



SENIOR RESEARCH

The Impact of Perceived Risk and Perceived Benefits on Adoption and Interbank Transactions of
Prompt Pay Mobile Banking in Bangkok

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Abstract

The senior research has been conducted to thoroughly investigate various factors affecting the usage of Prompt Pay Mobile Banking in Bangkok, especially in terms of perceived benefits and risks. Three logistic regression models were constructed to study consumers' decisions towards Mobile Banking Usage, Prompt Pay Adoption and their likelihood to increase transactions after the adoption. An online survey has been developed for 349 samples in order to achieve such objectives.

The study has found that transaction frequency, perceived convenience and average amount per transaction have positive impact on mobile banking usage. While interbank transaction user, perceived relative advantage in terms of government transfers and mobile banking user have positive effects toward the adoption of Prompt Pay, and only perceived relative advantage in terms of reduced interbank fees has a positive influence toward an increase in interbank transactions after Prompt Pay adoption.

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1. INTRODUCTION

With the ever-growing technological advances in the world, it is almost impossible to say that no industries progress without innovation nowadays. Financial industry, like banks, too, experience major changes in its operations and services due to these new innovations. Mobile Banking as well as Internet Banking play significant roles in the Banking Industry. Particularly for Thailand, the economy is facing a major transformation into “Thailand 4.0” where cashless society notably will become the key essential to economic growth. The Thai Banks’ Association under the Government of Thailand together with The Bank of Thailand have implemented an integrated system, “Prompt Pay”, a national e-payment, that will flourish the success of such shift towards digital economy, especially in the Banking industry. Prompt Pay is a new element added to the traditional financial transaction service that aims to reduce transaction costs and facilitate fund transfers between individuals, corporates and the society. Instead of using traditional bank account number, national identification number or phone number is used as a fund transfer code (National e-Payment, 2017). Payment Systems Office (PSO) is established to support the innovative digital platform, and act as a central committee to take care of the system (Yaklai, 2016). By 2020, up to 60% of overall transactions is expected to be cashless (Enterprise Innovation, 2017).

However, there are both supporters and critics of Prompt Pay. Although Prompt Pay reduces interbank fees and promotes inclusion, transparency and efficiency within the society, there are still cyber risks and government trust issues that remain as key barriers to the adoption. Currently, there is a great number of well published scholars on the adoption of mobile banking in different countries. However, none of which have thoroughly tackle that in the case of Thailand and particularly on Prompt Pay. This leaves rooms for this study to fill in the gaps by exploring the factors and identifying the relationships between those factors and the usage of Prompt Pay and its interbank transactions.

Therefore, the main objective for this paper is to examine the impact of perceived risks and perceived benefits on two important aspects; the adoption of Prompt Pay through Mobile Banking and their likelihood to increase interbank transactions after the adoption. The research question to this study is:

“The Impact of Perceived Risk and Perceived Benefits on Adoption and Interbank Transaction of Prompt Pay Mobile Banking in Bangkok”

The scope of this study is limited to middle to high income, current banking customers of average monthly income of over 10,000 Baht in Bangkok (Thailand’s National Statistics Office, 2009) in order to specifically investigate the influence on this target group. The outcome of this research is fundamentally important and beneficial to the banking industry and the Government of Thailand to clearly understand the root cause of Thai consumers’ reluctance towards Prompt Pay adoption so that awareness can be raised, problems can be tackled and usage can be promoted accordingly. The significant factors will enable them to construct appropriate strategies in order to encourage the use of Prompt Pay. Thus, the study hypothesizes that perceived risk has a negative impact while perceived benefit has a positive impact towards both Prompt Pay adoption and interbank transactions.

The paper is structured into different chapters and subchapters. Starting with the literature review on different variables in terms of Perceived Benefits and Perceived Risks, and how are they related to the adoption of mobile banking. Then the paper discusses deeply on Prompt Pay itself, on how reviewers and banks give information on Prompt Pay in both positive and negative aspects. Methodology of the paper is then explored in the succeeding section where conceptual framework is exhibited with regression models and data collection. Findings are thoroughly examined and clearly interpreted through data summary, descriptive statistics and regression results. Finally, the conclusion is drawn from all the sections, and practical implications and scope for future research are explained.

2. LITERATURE REVIEW

Literature review has been conducted to primarily understand the current knowledge and existing contributions towards the adoption of mobile banking studies in various target audiences and cultures. Several studies and researches on mobile banking adoption find a positive influence of perceived benefits and a negative influence of perceived risk on the adoption of mobile and online banking. Although most literatures have analyzed critically into various factors that influence consumers' behaviors of mobile/online banking adoption, none of which have thoroughly explored that in the context of Thailand, especially to the extent of Prompt Pay usage. For this reason, this study is performed to examine such issues through developing and building on ideas from the literature review.

2.1 PERCEIVED BENEFITS

Perceived Relative Advantage

Relative advantage is when an innovation is viewed to offer more benefits when compared to the traditional model (More & Benbasat 1991). With relative advantages, there is more efficiency, economic benefits and status. Thus, when people perceive these benefits relatively to their current usage, they tend to adopt it. The relative benefits of mobile banking technology may include immediacy, convenience and affordability. Therefore, it is suggested that there is a positive relationship between perceived benefits and the adoption of new technology, particularly, mobile banking adoption (Al-Jabri, Ibrahim M., and M. Sadiq Sohail, 2012).

Perceived Convenience

Perceived convenience from online and mobile banking adoption has a positive relationship to towards the adoption. The perception of users that is viewed as convenience may include time effective, safety, convenience, simplicity in operations and ease of navigation. The paper has analyzed the influence of time effectiveness to mobile banking adoption when compared differently with occupation, monthly income, gender and marital status. Thus, the results have shown that married females who are currently employed in the private sector and are in higher income class tend to prioritize time effectiveness as the main factor to their adoption of mobile banking. Therefore, it is also suggested that focusing and promoting perceived

convenience in terms of time effectiveness will definitely increase the adoption rate of mobile banking (Baht, 2016).

Perceived Safety

Perceived safety is another factor that has a positive impact towards mobile banking adoption. The perception of safety includes the security during fund transactions, bill payments and also third parties. Therefore, by ensuring safety in these areas and promoting security and privacy, reliability will enhance perceived efficiency and thus, lead to greater acceptance and less barriers to this mobile banking innovation (Baht, 2016).

Perceived Trust

Since the innovation of financial technology and products, particularly online and mobile banking, have unique features and attributes, when compared to that of traditional transactions, trust is essentially important. The power of online trust is profoundly and fundamentally important to the adoption of online and mobile banking. As a matter of fact, without sufficient trust, consumers become reluctant to use such innovative services. This certain paper has concluded that internet trust has a great impact on not only the adoption, but also consumers' perception of risk and their behaviors towards the functioning. The propensity to trust is the key to interpersonal relationships and technological systems, hence it is extremely important not just for banking but also all businesses during their customers' interactions (Grabner- Kräuter, Sonja, and Rita Faullant, 2008). Kabir, on the other hand, has explored the impact of perceived trust in Bangladesh. He has clearly stated that there are three main dimensions to trust, namely, ability, integrity and benevolence. The concept of ability is defined as the ability of banks to meet the satisfaction of customers, while integrity means that banks are fair, reasonable and honest, and lastly, benevolence refers to the good faith, kindness and compassion of banks towards customers. All of these perceived aspects form together to build up trust of customers (Kabir, 2013). Moreover, it is also confirmed that initial trust has a significant impact towards mobile banking adoption. Initial trust, similarly to perceived trust, is formed before the actual usage of the service. Yet, these perceptions are seriously important and shall be promoted. It has been

investigated that relative benefits, propensity to trust and structural assurances all have positive influence to initial trust (Kim, Gimun, BongSik Shin, and Ho Geun Lee, 2009).

Role of Information

The role of information is another crucial factor to mobile banking adoption. Generally, it is important for people to have sufficient information of certain things before they start using it. Similarly to mobile banking adoption, information and guidance are the two most influential aspects that encourage the shift from traditional to online banking services; where as image, value and risk show less influence. The role of information can be categorized into five different aspects namely usage, value, risk, tradition and image. It is suggested that people become more resistant because they lack information and guidance, and therefore tend to over perceive risks. Therefore, banks should provide all benefits such as time savings, real time information and feelings of control in order to minimize the barriers and reluctance towards innovation and mobile banking (Laukkanen, Tommi, and Vesa Kiviniemi, 2010).

2.2 PERCEIVED RISKS

Perceived Cost

The first barrier to the adoption of Mobile Banking is the customers' perception of high cost. Cost plays a significant role to all aspects of life, especially when it comes to new innovation such as mobile banking. The associating costs may include internet service fees, mobile service fees, the cost of purchasing a new mobile device and also banking charges; where the cost of internet access and banking fees accounted for the most significant barriers (Cruz, 2010). These costs must be paid if the consumers are to adopt the use of mobile banking. Therefore, it has been proven that cost is a crucial factor in the adoption of mobile banking and it is has a great impact on consumers' purchasing behaviors. According to KPMG International, cost is, foremost, the main barrier to the adoption of such service, where the study was done in 19 countries and over 59% have agreed so (Cruz, 2010). A study done in Brazil, a developing country just like Thailand, has suggested that perceived cost is closely linked to age, education and income level. Undeniably, cost concern decreases with higher income and greater age, but

lower education level. Fortunately, these perceived costs have no relationship with the role of information, hence, the barrier can still be diminished through cost cuttings (Cruz, 2010).

Perceived Risks

According to Theory of Diffusion of Innovation, perceived risk is considered to be the only factor that play a negative role towards people's adoption of mobile banking in Saudi Arabia. There will always be a barrier to an introduction to any new innovation because customers usually doubt inconsistency and technological failures. Especially in the context of mobile banking, concerns often arise with technological threats of privacy and security, such that they perceive risks that are dealt with privacy issues such as stolen of personal information or transaction tracking. Some are worried in the aspect of financial risks like hackers and loss of pin codes that may lead to financial theft. According to Lee (2009), perceived risk can be classified into five different types; performance, time, financial, privacy and social risk. Performance risk means any losses that may occur during the performance of mobile banking servers, time risk refers to any delays dealt with the transactions and the navigation, financial risk is any financial loss that may occur during transactions and accounts misuse, privacy risk refers to insecurity and personal information lost due to hackers, and lastly, social risk is defined as any disapproval from social groups when using the service.

As a result, all of these risks discourage consumers' perception on mobile banking, only social risk does not have any significant influence (Kabir, 2013). Therefore, it is highly recommended and extremely important for banks to prioritize these issues and build trust in order to bring down the perceptions of such risks, and instead promote safety and security. Examples could include providing assurances, offering guarantees, ensuring serious and immediate incident responses to customers (Al-Jabri, Ibrahim M., and M. Sadiq Sohail, 2012). Especially in a low income market, like Bangladesh, these actions are critical when introducing new innovative financial services to the market (Kabir, 2013). Furthermore, a study in India has claimed that frequency of users have an impact of the perception of risk as well where frequent users tend to be concerned more on psychological risks whereas infrequent users tend to concern on both financial and psychological risks (Bhatt, 2016).

Perceived Complexity

Perceived complexity is a relevant factor towards consumers' reluctance to adopting mobile banking. This complexity is one of the five common traits of perceived innovation; namely, relative advantage compatibility, trialability, observability and complexity. According to the same study done in Brazil, complexity refers to the complexity during the course of use, and thus requires both knowledge and learning. With this reason, sometimes perceived complexity is also referred as perceived difficulty and usage barrier. The results from the study demonstrate that higher education helps to reduce people's perceptions of complexity because the more educated they are, the greater understanding they have of new innovations and technology usage. In fact, it is proven to be significantly higher for primary school students. Since education level has a positive impact towards lower perceptions of complexity, some communication strategies and measures could be applied targeting lower educated people such as improving customer services and providing more guidance (Cruz, 2010).

3. PROMPT PAY

3.1 BENEFITS OF PROMPT PAY: INDIVIDUALS, PRIVATE, PUBLIC, ECONOMY

Prompt Pay is beneficial to all sectors including individuals, private businesses, public sector and the economy. Not only that Prompt Pay makes it faster and more convenient for consumers when compared to traditional transfer channels, with national identification number or phone number, it is simpler and easier to remember and most importantly, with lower interbank transaction cost. *Table 3.1* shows that the traditional interbank transfer rate starts at 25 Baht per transaction with minimum amount while Prompt Pay offers zero cost to a minimum interbank transfer amount of below 5000 Baht (National e-Payment, 2017). Therefore, by having a significantly lower cost in interbank transactions, individuals should be more likely to increase transactions which would circulate cashflow within the economy. The money can also be spent elsewhere instead of paying to banks for the fees. In fact, it has been stated that the majority of the revenues for banking institutions come from these transaction fees which is over 10,000 Million Baht per year (Thairath Online, 2016). Banks are willing to cut these revenues in the short run in order to encourage and push forward a complete cashless and digital economy in the long run which will, in return, reduces costs for them as well (Yaklai, 2016). In the meantime, there is a push of Bancassurance among banks in order to fill in the gaps of lost revenues (Tonygoong, Bansorn Magazine, 2016)

Table 3.1 : Comparison Table of Interbank Rates With and Without Prompt Pay

Amount per Transaction	With Prompt Pay	Without Prompt Pay
< 5,000	Free	25
5,000 - 30,000	<2	35
30,000 - 100,000	<5	>35
> 100,000	<10	>35

Source: Kasikorn's Call Center

In terms of private businesses, Prompt Pay will enable competitiveness within the industry through higher growth potential for online start-ups and Small-Medium Enterprises, or as known as SMEs. The roles of social media such as Facebook and Instagram have become a

crucial part of every day lives of Thai people, especially teenagers. Online startups from apparels, accessories, to foods through such channels has open up new opportunities and create areas of e-commerce growth as never seen before in the history (Krungsri Guru). This golden era of cashless society has captured the needs of Thai SMEs, and thus Prompt Pay fills in the gap and facilitates the needs for online transactions and a complete service of the online platform. It will not only minimizes human errors, but since all mechanisms are electronic such as e-Invoicing and e-Receipt, efficiency is now developed with a cutback in the use of paper (Prachachat Online, 2015). In fact, with a reduction in interbank transactions, it becomes a lot more convenient for online customers to make payments since they do no longer have to select the same bank to transfer in order to be exceptionally granted free transaction fee (Thairath Online, 2016).

For the public sector, Prompt Pay will increase transparency and efficiency for the government transfer payment program which will overall enhance and promote inclusion and accessibility for the society. With this transparency, tax evasions, money laundering and other forms of corruptions shall be noticed and reduced (Krungsri Guru). Locals are more targeted to directly receive the transfer payments, without the need to rely on a middle person. Tax refunds can also be easily be refunded through the use of Prompt Pay as well. With the international standardization of ISO 27001 by the global company NITMX, and the support of Thai legal act, Prompt Pay is considered to be safe, secured and more than ready to fulfill the new Digital era of Thailand 4.0. Eventually, the social welfare of the Thai economy can be raised and improved.

Overall, the economy of Thailand will develop towards success. Currently, Thailand wastes up to a thousand million Baht per year for cash management (Yaklai, 2016). However, with Prompt Pay, not only that cashflow is more promoted and there will be a reduction in the cost of printing money as well (Thairath Online, 2016). Challengingly, Prompt Pay will bring the country out of the middle income trap through the marked growth local farmers as new entrepreneurs and the SMEs flourishing beyond their potential abilities (eCommerceIQ, 2016). Hence, this step forward will assist and prepare Thailand to be promptly ready for the new era of financial transactions in the global economy as well.

3.2 CRITICISMS OF PROMPT PAY

Although Prompt Pay has claimed to have numerous benefits whether to the people, the society or the economy, there is still a large number of criticisms that users have to take into account when adopting it. Professor Prinya Hormanake, an Information Technology Stability Expert, has suggested that with Prompt Pay, the government should prioritize Cybersecurity Risk Management, Incident Response and Data Privacy, which would together help to build trust and promote the adoption within the society (Tonygoong, Bansorn Magazine, 2016). First and most importantly, privacy issues such as cyber risk and government trust have become a main barrier towards Prompt Pay adoption of many critics in Thailand. Since the government is able to track all financial transactions through Prompt Pay, it is vitally important for citizens to fully trust the government. Thailand has faced outrageous political situations in the past decade from demonstrations and turmoils, closing roads, Coup de tat to burning fires, and because of these events, it is reasonably true that some groups are still reluctant to place themselves in the position under certain government control. Some argued that with Prompt Pay, the government is able to track all transaction records, and hence call for unreasonably high tax collections. Critics often perceive this as scarier than the recent Government implementation, Single Gateway (Tonygoong, Bansorn Magazine, 2016). This is, however, not to be concerned because the accounts of Prompt Pay is almost identical to traditional banking accounts, and that the information of Banking customers cannot be transferred to any department of the Government unless there is a legal order. For excessive tax collection concerns, it is also not realistically possible since the tax collection rate is as normal as any bank accounts, for all interest paid of more than 20,000 Baht per year, tax is collected 15%, or it is free of tax collection otherwise (Thairath Online, 2016). As a matter of fact, it is strongly recommended that the public sector should also focus on business resilience and Chief Information Security Officer (CISO) in order to encounter possible security incidents. Improved legal acts could also be used to further ensure confidence (Tonygoong, Bansorn Magazine, 2016).

Another crucial cause to people's reluctance to the adoption is their initial knowledge of Prompt Pay itself. Since they do not have sufficient information, they easily become afraid to adopting it. The people with some initial knowledge, on the other hand, have accepted Prompt

Pay usage, yet they tend to remain only receivers to monitor the situation during the first two quarters (Tonygoong, Bansorn Magazine, 2016). Incident Response is one of the most important clarifications people need to ensure security. This means that it is greatly critical for them to be informed about the responsible party if there were to be lost money during transactions through both human and technical errors. It is strongly believed that if these information are widely promoted, there would be more users of Prompt Pay (Tonygoong, Bansorn Magazine, 2016). Both Pridi Daochai, K-Bank Executive and Head of Thai Banks' Association, and Songpol Cheewapunyarrod, KTB Executive, confirmed that banks are responsible for all cases (Prachachat Online, 2015). According to Dr. Benjarong Suwankiri, TMB Executive, Thai Banks' Association has established Payment Systems Office (PSO) to take care and investigate any cyber risks and problems that may occur during transactions through Prompt Pay (Prachachat Online, 2015). This party is established not only to investigate any issues that have occurred, but also to prevent those from happening. It will help scan and lessen responsibilities for banks as well. Therefore, without these sufficient amount of information and knowledge, people easily become afraid to adopt it.

Not only that there is no trust in the government's action, critics also have doubts in the NITMX Standards (Tonygoong, Bansorn Magazine, 2016). They believe that the NITMX is outdated and restricted to only bank use, which would still allow them to remain as monopolies. A suggestion to better Government trust is through more standardized certifications such as ISO27001, CISM and CISSP which are widely recognized and accepted in the global community (Tonygoong, Bansorn Magazine, 2016). Moreover, it is important to keep in mind that technology changes all the time, and there will always be new innovations. Therefore, awareness of future alternatives to financial technology is highly important (Tonygoong, Bansorn Magazine, 2016). Blockchain, a fair example, is a digital platform and network for all Bitcoin transactions (Investopedia).

4. METHODOLOGY

The methodology of this study is separated into three parts from sample selection, variable selection and hypotheses formulation to data collection. All of these methodologies are built and developed from the literature review in the above section, and are discussed in the categories below.

4.1 CONCEPTUAL FRAMEWORK

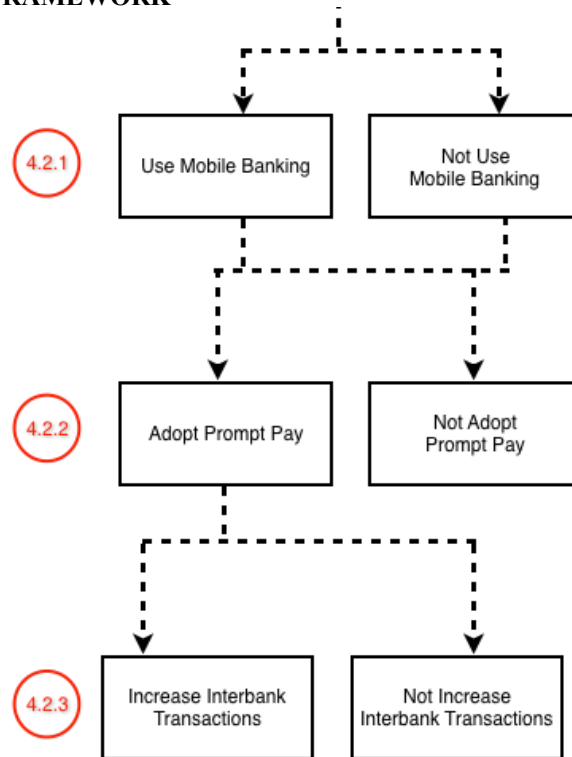


Figure 4:
Empirical Framework

The Empirical Framework (see *Figure 4*) displays the process of how each target group of the data collected is used into different regression models. The framework should be able to help clarify the big picture of how each data set is used for each of the regression models, and how each model is linked continuously from one another. Starting with the first model, Logit Model 1 (shown in 4.2.1), all the collected data are used which there are two groups of people who are currently and not currently using Mobile Banking. Then, the analyzed results from Logit Model 1 are then used in Logit Model 2 (shown in 4.2.2) in the term of an endogenous independent variable. Therefore, these two models are continuous and are predicted from the same data group. However, Logit Model 3 (shown in

4.2.3) is different. The data used for this model only comprises of the people who are willing to adopt Prompt Pay in the next three months in order to estimate the probability if those people are willing to increase their interbank transactions after their adoption.

4.2 REGRESSION MODEL / ESTIMATION METHOD

A total of three Binary Logistic Models are used for regression analyses. This paper mainly focuses on two dependent variables; one being Prompt Pay adoption and another being whether or not will they increase their interbank transactions after the adoption, which are presented in Logit Model 2 and 3, respectively.

Binary Logistic Regression Analysis is chosen because the studied dependent variables are both dummy variables, meaning that y can only take two values of 0 and 1. For Prompt Pay adoption, the choices are 1, yes to adoption, and 0, otherwise. Similarly for the interbank transaction after the adoption, the choices are 1, they will increase their transactions, and 0, otherwise. Thus, binary logistic regression must be applied in order to estimate the probability of a binary response of y from a great number of independent variables. For a better understanding of the models, the variable definitions of all the independent variables used in all three models can be seen in *Table 4*.

4.2.1 LOGIT MODEL 1

Mobile Banking User (Yes/No)

$$\hat{\text{Prob}}(\text{Mobile Banking}=1) = \frac{1}{(1 + e^{-z_1})} ; \text{ where } z_1 = \beta_1 + \beta_2\text{age} + \beta_3\text{edu} + \beta_4\text{pub} + \beta_5\text{pri} + \beta_6\text{own} + \beta_7\text{unemp} + \beta_8\text{inc} + \beta_9\text{midfreq} + \beta_{10}\text{hifreq} + \beta_{11}\text{tech} + \beta_{12}\text{sec} + \beta_{13}\text{con} + \beta_{14}\text{fees} + \beta_{15}\text{add} + \beta_{16}\text{govtrust} + \beta_{17}\text{lamt} + \beta_{18}\text{mamt} + \beta_{19}\text{hamt}$$

Logit Model 1 above examines the factors that have significant impact on the probability of mobile banking usage. The dependent variable is a dummy variable of Yes or No which is affected by the independent variables; namely Constant Term, Age, Years of Education, Occupation, Average Monthly Income, Frequency of Transactions, Technology Ability,

Perceived Cyber Security, Perceived Convenience, Perceived Cost in Transaction Fees, Perceived Relative Advantage in Additional Benefits and Average Transaction Amount. These factors are used to predict the probability of people to use or not use mobile banking, given all the samples that are collected. Please note that the reason for not having interbank user variable included in the model is because there is no additional perceived benefits or risks associated with either the person is an interbank user or not.

4.2.2 LOGIT MODEL 2

Adoption of Prompt Pay (Yes/No)

$$\text{Prob (Prompt Pay=1)} = \frac{1}{(1 + e^{-z_2})} ; \text{ where } z_2 = \beta_1 + \beta_2\text{age} + \beta_3\text{edu} + \beta_4\text{pub} + \beta_5\text{pri} + \beta_6\text{own} + \beta_7\text{unemp} + \beta_8\text{inc} + \beta_9\text{intbank} + \beta_{10}\text{tech} + \beta_{11}\text{fees} + \beta_{12}\text{con} + \beta_{13}\text{govtrans} + \beta_{14}\text{risk} + \beta_{15}\text{govtrust} + \beta_{16}\text{knwl} + \beta_{17}\hat{\text{MB}}$$

Logit Model 2 is continuous from Logit Model 1 where one of the independent variables is Mobile Banking Usage, which is endogenous. The result from Logit Model 1 is used to predict Logit Model 2. The dependent variable is the probability of Prompt Pay adoption within the next three months, which is again a dummy variable. There is a total of seventeen independent variables including the constant term that are used to predict the probability of Prompt Pay adoption. The independent terms include Age, Years of Education, Occupation, Average Monthly Income, Interbank Transaction Users, Technology Ability, Perceived Relative Advantage in terms of Banking Fees, Perceived Convenience, Perceived Relative Advantage in terms of Government Transfers, Perceived Risk, Government Trust, Knowledge and the endogenous factor of Mobile Banking Usage.

4.2.3 LOGIT MODEL 3

Increase interbank transactions through Prompt Pay (Yes/No)

$$\text{Prob (Increase Transactions=1)} = \frac{1}{(1 + e^{-z_3})} ; \text{ where } z_3 = \beta_1 + \beta_2\text{age} + \beta_3\text{edu} + \beta_4\text{pub} + \beta_5\text{pri} + \beta_6\text{own} + \beta_7\text{unemp} + \beta_8\text{inc} + \beta_9\text{midfreq} + \beta_{10}\text{hifreq} + \beta_{11}\text{lamt} + \beta_{12}\text{mamt} + \beta_{13}\text{hamt} + \beta_{14}\text{intbank} + \beta_{15}\text{fees}$$

Logit Model 3 studies the effect of different independent variables that have significant impact on the probability to increase interbank transactions through Prompt Pay given only the people who are willing to adopt Prompt Pay. Similarly to the previous two models, the dependent variable is a dummy variable of Yes to increase transactions and No otherwise. The factors that are used to examine are the Constant Term, Years of Education, Occupation, Average Monthly Income, Frequency of Transaction, Average Transaction Amount, Interbank Transaction User and Perceived Relative Advantage in terms of Banking Fees.

4.3 VARIABLE SELECTION

Different independent variables, also known as different x's in the empirical models, are carefully selected from the literature review, and further developed to meet the context of Thailand and Prompt Pay rather than Mobile Banking in general; where these factors are grouped and listed below:

A. Demographic Information: Age, Education, Occupation, Income

Age, years of education, occupation field and average monthly income are selected since they have been proven to have relationships with the adoption (Bhatt, 2016). In fact, the previous section (4.1) discusses concisely of different measurements and categories of each demographic characteristics of the sample.

B. Consumers' Behaviors: Frequency, Average Amount, Interbank Transaction

Again, as discussed earlier, consumers' transaction behaviors have an influence on the adoption as well (Bhatt, 2016). Therefore, frequency of transaction, average amount per transaction and interbank transaction users are grouped together under the classification of consumers' behaviors, which are all selected as the explanatory variables.

C. Perceived Benefits: Perceived Technological Skills, Perceived Relative Advantages in terms of Interbank Fees and Government Transfers, Perceived Convenience, Government Trust, Initial Knowledge, Perceived Additional Benefits, Perceived Cyber Security

In the context of Thailand and Prompt Pay, perceived relative advantages of Prompt Pay compared to non-Prompt Pay would be the reduction in interbank fees and the more efficient government transfer payments. The reduction in interbank fees is considered as a perceived benefit because although perceived cost is a barrier to mobile banking adoption (Cruz, 2010), a reduction in such cost must be perceived to encourage the adoption. Other perceived benefits include perceived convenience in terms of time effectiveness and convenience (Bhatt, 2016) and perceived trust (Kabir, 2013) in the government since Prompt Pay is a regulation implemented by the government. As well as initial knowledge of Prompt Pay and perceived technological skills as the role of information tends to have a positive impact towards the adoption (Laukkanen, Tommi, and Vesa Kiviniemi, 2010). All of these factors are collected as a likert scale, of 5 being the most influential factor and 1 being the least otherwise.

D. Perceived Risks: Perceived Cyber Risks

Perceived Risk from the cyber world is extremely important to the usage of Prompt Pay since this is not only the main concern from critics but the government has to prioritize the issue very seriously because the service is a full online platform. Perceived cyber risks may include both financial risk and privacy risk (Lee, 2009). It is also measured as a likert scale, of 5 being the most influential factor and 1 being the least otherwise.

Table 4: Explanatory Variable Definition

in Model	Definition	Unit	Category	Measurement
age	Age	Years	< 25 25 - 35 36 - 45 46 - 55 > 55	Categorical
edu	Education	Years	12 (High School) 14 (Certificate) 16 (Bachelor) 18 (Master) 22 (Docterate)	Categorical
-	Occupation	-	Student	Baseline
pub			Public Employee	Dummy
pri			Private Employee	
own			Owner	
unemp			Unemployed	
inc	Average Monthly Income	Baht / Month	< 15,000 15,000 - 30,000 30,000 - 50,000 50,001 - 100,000 100,001 - 300,000 > 300,000	Categorical
-	Monthly Transaction Frequency	Times / Month	< 1	Baseline
midfreq			2 - 4	Dummy
hifreq			> 4	
-	Average Transaction Amount	Baht / Transaction	< 5,000	Baseline
lamt			5,000 - 30,000	Dummy
mamt			30,001 - 100,000	
hamt			> 100,000	
intbank	Interbank Transaction User	-	Yes No	Dummy
tech	Technology Skills	-	5 (most) 4 3 2 1 (least)	Likert Scale
fees	Perceived Reduced Transaction Fees			
con	Perceived Convenience			
govtrans	Government Transfers			
risk	Perceived Cyber Risk			
govtrust	Initial Government Trust			
knwl	Initial Knowledge			
add	Perceived Additional Benefits			
sec	Perceived Cyber Security			

4.4 HYPOTHESIS FORMULATION

All the variables used in all three models are selected from and built upon the literature review in order to meet the context of not only Mobile Banking, but Prompt Pay in particular. Therefore, the directions for each independent model is hypothesized and presented in *Table 4.4* as shown below. The study logically and realistically hypothesizes that perceived benefits factors have positive impact towards Prompt Pay Adoption, while perceived risk factors have negative impact towards Prompt Pay Adoption. The demographics and transaction behaviors also tend to have a positive influence as Prompt Pay targets people with more income in order to fulfill and facilitate government transfers as well as lower fees between bank transactions. The more frequent they transfer with greater amount, the more benefits in terms of cost they are likely to receive.

Table 4.4

Explanatory Variable	Hypothesis
Age	(+)
Education	(+)
Occupation	N/A
Average Monthly Income	(+)
Monthly Transaction Frequency	(+)
Average Transaction Amount	(+)
Interbank Transaction User	(+)
Technology Skills	(+)
Reduced Transaction Fees	(+)
Perceived Convenience	(+)
Government Transfers	(+)
Perceived Cyber Risk	(-)
Initial Government Trust	(+)
Initial Knowledge	(+)
Perceived Additional Benefits	(+)
Perceived Cyber Security	(+)

4.5 SAMPLE SELECTION

Bangkok, the capital city and the most populated city in Thailand, is selected as the target for this research. Prompt Pay users are banking customers, thus the people who are able to adopt the system are the ones who own at least one bank account. In addition, Prompt Pay also focuses on people who are involved in government transfers and tax refunds. Because of this reason, the study aims to scope down the sample into Thai citizens with average monthly income of over 10,000 Baht to 1,000,000 Baht, which is considered to be middle to high income group in Thailand (Thailand's National Statistics Office, 2009). These people are expected have a bank account and are involved in banking transactions for various purposes in one way or another. Age and educational level are another two factors, evidently shown in many published scholars, that have some significant relationships with the adoption of Mobile Banking (Bhatt, 2016). Therefore, the study also selects people with different educational level, age and occupation areas to deeply explore such relationships, particularly with Prompt Pay. The variations in educational level include High School, Bachelor's Degree, Master's Degree and Doctorate Degree; whereas the target age varies from 18 years up to 80 years.

The paper does not only focus on young aged group but it also gives main attention to older people because they are one of the main target groups of Prompt Pay users in terms of receiving government transfers. Occupation areas that the sample is selected from include basic occupations; namely public and private employees, business owners, students and unemployed. Behaviors of consumers, too, have an impact on mobile banking adoption (Bhatt, 2016). Thus, the paper selects people with wide differences in transaction behaviors such as frequency of transaction, interbank transaction and average amount per transaction. All of these variations are the characteristics of the sample that the study selects from.

4.6 DATA COLLECTION

Primary data is the only source the paper uses, which is deliberately collected through online surveys via snowball sampling. A total of 349 observations were collected within a time duration of one week.

4.6.1 ONLINE SURVEY

An online survey (*see Appendix 1*) was structured in a well-organized manner to capture responses in the context of mobile banking and Prompt Pay adoption. Each independent variables, as selected in section 4.2, are asked in different forms of questions in order to precisely and accurately satisfy the objectives of the paper. The online survey was categorized into four different sections; consumers' demographics, usage of banking services and their behaviors, usage of mobile banking and usage of Prompt Pay, where all of these were built upon the previous section. All questions were multiple choices in order to prevent respondents answering in different units which would be difficult to assess. For example, education can be answered in various ways such as years of education or education level. Therefore, all of the questions were constructed to have distinct and standard unit answers so that they are practical for further use in regression analyses. Moreover, each question was created to account for different variable use (*see Table 4.6.1*).

Table 4.6.1

Constructs	Number of Questions
Demographic Information	5
Customers' Behaviors	8
Perceived Benefits	12
Perceived Risks	2

5. RESULTS

After the observations were collected via online survey, they were then organized and prepared in Data Summary (5.1) in order to support the understanding of the meaning, features and short summaries of the collected data. The findings, then, are fully analyzed in two distinct formats; descriptive statistics (5.2) and regression results (5.3) as shown below.

5.1 DATA SUMMARY

Table 5.1.1 Demographic Information

	Category	N	%
Age	18-25	91	26
	25-35	93	27
	36-45	67	19
	46-55	60	17
	55-80	38	11
Education	12	22	6
	14	15	4
	16	196	56
	18	107	31
	22	9	3
Occupation	Public	31	9
	Private	129	37
	Owner	116	33
	Student	59	17
	Unemployed	14	4
Income	0-15,000	43	12
	15,001-30,000	85	24
	30,001-50,000	75	21
	50,001-100,000	82	23
	100,001-300,000	48	14
	300,001-1,000,000	16	5

Table 5.1.2 Consumers' Behaviors

	Category	N	%
Smart Phone User	Yes	337	97
	No	12	3
Current Mobile Banking User	Yes	270	77
	No	79	23
Interbank* User	Yes	191	71
	No	79	29
Transaction Frequency*	<1	25	9
	2-4	101	37
	>4	144	53
Average Amount per Transaction*	<5,000	134	50
	5,001-30,000	99	37
	30,001-100,000	25	9
	>100,000	12	4
Prompt Pay Adoption	Yes	182	52
	No	167	48
Increase Interbank Transfer**	Yes	118	65
	No	64	35

* Given only current mobile banking users

**Given only people who are willing to adopt Prompt Pay

Table 5.1.1 summarizes the raw data collected into clean and organized groups of demographic information which are also the independent variables. It can be seen that the age collected varies from 18 to 80 years of age, however, the majority lies on the range of 25-35 years. For years of education, although the range is widely collected from high school to doctorate, most people have 16 years of education. This means that more than half (56%) of the sample are Bachelor's Degree graduates. Master's Degree graduates also account for a large part of the sample which is 31% while others recorded for a much less amount. Occupation on the other hand, the majority of people work in a private sectors either as employees (37%) or business owners (33%). Therefore, the larger part of the sample account up to 70% in private businesses. Finally, average monthly income is very comprehensive since there is almost an equal percentage for 15,001 - 100,000 Baht. This range is 68% of the overall sample size. Therefore, it can be concluded that in terms of the demographics of the majority sample observed are bachelor's degree graduates aged 25-35 with an average monthly income of 15,001 - 100,000 Baht and work in a private sector either as an owner or a employee.

On the other hand, *Table 5.1.2* gives a synopsis of the sample's behaviors towards banking transactions. The first two rows; smart phone and mobile banking user, inspect potential areas for Prompt Pay adoption through mobile banking. Out of all the samples collected, only 77% are current mobile banking users while there are 97% using smart phones. This means that the remaining 20% have potential ability to adopt mobile banking instantly. In fact, out of all the samples collected, both currently using and not using mobile banking, 52% are willing to adopt Prompt Pay through mobile banking in the next three months, and 65% of those will increase their interbank transactions after the adoption. This is an interesting proportion because only about half of all current banking customers in Thailand is willing to adopt Prompt Pay within the next three months, this triggers a question to find out more on what could be the reason to adopt or not adopt it. In terms of the behaviors in banking transactions through mobile banking, expectedly people do not conduct financial transactions to interbanks up to 29% of the overall mobile banking users which is quite a large number. This may be due to the high cost in interbank transactions. On an average, around half of the sample transfer more than 4 times a

month using mobile banking (53%) with an amount of less than 5,000 Baht per transaction (50%). These behaviors are expected to have some influence towards the adoption (Bhatt, 2016).

Moreover, the common channel for conducting financial transfers is Mobile Banking which accounts for 35% relatively to other channels such as branch, ATM and website (shown in *Figure 5.1.1*). While the main purpose for mobile banking usage (*Figure 5.1.2*) is for fund transfer, and then balance inquiry and bill payments which contributes to 78%, 16% and 5%, respectively. *Figure 5.1.3* shows the most influential communication channel that people receive information about Prompt Pay. Social Media is, undoubtedly, the most powerful communication channel, following by banks themselves, television, radio and others. Since the role of information and guidance is important (Laukkanen, Tommi, and Vesa Kiviniemi, 2010), government must provide the required knowledge and promote the use of Prompt Pay through social media, as it is the most effective channel for communication.

Figure 5.1.1: Transaction Channels

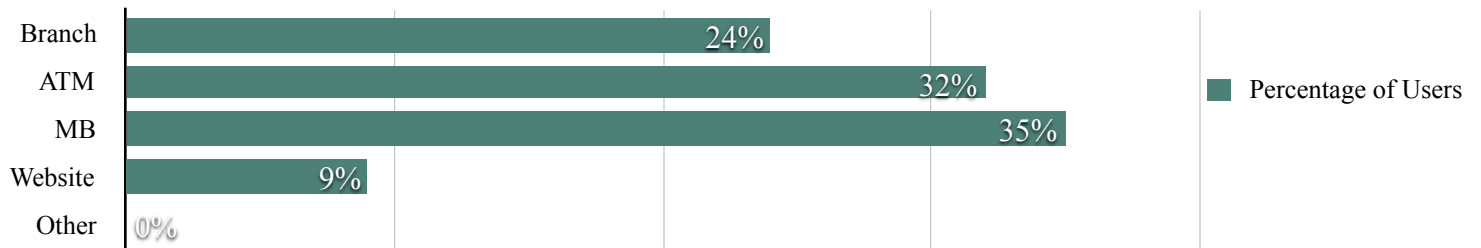


Figure 5.1.2: Transaction Purposes

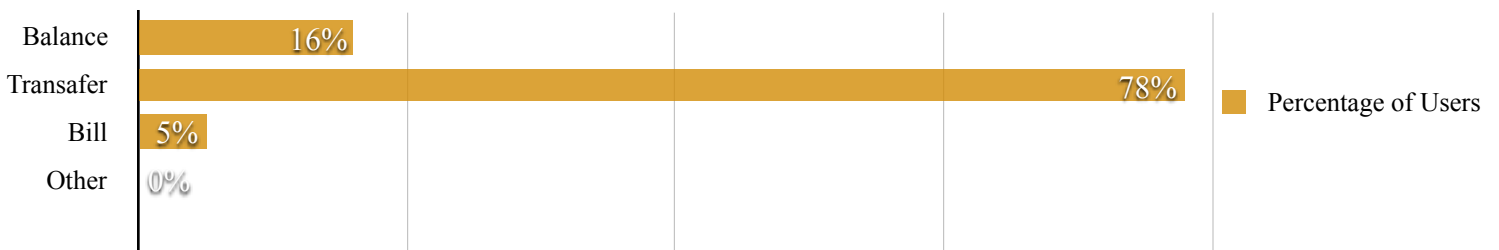
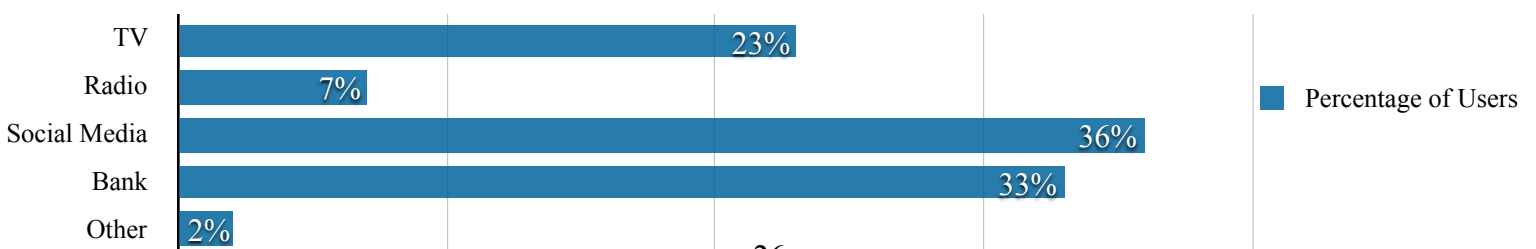
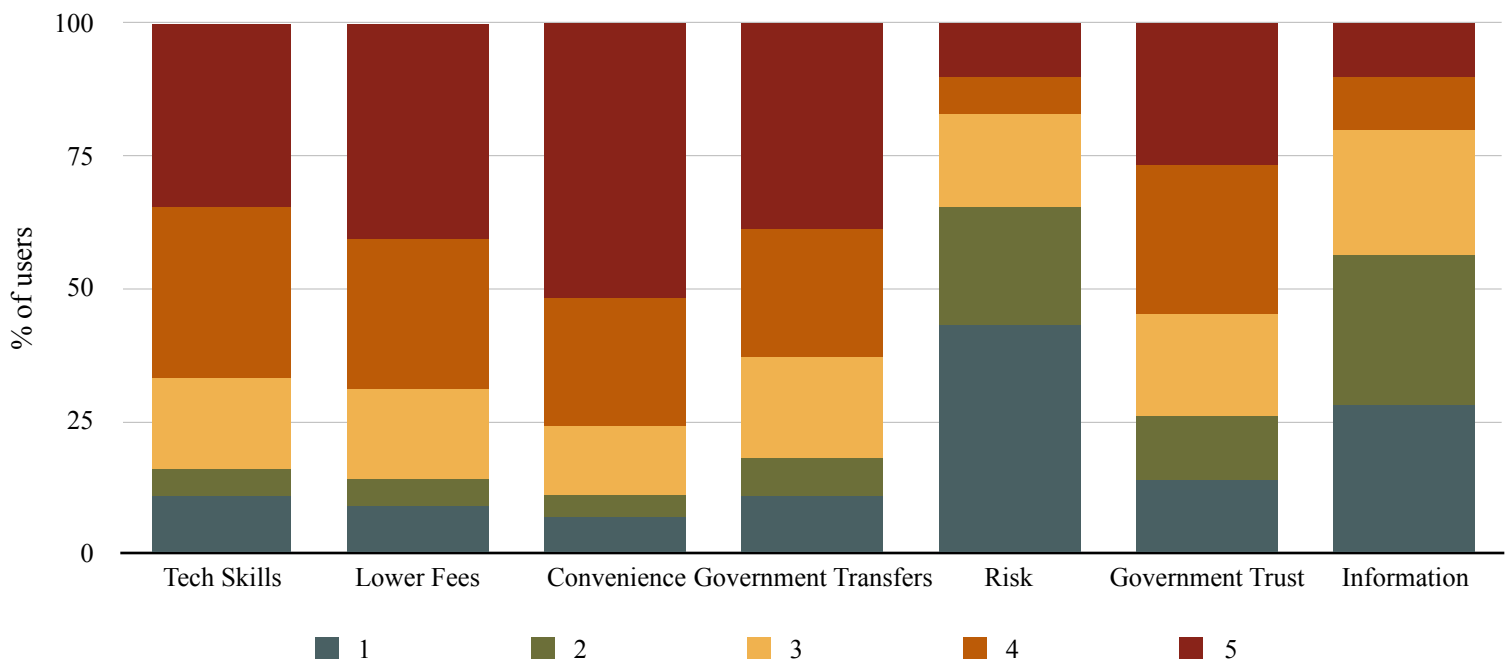


Figure 5.1.3. Prompt Pay Communication Channels



The observations for consumers' perceptions towards Prompt Pay Mobile Banking is also summarized in *Figure 5.1.4*. The factors include perceived technological skills, perceived relative advantage in terms of lower interbank fees, perceived convenience, perceived relative advantage in terms of government transfers, perceived cyber security, government trust and finally, initial information or knowledge of Prompt Pay. These factors are measured through a likert scale which ranks from 5 to 1, where 5 is the most influential and 1 is the least influential to their adoption of Prompt Pay. The bar graph shows a clear comparison of how much each rating contributes to each factor in terms of percentage. Evidently, the most rated-5 factor is perceived convenience while the least rated-5 factor is perceived cyber risk and their current information of Prompt Pay. This means that the overall sample still lacks the knowledge of Prompt Pay and have a strong belief in cyber risk. In spite of that, the most rated-1 factor is, again, perceived cyber risk, and the least rated-1 factor is perceived convenience. Interestingly, these factors are the two factors that consist of both most rated and least rated in 5 and 1. That being the case, most people feel that perceived convenience is the main reason why they would adopt Prompt Pay through mobile banking; whereas the lack of on Prompt Pay and perceived cyber risk are the main barriers to their adoption.

Figure 5.1.4. Consumers' Perceptions



5.2 DESCRIPTIVE STATISTICS

This section demonstrates the findings in a more analytical manner. Descriptive statistics is used to help describe and understand the set of data through measures of central tendency and measures of variability.

Figure 5.2.1

	Min	Max	Mean	Median	Mode	SD
Age*	21.50	67.50	37.41	30	30	14.53
Education	12	22	16.43	16	16	1.78
Income*	7500	650000	89928.37	40000	22500	136502.90
Mobile Banking User*	0	1	0.77	1	1	0.42
Transaction Frequency*	0	2	1.44	2	2	0.66
Transaction Amount	0	3	0.69	1	0	0.82
Interbank User	0	1	0.71	1	1	0.46
Prompt Pay Adoption	0	1	0.52	1	1	0.50
Increase interbank transactions	0	1	0.65	1	1	0.48

Figure 5.2.1 demonstrates different central tendency and variability measures for demographic variables and customers' behaviors. First two columns show minimum and maximum amount for each variable; whereas central tendency measures are illustrated via mean, median and mode, and then standard deviation is displayed on the last column. Interestingly, out of all the mobile banking users, transaction frequency through mobile banking is mostly more than four times a month; with the mean of 1.44 out of 2, and both median and mode equal to 2. Meanwhile, those people also transact with a low amount of less than 5,000 Baht with the mode equals to 0.

Figure 5.2.2 Perceptions towards mobile banking usage

	Min	Max	Mean	Median	Mode	SD
Tech Skills	1	5	4.23	4	5	0.89
Cyber Security	1	5	4.08	4	4	0.92
Convenience	1	5	4.84	5	5	0.45
Transaction Fees	1	5	3.89	4	4	1.05
Additional Benefits	1	5	3.10	3	4	1.27

Figure 5.2.3 Perceptions towards Prompt Pay Adoption

	Min	Max	Mean	Median	Mode	SD
Tech Skills	1	5	3.74	4	5	1.29
Lower Transaction Fees	1	5	3.88	4	5	1.24
Convenience	1	5	4.09	5	5	1.20
Government Transfers	1	5	3.74	4	5	1.33
Cyber Risk	1	5	2.19	2	1	1.32
Government Trust	1	5	3.42	4	4	1.38
Knowledge	1	5	2.53	2	2	1.29

Figure 5.2.2 and Figure 5.2.3 demonstrate the perceptions of consumers' in terms of statistical analysis in comparison of Mobile Banking usage and Prompt Pay adoption, respectively. On the sample of all banking customers, both currently using and not using mobile banking, the factor with the greatest influence to their usage is perceived convenience which the mean equals to 4.84 out of 5 and both median and mode at 5. Its standard deviation is also the lowest among other factors, at 0.45 which is considered a very small dispersion from its mean. The lowest influential factor, on the other hand, is the perceived relative advantage in terms of additional benefits such as restaurant discount coupons. The mean is at 3.10 out of 5 while its

standard deviation is 1.27, which is again, shows the highest dispersion from its mean. On the other hand, the perceptions of all banking customers, both using and not using mobile banking, is shown in *Figure 5.2.3*. The most influential factor to them, is again, perceived convenience with the mean at 4.09, median and mode at 5, and standard deviation at 1.20, the lowest dispersion among others. Meanwhile, the factor with the least rating is perceived cyber risk. Its mean is at 2.19 with median at 2 and mode at 1. This shows that people have a negative perception towards cyber risk. In fact, its standard deviation is not much different from any other factors which means that the dispersion from the mean is not high as well.

5.3 REGRESSION RESULTS

After descriptive analyses were conducted, regression models were run by an econometrics program called Gretl. The estimation results are presented in *Table 5.3.1*, *5.3.2* and *5.3.3* by their coefficient, standard error and p-value, which the significant variables are highlighted in light blue as follows:

5.3.1 LOGIT MODEL 1 : MOBILE BANKING USER (YES/NO)

Given banking customers, the probability of using mobile banking is estimated to have significant relationships with three explanatory variables; transaction frequency, perceived convenience and average amount per transaction. Only 278 observations were successful which can be used for empirical analysis. Thus, this means that 71 were unsuccessful observations which were dropped due to missing or incomplete observations.

Firstly, transaction frequency has a positive relationship towards mobile banking usage. People who transfer 2-4 times a month is likely to use mobile banking 9.48 times (*See Appendix 2 for calculation*) of people who transfer less than once a month. While, people who transfer more than 4 times a month is likely to use mobile banking 186 (*See Appendix 2 for calculation*) times of people who transfer less than once a month.

Secondly, perceived convenience has a positive relationship towards mobile banking usage.

Thirdly, average amount per transaction of 5000 - 30000 Baht has a positive relationship with mobile banking usage. People who transfer, on average, 5000 - 30000 Baht per transaction are likely to use mobile banking 10.8 times (*See Appendix 2 for calculation*) of people who transfer less than 5000 Baht per transaction.

Overall, other insignificant factors are demographic characteristics of the samples, technological skills, perceived cyber security, perceived cost in transaction fees and perceived additional benefits.

Table 5.3.1

	Coefficient	Standard Error	p-value	
Constant	-11.27	7.14	0.11	
age	-0.02	0.03	0.54	
edu	0.19	0.25	0.46	
pub	-1.07	1.42	0.45	
pri	1.26	1.24	0.31	
own	0.43	1.22	0.72	
unemp	19.40	16747.00	1.00	
inc	-3.04474e-06	3.10447e-06	0.33	
midfreq	2.25	0.95	0.02	**
hifreq	5.23	2.03	0.01	***
tech	-0.49	0.66	0.46	
sec	0.23	0.51	0.65	
con	3.04	1.08	0.01	***
fees	-0.23	0.54	0.67	
add	-0.75	0.48	0.12	
lamt	2.38	1.36	0.08	*
hamt	-1.97	2.17	0.36	

McFadden R-Squared = 0.569195

Number of cases 'correctly predicted' = 268 (96.4%)

n = 278

Note:

*, **, *** = 10%, 5%, 1% significance level, respectively.

Variable "mamt" dropped.

5.3.2 LOGIT MODEL 2 : PROMPT PAY ADOPTION (YES/NO)

Table 5.3.2

	Coefficient	Standard Error	p-value	
Constant	-8.19	2.29	0.00	***
age	0.02	0.01	0.13	
edu	0.05	0.10	0.62	
pub	1.29	0.85	0.13	
pri	0.64	0.44	0.14	
own	-0.14	0.49	0.77	
unemp	-1.14	0.87	0.19	
inc	-9.68612e-07	1.12536e-06	0.39	
intbank	0.69	0.32	0.03	**
tech	-0.01	0.16	0.94	
fees	0.12	0.21	0.58	
con	0.38	0.23	0.10	
govtrans	0.32	0.15	0.04	**
risk	0.07	0.19	0.71	
govtrust	0.15	0.16	0.34	
knwl	0.15	0.15	0.30	
MB_hat	2.25	1.31	0.09	*

McFadden R-Squared = 0.203456

Number of cases 'correctly predicted' = 195 (70.1%)

n = 278

Note: *, **, *** = 10%, 5%, 1% significance level, respectively.

Given banking customers who are both using and not using mobile banking, there is a total of three independent variables, excluding the constant, that have significant relationships with the adoption of Prompt Pay through Mobile Banking; Interbank Transaction User, Perceived Relative Advantage in terms of Government Transfers and the endogenous Mobile Banking User (See Table 5.3.2).

Firstly, interbank transaction user has a positive relationship with Prompt Pay adoption. The people who transfer to interbanks are likely to adopt Prompt Pay 1.99 times (See Appendix 2 for calculation) of people who do not transfer to interbanks.

Secondly, perceived relative advantage in terms of government transfer payment has a positive relationship with Prompt Pay adoption.

Thirdly, mobile banking user has a positive relationship with Prompt Pay adoption. The people who are currently mobile banking user are more likely to adopt Prompt Pay 9.48 times (*See Appendix 2 for calculation*) of people who do not use mobile banking.

However, the factors that have insignificant impact towards the adoption of Prompt Pay include demographic information, technology skills, perceived reduction in transaction fees, perceived convenience, perceived cyber risk, initial government trust and Prompt Pay knowledge.

5.3.3 LOGIT MODEL 3 : INCREASE INTERBANK TRANSACTIONS AFTER ADOPTION (YES/NO)

Table 5.3.3

	Coefficient	Standard Error	p-value	
Constant	0.15	1.97	0.94	
age	0.00	0.02	0.86	
edu	-0.07	0.11	0.52	
pub	-0.14	0.85	0.87	
pri	-0.67	0.63	0.28	
own	-0.40	0.75	0.59	
unemp	-0.37	1.38	0.79	
inc	3.14044e-07	1.66067e-06	0.85	
midfreq	0.74	0.65	0.26	
hifreq	1.04	0.67	0.12	
lamt	-0.43	0.41	0.28	
mamt	-0.71	0.67	0.28	
intbank	-0.15	0.43	0.73	
fees	0.38	0.17	0.03	**

McFadden R-Squared = 0.056561

Number of cases 'correctly predicted' = 112 (68.3%)

n = 164

Note:

* , ** , *** = 10%, 5%, 1% significance level, respectively.

Variable “hamt” dropped.

Given the dataset of all samples who are willing to adopt Prompt Pay through mobile banking, there is only one significant factor that has a relationship towards an increase in interbank transactions which is the perceived relative advantage in reduction of interbank transaction fees (See *Table 5.3.3*). The perceived relative advantage in terms of lower interbank transaction fees has a positive relationship with the increase in interbank transactions.

All other variables, on the other hand, have insignificant influence towards the increase; where these factors consist of demographic information such as age, years of education, occupation and banking behaviors such as interbank user, frequency and average amount per transaction.

6. CONCLUSION

In the context of Thailand 4.0 and cashless economy, Prompt Pay has been introduced to the country to facilitate such major transformation and encourage digital economy. However, with this introduction, there have been both supporters and critics to the new system which trigger this research to attentively fulfill the questions and concerns. Thus, the research studies intensively into the relationships between different variables, particularly perceived benefits and perceived risks, towards the adoption of Prompt Pay Mobile Banking in Bangkok. 349 observations of different types of people in Bangkok were collected via online survey to investigate their perceptions towards benefits and risks of Prompt Pay. Logistic regression was used in three main models to analytically process the significant impact. Hence, it is found that interbank transaction user, perceived relative advantage in terms of government transfers and mobile banking user have significant relationships towards the adoption of Prompt Pay. Whereas perceived relative advantage in terms of lower interbank fees is the only significant factor towards the increase in interbank transaction after Prompt Pay adoption. While the insignificant variables consist of demographic information of age, years of education, occupation and average monthly income; perceived benefits of technology skills, cyber security, trust and knowledge; and perceived cyber risks. Therefore, the significant factors can be used to investigate deeper in order to provide practical implications for banks, the Government of Thailand and the Bank of Thailand to efficiently promote the use of Prompt Pay.

6.1 PRACTICAL IMPLICATIONS FOR BANKS AND GOVERNMENT

Once the significant factors have been identified, the government, together with the Bank of Thailand, could tackle more issues on the particular variables in order to effectively promote the use of Prompt Pay. In addition, as social media is the most powerful communication channel, they could take an advantage of such medium to promote government transfer payments of Prompt Pay to all citizens, especially to those who are interbank transaction users and current mobile banking users. The reduction in interbank fees should also be further publicized so that there would be an increase in transactions between banks which would foster and encourage more circulations within the economy.

6.2 SCOPE FOR FUTURE RESEARCH

Although the paper has thoroughly and successfully investigated the impact of perceived benefits and risk towards the adoption of Prompt Pay, it has not intensively concentrated in the differences in some groups, such as people living in the city and in rural areas may have different perceptions. This may be due the bias through online surveys which would only allow people with internet access to be able to fill the questionnaires. In fact, the duration for data collection was limited to one week, the scope for the study was restricted to middle to high income people. The research would even be more useful if the data was collected in a wider variety and range including all income groups so that the perceptions and behaviors towards the adoption could be profoundly analyzed to publish the best research and more efficient implications for the Thai society. With this scope that future research could fill in, Thailand would be able to strongly advance forward into the forthcoming cashless and digital economy of Thailand 4.0.

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Appendices

Appendix 1 : Online Survey Sample

What is the Impact of Perceived Risk and Perceived Benefits on Adoption and Interbank Transaction of Prompt Pay through Mobile Banking Application in Bangkok?

SECTION A: Consumer Information

1. Gender

Male Female Prefer not to disclose

2. Age

≤ 25 25 ≤ 35 35 ≤ 45 45 ≤ 55 55 ≤ 65

3. Occupation

Government/Public Services Private Business Student
Unemployed Others: Please Specify

4. Education

High School Bachelor's Degree Master's Degree Doctorate
Other: Please specify

5. Income (THB/Month)

< 15000 15001 - 30000 30001 - 50000 50001 - 100000
100001 - 300000 > 300001

SECTION B: Usage of Traditional Banking

6. Do you operate a bank account?

Yes No

7. Which channel do you usually use to do banking transaction?

ATM Bank Branch Mobile Application Website Other: Please Specify

SECTION C: Usage of Mobile Banking

8. Do you own a smartphone? (No - skip to 19.)

Yes No

9. Have you used a Mobile Banking Application in the past 3 months? (No - skip to 19.)

Yes No

10. How often do you use your mobile banking application?

<1 time/month 2-4 times/month >4 times/month

11. What is your most common type of use?

Balance Inquiry Transfer (between individuals, online shopping) Bill Payment
Others

12. How much do you typically transfer per transaction record?

<5000THB 5000-30000THB 30001-100000THB >100001THB

13. Do you transfer to other Banks?

Yes No

14. Rate your most/least influential factors that influence your decisions for using Mobile Banking Application. (5=highest to 1=lowest)

	5	4	3	2	1
Tech Skills					
Reduced Transaction Fees					
Convenience/ Time Saving					
Government Transfers					
Cyber Risk					
Government Trust					
Prompt Pay Knowledge					

SECTION D: Usage of Prompt Pay

15. Have you ever heard of Prompt Pay?

Yes No

16. Where have you heard it from?

TV Commercial Radio Social Media Banks Other: Please Specify

FACT: What is Prompt Pay?

Prompt Pay is a new financial system of the Government, which is an option that innovates upon the traditional banking system. It can be used by connecting either your phone number or national ID number with your current bank account, and it will be used for your fund transfer code. In order to make it more convenient, faster, safer and a more transparent and efficient channel for Government's transfer payments to Thai citizens.

17. Do you currently use Prompt Pay?

Yes No

18. Do you currently use Prompt Pay in your Mobile Banking Application?

Yes No

19. Rate your most/least influential factors that influence your decisions for using Prompt Pay in Mobile Banking Application. (5=highest to 1=lowest)

	5	4	3	2	1
Tech Skills					
Reduced Transaction Fees					
Convenience/ Time Saving					
Government Transfers					
Cyber Risk					
Government Trust					
Prompt Pay Knowledge					

TABLE: Comparison of interbank transaction fees between with and without Prompt Pay Services in Mobile Banking Application:

Amount of Transaction (THB/record)	With Prompt Pay (THB/record)	Without Prompt Pay (THB/record)
< 5000	Free	25
5000 - 30000	< 2	35
30000 - 100000	< 5	>35
> 100000	< 10	>35

20. Do you plan to use it in the next 3 months?

Yes No

21. Since Prompt Pay lowers interbank transaction fees, is it likely for you to increase your transactions between banks using Prompt Pay in your Mobile Banking Application?

Yes No

Appendix 2 : Calculation for Odds Ratio

Logit Model 1:

- $e^{2.25} = 9.48$; People who transfer 2-4 times a month is likely to use mobile banking 9.48 times of people who transfer less than 1 time a month.
- $e^{5.23} = 186$; people who transfer more than 4 times a month is likely to use mobile banking 186 times of people who transfer less than 1 time a month.
- $e^{2.38} = 10.8$; ; People who transfer, on average, 5000 - 30000 Baht per transaction are likely to use mobile banking 10.8 times of people who transfer less than 5000 Baht per transaction.

Logit Model 2:

- $e^{0.96} = 1.99$; The people who transfer to interbanks are likely to adopt Prompt Pay 1.99 times of people who do not transfer to interbanks.
- $e^{2.25} = 9.48$; The people who are currently mobile banking user are more likely to adopt Prompt Pay 9.48 times of people who do not use mobile banking.