system not disclose their personal banking data (PP2: Mean = 4.12 and S.D. = 1.00).

3) 96% of the total believe that the banks keep customer data securely (PP3: Mean = 4.00 and S.D. = .86).

For Non-Internet Banking User, 92% of the total believe that the banks keep customer data securely (PP3: Mean = 4.08 and S.D. = .98).

4) 96% of the total believe that the Internet Banking using is safe (PP4: Mean = 3.96 and S.D. = .81).

For Non-Internet Banking User, 91% of the total believe that the Internet Banking using is safe (PP4: Mean = 3.97 and S.D. = 1.00).

5) *96% of the total believe that making transactions through Internet Banking is just like going to the bank (PP5: Mean = 4.03 and S.D. = .79).

For Non-Internet Banking User, 90% of the total believe that making transactions through Internet Banking is just like going to the bank (PP5: Mean = 3.98 and S.D. = 1.01).

6) Non-IB users responded with higher average for the "Privacy" than the responses from subjects in the IB users (4.06 > 3.95)

Table 4.5

Mean and Standard Deviation in the Research Study: Normative Belief

		Internet Banking User				Non-Internet Banking User			
Varia -ble	**Measure -ment**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**	**Posi-tive (5,4)**	**Neu-ral (3)**	**Mean**	**S.D.**
PN1	Collogue influence me to use	60%	23%	3.88	.908	56%	36%	3.66	.933
PN2	Family influence me to use	54%	29%	3.55	1.068	50%	35%	3.46	.980
PN3	Friend influence me to use	62%	23%	3.58	1.087	51%	32%	3.39	1.012
PN4	Bank image	*89%	7%	4.35	.804	*82%	13%	4.18	.865
PN5	Bank promo-tion	82%	11%	4.13	.922	72%	19%	3.90	.950
PN	Average of Mean			3.90		Average of Mean		3.72	

The results from the survey of 5 variables of the Normative Belief are summarized as follows:

1) 83% of the total believe that people in the organization think that they should use Internet Banking (PN1: Mean = 3.88 and S.D. = .91).

For Non-Internet Banking User, 92% of the total believe that people in the organization think that they should use Internet Banking (PN1: Mean = 3.66 and S.D. = .93).

2) 83% of the total believe that their family thinks that they should use Internet Banking (PN2: Mean = 3.55 and S.D. = 1.07).

For Non-Internet Banking User, 85% of the total believe that their family thinks that they should use Internet Banking (PN2: Mean = 3.46 and S.D. = .98).

3) 85% of the total believe that their friends influence their decision to use Internet Banking (PN3: Mean = 3.58 and S.D. = 1.09).

For Non-Internet Banking User, 83% of the total believe that their friends influence their decision to use Internet Banking (PN3: Mean = 3.39 and S.D. = 1.01).

4) *96% of the total believe that the image of the bank has influence on using Internet Banking (PN4: Mean = 4.35 and S.D. = .80).

For Non-Internet Banking User, *95% of the total believe that the image of the bank has influence on using Internet Banking (PN4: Mean = 4.18 and S.D. = .87).

5) 93% of the total believe that the special promotion of the bank has influence on using Internet Banking (PN5: Mean = 4.13 and S.D. = .92).

For Non-Internet Banking User, 91% of the total believe that the special promotion of the bank has influence on using Internet Banking (PN5: Mean = 3.90 and S.D. = .95).

6) IB users responded with higher average for the "Normative Belief" than the responses from subjects in the Non-IB users (3.90 >3.72)

4.3.2 Reliable and validity measurement. Sekaran and Bougie (2010) stated that it was important to make sure that the variables using in the questionnaire measure indeed accurately particular concepts that were supposed to. The first concept measured is reliability. Reliability is a test of how accuracy in measurement by consistency and stability. Cronbach's alpha is the most popular test of inter-item consistency reliability which the degrees of all items are independent measures of the same concept and correlated with one another. The higher the coefficients, the better

the measuring instrument. The final result of Cronbach's alpha for each latent construct is summarized in the Table 4.6.

Table 4.6

Reliability Statistics

Cronbach's Alpha (α) Summary				
Latent Constructs		**Items**	**IB User – 342**	**Non- IB User – 355**
All		25	.928	.916
Perceived Ease of Use	(PE1 - PE5)	5	.865	.822
Perceived Usefulness	(PU1 - PU5)	5	.911	.865
Perceived Privacy	(PP1 - PP5)	5	.922	.846
Normative Belief	(PN1 - PN5)	5	.759	.757
Intention to Use	(IU1 - IU5)	5	.844	.858

There are no constructs showed the Cronbach's coefficient alpha less than 0.7. Therefore, the first step to test reliability of all instruments can ensure that the developed measures are reasonably good. The next step is the measures of validity.

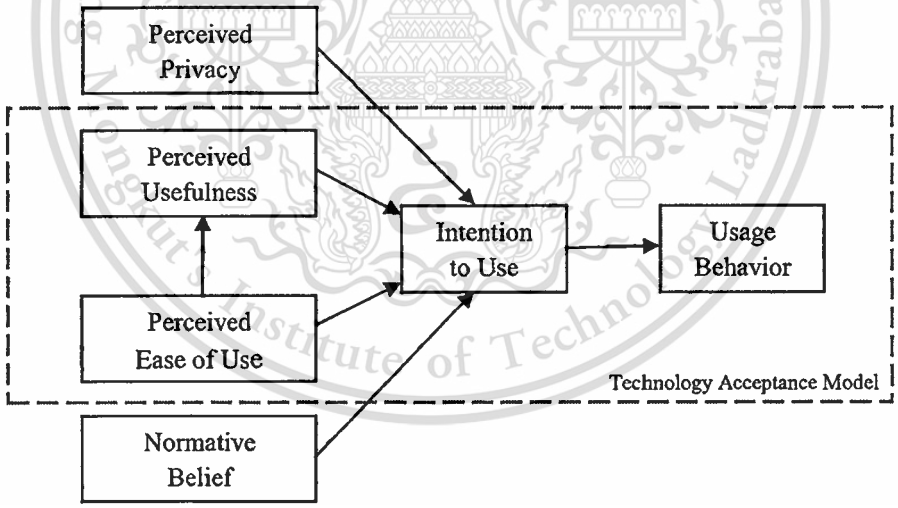
This research designed the questionnaire by adapting the instrument and scales from TAM used in the past researchers. Additional TAM by Perceived Privacy was adopted from Pikkarainen et al. (2004), Augmented TAM and TAMCom Extension of TAM and Normative Belief were adopted from Venkatesh and Davis (2000) - UTAUT to measure those constructs in the research questionnaire. Therefore, the validity of each construct is to be proved by the prior studies. Scale inter-correlations are presented in Table 4.7 showing that there is no occurred relationship between variables (not greater than 0.8).

Table 4.7

Correlations between Measured Variables

Model variables	PN	PP	PE	PU
PN	-			
PP	.326	-		
PE	.460	.438	-	
PU	.353	.337	.768	-
INT	.646	.512	.638	.669

4.3.3 Structural equation model measurement. The research model shows a good fit of the data with SEM program. By AMOS, the followings: Chi-Square/df < 3, RMSEA < 0.07, GFI > 0.8, CFI > 0.85, RMR <0.08 are many basically value of fit indexes indicates the goodness-of-fit (Kline, 2005; 2011). The details are described in Chapter 3.



Internet Banking users

Model fit summary

χ^2 /df = 2.219 (between 1 and3)
GFI = .9 (approach 1)
CFI = .94 (>=0.9)
NFI = .90 (approach 1)
RMSEA = .060 (between .05 and .08)
P_Value = .000

Non-Internet Banking users

Model fit summary

χ^2 /df = 2.596 (between 1 and3)
GFI = .9 (approach 1)
CFI = .914 (>=0.9)
NFI = .9 (approach 1)
RMSEA = .067 (between .05 and .08)
P_Value = .000

Figure 4.1 Structural Equation Model results summary

4.4 Hypotheses Testing Results Using SEM (H1 – H6)

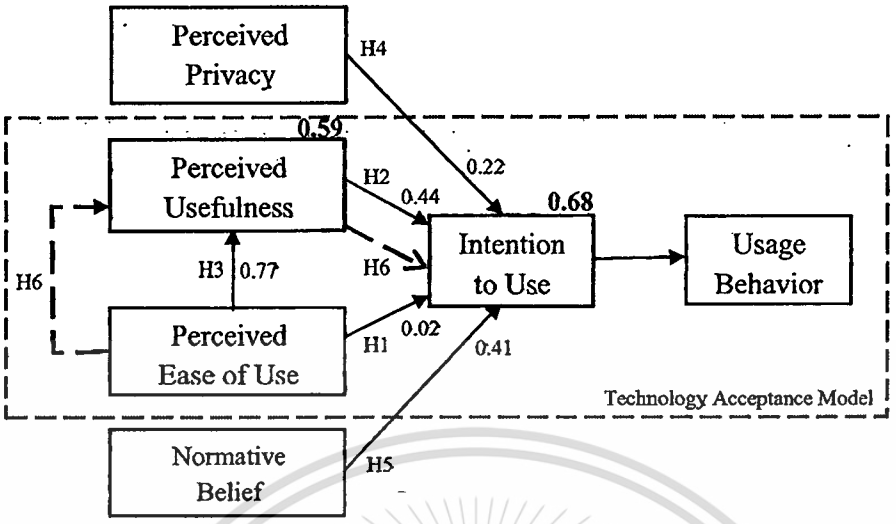


Figure 4.2 Summary results of structural modeling analysis for IB users

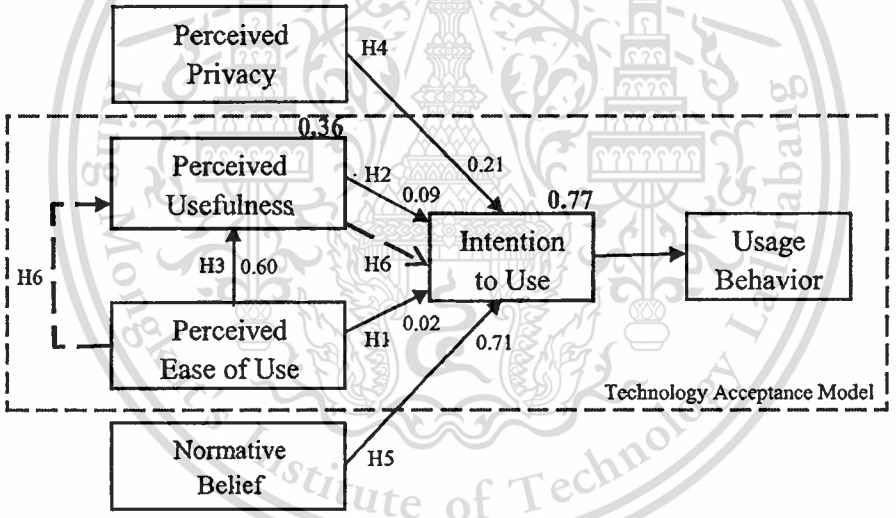


Figure 4.3 Summary results of structural modeling analysis for Non-IB users

- H1: Perceived Ease of Use (PE) has significant influence Intention to Use of the IB.
- H2: Perceived Usefulness (PU) has significant influence Intention to Use of the IB.
- H3: Perceived Ease of Use (PE) has significant influence Perceived Usefulness (PU) of the IB.
- H4: Perceived Privacy (PP) has significant influence Intention to Use of the IB.

- H5: Normative Belief (PN) has significant influence Intention to Use of the IB.
- H6: Perceived Ease of Use (PE) has indirect influence Intention to Use of the IB via Perceived Usefulness (PU).

4.5 Expected Prediction Results of the SEM

Sekaran and Bougie (2009; 2010) explained the coefficient of determination (R^2) that provided the goodness of fit of the regression model. The rule of R^2 is that if R^2 is near to 1, the percentage of variance in the dependent variable can be explained by the variation in the independent variable. It means that the regression model fits the data well. In this study (see figure 4.2 & 4.3), it gets a good model of variance explanation. The value R^2 of 0.68 for IB users and 0.77 for Internet Banking-IB users indicate that the proportion 68% for IB users and 77% for Non-IB users of variance in Intention to Use construct can be explained by all of constructs in the model and the proportion 59% for IB users and 36% for Non-IB users of variance in Perceived Usefulness can be explained by construct of Perceived Ease of Use. In other words, the extensions to the model by Perceived Privacy and Normative Belief not only help to understand the precursors to Perceived Ease of Use and Perceived usefulness; they also improve the prediction of Intention to Use with a good reliability of prediction.

4.6 Summary of Hypotheses Testing Using SEM (H1 – H6)

Table 4.8

Hypothesis Testing Summary

	Relationship (→ = direct)	Factor Loading (*accepted 0.3-1.0)		Results
		IB users	Non-IB users	
H1	Perceived Ease of Use (PE) → Intention to Use (IU)	0.02	0.02	-
H2	Perceived Usefulness (PU) → Intention to Use (IU)	0.44*	0.09	*Supported

Table 4.8 (Continued.)

	Relationship (→ = direct)	Factor Loading (*accepted 0.3-1.0)		Results
		IB users	Non-IB users	
H3	Perceived Ease of Use (PE) → PU	0.77*	0.60*	*Supported
H4	Perceived Privacy (PP) → Intention to Use (IU)	0.22	0.21	-
H5	Normative Beliefs (PN) → IU	0.41*	0.71*	*Supported
H6	Perceived Ease of Use (PE) via PU → IU	0.77*0.44*	0.60*0.09	*Supported

Figure 4.2 and 4.3 illustrate the final structural model and hypothesis paths among the model's variables for Internet Banking users (IB users) and Non- Internet Banking users (Non-IB users) using SEM analysis by AMOS. Table 4.8 shows the hypothesis testing established cause-and-effect relationships and also enhancing understanding the relationship that exists among variables (Sekaran & Bougie, 2009). Intention to Use Internet Banking from this study was affected directly by Perceived Usefulness for only IB users and Normative Belief for both IB users and Non-IB users. The factor that is the most important in predicting the adoption of Internet Banking for IB users is Perceived usefulness, which directly influences on IB users' Intention to Use with standardized path coefficient (β) of 0.44 and in predicting the adoption Internet Banking of Non-IB users is Normative Belief which directly influences on Intention to Use with standardized path coefficient (β) of 0.71. The second factor that is important to adopt IB is Normative Belief, which directly affects Intention to Use of IB users with standardized path coefficient (β) of 0.41. Also, Perceived Usefulness in this study was affected directly by Perceived Ease of Use with standardized path coefficient (β) of 0.77 for IB user and 0.60 for Non- IB users. Perceived Ease of Use indirectly influences Intention to Use via Perceived Usefulness evaluated by factor loading total equal 0.34 (β=0.77* β=0.44) for IB users and 0.05 (β=0.60* β=0.09) for Non- IB users. Perceived Privacy and Perceived Ease of Use in

this study does not affect Intention to Use of both IB users and Non-IB users. As a result, all hypotheses (H2 to H6) are all supported except H1: Perceived Ease of Use is not significant at standardized path coefficient (β) of .02 for both users and H4: Perceived Privacy is not significant at standardized path coefficient (β) of .24 for Non-IB users and 0.21 for IB users.

4.7 Summary of Hypotheses Testing Using T-Test (H7 – H10)

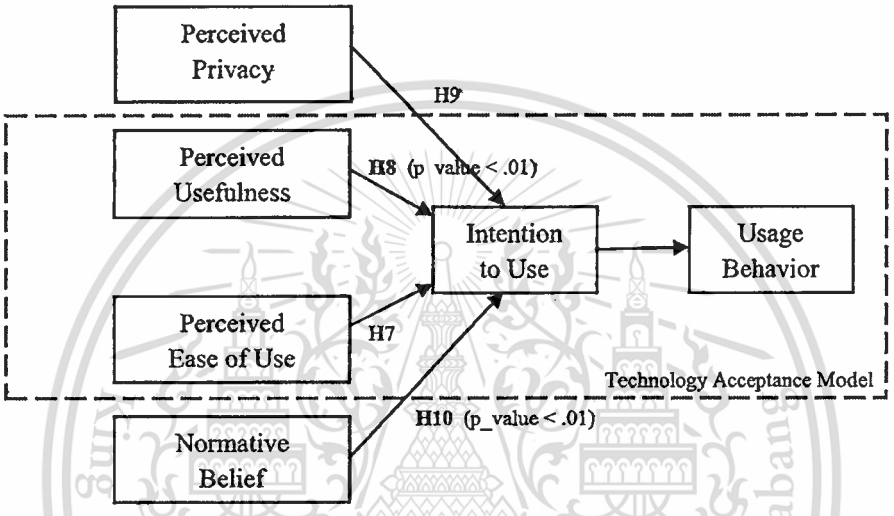


Figure 4.4 Summary results of T-Test analysis between two groups

- H7: There is a significant difference on the perceptions about the PE between the subjects who use IB and those who do not use IB.
- H8: There is a significant difference on the perceptions about the PU between the subjects who use IB and those who do not use IB.
- H9: There is a significant difference on the perceptions about the PP between the subjects who use IB and those who do not use IB.
- H10: There is a significant difference on the perceptions about the PN between the subjects who use IB and those who do not use IB.

Table 4.9

Summary of T-Test analysis of hypotheses of two groups (H7 – H10)

Factors	Mean		p-value
	Do not Use IB	Use IB	
H 7: Perceived Ease of Use	4.33	4.24	0.094
H 8: Perceived Usefulness	4.31	4.47	0.002*
H 9: Perceived Privacy	4.06	3.95	0.064
H 10: Normative Belief	3.72	3.90	0.001*

* Significant at p-value < 0.01 level

The results in Table 4.9 are the T-Test of two groups. For Perceived Usefulness and Normative Belief, there is a significant difference of two groups at the p-value < .01. It shows that the more Perceived Usefulness and Normative Belief, the more accept adopting Internet Banking.

There is no significant difference on the Perceived Ease of Use and Perceived Privacy between two groups (p-value > .05). The results show that there is no need to do anything with these factors.

4.8 Comparison Results with Past Research Works

As the results of a goodness-of-fit of the data which is adequate to show that the model has been plausibility explanation, many prior studies attempted to investigate the key factors that affect Internet Banking adoption which the results bring advantages to banking providers applying the benefits to their customers. The effectiveness and the efficiency of the various key factors depend on how goodness-of-fit of the conceptual framework of each study getting. Table 4.10 is the summarized example results of each study compare to this study.

Table 4.10

Comparison Effects of Constructs in this Study on Internet Banking

Construct	Researchers	Finding
Perceived Ease of Use and Perceived Usefulness	This study (Thailand)	- Perceived Usefulness affect to usage of Internet Banking behavior more than Perceived Ease of Use. - The present research shows some similarity to the David of the 1989. - There is not significant in Perceived Ease of Use for both IB users and Non-IB users. - There is significant in Perceived Usefulness for IB users but not for Non-IB users. - There is a significant difference on the perceptions about the PU between the subjects who use Internet Banking and those who do not use Internet Banking.
	1989 Davis (USA)	Usefulness was significantly greater than the Ease of Use.
	2011 Rouibah, Ramayah and May (Malaysia)	- Results reveal that the Perceived Ease of Use, and Perceived Usefulness have a direct positive effect on behavioral Intention to Use Internet Banking. - Results found TAM model has the best explanatory power. - Attitude toward behavior has the highest beta, followed by Perceived usefulness, and subjective norm,

Table 4.10 (Continued, p.2)

Construct	Researchers	Finding
Perceived Ease of Use and Perceived Usefulness	2010 Nor, Sutanonpaiboon and Mastor (Malay, Chinese)	Perceived usefulness, Perceived Ease of Use, all have significant effect on the Intention to Use Internet Banking.
	2009 Rotchanakitumnuai and Speece (Thailand)	The findings show Ease of Use and the others have a positive impact on Perceived usefulness.
	2008 Huang (Taiwan)	The analytical results showed that Perceived Usefulness and ease of Web use (information systems) are important predictors of E-Consumers' use intention.
	2007 Yousafzai, Foxall and Pallister (UK)	This paper considered "useful (PU)" if they contribute to accomplishing the end-user's purpose and "easy to use (PE)" if the effort required making use of the application is modest relative to the end-user's frame of reference. Summarized between PE and PU as follows. - PE has a direct and equal PU. - PE is a stronger effect than PU on technology adoption.

Table 4.10 (Continued, p.3)

Construct	Researchers	Finding
Perceived Ease of Use and Perceived Usefulness	2007 Yousafzai, Foxall and Pallister (UK)	- In contrast a spurious relationship between PU and initial usage suggested that PE is an intervening variable between usage and PU. - Some studies suggest that PE has a negative effect of PU on usage. PE will affect use when the intrinsic character of the technology contributes to the actual outcome of its application. - PE can be a strong catalyst fostering acceptance in a positive and enjoyable training environment. - Contrary to the original TAM, in Finland, "beliefs about outcome (PU) may not be sufficient to affect behaviors if individuals doubt their capabilities to successfully use the computer technology" (p. 600).
	2005 Jaruwachirathanakul and Fink (Thailand)	The attitudinal factors that appear to encourage the adoption of Internet Banking in Thailand most are "Features of the Web site" and "Perceived Usefulness"

Table 4.10 (Continued, p.4)

Construct	Researchers	Finding
Perceived Privacy	This study (Thailand)	- The results do not support the extended TAM with Perceived Privacy in predicting the usage of Internet Banking behavior to adopt Internet Banking for both IB users and Non-IB users. - The perception of Perceived Privacy between IB users and Non-IB users is not difference.
	2010 Nor, Sutanonpaiboon and Mastor (Malaysia and Chinese)	The results showed that trust has significant effect on the Intention to Use Internet Banking and security is one of the major issues in the Internet Banking adoption.
	2009 Roca, Garcı´a and Vega (Spain)	- The results from this study suggest that Perceived trust is important issues in online trading systems.
	2006 Flavia´n and Guinalı´u (Spain)	- The study reveals that an individual's loyalty to a web site is closely linked to the levels of trust. - The analyses show that trust in the Internet is particularly influenced by the security Perceived by consumers regarding the handling of their private data.
	2004 Kurma and Mittal (India)	- The growth in the usage of Internet Banking depends upon the generation of customer' trust in the medium of banking.

Table 4.10 (Continued, p.5)

Construct	Researchers	Finding
Perceived Privacy	2003 Rotchanakitumnuai and Speece (Thailand)	- Interviews with Thai firms suggest that security of the Internet is a major factor inhibiting wider adoption which affect to users have more confident and reliable in the system. Non-users are much more service conscious, and do not trust financial transactions made via Internet channels.
	1999 Sathye (Australia)	- Shows that security concerns and lack of awareness about Internet Banking and its benefits stand out as being the obstacles to the adoption of Internet Banking.
Normative Beliefs	This study (Thailand)	Normative Belief of Non-IB users is significant more than IB users which both affect to usage of Internet Banking behavior. The perception of Normative Belief between IB users and Non-IB users is not difference.
	2011 Rouibah, Ramayah and May (Malaysia)	- The findings revealed that the five factors - attitude, subjective norm, Perceived behavioral control, Perceived Usefulness and Perceived Ease of Use are significant in affecting users' behavioral Intention to Use E-Banking. Results also revealed that attitude plays the most important role, followed by subjective norm and Perceived usefulness.

Table 4.10 (Continued, p.6)

Construct	Researchers	Finding
Normative Beliefs	2005 Jaruwachirathanakul and Fink (Thailand)	- The research argued that a subjective norm can be a barrier to the adoption of innovation such as Internet Banking.
	2004 Vijayasarathy (USA)	Intention to Use on-line shopping was strongly influenced by Normative Beliefs.
	2003 Venkatesh et al. (USA)	- These tests provided strong empirical support for UTAUT, which posits three direct determinants of Intention to Use (performance expectancy, effort expectancy, and social influence) The effect of social influence on intention is contingent on all four moderators (Gender, Age, Voluntariness, Experience) included here such that the report found it to be non-significant when the data were analyzed without the inclusion of moderators.
	2000 Venkatesh and Davis (USA)	Both social influence processes including subjective norm and voluntariness significantly influenced user acceptance.
	1991 Moore and Benbasat (Canada)	- The research reported that the Perceived degree of voluntariness of the adoption of innovations particularly in work will have a direct positive effect on the adoption decision.

Table 4.10 (Continued, p.7)

Construct	Researchers	Finding
Normative Beliefs	1967 Fishbien (USA)	The research hypothesizes that an attitude toward an object could be identified by measuring relevant beliefs and evaluations of the object. Beliefs which are inherent in their target object - using Internet Banking will expose the potential adopter to different levels of belief.

The finding of the prior results in Table 4.10 is supportive throughout this study. Perceived Usefulness is still strong influence to Intention to Use. In the same situation, Perceived Privacy shows non-significant concern for customer rights in the reliable of the system. In addition, Normative Belief is the key construct in predicting the innovation adoption.

4.9 Behavior in Using Internet Banking

In addition to the questions for the variables in the questionnaire, the additional questions in separated part survey the user's behavior by asking about how Internet Banking users experiences are, what the most location they are using, how the frequency users use last month, how many transactions use per time, which banks users access, and what the most type of service users are. Details are shown in Table 4.11.

Table 4.11

Behavior in Using Internet Banking

4.11.1 Internet Banking experience

Measurement	Internet Banking User		
	342 Answers	%	Previous Study
Less than 6 months (< 6 M)	128	37	- less than 1 year 53% (Jaruwachirathanakul & Fink, 2005) - 84% more than a year (Shih & Fang, 2004)
6 months to less than 12 months (6-12 M)	55	16	
1 year to less than 4 years (1-4 Y)	139	41	
More than 4 years (> 4 Y)	20	6	

4.11.2 Internet Banking location

Measurement	Internet Banking User		
	407 Answers	%	Previous Study
Home	137	34%	in Greek 63% at my house, in Bulgarian 49% at working place (Maditinos, Tsairidis & Grigoriadis, 2009)
Work	200	49%	
Bank Branch office	29	7%	
Internet Café	13	3%	
Library	4	1%	
Institute	19	5%	
Friend house	3	1%	
Other (Fitness and Mobile phone)	2	0%	

4.11.3 Internet Banking using last month

Measurement	Internet Banking User		
	339 Answers	%	Previous Study
Use	239	71%	N/A
Not use	100	29%	

Table 4.11 (Continued, p.2)

4.11.4 Frequencies of Internet Banking using

Measurement	Internet Banking User		
	341 Answers	%	Previous Study
1-2 times	182	53%	- 61% fewer than 5 times (Celik, 2008) - 44% more than 10 times (Shih & Fang, 2006)
3-10 times	113	33%	
>10 times	29	9%	
Almost everyday	12	4%	
Everyday	5	1%	

4.11.5 How to use Internet Banking

Measurement	Internet Banking User		
	341 Answers	%	Previous Study
1 transaction	124	36%	N/A
2-3 transactions	184	54%	
4-8 transactions	27	8%	
> 9 transactions	6	2%	

4.11.6 Characteristic of using

Measurement	Internet Banking User		
	340 Answers	%	Previous Study
Only one Bank	164	48%	N/A
More than 1 Bank	176	52%	

Table 4.11 (Continued, p.3)

4.11.7 Service type

Measurement	Internet Banking User		
	813 Answers	%	Previous Study
Account Activities Review	265	33%	- 42% money transfer (Celik, 2008) - very frequency in checking balance and transaction history (Manzano et al., 2009)
Fund Transfer	167	21%	
International Funds Transfer	92	11%	
Invest in Mutual Funds	10	1%	
Bill Payments	180	22%	
Cheque Services	14	2%	
Credit Card, Thank you rewards	55	7%	
Other additional services	30	3%	
Other	0	0%	

4.10 Problem Encountered when Using Internet Banking

According to an interview of some people who use Internet Banking, the researcher found some interesting reply about the reason why users are not using Internet Banking. The answers have been collected and summarized as follows:

1) There are alternatives available that are more convenient than Internet Banking such as ATM.

2) Cash withdrawal for daily use cannot be done through Internet Banking

3) Transferring money with phone banking can be done very quickly while Internet Banking can take some 5-10 minutes before the website can be reached.

4) Computer security as exemplified by the recent news on Internet theft.

5) Usability problem and security concerns.

6) Internet connection is always not connected while doing transaction.

7) Take time to Internet access.

8) Instruction is not clear.

9) Using vocabulary that users are not known or familiar with.

Additional answers are collected from the respondents regarding the open questionnaire. One of the open questions was what the problem encountered when using Internet Banking. The following are the answers.

Table 4.12

Problem Encountered when Using Internet Banking from Questionnaire.

List of Problems
- Slow Internet or Internet problem
- Take long time to access
- After access, the screen hang very often while doing transaction
- Take long time to do transaction
- Internet connection problem
- System broken down
- Difficult to connect
- Knowledge transfer is not fast enough to learn, then error occurred
- Provider web's very slow
- Double transactions
- Reject transactions
- Error transaction
- Incorrect fee charge automation
- Data is not real time
- Do not display financial statement
- Balance is incorrect
- Cannot add money to SIM
- Difficulty in Internet Banking application
- Wrong or forget password
- Cannot use their password and have to contact branch staff
- Do not understand in detail of how to do or the menu
- Cannot add other Bank
- Cannot add account of paying bill
- Do not know step to do transaction clearly
- With fast cursor effect to select incorrect account
- Fine by incident keying incorrect code to pay bill
- Do wrong transaction
- Cannot do transaction
- Cannot transfer money

Table 4.12 (Continued.)

List of Problems
- Not easy to use
- System lock, cannot do anything
- Puzzle with the information message on the screen
- Computer down
- Internet down during using

4.11 Discussion

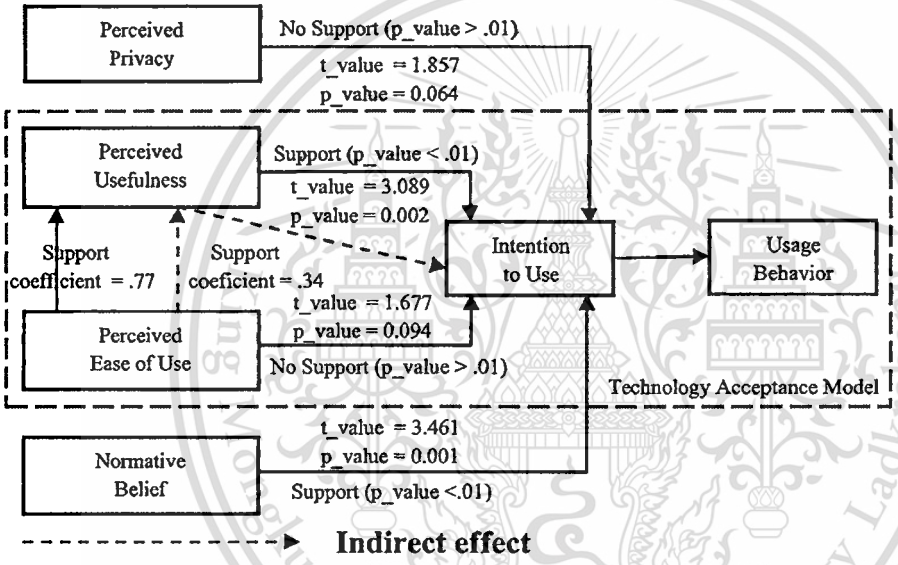


Figure 4.5 Summary results of IB users

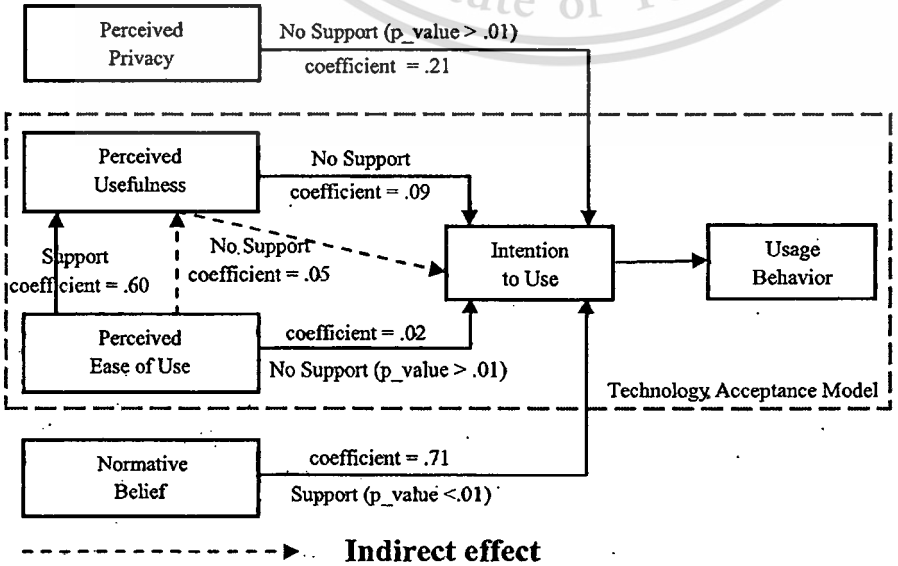


Figure 4.6 Summary results of Non-IB users

The summarized results from SEM analysis by AMOS (Figure 4.5 and 4.6) show the most significant influence of Intention to Use of Internet Banking on Perceived Usefulness for Internet Banking users but not for Non-IB users. The finding indicates that IB users are using Internet Banking because of its benefit to their financial business with the bank. For Non-IB users, actually they have not known what benefit they might get from Internet Banking.

It is not surprised that Perceived Ease of Use does not have the significant influence of Intention to Use of Internet Banking for both IB users and Non-IB users due to people have looked over this factor after the coming of digital age which consumers are firstly provided the easy and convenient way to use.

Perceived Privacy also gives the same result as Perceived Ease of Use that do not support the extended TAM in predicting the Intention to Use of Internet Banking behavior to adopt Internet Banking for both IB users and Non-IB users because people is confident that service providers must offer this feature in the product.

It is very interesting that the result of predicting Normative Belief is the most significant influence of adopting Internet Banking for Non-IB users. The finding reveals that people in their organization are the important key to persuade them to use Internet Banking.

The results from T-Test show a significant difference on the Perceived Usefulness between the two groups at a p-value < 0.01. This finding indicates that subjects whose their Perceived Usefulness of the Internet Banking are high are likely to adopt the Internet Banking if they are not already Internet Banking users.

It is quite interesting to find that there is no significant difference on the Perceived Ease of Use between the two groups. This finding points out that the reason of not using the Internet Banking were not because customers feel that it is difficult to use. Actually, although subjects in the Non-IB group have never used the Internet Banking before, they even responded with higher average for the "Ease of Use" than the responses from subjects in the IB group.

For the Perceived Privacy, there are no significant differences between the two groups at the p-value > 0.05. However, it is intriguing to find that subjects in the Non-IB group responded with higher average on Perceived Privacy than the responses from the IB group. The results reveal that the subjects in the Non-IB group have not concern about the Privacy the same as those in the IB group.

For the Normative Belief, there is a significant difference between the two groups at the p-value < 0.01. Subjects who use the Internet Banking perceived higher Normative Belief than subjects who do not use the Internet Banking.

4.12 Conclusions

The chapter 4 mainly provides the results of the study especially the significant of the expected hypothesis. Before hypothesis, the study has been compared the analysis between Internet Banking users and Non-Internet Banking users in respondents user's profile, mean and standard deviation, reliability statistics, hypotheses testing results, effects of each constructs, behavior in using Internet Banking, and problem encountered when using Internet Banking.

The analytical results of 6 hypotheses from SEM and 4 hypotheses from T-Test report given overall results the same that the factors affecting Internet Banking are Perceived Usefulness and Normative Belief. The others two constructs: Perceived Ease of Use and Perceived Privacy have no significant influence of Intention to Use between users who use Internet Banking and do not user Internet Banking. As the results shown the same between SEM and T-Test, it is in remarkably good predication of goodness of fit of the model.

Chapter 5
Conclusions and Recommendations

The detailed analysis presented in the previous chapter has served to illustrate how the objective of this study has been achieved, and research hypotheses tested and answered. To start off this final chapter, a brief overview of Chapter 1 – 4 will be provided in the introduction section, followed by individual sections on conclusions, limitations and further research, and contributions and suggestions. It is this researcher's hope that with substantial evidence and analytic insights on Internet Banking adoption produced by this study, the findings will not only be valuable to bank managers, but also make a useful addition to the existing literature on this topic.

5.1 Introduction

5.1.1 Research objective. Driven by intense competition in the banking sector, many banks have developed and rolled out online personal finance management tools, such as K-Cyber Banking, Bualuang iBanking, and SCB Easy Net, to enable their customers to easily access financial information and services over the Internet. Among other things, the primary purpose of this product launch is to retain existing customers and entice new ones to switch to their banks. Even though as of now Internet Banking remains fairly unpopular among consumers and is only used by a small number of people, banks should continue to expand their online business offerings which for the time being can serve as a medium or instrument that draws the attention of customers to other banking products. At present, there are several limitations that prevent a number of Thais from using the Internet from financial restraints to lack of digital skills. For example, there are many people who despite earning steady incomes, cannot afford their own computers and home Internet subscription. On the other hand, there are others who do not have technological capabilities.

As such, it is important for bank managers to keep these factors in mind when setting their goals and deciding how a financial product should be marketed to consumers to ensure that consumer needs will be met and increased bank profitability achievable. This is especially true in the case of Internet Banking, which is an area

that has shown continual growth over the past few years, despite accounting for a relatively small part of the total banking revenue. Finally, SEM goodness of fit tests has been performed using AMOS software to assess the goodness of fit in the model used in this research. The results have shown that this analysis model, which consists of the original Technology Acceptance Model and an addition of two external constructs, is an acceptable fit achieved on all indices, confirming that all the constructs selected are able to predict factors influencing Internet Banking adoption. As a result, the overall objective of this research, which is to build a valid and reliable conceptual framework that is model-based to understand the factors that affect Internet Banking adoption and predict future Internet Banking behavior, has been fulfilled.

5.1.2 Summary of research design and methodology

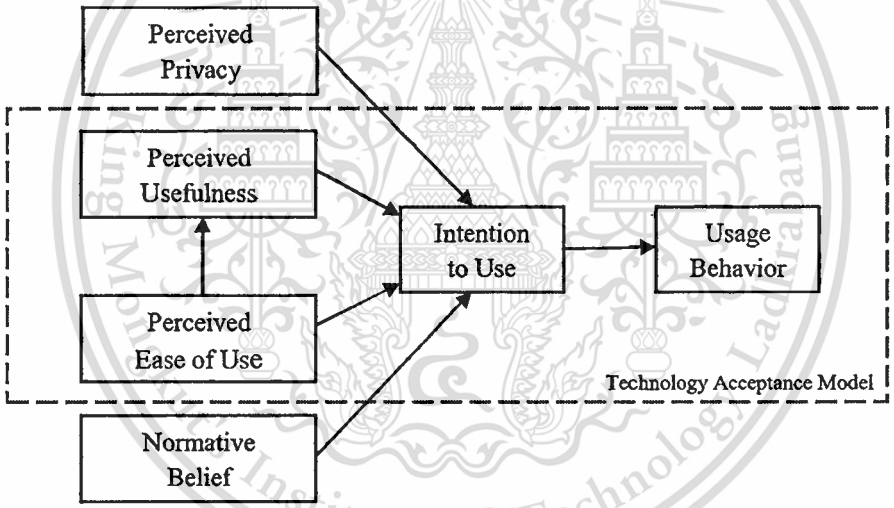


Figure 5.1 Conceptual framework of research model

The Technology Acceptance Model (TAM), developed by David in 1989, is a popular theory to study consumer adoption of new technology. In the model, to explain users' acceptance and adoption of a technology two main components are used - Perceived Usefulness and Perceived Ease of Use.

The research model developed by the researcher is an extension of the original TAM which incorporates Perceived usefulness, Perceived Ease of Use Perceived Privacy and Normative Belief into the analysis model to examine user acceptance of Internet Banking in Thailand. The main reason for the addition of two supplementary constructs, Perceived Privacy and Normative Belief, is to further explore the mind of each individual subject as to why he or she start using Internet Banking services. With

this insight into the consumer mind, it can help bank managers develop better understanding of their customers.

The questionnaire and variables designed for this research, shown in table 3.5, are borrowed from a collection of previous studies, which also used the TAM as their theoretical basis for analysis. The questionnaire had been translated into Thai before being sent to 100 bank employees for testing and subsequently reviewed by a professor at University for final adjustment to ensure clear and consistent communication. The finalized questionnaire was delivered to respondents via the Internet as well as in person. The study population consists of people who live in every region of Thailand and work in the following three sectors: business, government or education sectors. As most of the returned questionnaire were from those working in the education sector, it may be interpreted that this group has greater interest in Internet Banking and that employees in the education sector may be one of the leading groups that will adopt Internet Banking in the near future. Of all questionnaire respondents who are qualified to be included in the hypothesis testing, 342 are IB-users and 355 Non-IB users.

Based on the questionnaire responses, the average scores for each construct between IB-users and Non-IB users are as follows: 4.47 (PU) and 3.90 (PN) for IB users, and 4.33 (PE) and 3.72 (PN) for Non-IB users. The standard deviations are 1.087 (PN) and 0.699 (PU) for IB users, and 1.012 (PN) and 0.761 (PE) for Non-IB users.

It is particularly due to this study's reliance on the instruments used in previous research that after running a number of reliability and validity tests, this research is able to achieve a reasonable level of reliability and validity in all areas. The alpha values for IB users and Non-IB users are in the range of 0.922 to 0.759 and 0.865 to 0.757, respectively. With sufficient number of questionnaire respondents, the high alpha coefficients for all constructs have been proven reliable. Meanwhile, to establish the credibility of the study's constructed and ensure that its content would be valid the questionnaire had been tested by bank employees and approved by a professor at University. Finally, through conducting a T-Test, the validity and reliability of this research hypothesis has been established.

The results from conducting confirmatory factor analysis and full structural equation using the AMOS16 program show that the chosen research model is well-fitting and consistent with the SEM data. To reflect different aspects of model fit in

this study, a variety of fit indices have been used. Shown below are the selected fit indices and the mean values (Byrne, 2010; Kline, 2005; 2011);

1) Chi-Square/df, which is also known as the likelihood ratio chi-square and generalized likelihood ratio, is a test that determines whether there is a relationship between two categorical variables. The chi-square value must be between 1.0 and 3.0 - The IB user's model and Non-IB user's model achieved a value of 2.219 and 2.596, respectively.

2) CFI (Comparative Fit Index) is a test to assess the relative improvement in fit of the model compared to the baseline model. A value of greater than .90 had been considered an indication of a well-fitting model in the past but a revised cutoff value close to .95 is now the new recommended threshold – The IB users model and Non-IB users model achieved a value of .94 and .9, respectively.

3) Standardized Root Mean Square Residual (RMR) is an absolute measure of fit.

An RMR of 0 indicates a perfect fit but well-fitting models have RMR values less than .05. – The IB users model and Non-IB users model achieved a value of 052 and :060, respectively.

4) RMSEA (Root Mean Square Error of Approximation) can be used to conduct a hypothesis test to determine the model fit with the null hypothesis. RMSEA in the range of 05 to .08 is considered reasonable and indicates an acceptable fit – The IB user's model and Non-IB user's model achieved a value of .060 and .067, respectively.

5.2 Conclusions of the Study

Table 5.1

SEM Results between IB Users and Non-IB Users

	Constructs direct to Intention to Use	Regression Weight *(Acceptable level 0.3-1.0)		Results
		IB users	Non-IB users	
H1	Perceived Ease of Use (PE)	0.02	0.02	Both no significant
H2	Perceived Usefulness (PU)	*0.44	0.09	No significant for Non-IB - Difference
H4	Perceived Privacy (PP)	0.22	0.21	Both no significant
H5	Normative Beliefs (PN)	*0.41	*0.71	Both significant - Difference
H3	PE → PU	*0.77	*0.60	Both significant - Difference
H6	PE → PU →IU (Indirect)	*0.34	0.05	No significant for Non-IB - Difference

Overview: Through the examination of Perceived Usefulness and Perceived Ease of Use in the original of theory of Technology Acceptance Model (TAM), and two supplementary constructs, Perceived Privacy and Normative Belief in the proposed conceptual framework developed specifically for the analysis of Internet Banking adoption in Thailand, the study has found that Perceived Usefulness and Normative Belief are significant predictors for IB users, whereas for Non-IB users only Normative Belief has a significant direct influence on Intention to Use. The results also show that for both IB users and Non-IB users Perceived Ease of Use is not a direct significant predictor of Intention to Use. Furthermore, Ease of Use has been

found to have no indirect influence on Intention to Use via Perceived Usefulness for both groups.

In regards to Perceived Ease of Use and Perceived Privacy, the SEM results in this study suggest that both IB users and Non-IB users are not particularly concerned about either factor. Therefore, based on these findings it can be concluded that the two most important factors that encourage the use of Internet Banking are Perceived Usefulness and Normative Belief.

Technology Acceptance Model (TAM): According to the research findings (shown in Table 5.1), IB users' Intention to Use is driven by Perceived Usefulness (λ=0.44), which receives higher rating than Perceived Ease of Use (λ= 0.02). One possible explanation may be that having already adopted the technology this group has been familiarized with the online services available to them. The decision whether to continue using Internet Banking services, therefore, will rest on the usefulness of the system. The implication of this finding is that it is likely for IB users to stop using Internet Banking or decide to move their business to another bank that they believe can better meet their needs if the usefulness of a current Internet Banking product is found to be lacking. In addition, with improved IT infrastructures and availability of electronic devices such as mobile phones or iPads, IB users have been accustomed to instant and easy access to information and services. Ease of Use, therefore, becomes a default feature or a must that users expect from their service providers. This is consistent with the conclusion reached in the study of Davis (1989) in which usefulness has been found to have greater influence than Ease of Use. The most influential factor in usefulness, identified by IB users, is "Using Internet Banking enables me to get a wide range of my banking information with only 'on click' (0.899), which confirms the hypothesis in this study that Perceived Ease of Use directly influences Perceived Usefulness (λ= 0.77). This is consistent with the results in Table 5.1 and the original TAM study carried out by Davis (1989).

Furthermore, the study has found that Non-IB users regard usefulness as insignificant, which may indicate their overall lack of knowledge about Internet Banking, or that they have yet to be informed of available Internet Banking services by their banks.

On the other hand, the results show that perceived Ease of Use has played no significant role in the acceptance and adoption of Internet Banking among both IB users and Non-IB users (λ= 0.02). This finding supports the conclusion in the study of

Pikkarainen et al. (2004) which has suggested that PE does not significantly affect the use of Internet Banking. However, this same result is in contradiction with Davis's finding (1989) where a significant correlation between Perceived Ease of Use and current usage has been found.

Perceived Privacy: Despite including Perceived Privacy in this research's analysis model, the results indicate that the construct does not have an effect on Intention to Use of IB-users and Non-IB users (λ=0.22). This is consistent with the findings in the studies conducted by Pikkarainen et al. (2004) and Vijayasarathy (2004). Both Pikkarainen et al. (2004) and Vijayasarathy (2004) and several other researchers have come to the same conclusion that Privacy has no significant effect on the adoption of Internet Banking. However, the confirm factor analysis (CFA) results in this paper show that respondents who have the highest factor loading have identified Perceived Privacy as the most important factor affecting their adoption of Internet Banking. Furthermore, of all factors studied, Perceived Privacy has the highest successful rate for predicting user adoption (86%). This conclusion is based on the respondents' responses to the question, "*I am able to trust that the Internet Banking I am using is safe*". What this means is that there is a strong customer demand for safe and secure online financial services. For service providers, awareness campaigns may be an effective way to demonstrate their commitment to protecting the Privacy of their customers. In his paper, Cerf (2010) has emphasized that "*trust is essential to most human transactions*". In this sense, it highlights the need for clear and effective communication especially on bank websites. This is where banks should demonstrate their trustworthiness to their customers who will base their judgment on the online experience and interaction when they access the bank website and online services.

Normative Belief: According to the results found in Table 5.1, Intention to Use of IB users and Non-IB users are affected by Normative Belief (λ=0.41, 0.71), confirming the hypothesis of this study that Normative Belief plays an important role in the adoption of Internet Banking. Identified by the respondents as the most important variable in Normative Belief, "People in my organization think that I should use Internet Banking" suggests that user adoption is strongly influenced by colleagues. This finding demonstrates how important workplace environment is to the adoption of Internet Banking. Due to daily and constant exposure to technology,

whether or not people find Internet Banking easy to use or useful on a personal level, they come to see that everyone can benefit from using the system.

Therefore, when banks develop a plan to increase Internet Banking adoption the strategy should be built around Normative Belief, which achieves the highest factor loading out of all constructs investigated in this study.

Direct and indirect effect: For both IB users and Non-IB users, the study has found that neither Perceived Ease of Use (λ=0.02) nor Perceived Privacy (λ=0.02) has a direct effect on Intention to Use. Meanwhile, Perceived Usefulness has shown to directly influence IB users' Intention to Use (λ=0.44) but does not have a direct impact on the intention of Non-IB users (λ=0.09). The study has also found that for both IB users and Non-IB users Perceived Ease of Use has a direct effect on Perceived Usefulness (λ=0.77 and λ=0.60). The outcome is consistent with the conclusion reached in Davis's regression analyses (1989) on which this study has been based, which has suggested that *Perceived Ease of Use may actually be a causal dent to Perceived usefulness"*. Furthermore, the findings show that for IB users there is an indirect effect of Perceived Ease of Use on Intention to Use via Perceived Usefulness (λ = 0.77 * 0.44 = 0.34) but not for Non-IB users (λ = 0.60 * 0.09 = 0.05).

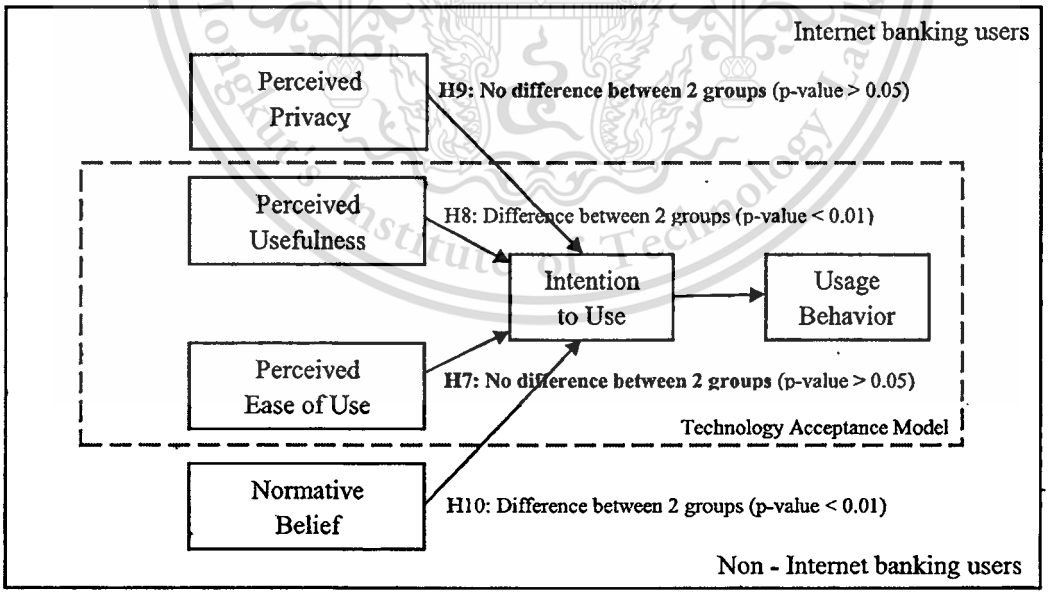


Figure 5.2 T-Test Results between two groups – IB users and Non-IB users

This study has found that IB users and Non-IB users have different perceptions regarding Perceived Usefulness and Normative Belief. The results suggest that Non-IB users are not particularly concerned about Perceived Privacy and

Perceived Ease of Use, which may stem from their general perception that Internet Banking must be easy to use and safe because it is a service provided by a bank.

In light of these findings, a blanket strategy for encouraging Internet Banking adoption will be sufficient when dealing with Perceived Privacy and Perceived Ease of Use. On the other hand, banks will need to devise separate strategies to appropriately address Perceived Usefulness and Normative Belief.

5.3 Limitations and Future Research

An inherent limitation of this study is that the study population only consists of two groups of bank customers, people who have used Internet Banking and people who have not.

In order to gain better insight into the general public attitude towards Internet Banking and usage, large-scale data collection will be needed when conducting future research. Other researchers interested in studying Online Banking adoption may also consider expanding the geographic scope to cover users in other countries as well. Likewise, incorporation of additional rating scale questions may yield valuable information that can explain the factors that drive consumer adoption of Internet Banking services. Finally, it may be interesting to explore other factors that have not been examined in this study, such as environmental concerns. Among possible variables to include in future research are reducing paper waste, lowering carbon footprint and improving the environment, for example.

5.4 Contributions and Suggestions (See detailed SEM results in Table 5.1)

First, an overall alpha coefficient .71 in Normative Belief and .44 in Perceived Usefulness demonstrate the successful integration of two supplementary constructs into the original TAM, implying that this research model is well-fitting. The alpha values show that both Normative Belief and Perceived Usefulness strongly influence Internet Banking adoption and that Perceived Usefulness (Coefficient .77) is directly affected by Perceived Ease of Use, while Perceived Ease of Use via Perceived Usefulness has a direct impact on Intention to Use (Coefficient .34).

The high percentage point of non-IB users of over 90% in some locations also reflects the newness of Internet Banking among the respondents of this research. The constructs and variables examined in this study, therefore, will be a great contribution

to banks and or any bank-related organizations as well as provide a number of useful implications for future development of Internet Banking services.

The research findings demonstrate that Normative Belief (Coefficient .71) is the most important factor for Non-IB users and the second most important factor for IB users (Coefficient .41) for the adoption of Internet Banking, With this knowledge, bank managers may consider launching a refer-a-friend campaign based on VALS II segmentation (See VALS II details at Appendix E.) to attract new Internet Banking customers as consumers would be more open to lifestyle changes when someone close to them believes or expresses confidence in the services.

Second, the research results indicate that when customers see the usefulness (Coefficient .44) of Internet Banking they will adopt the system willingly. The implication of this finding is that the focal point of Internet Banking promotion and future development should be on the usefulness of the system. For example, when bank managers give out information about Internet Banking they should stress on how the services can benefit their customers in clear and simple language. Similarly, this information will help banks develop better products or services that accurately respond to customer needs and requirements as well as implement an effective promotional strategy to ensure that their business can maintain a competitive edge and stay ahead of other competitors. In addition, with potential customers, it may be useful for bank managers to share user reviews and comments on the usefulness of the system or when a new feature is introduced. Launching a social networking page dedicated to bank customers is one way to encourage active information sharing. Furthermore, when a customer applies to use Internet Banking services either at a bank branch or on the Internet a compulsory tutorial session should be provided. The purpose of the tutorial is to help customers develop clear understanding of the product so that they are aware of the available services and can make full use of the system. It is worth noting that the tutorial should not be too complicated or cause inconvenience to the customers.

Third, the findings show that for both IB users and Non-IB users Perceived Ease of Use (Coefficient .02 for both IB users and Non-IB users) does not have a significant effect on Intention to Use, suggesting that there may not be a need for a separate strategy to address Ease of Use. Meanwhile, the result of Non-IB users in perceived Ease of Use clearly indicates that although this group has never used the Internet Banking they do not feel intimidated by the technology and is confident that

the system will be easy to use. Again, based on these findings, it may not be worthwhile for banks to invest on promoting the system's Ease of Use.

On the other hand, both IB-users and Non-IB users have identified usefulness as the most important factor for the adoption of Internet Banking (λ=0.77 for IB users and 0.60 for Non-IB users). Based on the findings it can be concluded that besides being the determinant of Intention to Use, usefulness is also the first thing that consumers look for in a product such as Internet Banking or mobile phones. Meanwhile, bank managers should not completely ignore Ease of Use. As already discussed above, due to increased public exposure to digital instant gratification, Ease of Use, in consumer's mind, has become an indistinguishable part of Internet Banking. In developing a website or application for Internet Banking banks should think of their potential users as novices. In addition to being user-friendly and easy navigation, the website and application should require low learning curve while every function should be intuitive and simple, allowing users to find answers by themselves without having to contact a help desk. More importantly, the system should be able to roughly guess what information users are trying to find and direct them to the right source even when users make a mistake or at the very least any error should not affect their inquiry. Also, it is clear from the research findings that even if an individual finds the system to be un-useful on a personal level it does not mean that he or she does not believe in the usefulness of Internet Banking in general. The results in this study have demonstrated that the first thing that comes to mind when people think about the benefit of Internet Banking is quick and easy transaction. Equally important is the readiness to respond and adapt to any changes that may occur, regular system updates and continued product improvement should not be overlooked. Until Internet Banking can be fully automated, further research in this area will remain necessary.

Next is Privacy, which is the last construct examined in this study. Although the results show that for both IB users and Non-IB users Perceived Privacy (Coefficient .2 for both IB users and Non-IB users) does not have a significant influence on Intention to Use concerns about online Privacy and security are bound to increase in face of growing ubiquity of digital technology in our everyday life. It is thus vital that bank managers perform data quality management to ensure accuracy and timeliness. Besides providing financial services to customers, bank managers have to be ready and available around the clock to tackle any problems, and are able to take appropriate actions when there are complaints or incidents of lost or stolen money.

Inaccurate or incomplete information are not acceptable when responding to customer inquiries. The data collected during customer interactions can be used to improve service delivery and create a more personalized service tailored to each customer's needs and preferences in the future. Furthermore, to prevent customer churn bank executives tasked with monitoring customer satisfaction should be able to make a timely decision and can promptly tend to the source of customer dissatisfaction, as well as pay attention to specific details of customer complaints to provide quick response and support to help solve their problems. A spin-off of bank's customer service into a separate unit may be one of the solutions to create better customer experience as the job is extremely demanding and requires constant adjustments. This is certainly a move that many banks are now considering. The key in quality customer service is ensuring trustworthiness. It is important that bank managers can make a request to a bank executive or a person in authority to make swift decision when being contacted by customers regarding complaints or lost or stolen money. Fraud monitoring and fraud alert are another area that is time-sensitive and immediate response is required. Despite the implementation of Terminal Line Encryption and audit system, in cases of security breaches there should be a team in place that is directly responsible for fraud monitoring and fraud alert and this team must be given full authority to carry out quick anti-fraud measures. In short, in terms of Privacy and usefulness, it is crucial that bank managers recognize the importance of trustworthiness, and work towards building customer confidence in the system security and the ability of their service provider to protect their Privacy. The usefulness of Internet Banking services, however, should continue to be the main selling point.

Nevertheless, the most pressing matter with the issue of Privacy is for banks and bank-related businesses to protect their company systems and customers from hackers. Potential threats to security breach cannot be taken for granted. Service providers have to be prepared for any cyber-attacks on their systems or customer accounts all at times. A dedicated team should be set up to monitor dubious online activities and analyze past cyber-attacks to prevent repeated incidents. However, this study believes that the most effective way to fight against hacking and online fraud is through establishing a Banking Union, which will allow well-coordinated response and seamless information sharing among service providers.

Last but not least, the well-being of the environment is everyone's responsibility. With Internet Banking, people can access and use financial services at home, which can contribute to lower fuel consumption and reduction of pollution.

If the suggestions proposed by this study could be executed, it would be very likely that more bank customers would make a voluntary switch to Internet Banking. In addition, presented below are some of the interesting views and suggestions arising from the researcher's interviews with respondents, which may prove useful for bank managers to increase the use of Internet Banking:

1) Some respondents feel that banks are more concerned with selling their products than serving their customers;

2) Many respondents express their desire for banks to make customer security a priority and employ the most sophisticated security system to ensure highest possible level of protection;

3) Several respondents believe that banks should share the responsibility in the losses that occur due to online security breaches and frauds to minimize the burden on their clients;

4) Many respondents agree that banks should bear the burden of customer's losses and provide efficient and quick response to combat cyber-crimes.

5.5 Contributions on Analysis with SEM

SEM is a comprehensive statistical approach to test hypotheses about relationships between dependence and independent variables or between observed and latent variables and also relationship between 2 or more latent variables. Based on the results of SEM analysis, this study succeeds in predicting usage behavior and offers a number of useful implications. First, the measurement and the analysis model have been examined using a combination of factor analysis and multiple regressions. Second, causal relationships among latent variables as well as between measured (observed) variables have been estimated. Third, the analysis model proves sufficiently flexible and can accommodate measurement errors and correlated residuals. Forth, the study uses path analysis, which is a form of SEM, to determine "causal" relationships that are hypothesized between observed variables only. Finally, SEM tests have been performed to evaluate the theoretical relationships between certain hypothesized structural conditions.

The following is a summary of the SEM results based on the research assumptions;

1) Low multicollinearity;

2) Error terms may be correlated (SEM error are variables);

3) Confirmatory Analysis factor (CFA) reduce measurement error;

4) SEM's graphical modeling interface, the desirability of testing models overall rather than coefficient individually;

5) SEM can test with multiple dependents;

6) SEM can have mediating variables to measure indirect influence;

7) SEM can test coefficient across multiple between subject groups;

8) SEM can handle difficult data;

- Fine series with auto correlated error;
- Non-normal data;
- Incomplete data.

Advantages of SEM, which makes this analysis model more suitable than older generation of multivariate procedures, listed by Byrne (2010) are described below;

1) Well-suited to analysis of data for inferential purposes;

2) Provide explicit estimates of measurement error variance parameters;

3) Can incorporate both unobserved and observed variables;

4) Unavailability of recognized alternative methods that is easy to use for modeling multivariate relations, or for estimating point and / or interval indirect effects.

5.6 Viewpoints about Technology Replacement

This part is for planning the increasing availability of affordable technology with high speed wireless networks offered on more spectra which might make replacement the old tradition of many branches. Alfred Romann reported in the article of "Growing without branching out" that everyone is talking about digital banking and it is not yet fully defined but everyone knows it is coming (China Daily Asia Weekly, Aug 2-8, 2013)

Another of article of Romann in China Daily Asia Weekly is "Banking on the digital age" (Aug 2-8, 2013) reported that with a combination of factors including a

relative youth and the willingness of bank customers in Asia to adopt new mobile and digital technologies, bank across Asia can jump right into offering digital services and bypass the expensive physical world.

Vyas (2008) also supported that E-Banking gives consumers much more choice. As smartphone become more commonplace, so does Mobile Banking, consumers will be less inclined to remain loyal, with fewer customers visiting branches than in the past. In 2011, the rate of branch in India visits started to drop in favor of more mobile access. In Thailand, the number of branches of commercial banks has started declining in year 2009 as Table below:

Table 5.2

The Number of Branches of Commercial Banks

Year		2006	2007	2008	2009
The number of branches of commercial banks	Branches	14373	17432	20845	17563

Source. Bank of Thailand

In contrast, the majority of customers still rely on physical branches for a wide range of services. It is hard to shutdown branches. Hong Kong and Singapore aside, most banking markets in the region "are still characterized by the branch and mortar of the traditional branch and ATM". Even in markets like China and India, where the take-up of Mobile Banking has been quite fast, customers still rely on branches and ATMs. In South Korea, local banks are opening branches quite rapidly. To be success, banks have to invest in both approaches.

Pichaya Changsorn (The Nation, April 20, 2009) reported in his article "In era of change, companies must adapt constantly" that "There is no more 'one best way' in today's business world" - given the rapidly changing and highly unpredictable nature of today's business and things become obsolete quickly in the current era". The suggestion is in order to survive; firms must forgo their culture of consistency and lean toward flexibility and a culture of adaptation by provided second-job training for employees, who must equip themselves with multiple skills.

Many people in the company are in a panic to cut costs. *"Instead, today is an opportune time for us to review: Are we adaptive enough? There are no 'best people';*

there is no 'best structure'. The person you hate today might be the 'best person' next year." Dr. Surapit Promsit, a young business consultant said. Another consultant - Jack Welch, the legendary former CEO of General Electric - had a policy to fire 20 per cent of his staff every year. He always said "*the firm's management would make the mistake of not preparing staffs for change, and thus would have to fire them.*"

Surapit (2009) also said that

> *The commander must give employee multiple choices, learn to think according to several aspects, have several strategies, knowing there is not a single tool with which to fight all battles. And since the future is not just about acquiring knowledge but also participating in a creative economy, an organization will not thrive unless a majority of its workers can think. As a result, training in strategic thinking is necessary.*
> (http://www.nationmultimedia.com/2009/04/20/business/business_30100770.php)

References

AbuShanab, E., & Pearson, J. M. (2007). Internet Banking in Jordan: The Unified Theory of Acceptance and Use of Technology (UTAUT) perspective. *Journal of Systems and Information Technology, 9*(1), 78-97.

Agarwal, R., & Karahanna, E. (2000). Time flies when you are having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly, 24*(4), 665-694.

Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences, 28*, 557-582.

Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies?. *Decision Sciences, 30*(2), 361-391.

Ahmad Khan, M., & Khan, S. (2012). Internet versus Mobile Banking: A study of Peshawar City (Pakistan). *Journal of Internet Banking and Commerce, 17*(3), 1-13.

Ajam, A. S. A., & Nor, K. M. (2013). Adoption of Internet Banking by Yemeni consumers: An empirical investigation. *Australian Journal of Basic and Applied Sciences, 7*(2), 182-189.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Aladwani, A. M. (2001). Online Banking: A field study of drivers, development challenges, and expectations. *International Journal of Information Management, 21*(3), 213-225.

Albright, S. C., Winston, W. L., & Zappe, C. J. (2009). *Data analysis and decision making with Microsoft Excel*. Mason: Southwestern Cengage .

Alda´s-Manzano, J., Lassala-Navarre´, C., Ruiz-Mafe, C., & Sanz-Blas, S. (2009). Key drivers of Internet Banking services use. *Online Information Review, 33*(4), 672-695.

Alda´s-Manzano, J., Ruiz-Mafe´, C., & Sanz-Blas, S. (2009). Exploring individual personality factors as drivers of M-shopping acceptance. *Industrial Management & Data Systems, 109*(6), 739-757.

Alda´s-Manzano, J., Ruiz-Mafe, C., Sanz-Blas, S. & Lassala-Navarre´, C. (2011). Internet Banking loyalty: Evaluating the role of trust, satisfaction, perceived risk and frequency of use. *The Service Industries Journal, 31*(7), 1165–1190.

Alsajjan, B. A., & Dennis, C. (2006). The impact of trust on acceptance of Online Banking. *European Association of Education and Research in Commercial Distribution, Brunel University* . West London, United Kingdom.

Amin, H. (2007). Internet Banking adoption among young intellectuals. *Journal of Internet Banking and Commerce, 12*(3), 1-13.

Ashraf, M. A., Alam, M. M. D., & Noor, M. S. I. (2010). The influence of privacy and trust on the adoption of Internet Banking in Bangladesh. *Malaysian Management Journal, 14*, 33–48.

Backstrom, C. H., & Hursh-Csar, G. (1981). *Survey research*. Cambridge: Wiley.

Bagozzi, R. P. (2007). The legacy of the Technology Acceptance Model and a proposal for a paradigm shift. *Journal of the Association for Information Systems, 8*(4/7), 244-254.

Bagozzi, R. P., Yi, Y., & Phillips, L.W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly, 36*, 421-458.

Baines, P., & Chansarkar, B. (2002). *Introducing marketing research*. West Sussex: John Wiley & Sons.

Bank of Thailand. (2011). *Annual report 2011 as of Jun 2012*. Retrieved from http://www.bot.or.th/English/PaymentSystems/Publication/ps_annually_report /Pages/ps_annually_report1.aspx

Bank of Thailand. (2012). *Use of Mobile Banking and Internet Banking report.* Retrieved from http://www2.bot.or.th/statistics/botwebstat.aspx?reportID =688&language=ENG

Barbole, A. N., & Parakh, S. D. (2013). The study of consumer's perspective about Internet Banking: Empirical evidence from Western Maharashtra. *Indian Streams Research Journal, 3*(3), 1-11

Blunch, N. J. (2008). *Introduction to Structural Equation Modeling using SPSS and AMOS*. London: SAGE.

Bollen, K. A. (1987). Outliers and improper solutions: A confirmatory factor analysis example. *Sociological Methods & Research, 15*(4), 375-384.

Bowen, W. (1986). The puny payoff from office computers. *Fortune, May 26,* 20-24.

Bright, A. D., Fishbein, M., Manfredo, M. J., & Bath, A. (1993). Application of the Theory of Reasoned Action to the national park services controlled burn policy. *Journal of Leisure Research, 25*, 263-280.

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS: Basic concepts, applications, and programming* (2nd Ed.). Routledge: Taylor & Francis group.

Calisir, F., Gumussoy, C. A., & Bayram, A. (2009). Predicting the behavioral intention to use enterprise resource planning systems: An exploratory extension of the Technology Acceptance Model. *Management Research, 32*(7), 597-613.

Celik, H. (2008). What determines Turkish customers' acceptance of Internet Banking?. *International Journal of Bank Marketing, 26*(5), 353-370.

Cerf, V. G. (2010). Trust and the internet. *IEEE Internet Computing, 14*(5), 95-96.

Chan, S. C., & Lu, M. T. (2004). Understanding Internet Banking adoption and use behavior: A Hong Kong perspective. *Journal of Global Information Management, 12*(3), 21-23.

Chang, H. H., & Hamid, M. R. B. A. (2010). An empirical investigation of Internet Banking in Taiwan. *Global Journal of Business Research, 4*(2), 39-47.

Changchit, C. (2008). Data protection and privacy issue. *Journal of Information Privacy & Security, 4*(4), 1.

Chao Chao, C., & Fu-Ling, H. (2012). Customer adoption of Internet Banking: An empirical investigation in Taiwanese banking context. *Information Management Business Review, 4*(11), 570-582.

Chareonsuk, C. (2009). *Managing intangible assets for long-term business performance strategies*. Bangkok: Shinawatra University.

Chau, K. Y. P., & Lai, S. K. V. (2003). An empirical investigation of the determinants of user acceptance of Internet Banking. *Journal of Organizational Computing and Electronic Commerce, 13*(2), 123-145.

Chau, P. Y. K., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences, 32*(4), 699-719.

Chau, V. S., & Ngai Liqing, W. L. C. (2010). The youth market for Internet Banking services: Perceptions. attitude and behavior. *Journal of Services Marketing, 24*(1), 42–60.

Cheng, T. C. E., Lam, D. Y. C., & Yeung, A. C. L. (2006). Adoption of Internet Banking: An empirical study in Hong Kong. *Decision Support Systems*, *42*(3), 1558-1572.

Chung, W., & Paynter, J. (2002). An evaluation of Internet Banking in New Zealand. *Proceedings of 35th Hawaii Conference in System Sciences (HICSS 2002).* IEEE Society Press.

Churchill, G. A. (1995). *Marketing research: Methodological foundation* (6th Ed.). Chicago: The Dryden Press.

Churchill, G. A., & Lacobucci, D. (2002). *Marketing research: Methodological foundations* (8th Ed.). Mason: South-Western Thomson Learning.

Cooper, D. R., & Schindler, P. S. (2008). *Business research methods* (10th Ed.). Boston: Mcgraw-Hill.

Country Commerce. (2006). *The economist intelligence unit limited.* Retrieved from www.eiu.com

Cunningham, L. F., Gerlach, J., & Harper, M. D. (2005). Perceived risk and E-Banking services: An analysis from the perspective of the consumer. *Journal of Financial Services Marketing, 10*(2), 165–178.

Dahlberg, T., Mallet, N., & Oorni, A. (2003). A trust enhanced Technology Acceptance Model - Consumer acceptance of mobile payment solution. In *Proceedings of the CIC roundtable.* Scottsdale, Arizona.

Davis, F. D. (1986). *A technology acceptance model for empirically testing new and end-user information system: Theory and results* (Doctoral dissertation). Massachusetts Institute of Technology, Cambridge MA, United States.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point, and 10-point scales. *International Journal of Market Research, 50*(1), 61-77.

Dawkins, C. E., & Frass, J. W. (2005). Decision of union workers to participate in employee involvement: An application of the Theory of Planned Behavior. *Employee Relations, 27*(5), 511-531.

Efraimidis, P. S., Drosatos, G., Nalbadis, F., & Tasidou, A. (2009). Towards privacy in personal data management. *Information Management & Computer Security, 17*(4), 311-329.

Elwood, S., Changchit, C., & Cutshall, R. (2006). Investigating student's perceptions on laptop initiative in higher education: An extension of the Technology Acceptance Model. *Campus - Wide Information Systems, 23*(5), 336-349.

Emarketer. (2004). *Online consumers continue to worry*. Retrieved from www.emarketer.com /Article.aspx?1002913.

Erdos, P. L. (1983). *Professional mail survey*. Malabar, FL: Robert E. Krieger.

Eriksson, K., Kerem, K., & Nilsson, D. (2005). Customer acceptance of Internet Banking in Estonia. *International Journal of Bank Marketing, 23*(2), 200-216.

Esichaikul, V., & Janecek, P. (2009). A survey of E-Banking performance in Thailand. *Int. J. of Electronic Finance, 3*(4), 354-373.

Fishbein, M. (1967). Attitude and the prediction of behavior. In Martin Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 477-492). New York: John Wiley.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Flavia´n, C., & Guinalı´u, M. (2006). Consumer trust, perceived security and privacy policy: Three basic elements of loyalty to a Web site. *Industrial Management and Data Systems, 106*(5), 601-620.

Forcht, K. (1994). *Computer security management*. Boston: Boyd & Fraser.

Fornell, C. R., & Larcker, D. F. (1981). Evaluating Structural Equation Models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Galanxhi-Janaqi, H., & Fui-Hoon Nah, F. (2004). U-Commerce: Emerging trends and research issues. *Industrial Management & Data Systems, 104*(9), 744-755.

Gerrard, P., & Cunningham, J. B. (2003). The diffusion of Internet Banking among Singapore consumers. *International Journal of Bank Marketing, 21*(1), 16-28.

Goodwin, C. (1991). Privacy: Recognition of a consumer right. *Journal of Public Policy and Marketing, 10*(1), 149-166.

Gounaris, S., & Koritos, C. (2008). Investigating the drivers of Internet Banking adoption decision: A comparison of three alternative frameworks. *International Journal of Bank Marketing*, *26*(5), 282-304.

Grandon, E., & Pearson, J. M. (2003). Strategic value and adoption of Electronic Commerce: An empirical study of Chilean small and medium business. *Journal of Global Information Technology Management*, *6*(3), 22-43.

Grandon, E., & Pearson, J. M. (2004). E-Commerce adoption: Perceptions of managers/owners of small and medium sized firms in Chile. *Communications of the Association for Information Systems*, *13*, 81-102.

Guriting, P., Chunwen, G., & Ndubisi, N. O. (2007). Computer self-efficacy levels, perceptions and adoption of Online Banking. *International Journal of Computer Applications in Technology*, *8*(1), 150.

Hair, J. F., Black, W. C., Babin, B. J., & Andrson, R. E. (2010). *Multivariate data analysis a global perspective* (7th Ed.). London: Pearson Education.

Hair, J. F., Bush, R. P., & David, J. O. (2006). *Marketing research – within a changing information environment* (3rd Ed.). Boston: McGraw-Hill.

Hamid, M. R. A., Amin, H., Lada, S., & Ahmad, N. (2007). A comparative analysis of Internet Banking in Malaysia and Thailand. *Journal of Internet Business*, *4*, 1-19.

Hejjden, V. H., Verhagen, T., & Creemers, M. (2003). Understanding online purchase intentions: Contributions from technology and trust perspectives. *European Journal of Information Systems*, *12*(1), 41-48.

Hernandez, J. M. C., & Mazzon, J. A. (2007). Adoption of Internet Banking: Proposition and implementation of an integrated methodology approach. *International Journal of Bank Marketing*, *25*(2), 72-88.

Ho, S. H., & Ko, Y. Y. (2008). Effects of self-service technology on customer value and customer readiness: The case of Internet Banking. *Internet Research*, *18*(4), 427-446.

Hong, W., Thong, J., Wong, W., & Tam, K. Y. (2001). Determinants of user acceptance of digital libraries: An empirical examination of individual differences and system characteristics. *Journal of Management Information Systems*, *18*(3), 97-125.

Huang, E. (2008). Use and gratification in E-Consumers. *Internet Research*, *18*(4), 405-426.

Huber, G. P. (2001). Transfer of knowledge in knowledge management systems: Unexplored issues and suggested studies. *European Journal of Information Systems*, *10*(2), 72-79.

Igbaria, M., Guimaraes, T., & Davis, G. B. (1995). Testing the determinants of microcomputer usage via a Structural Equation Model. *Journal of Management Information System*, *11*(4), 87-114.

Internet World Stats. (2012). *Internet usage in Asia as of Sep 2012*. Retrieved from http://www.internetworldstats.com/stats3.htm

Isarangkul Na Ayudaya, C. (1999). *Knowledge, understanding and behavior of Thai internet users in E-Commerce* (Master's Thesis). Kasetsart University, Bangkok, Thailand.

Jahangir, N., & Begum, N. (2007). Effect of perceived usefulness, ease of use, security and privacy on customer attitude and adaptation in the context of E-Banking. *Journal of Management Research*, *7*(3), 147-157.

Jaruwachirathanakul, B., & Fink, D. (2005). Internet Banking adoption strategies for a developing country: The case of Thailand. *Internet Research*, *15*(3), 295-311.

Jarvennpaa, S. L., & Todd, P. A. (1996). Consumer reaction to electronic shopping on the world wide web. *International Journal of Electronic Commerce*, *1*(2), 59-88.

Jones, A. B., & Hubona, G. S. (2006). The mediation of external variables in the Technology Acceptance Model. *Information & Management*, *43*(6), 706.

Jun, M., & Cai, S. (2001). The key determinants of Internet Banking services quality: A content analysis. *International Journal of Bank Marketing*, *19*(7), 276-291.

Kalakota, R., & Whinston, A. (1997). *Electronic commerce: A manager's guide*. Reading Mass: Addison Wesley.

Kaleem, A., & Ahmad, S. (2008). Bankers perceptions of electronic banking in Pakistan. *Journal of Internet Banking and Commerce*, *13*(1), 1-16.

Khalil, M. N., Sutanonpaiboon, J., & Hamimah, N. M. (2010). Malay, Chinese, and Internet Banking. *Chinese Management Studies*, *4*(2), 141-153.

Khanifar, H., Molavi, Z., Jandaghi, G. R., & Niya, M. J. M. (2012). Factors influencing the intendancy of E-Banking: An integration of TAM & TPB with E-Service quality. *Journal of Applied Sciences Research*, *8*(3), 1842-1852.

Khare, A., Mishra, A., & Singh, A. B. (2012). Indian customer's attitude towards trust and convenience dimensions of Internet Banking. *International Journal of Services and Operations Management*, *11*(1), 107-122.

Kline, R. B. (1998). *Principles and practice of Structural Equation Modeling*. New York: The Guilford Press.

Kline, R. B. (2005). *Principles and practice of Structural Equation Modeling* (2nd Ed.). New York: The Guilford Press.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (3rd Ed.). New York: The Guilford Press.

Krauter, S. G., & Faullant, R. (2008). Consumer acceptance of Internet Banking: The influence of Internet trust. *International Journal of Bank Marketing, 26*(7), 483-504.

Kuisma, T., Laukkamen, T., & Hiltunen, M. (2007). Mapping the reasons for resistance to Internet Banking: A means-end approach. *Int. J. Inform Manage, 27*(2), 75-85.

Kumra, R., & Mittal, R. K. (2004). Trust and its determinants in Internet Banking: A study of private sector banks in India. *Decision, 31*(1), 73-96.

Labau, P. (1981). *Advanced questionnaire design*. Cambridge, MA: Abt Books.

Lai, V. S., & Li, H. (2005). Technology Acceptance Model for Internet Banking: An invariance analysis. *Information and Management, 42*, 373-386.

Lallmahamood, M. (2007). An examination of individuals perceived security and privacy of the Internet in Malaysia and the influence of this on their intention to use E-Commerce: Using an extension of the Technology Acceptance Model. *Journal of Internet Banking and Commerce, 12*(3), 1-26.

Lardner, J. (1999). I know what you did last summer and fall. *US News & World Report, 126*(15), 55.

Larpsiri, R., Rotchanakitumnuai, S., Chaisrakeo, S., & Speece, M. (2002). The impact of Internet Banking on Thai consumer perception. Paper presented at *the Conference on Marketing Communication Strategies in a Changing Global Environment.* Hong Kong.

Lee, DH., Sang M. L., David L. O., & Soong H. C. (2010). The effect of organizational support on ERP implementation. *Industrial Management & Data Systems, 110*(2), 269-283.

Lee, M. -C. (2009). Factors influencing the adoption of Internet Banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications, 8*(3), 130-141.

Lee, Y., Kozar, K. A., & Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, present, and future. *Communications of the Association for Information Systems, 12*, 752-780.

Leelapongprasut, P., Praneetpolgrang, P., & Paopun, N. (2005). A quality study of Internet Banking in Thailand. *Proceedings of the Fourth International Conference on EBusiness, Nov19-20*. Bangkok, Thailand.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the Technology Acceptance Model. *Information and Management, 40*(3), 191-205.

Lu, M. T., Liu, C. H., Jing, J., & Huang, L. L. (2005). Internet Banking: Strategic responses to the accession of WTO by Chinese banks. *Industrial Management & Data Systems, 105*(4), 429-442.

Maditinos, D., Tsairidis, C., & Grigoriadis, C. (2009). Internet Banking user acceptance: Evidence from Greece and Bulgaria. *5th HSSS Conference 24-27 June* (pp.1-26). Democritus University of Thrace, Xanthi, Greece.

Malhotra, N. K., & Birks, D. F. (2000). *Marketing research: An applied approach* (European Ed.). New Jersey: Pearson Education.

Malhotra, N. K., & Peterson, M. (2006). *Basic marketing research – A decision-making approach* (2nd Ed.). New Jersey: Pearson Education.

Mirza, A. P., Mohammad, T. H. B., Wallstrom, A., & Mirza, O. P. (2009). Adoption Internet Banking by Iranian consumers: An empirical investigation. *Journal of Applied Sciences, 9*(14), 2567-2575.

Moghadam, B., Behboudi, M., & Jafari, F. (2012). Does Internet advertising affect the Internet Banking effectiveness? A three dimensional model for Iran. *Journal of Internet Banking and Commerce, 17*(3), 1-16.

Monsuwe´, T., Perea y., Dellaert, B. G. C., & de Ruyter, Ko. (2004). What drives consumers to shop online? A literature review. *International Journal of Service Industry Management, 15*(1), 102-121.

Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a world-wide-web context. *Information and Management, 38*(4), 217-230.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.

Moreira, F., Rocha, P., & Almeida, F. (2012). The use of Internet Banking among portuguese college students. *Journal of Internet Banking and Commerce, 17*(2), 1-13.

Munusamy, J., De Run, E., Chelliah, S., & Annamalah, S. (2012). Adoption of retail Internet Banking: A study of demographic factors. *Journal of Internet Banking and Commerce, 17*(3), 1-14.

Myerscough, S., Lowe, B., & Alpert, F. (2006). Willingness to provide personal information online: The role of perceived privacy risk, privacy statements, and brand strength. *Journal of Website Promotion, 2*(1/2), 115-140.

National Statistical Office in Thailand. (2011). *Information and communication technology survey*. Retrieved from http://web.nso.go.th/en/survey/data_survey/550917-icth.pdf

Ndubisi, N. O. (2007). Customer's perceptions and intention to adopt Internet Banking: The moderation effect of computer self-efficacy. *AI & Soc, 21*, 315-327.

Ndubisi, N. O., & Sinti, Q. (2006). Consumer attitudes, systems characteristics and Internet Banking adoption in Malaysia. *Management Research, 29*(1/2), 16-27.

Nielsen, J. F. (2002). Internet technology and customer linking in Nordic banking. *International Journal of Service Industry Management, 13*(5), 475-495.

Njuguna, P., Ritho, C., Olweny, T., & Wanderi, M. P. (2012). Internet Banking adoption in Kenya: The case of Nairobi country. *International Journal of Business and Social Science, 3*(18), 246-252.

Nor, K. M., Sutanonpaiboon, J., & Mastor, N. H. (2010). Malay, Chinese, and Internet Banking. *Chinese Management Studies, 4*(2), 141-153.

Omariba, Z. B., Masese, N. B., & Wanyembi, G. (2012). Security and privacy of Electronic Banking. *IJCSI International Journal of Computer Science Issues, 9*(4/3), 432-446.

Ongkasuwan, M., & Tantichattanon, W. (2002, October). A comparative study of Internet Banking in Thailand. Paper presented at *the First National Conference on Electronic Business* (pp.1-18). Bangkok, Thailand.

Ozdemir, S., Trott, P., & Hoecht, A. (2008). Segmenting Internet Banking adopter and non-adopters in the Turkish retail banking sector. *International Journal of Bank Marketing, 26*(4), 212-236.

Patil, U. N. (2012). Internet Banking in India: Risk analysis and adoption in an emerging economy. *Indian Streams Research Journal, 2*(3), 283-286.

Peterson, R. A. (2000). *Constructing effective questionnaires*. Thoasand Oaks: Sage Publications.

Pijpers, G. G. M., & Montfort, K. V. (2006). An investigation of factors that influence senior executives to accept innovations in information technology. *International Journal of Management, 23*(1), 11-23.

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnila, S. (2004). Consumer acceptance of Online Banking: An extension of the Technology Acceptance Model. *Internet Research, 14*(3), 224-235.

Podder, B. (2005). *Factors influencing the adoption and usage of Internet Banking: A New Zealand perspective* (Master's Thesis). Auckland University of Technology, Auckland, New Zealand.

Polatoglu, V. N., & Ekin, S. (2001). An empirical investigation of the Turkish consumers acceptance of Internet Banking services. *International Journal of Bank Marketing, 19*(4/5), 156-165.

Proctor, M. (1997). *The essentials of marketing research*. London: Pitman.

Promsit, S. (2009). *Strategic thinking: In era of change, companies must adapt constantly*. Retrieved from http://www.nationmultimedia.com/2009/04/20/business/business_30100770.php

Puangwattanawong, S., Plansoongnern, O., Anurit, P., & Bunchapattanasakda, C. (2008). Factors influencing Internet users' behavior not to purchase through E-Commerce in Thailand. *Apeejay Journal of Management and Technology, 3*(1), 27-35.

Püschel, J., Mazzon, J., A., & Hernandez, J. M. C. (2010). Mobile banking: Proposition of an integrated adoption intention framework. *International Journal of Bank Marketing, 28*(5), 389-409.

Raza, S. A., & Hanif, N. (2013). Factors affecting Internet Banking adoption among internal and external customers: A case of Pakistan. *Int. J. of Electronic Finance, 7*(1), 82-96.

Reagle, J., & Cranor, L. F. (1999). The platform for privacy and preferences. *Communications of the ACM, 41*(2), 48-55.

Robinson, T. (2000). *Internet Banking: Still not a perfect marriage*. Retrieved April 17, 2000, from http//www.informationweek.com.

Roca, J. C., García, J. J., & de la Vega, J. J. (2009). The importance of perceived trust, security and privacy in online trading systems. *Information Management & Computer Security*, *17*(2), 96-113.

Rojanachaichanin, N. (2001). *Electronic Banking*. Retrieved from http://www.ethailand.com/index.php?id=1628.

Rotchanakitumnuai, S., & Speece, M. (2003). Barriers to Internet Banking adoption: A qualitative study among corporate customers in Thailand. *The International Journal of Bank Marketing*, *21*(6/7), 312-323.

Rotchanakitumnuai, S., & Speece, M. (2009). Modeling electronic service acceptance of an E-Securities trading system. *Industrial Management & Data Systems*, *109*(8), 1069-1084.

Rouibah, K., Ramayah, T., & May, O. S. (2011). Modeling user acceptance of Internet Banking in Malaysia: A Partial Least Square (PLS) approach. In Sushil K. Sharma (Ed.), *E-Adoption and Socio-Economic Impacts: Emerging Infrastructural Effects* (pp.1-23). USA: Information Science Reference (IGI Global).

Saeednia, H., & Abdollahi, H. (2012). Factors affecting client trust in Online Banking - A case study of Saman bank. *International Journal of Economics and Business Modeling*, *3*(1), 149-151.

Sathye, M. (1999). Adoption of Internet Banking by Australian consumers: An empirical investigation. *International Journal of Bank Marketing*, *17*(7), 324-334.

Schneider, G. P., & Perry, J. T. (2000). *Electronic commerce*. Cambridge, MA: The Course Technology.

Schuman, H., & Presser, S. (1981). *Questions and answers in attitude surveys: Experiments on question form, wording, and context*. Orlando, Florida: Academic Press.

Sekaran, U. (2003). *Research methods for business: A skill-building approach* (4th Ed.). West Sussex: John Wiley & Sons.

Sekaran, U., & Bougie, R. (2009). *Research methods for business: A skill building approach* (5th Ed.). West Sussex: John Wiley & Sons.

Sharma, S., & Singh, R. (2011). Factors influencing Internet Banking: An empirical investigation. *IUP Journal of Banking Management*, *10*(4), 71-80.

Shi, W., Shambare, N., & Wang, J. (2007). The adoption of Internet Banking: An institutional theory perspective. *Journal of Financial Services Marketing, 12*(4), 272-286.

Shih, Y. -Y., & Fang, K. (2004). The use of a decomposed Theory of Planned Behavior to study Internet Banking in Taiwan. *Internet Research, 14*(3), 213-223.

Shih, Y. -Y., & Fang, K. (2006). Effects of network quality attributes on customer adoption intentions of Internet Banking. *Total Quality Management & Business Excellence, 17*(1), 61-77.

Singh, K. (2012). Effect of card and Internet Banking on users. *International Journal of Technology Marketing, 7*(1), 20-31.

Sprott, D. E., Spangenberg, E. R., & Fisher, R. (2003). The importance of normative beliefs to the self-prophecy effect. *Journal of Applied Psychology, 88*(3), 423-431.

Srijumpa, R., Chiarakul, T., & Speece M. (2007). Satisfaction and dissatisfaction in service encounters: Retail stockbrokerage and corporate banking in Thailand. *International Journal of Bank Marketing, 25*(3), 173-194.

Sudman, S., & Bradburn, N. M. (1983). *Asking questions*. San Francisco: Jossey-Bass.

Suganthi, R., Balachandher, K. G., & Balachandran, V. (2001). Internet Banking patronage: An empirical investigation of Malaysia. *Journal of Internet Banking and Commerce, 6*(1). Retrieved from www.arraydev.com/ commerce/JIBC/0103_01.htm.

Suh, B., & Han, I. (2002). Effect of trust on customer acceptance of Internet Banking. *Electronic Commerce Research & Applications, 1*(3), 247-263.

Sukkar, A. Al., & Hasan, H. (2005). Toward a model for the acceptance of Internet Banking in developing countries. *Information Technology for Development, 11*(4), 381–398.

Tan, M., & Teo, T. S. H. (2000). Factors influencing the adoption of Internet Banking. *Journal of the Association for Information Systems, 1*(5), 1-44.

Taylor, S., Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144-176.

Teo, T., & Noyes, J. (2010). Exploring attitudes towards computer use among pre-service teachers from Singapore and the UK: A multi-group invariance test of

the Technology Acceptance Model (TAM). *Multicultural Education & Technology Journal, 4*(2), 126-135.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the Technology Acceptance Model. *Information Systems Research, 11*(4), 342-365.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences, 27*(3), 451-481.

Venkatesh, V., & Davis, F. D. (2000). A Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science, 46*(2), 186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view1. *MIS Quarterly, 27*(3), 425-478.

Vijayasarathy, L. R. (2004). Predicting consumer intentions to use on-line shopping: The case for an augmented Technology Acceptance Model. *Information & Management, 41*(6), 747-762.

Virk, N. (2013). Preference attributes in using E-Banking. *The IUP Journal of Bank Management, XII*(1), 72-78.

Vyas, S. (2008). *Impact of E-Banking on traditional banking services*. Retrieved from http://arxiv.org/pdf/ 1209.2368.pdf.

Wang, Y. -S., Wang, Y. -M., Lin, H. -H., & Tang, T. -I. (2003). Determinants of user acceptance of Internet Banking: An empirical study. *International Journal of Service Industry Management, 14*(5), 501-519.

Westin, A. (1967). *Privacy and freedom*. New York: Atheneum.

Wong, Y. K., & Hsu, C. J. (2008). A confidence-based framework for business to consumer (B2C) mobile commerce adoption. *Pers Ubiquit Comput, 12*, 77–84.

Wonglimpiyarat, J. (2006). Technology foresight: Creating the future of Thailand's industries. *Emerald Group Publishing Limited, 8*(4), 23-33.

Wonglimpiyarat, J. (2007). Thai banking: A note on technological change and technological capabilities. *International Journal of Banking and Finance, 5*(1), 165-184.

Wongsiriwat, K. (2006). *A study of influences of values, attitudes and lifestyles (VALS II) on brand equity of luxury handbags in Bangkok* (Master's Thesis). School of Management, Shinawatra University, Bangkok, Thailand.

Xu, B., Shao, B., Lin, Z., & Shi, Y. (2007). Enterprise adoption of Internet Banking in China. *Internet Banking in China*, 7-28. Retrieved from http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=398e9f2d-44a9-4333-9704-47dac44d5686%40sessionmgr4002&vid=0&hid=4207&preview=false

Xu, J., & Quaddus, M. (2007). Exploring the factors influencing end users' acceptance of knowledge management systems: Development of a research model of adoption and continued use. *Journal of Organizational and End User Computing, 19*(4), 57-79.

Young, T. R. (1984). The lonely micro. *Datamation, 30*(4), 110-114.

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2007). Technology acceptance: A meta-analysis of the TAM: Part 1. *Journal of Modeling in Management, 2*(3), 251-280.

Yousafzai, S. Y., Pallister, J. G., & Foxall, G. R. (2009). Multi-dimensional role of trust in Internet Banking adoption. *The Service Industries Journal, 29*(5), 591-605.

Zhang, Y., Chen, K. L., Lee, H., & Yang, J. (2012). Adoption of Online Banking features by financial intermediaries. *Int. J. of Electronic Finance, 6*(3/4), 219-238.

Zhao, A. L., Lewis, N. K., Lloyd, S. H., & Ward, P. (2010). Adoption of Internet Banking services in China: Is it all about trust? *International Journal of Bank Marketing, 28*(1), 7-26.

Zolait, A. H. S. (2010). An examination of the factors influencing Yemeni bank users behavioral intention to use Internet Banking services. *Journal of Financial Services Marketing, 15*, 76 -94.

Zorotheos, A., & Kafeza, E. (2009). User's perceptions on privacy and their intention to transact online: A study on Greek internet users. *Direct Marketing: An International Journal, 3*(2), 139-153.

Appendix A

Figures of Extended Technology Accepted Model (TAM)

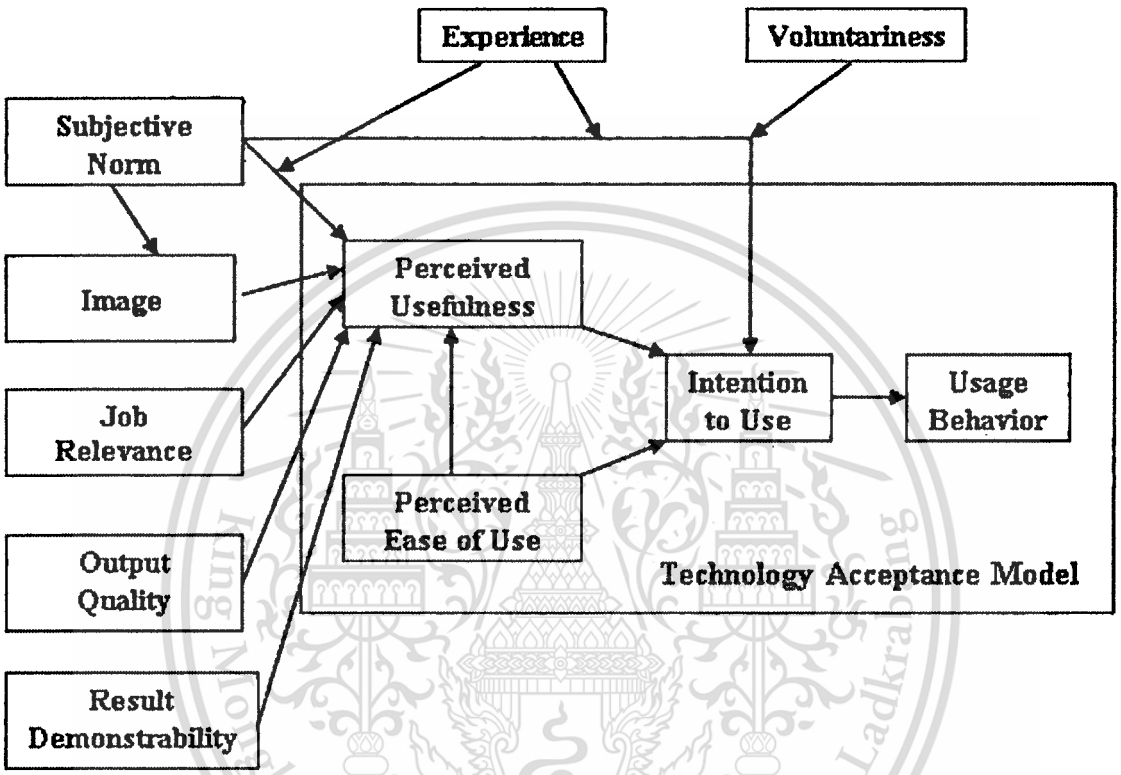


Figure 2.2 TAM2 – A Theoretical extension of the Technology Acceptance Model by Venkatesh & Davis, 2000.

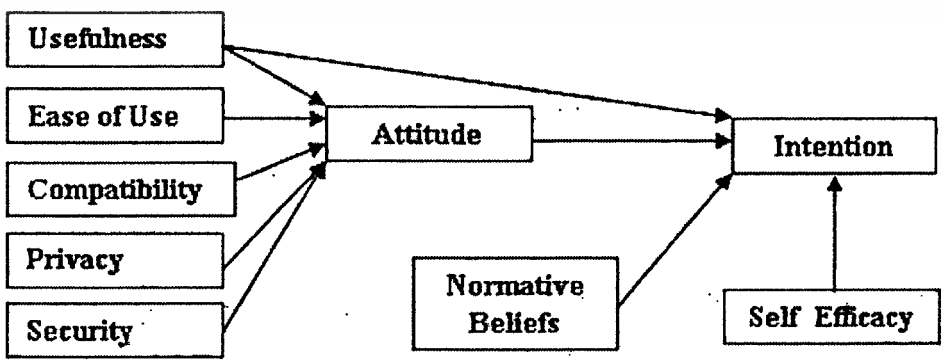


Figure 2.3 Augmented TAM for online shopping by Vijayasarathy, 2004.

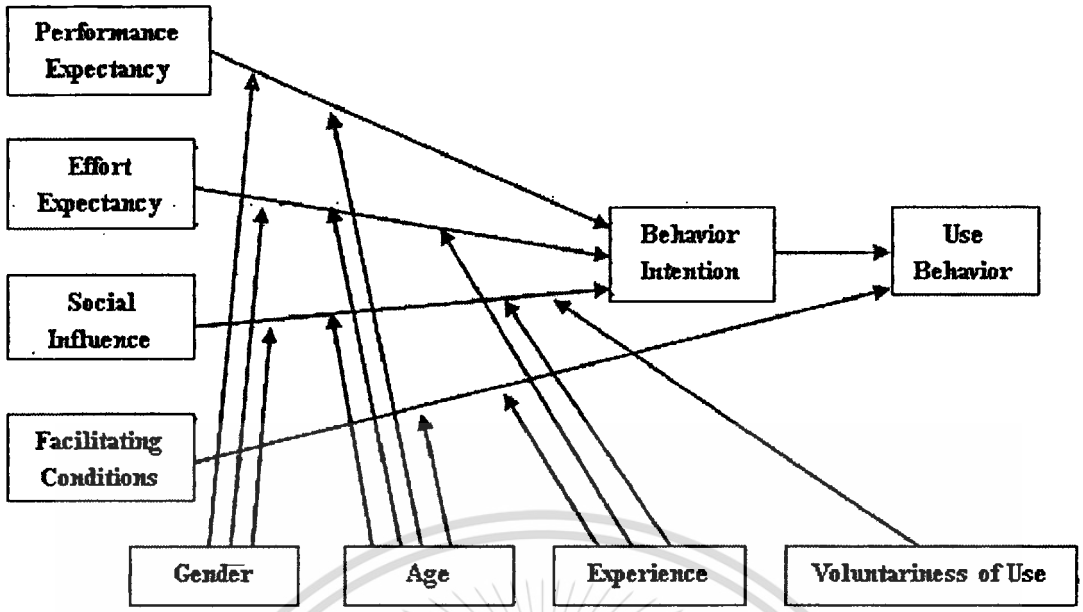


Figure 2.4 The Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al., 2003.

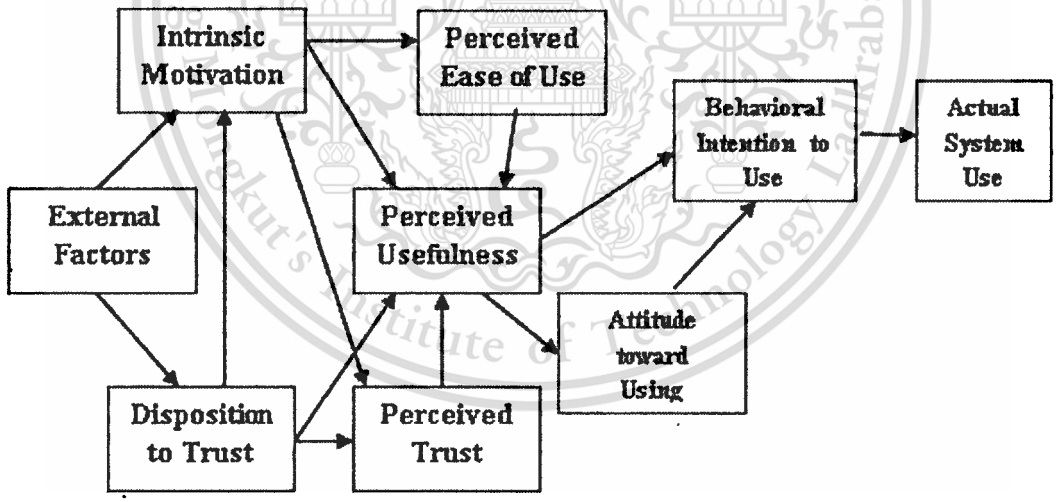


Figure 2.5 Trust enhanced TAM for mobile payment by (Dahlberg et al., 2003)

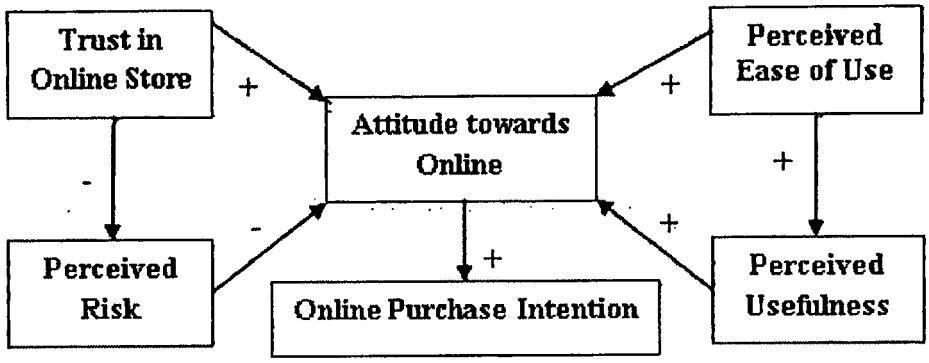


Figure 2.6 Extended TAM for online purchasing at an e-commerce website by Heijden et al., 2003.

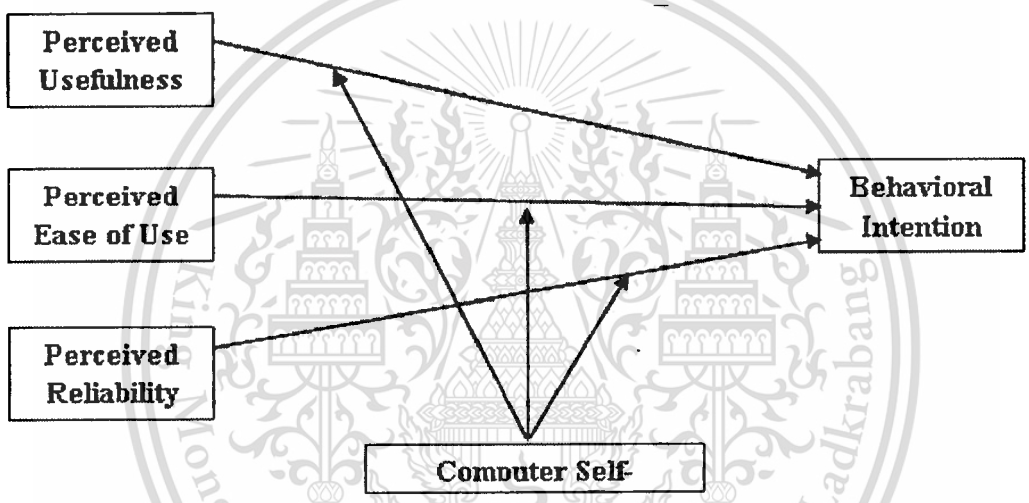


Figure 2.7 Extended TAM for internet banking by Ndubisi, 2007.

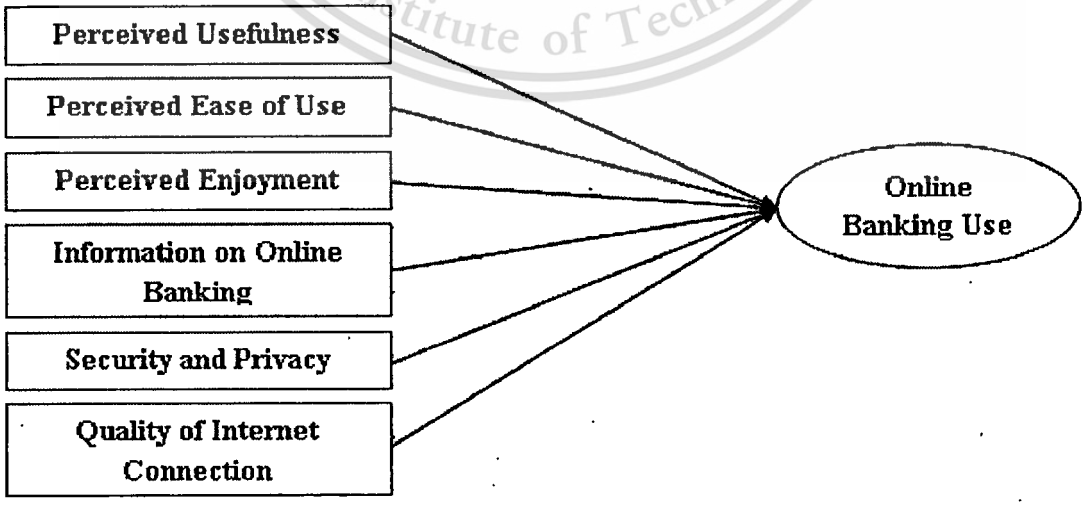


Figure 2.8 The extension of TAM for online banking acceptance by Pikkarainen et al., 2004.

Appendix B

Figures of Example of Internet banking related to TAM

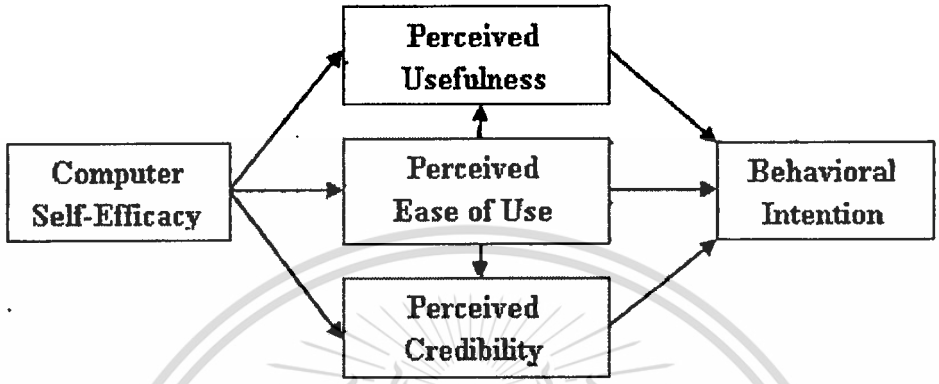


Figure 2.9 Determinants of user acceptance of Internet banking: An empirical study in Taiwan by Wang et al., 2003.

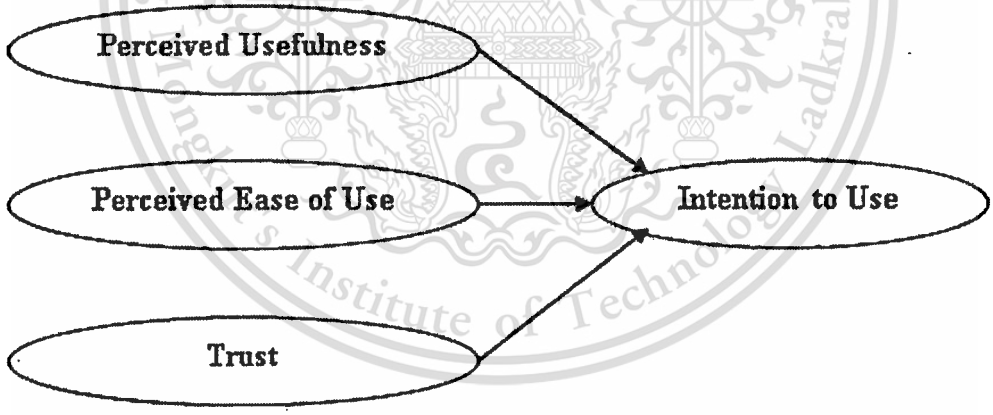


Figure 2.10 Malay, Chinese, and internet banking by Nor et al., 2010.

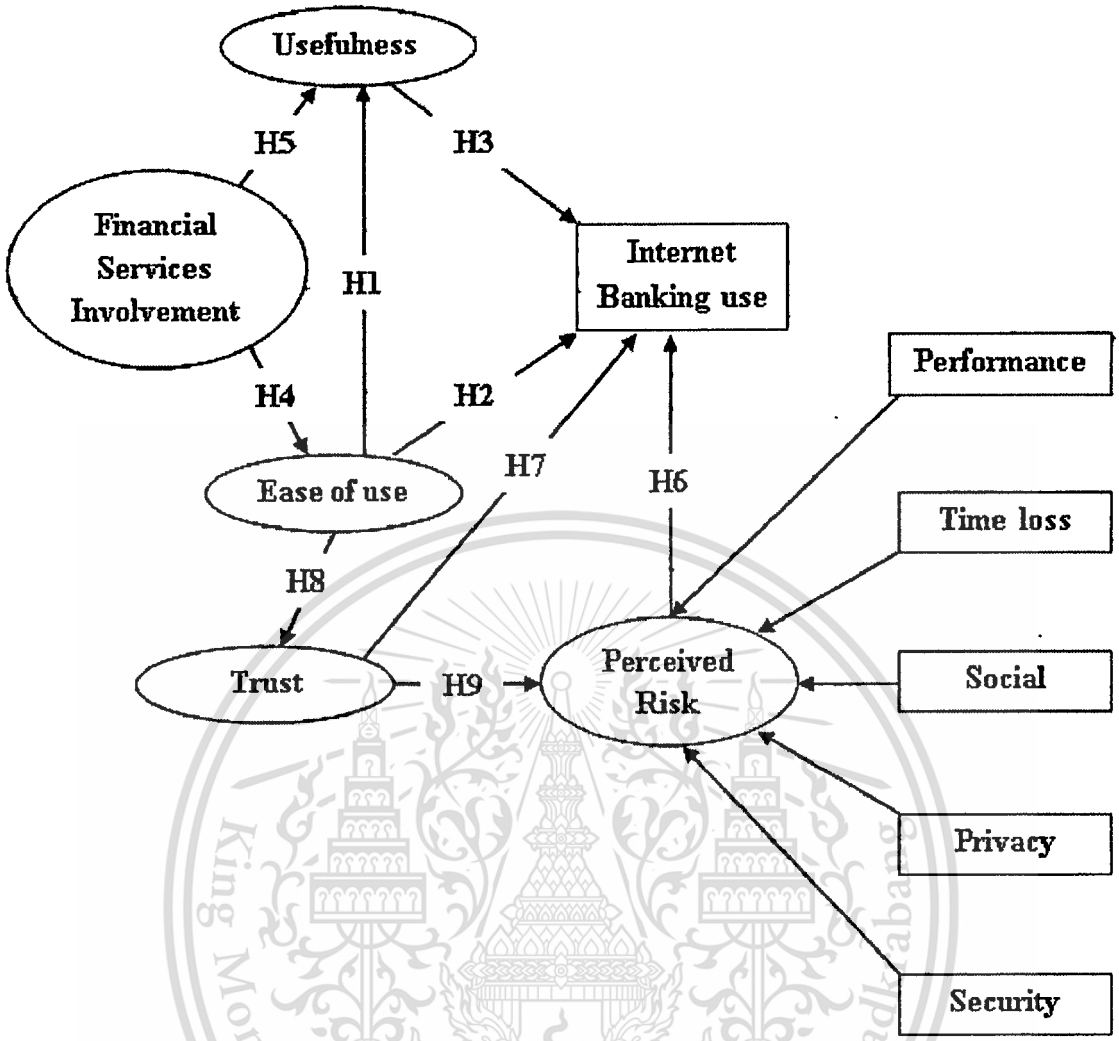


Figure 2.11 Key drivers of internet banking services use in Spain by Manzano et al., 2009.

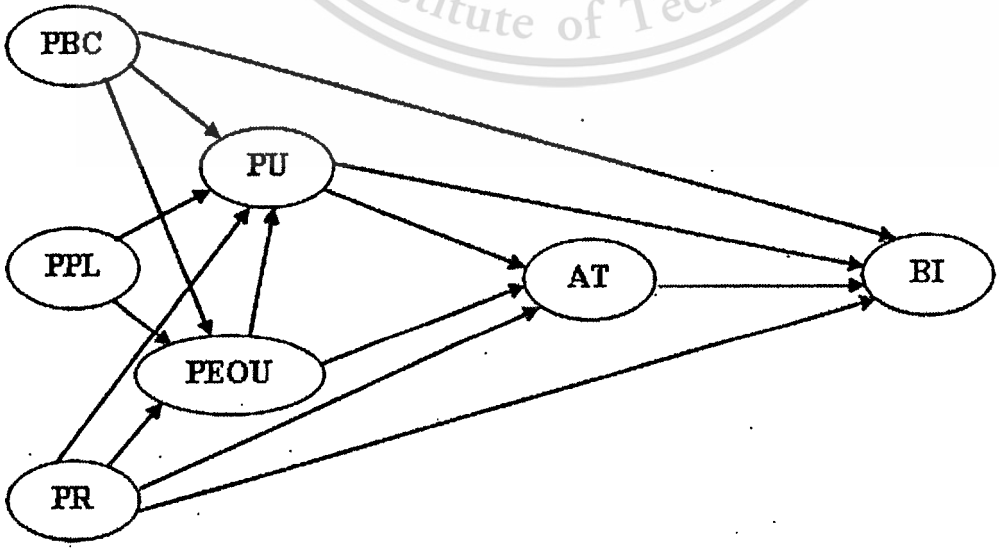


Figure 2.12 What determines Turkish customers' acceptance of internet banking? by Celik, 2008.

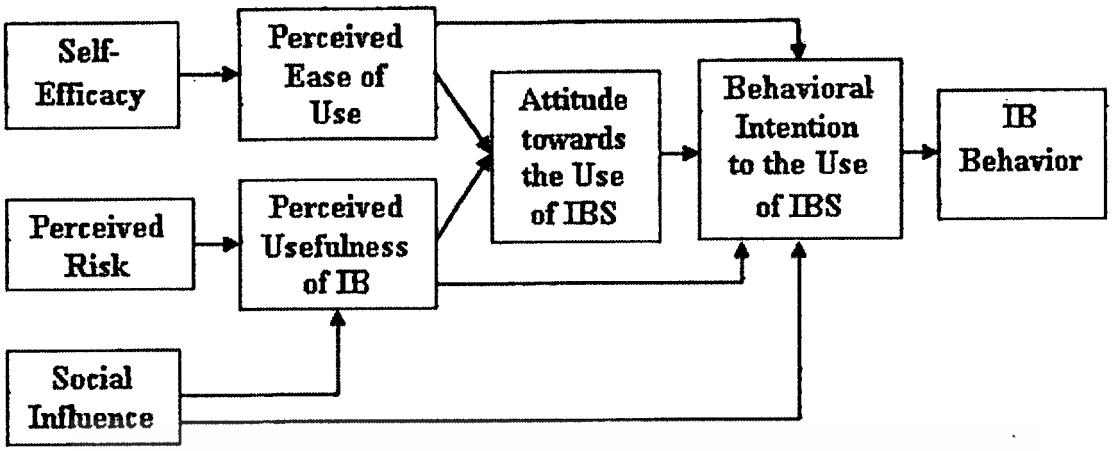


Figure 2.13 The youth market for internet banking services: Perceptions, attitude and behavior in the UK by Chau & Ngai, 2010.

Appendix C

Method of Data Analysis Summary

Table 3.1

Method of Data Analysis Summary

#	Data Analysis	Method	App.	Criteria	Researcher/ Author
1	Missing Data	Listwise deletion	SPSS	Any missing value	Blunch (2008), Byrne (2010)
2	Outliers	-IQR (Interquartile range)	SPSS	- exceed +1.5 the interquartile range	Albright, Winston, & Zappe (2009)
		-Mahalanobis distance	AMOS	- small p1 value But small p2 value	
3	Normality	-Skewness	SPSS	0 → Normal	Blunch (2008, pp.96-97), Kline (2005)
		-Kurtosis	AMOS	-1 < accepted <1 -3 < accepted <3 -10 < accepted <10	

Table 3.1 (Continued, p.2)

#	Data Analysis	Method	App.	Criteria	Researcher/ Author
4	Reliability -Internal consistency reliability	Cronbach's Alpha	SPSS	Over 0.80 →good 0.70→ acceptable Lower 0.60 → poor .90 → excellent .80 → very good .70 → adequate - Should exceed a threshold of .70 - .60 used in exploratory research	Sekaran & Bougie (2009) Kline (2005, pp.59) Hair et al. (2010, pp.127)
5	-Discriminant Validity -Convergent Validity	- Correlation Index - AVE - Square root of AVE		Less than 0.85 Greater than 0.5 Higher than IC	Fornell & Larcker (1981)
6	-Content Validity	Discussion	-	Evaluated in discussions with colleagues or other experts	Blunch (2008 pp.43)

Table 3.1 (Continued, p.3)

#	Data Analysis	Method	App.	Criteria	Researcher/ Author
7	Factor loadings	Standardized loading estimates (Standardized Regression Weights)	AMOS	- minimally acceptable -→ ±.30 to ±.40 - necessary for practical significance -→ Should be .5 or higher Ideally .7 or higher	Hair et al .(2010 pp.118) Hair et al.(2010 pp.695)

Table 3.2

Model Fit

	Index	Acceptable range	Researcher	Method	App.
1	λ^2/ df or CMIN/DF	≤ 2 good fit ≤ 3 good ≤ 5 acceptable	Vanichbuncha Hair J.F. et al.(2010 p118) Bollen,1989: Diamantopoulos and Siguaw, 2000 ref. in Thanakorn, 2009)	AMOS analysis	AMOS
	Notes:	λ^2 value varies significant directly by N (Number of samples) $\lambda^2 = (N - 1)(S - \Sigma_i)$			
2	p-value	≥ 0.5 no statistical significance	Byrne 2010	AMOS analysis	AMOS
3	GFI, AGFI	At least should ≥ 0.90 ≥ 0.95 good	Byrne 2010		

Table 3.2 (Continued.)

	Index	Acceptable range	Researcher	Method	App.
4	RMSEA	≤ 0.05 good fit 0.05 < RMSEA ≤ 0.08 good 0.08 < RMSEA ≤ 0.10 acceptable RMSEA > 0.10 not acceptable	Bollen,1989: Diamantopoulos and Siguaw, 2000 ref. in Thanakorn, 2009)	AMOS analysis	AMOS
5	RMR, SRMR	RMR → 0 SRMR ≤ 0.5 fit	Byrne 2010		
6	NFI, TLI	→ 1 with values close to .95 indicating superior fit	Byrne 2010		
7	CFI	≥ 0.90 with values close to .95 indicating superior fit	Byrne 2010		

Appendix D

Summary of Questions for each Constructs

This questionnaire is a part of the research

"Factors affecting Internet banking (IB) adoption in Thailand"

Please tick a box/ circle one number/ fill in the blank with the answer that best describes your opinion.

1. Using internet banking enables me to accomplish my banking transactions more quickly.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

2. Using internet banking makes it easier for me to do my banking transactions.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

3. Using internet banking enables the effective use of my time.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

4. Using internet banking enables me to get a wide range of my banking information with only "on click".

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

5. I find internet banking useful in my banking transactions.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

6. I find internet banking flexible to interact with.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

7. Learning to use internet banking is easy for me.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

8. I find it easy to get internet banking to do what I want it to do for my banking purposes.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

9. My interaction with internet banking is clear and understandable.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

10. I find internet banking easy to use.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

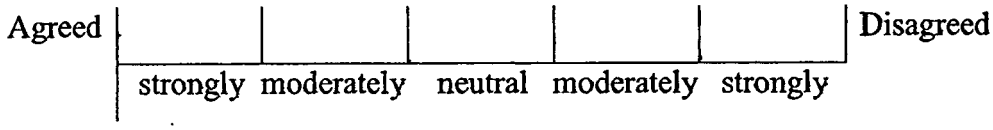
11. I am able to trust the ability of the internet banking system to protect the privacy of my personal banking data.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

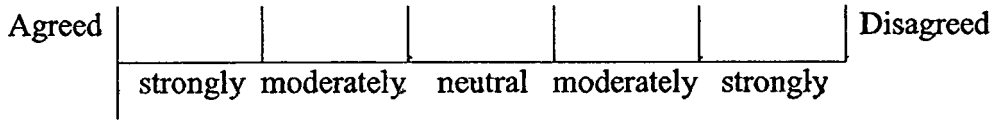
12. I am able to trust the internet banking system not to disclose my personal banking data.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

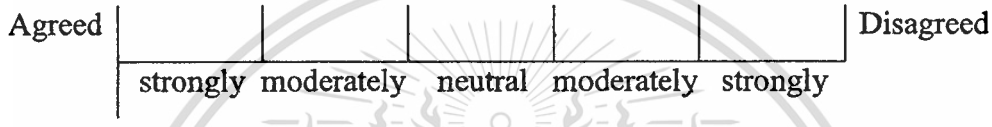
13. I am able to trust banks to keep customer data securely.



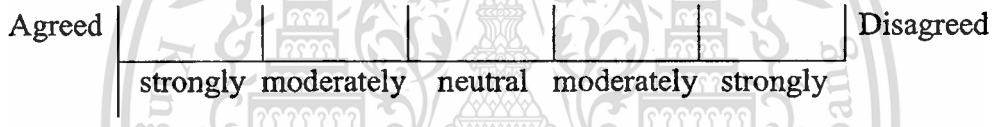
14. I am able to trust that the internet banking I am using is safe.



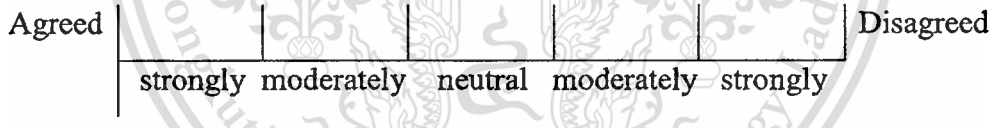
15. I am able to trust that making transactions through internet banking is just like going to the bank.



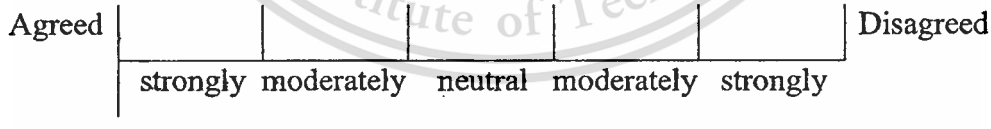
16. People in my organization think that I should use internet banking.



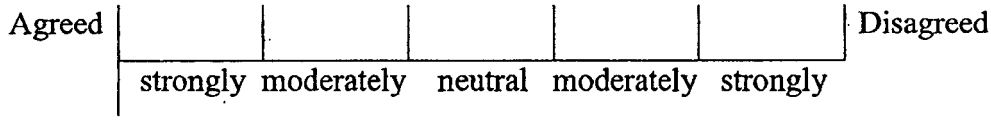
17. My family thinks that I should use internet banking.



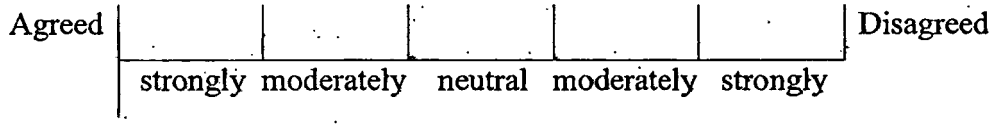
18. My friends influence my decision to use internet banking.



19. The image of the bank has influence on my using internet banking.



20. Internet banking's special promotion has influence on my using internet banking.



21. I access bank's web page, I intend to use internet banking.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

22. I access internet banking (IB), I intend to make financial transactions through the internet banking.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

23. I would internet banking to carry out my transactions.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

24. I am interested in new internet banking.

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

25. All things considered, using internet banking in the future for me .....

Agreed						Disagreed
	strongly	moderately	neutral	moderately	strongly	

We need some socio-demographic information about you to help us in interpreting the data.

Personal Details

- Area of residence
  - ☐ Bangkok metropolitan area (Bangkok, Pathumthani, Nontaburi, Samutprakarn)
  - ☐ Other provinces (please specify).....
- Gender
  - ☐ Male ☐ Female

- Age

  ☐ Under 18 ☐ 18 – 22 ☐ 23 – 27 ☐ 28 – 35
  ☐ 36 – 45 ☐ 46 – 55 ☐ Over 55

- Education

  ☐ Primary school ☐ Secondary school ☐ High school
  ☐ School certificate ☐ Bachelor degree ☐ Master degree
  ☐ Doctoral degree

- Occupation

  ☐ Government officer
  - ○ C1 – C3 Level ○ C4 – C7 Level
  - ○ C8 – C9 Level ○ C10 up Level ○ Temporary employee

  ☐ State Enterprise official
  - ○ 1 – 3 Level ○ 4 – 7 Level
  - ○ 8 - 9 Level ○ 10 up Level ○ Temporary employee

  ☐ Private sector
  - ○ Operational–level staff ○ Supervisor
  - ○ Assistant Vice President (AVP) ○ Vice President (VP)
  - ○ Senior Vice President (SVP) ○ Executive Vice President (EVP)
  - ○ Temporary employee

  ☐ Company owner
  - ○ Retail ○ Commercial
  - ○ Wholesale ○ Others (please specify).....

  ☐ Entrepreneur
  - ○ Manufacturer ○ Engineering ○ Textile
  - ○ Processed Food ○ Restaurant ○ Travel & Tourism
  - ○ Service ○ Wholesale ○ Retail

  ☐ Self-employed professional
  - ○ Doctor ○ Architect ○ Lawyer
  - ○ Engineer ○ Interior designer ○ Actor
  - ○ Accountant ○ Press ○ Consultant
  - ○ Others (please specify).....

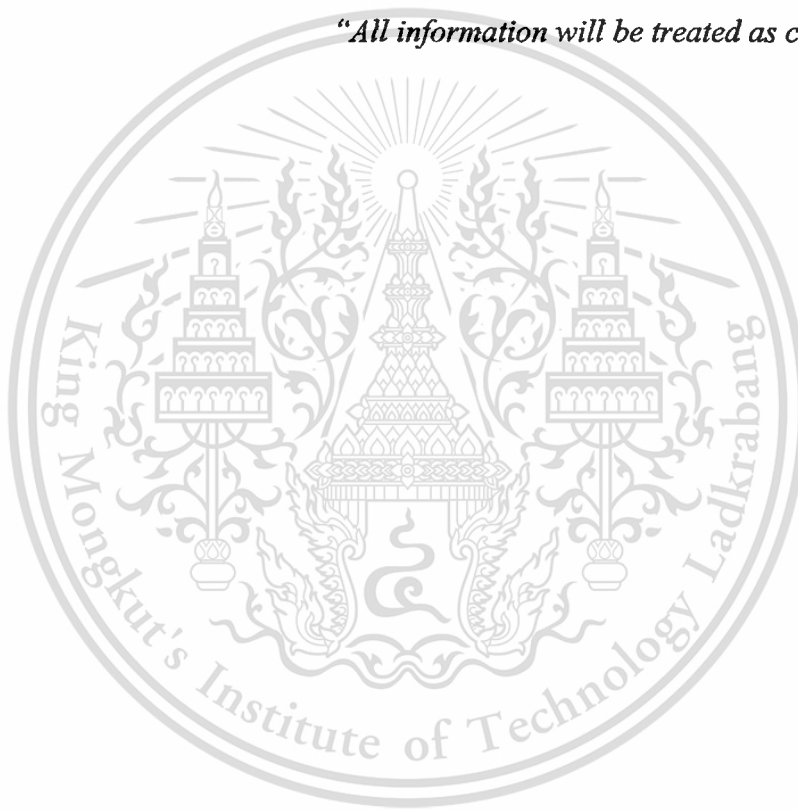
  ☐ Home maker

  ☐ Daily wage earner

- ☐ Student
- ☐ Farmer
- ☐ Retiree
- ☐ Unemployed
- ☐ About to be employed

Thank you!

"All information will be treated as confidential."



This questionnaire is a part of the research

"Factors affecting Internet banking (IB) adoption in Thailand"

This questionnaire is intended for those who have never used any Internet banking before, please allow me to introduce Internet banking.

Freedom when you bank

Simplify your financial life

Getting started with Internet Explorer

With an Internet connection and Internet Explorer,

You can find and view information about anything on the Web.

Click your way through all your daily banking needs with Internet banking.

It's convenient, reliable, and available 24 hours per day in Thai and English. You can pay bills to more than 300 companies and …

…transfer money between bank accounts anywhere in Thailand at your leisure.

Internet banking transactions

Internet banking service provides you with convenient and reliable Internet banking. You can do almost all your personal banking transactions online 24 hours a day. Services for your convenient include:

1. Account Summary or Account Balance Inquiry or Account Statement Inquiry
2. Inter-Account Funds transfer to owner or to other account
3. Bill Payments
4. Mutual Funds
5. Extra Services such as Query returned cheques, Stop-Payment Cheque Inquiry
6. Other Services such as Activate SMS authentication for receiving a One Time Password (OTP) and instantly add 3rd party accounts
7. Bank Mail for securely sending and receiving e-mails to and from bank

By volunteering to complete the questionnaire, Please provide your name and address in the space below.

Have you ever used Internet banking for banking purpose?

❍ No ❍ Yes

Please tick a box/ circle one number/ fill in the blank with the answer that best describes your opinion.

1. Using Internet banking would enable me to accomplish my banking transactions more quickly.

Agreed					Disagreed
strongly	moderately	neutral	moderately	strongly	

2. Using Internet banking would make it easier for me to do my banking transactions.

Agreed					Disagreed
strongly	moderately	neutral	moderately	strongly	

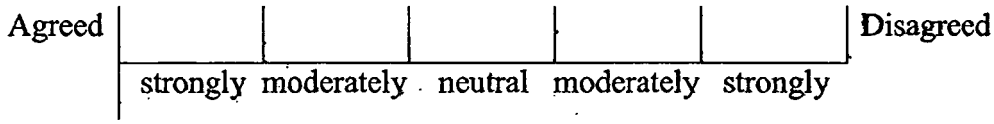
3. Using Internet banking would enable the efficient use of my time.

Agreed					Disagreed
strongly	moderately	neutral	moderately	strongly	

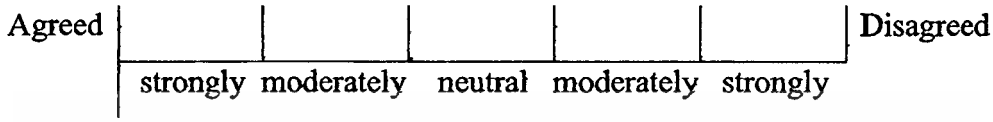
4. Using Internet banking would enable me to get a wide range of my banking information with only "on click".

Agreed					Disagreed
strongly	moderately	neutral	moderately	strongly	

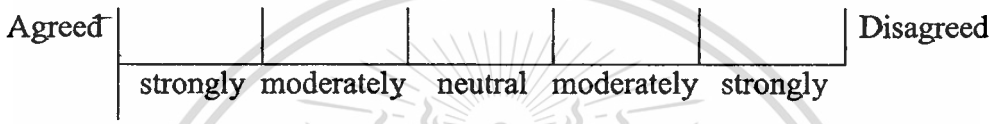
5. I would find Internet banking useful in my banking transactions.



6. I would find Internet banking flexible to interact with.

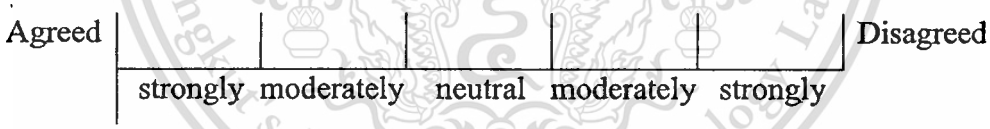


7. Learning to use Internet banking would be easy for me.

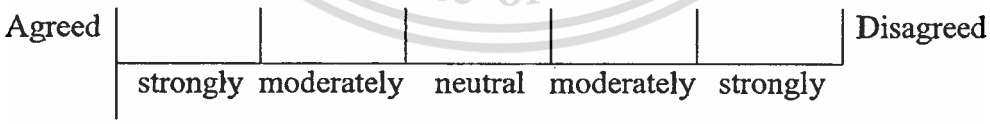


8. I would find it easy to get Internet banking to do what I want it to do for my banking purposes.

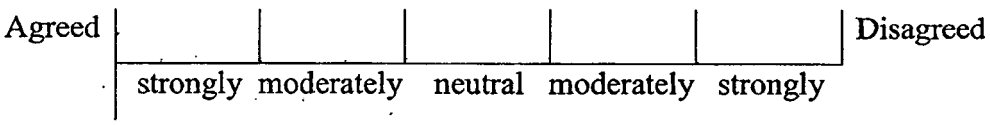
9. My interaction with Internet banking would be clear and understandable.



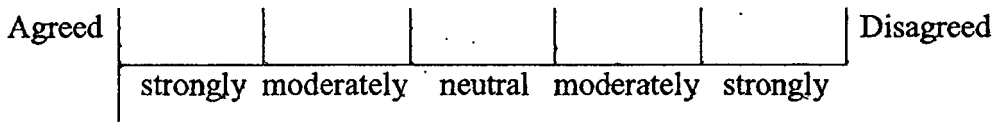
10. I would find Internet banking easy to use.



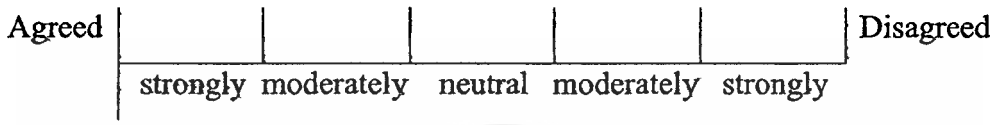
11. I would be able to trust the ability of the Internet banking system to protect the privacy of my personal banking data.



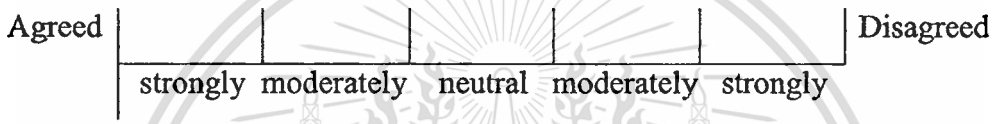
12. I would be able to trust the Internet banking system not to disclose my personal banking data.



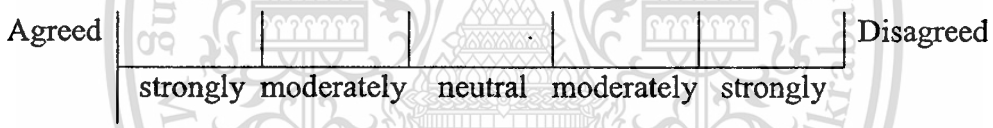
13. I would be able to trust banks to keep customer data securely.



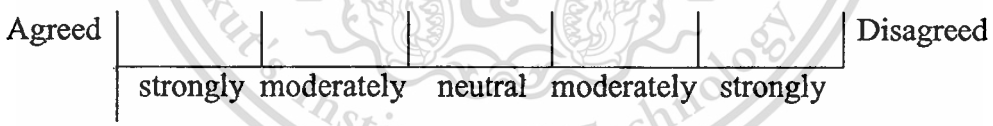
14. I would be able to trust that Internet banking is safe to use.



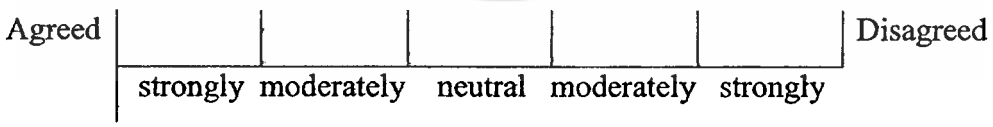
15. I would be able to trust that making transactions through Internet banking is just like going to the bank.



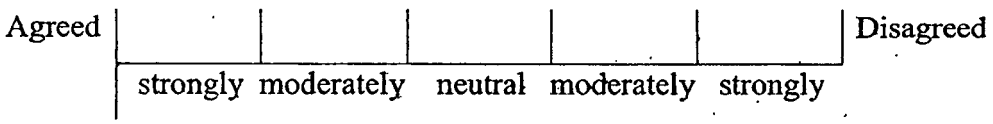
16. People in my organization think that I should use Internet banking.



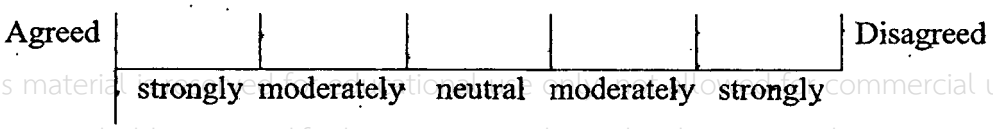
17. My family thinks that I should use Internet banking.



18. My friends influence my decision to use Internet banking.



19. The image of the bank has influence on my using Internet banking (IB).



20. Internet banking's special promotion has influence on my using Internet banking.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

21. Whenever I access the bank's web page, I intend to use it for Internet banking.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

22. Whenever I access Internet banking, I intend to make financial transactions through the Internet banking.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

23. I would apply to use Internet banking to carry out my financial transactions.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

24. I would be interested in new Internet banking services.

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

25. All things considered, using Internet banking in the future for me would be……

Agreed | | | | | | Disagreed
strongly moderately neutral moderately strongly

We need some socio-demographic information about you to help us in interpreting the data.

Personal Details

- Area of resident

  ❒ Bangkok metropolitan area

  (Bangkok, Pathumtani, Nonthaburi, Samutprakarn)

  ❒ Other provinces (please specify).....

- Gender

  ❒ Male ❒ Female

- Age

  ❒ Under 18 ❒ 18 – 22 ❒ 23 – 27 ❒ 28 – 35

  ❒ 36 – 45 ❒ 46 – 55 ❒ Over 55

- Education

  ❒ Primary school ❒ Secondary school ❒ High school

  ❒ School certificate ❒ Bachelor degree ❒ Master degree

  ❒ Doctoral degree

- Occupation

  ❒ Government officer

  ○ C1 – C3 Level ○ C4 – C7 Level

  ○ C8 - C9 Level ○ C10 up ○ Temporary employee

  ❒ State Enterprise official

  ○ 1 – 3 Level ○ 4 – 7 Level

  ○ 8 - 9 Level ○ 10 up ○ Temporary employee

  ❒ Private sector

  ○ Operational – level staff ○ Supervisor

  ○ Assistant Vice President (AVP) ○ Vice President (VP)

  ○ Senior Vice President (SVP) ○ Executive Vice President (EVP)

  ○ Temporary employee

  ❒ Company owner

  ○ Retail ○ Commercial ○ Wholesale

  ○ Others ....*Please specify*.....

☐ Entrepreneur

○ Manufacturer	○ Engineering	○ Textile
○ Processed Food	○ Restaurant	○ Travel & Tourism
○ Service	○ Wholesale	○ Retail

☐ Self-employed professional

○ Doctor	○ Architect	○ Lawyer
○ Engineer	○ Interior designer	○ Actor
○ Accountant	○ Press	○ Consultant

○ Others ….*Please specify*……

☐ Home maker

☐ Daily wage earner

☐ Student

☐ Farmer

☐ Retiree

☐ Unemployed

☐ About to be employed

Thank you!

"All information will be treated as confidential."

Appendix E
VALS II

A STUDY OF INFLUENCES OF VALUES, ATTITUDES AND LIFESTYLES (VALS II) ON BRAND EQUITY OF LUXURY HANDBAGS IN BANGKOK

By

Koonnaree Wongsiriwat

Advisor: Asst. Prof. Dr. Pacapol Anurit

Master of Business Administration in Management

School of Management

Shinawatra University

June 2007

Values, Attitudes, and Lifestyles System are proprietary psychographic consumer segmentation system that classifies people into eight basic lifestyle groups on the basis of two dimensions: resources and self-orientation. VALS II was developed by the US consulting firm Stanford Research Institute (SRI) as an improvement on its original VALS (introduced in 1978), VALS (Values and Lifestyles) is a segmentation system designed by Stanford Research Institute (SRI), to categorize U.S. adult consumers into mutually exclusive groups based on their psychology and several key demographics (VALS, 2007).

Value: The manner in which human beings develop, assert and believe in certain values, and act or fail to act on them. Attempts are made to explain experimentally why human beings prefer or choose some things over others, how personal behavior may be guided (or fail to be guided) by certain values and judgments, and how values emerge at different stages of human development. In psychotherapy and counseling, eliciting and clarifying the values of the client can play an important role to help the client orient or reorient him or herself in social life.

Attitude is a concept in psychology. Attitudes are positive, negative or neutral views of an "attitude object" a person, behavior or event. People can also be "ambivalent" towards a target, meaning that they simultaneously possess a positive and a negative attitude.

Lifestyle refers to how people live, how they spend their money, and how they allocate their time. In sociology, a lifestyle is the way a person or a group lives. This includes patterns of consumption. A lifestyle typically also reflects an individual's attitudes, values or worldview. In business, "lifestyles" provide a means of targeting consumers as advertisers and marketers endeavor to match consumer aspirations with products.

Biography

Name: Mantana Intana

Date of Birth: August 14, 1953

Place of Birth: Lampang, Thailand

Institutions Attended:

June 1971 – March 1975 Bachelor of Education, Mathematic, Faculty of Education, Srinakharinwirot University - Prasanmitr, Bangkok, Thailand.

June 1987 – March 1990 Master of Business Administration, Accounting Faculty, Thammasat University, Bangkok, Thailand.

June 1995 – March 1997 Master of Information Technology, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand.

Position and Office: Specialist 2 - Analytics Project, Accounting and Financial Information Department, Bangkok Bank Co., LTD.

Home Address: 88 Phatthanakan Road, Soi 46 Suan Luang District Bangkok, Thailand, 10250.

Telephone: +66-085-199-2522

E-mail: manin12345@gmail.com

Publication/ Presentation:

Proceedings of 2009 *International Conference on Technology Innovation and Industrial Management*, Jun 18th – 19th, Bangkok, Thailand.

International Journal Electronic Finance, 2013, *7*(3/4), 196-212.

Asian Journal of Management Research, 2014, *5*(1), 124-137.