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Mobile Banking Adoption: Thai Consumers' Perspective

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ABSTRACT

With a rapid growth of smart phone users, mobile banking has gained significant importance and the growth of the field is accelerating. To remain competitive, banking services realize the need to run their business to suit the convenience of their customers. However, despite many benefits and popularity of mobile banking, not all consumers are ready to embrace this technology, especially in the developing countries. The objective of this study is to explore determinants of mobile banking adoption in Thailand. The findings reveal factors influencing consumers' attitude toward the usage of mobile banking.

KEYWORDS: Technology Acceptance Model (TAM), Perceived Usefulness, Perceived Ease of Use, Perceived Security, Perceived Privacy, Perceived Trust, Previous Experiences, Technology Competency, Normative Beliefs, Internet Banking, Mobile Banking, Thailand

INTRODUCTION

The rapid expansion of information and communication technologies has had a tremendous impact on all areas of human life (Hanafizadeh et al., 2014). Information technology (IT) has been expanding beyond the traditional organizational boundaries (Zhao et al., 2013). Technology adoption is a complex process influenced by a mix of social, technological, economical, and political factors (Gupta et al., 2014). Emerging technologies often result in new opportunities for businesses and have become one of the major factors that will determine the future success of organizations (Bapna et al., 2014; Bhattacharjee et al., 2006; Holsapple & Singh, 2000).

With the improvement of mobile technologies and devices, mobile banking has been considered as a salient system because of such attributes of mobile technologies as ubiquity, convenience and interactivity (Gu et al., 2009; Turban et al., 2006). To remain competitive in the market, many banks realize the need to run their business to suit the convenience of their customers. Several banks are competing with each other by implementing new and modern electronic system via the Internet connectivity, which is shifting usage from desktops to laptops and mobile devices such as iPhones or iPads (Puschel et al., 2010).

Although Internet technologies and global networking infrastructures have made information sharing much easier and less expensive, the availability of such information systems comes at the expenses of higher risks (Ba et al., 2005). Quite a few customers are still reluctant to adopt this channel of banking services because of their concerns with uncertainty and security (Islam, 2014; Robinson, 2000). A study reported that only 12% of German consumers use their cell phones for banking or shopping (Tanner, 2008).

Many prior studies have been conducted to examine users' behavior to understand how users behave when using mobile banking. For instance, Shaikh, Karjaluo, & Chinje (2015) examined continuous usage behavior of mobile banking among consumers living in Finland and South Africa. The study found that trust plays a significant role in promoting continuous usage of m-banking. Another study proposed a theoretical model that explains sustained use of mobile banking services (Kang et al., 2012). The results of the study indicated that perceived usability, channel preference, and perceived value are three major determinants of sustained mobile banking usage.

Even though the literature on the adoption of mobile banking is quite extensive in developed country such as the U.S. (Afshan & Sharif, 2016; Lee et al., 2013; Lin, 2011; Nel & Boshoff, 2014; Staff, 2013), few studies have explored the motivations for mobile banking adoption in a developing countries. In particular, very few studies were conducted to examine the factors impacting the usage of mobile banking in Thailand. Therefore, the objective of this study is to identify factors affecting the adoption of mobile banking in Thailand. We extended the technology acceptance model by integrating new factors for a developing nation. The findings of this study should provide insights for banks to develop strategies and business model of mobile banking to best fit their customers' need.

LITERATURE REVIEW

Rapid advances in mobile technologies and devices have made mobile banking increasingly important in mobile commerce and financial services (Lin, 2011). In recent years, the preference of technology has shifted from a PC to a handheld device, largely due to its portability. A mobile phone and a tablet become an integral part of consumers' lives (Singh et al., 2010). The relatively high prevalence of mobile phone and smartphone use among younger generations, minorities, and those with low levels of income (i.e., groups that are more likely to be unbanked or under-banked) makes mobile phones a potential platform for expanding financial access and inclusion (Federal Reserve Board, 2015).

As with other types of businesses, a mobile phone as a channel provides enormous potential in banking. Mobile banking provides a more convenient means for customers to meet their banking needs with more complete and timely information (Baptista & Oliveira, 2015; Gerrard & Cunningham, 2003). Mobile banking was defined by the Federal Reserve Board (2015) as the use of a mobile phone to access a bank or credit union account, which can be done either by accessing the web page through the web browser on a mobile phone, via text messaging, or by using an application downloaded to a mobile phone. The electronic transaction conducted via mobile devices such as smartphones, is expected to play a larger role in the near future, with more than half a million customers worldwide shopping via mobile devices by 2015 (Deng & Zhang, 2014).

In information system (IS) literature, mobile banking has received ample consideration by both academia and practice (Afshan & Sharif, 2016; Gu et al., 2009; Kim et al., 2009; Luarn & Lin,

2005; Zhou et al., 2010). The extant works in IS have descended their focus on coupling various theoretical models to study intention adoption of mobile banking. For instance, Yu (2014) investigated factors that influence consumers to make a transition from online to mobile banking. The results demonstrated that relative attitude and relative subjective norm positively motivated respondents to switch from Internet to mobile banking while relative perceived behavior control deterred respondents from transitioning. Another study proposed a mobile banking user adoption model based on the Technology Acceptance Model (TAM), integrating social influence, and trust perception to predict the user intention. The findings suggested that perceived usefulness, perceived ease of use, social influence, and trust perception have significant effects on user adoption (Song, 2015). A study by AISoufi and Ali, (2014) revealed that the intention to adopt mobile banking is not affected by perceived cost and perceived risk.

In addition to the investigation of users' intention on the usage of mobile banking, some studies focused on examining the factors impacting the continuous use of mobile banking. For instances, Kang, Lee, and Lee (2012) develops and empirically tests a theoretical model that explains sustained use of mobile banking services. The results of the study indicated that perceived usability, channel preference, and perceived value were three major determinants of sustained mobile banking use. Another study investigated the invariance of cross-channel cognitive evaluations influencing salient beliefs in mobile banking adoption and continuance-of-use behavior between the users of internet banking and the users of both internet and mobile banking. The results suggested that cross channel evaluations can be both invariant and non-invariant across the two cohorts (Nel & Boshoff, 2014).

Internet and Mobile Banking in Thailand

Banks in Thailand can be classified as the commercial banks, state own banks and Foreign subsidiary banks. Internet in Thailand was dated back to 1987 (Thailand Chapter of Internet Society, 2015). Nowadays, over one third of the population in Thailand has regular access to the Internet (National Statistical Office, 2014). Although there are increasing number of Internet banking in Thailand, not all customers are ready to adopt this channel of banking services (Intana et al., 2013). One study reported that Thai people found security to be insufficient and thus holding them back from adopting Internet banking (Esichaikul & Janecek, 2009). The study also revealed that the lack of customer service was a major reason preventing them from adopting Internet banking as well. Another study also reported trust as a critical factor that led to adoption of using internet banking for Thai banks (Namahoot & Laohavichien, 2015).

With a rapid growth in technology, smart phone applications become popular in this era, with more advanced computing ability and connectivity. In 2014, from 62.3 million of Thai population aged 6 years and over, there were 21.7 (34.9%) millions of Internet users and 48.1 (77.2%) millions of mobile users (National Statistical Office, 2014). It is very obvious that smart phone becomes part of Thai consumers' life. This increasing trend of smart phone users has forced banks in Thailand to offer banking services via a mobile channel. A study conducted in 2014 revealed that sixty-four percent (64%) of Thai consumers used mobile banking apps in Thailand (Statista, 2014). Wonglimpiyarat (2014) investigated the competition and challenges of mobile banking system in Thailand. The study discussed the strategies, SWOT analyses of the mobile banking industry. The results revealed that banks recognized mobile banking as a convenient delivery channel to provide value-added services to the bank customers. The competition forces banks to seek strategic alliances (network collaboration between the banking and ICT industries) to offer innovative solutions in the payment market.

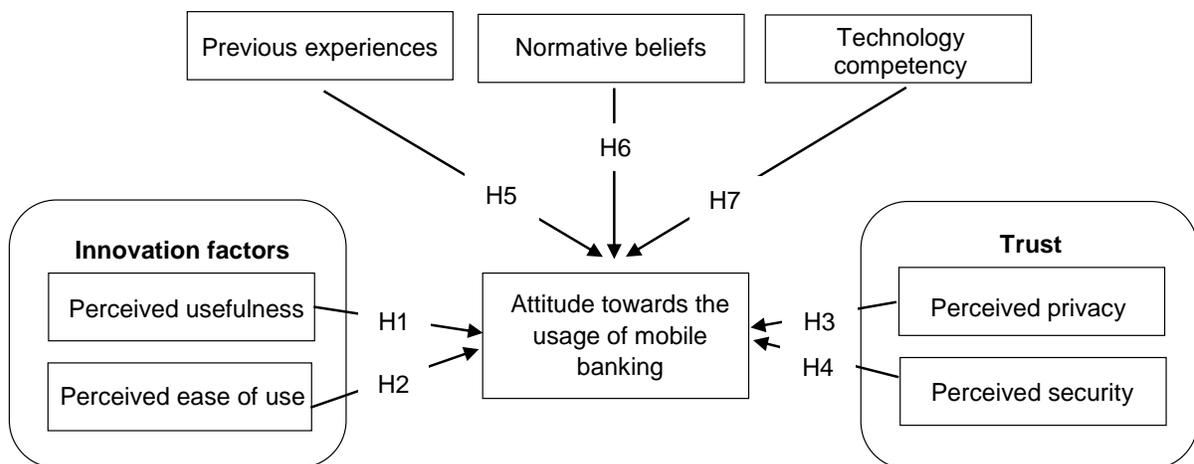
Major bank in Thailand such as Bangkok Bank, Krung Thai Bank, Kasikorn Bank, and Siam Commercial Bank, have developed mobile banking services, but the adoption rate was only 4.5% of the population (Bhatiasevi, 2015). This data indicates the need for more studies to investigate what factors contribute to the low adoption rate compared to other countries. This study is thus aims at identifying factors affecting the adoption of mobile banking in Thailand. The result should provide insight for banks in Thailand on the factors which play a crucial role to the success of mobile banking in Thailand.

THEORETICAL DEVELOPMENT/MODEL

Technology Acceptance Model (TAM) developed by Davis in 1986 is derived from the Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975). TAM was cited in many prior studies as a model to examine factors impacting user acceptance of information systems (Bagozzi, 2007; Davis et al., 1989). The model is successful in predicting about 40% of a system's use (Legris et al., 2003). Lee, Kozar, and Larsen (2003) stated that TAM is considered the most influential and commonly employed theory for describing an individual's acceptance of information systems. A review of prior studies suggested that the Technology Acceptance Model (TAM) was widely used to study users' acceptance of the new technology. Quite a few studies in many countries have widely used TAM to study the use of mobile banking, for example; in Iran by Hanafizadeh, Keating, and Khedmatgozar (2014), in China by Song (2015) and Zhou, Lu, and Wang (2010), in Bahrain by AISoufi and Ali (2014), in Korea by Gu, Lee, and Suh (2009), in Taiwan by Luarn and Lin (2005), in Portugal by Baptista and Oliveira (2015).

This study has modified the TAM model to include five additional factors: (1) Perceived Privacy (PP), (2) Perceived Security (PS), (3) Previous Experiences, (4) Normative Beliefs (NB), and (5) Technology Competency (TC). The proposed research model is shown in Figure 1 below.

Figure 1: Research model



Perceived Usefulness of Mobile Banking

The construct 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 & Davis, 2000). Perceived usefulness is, thus, predicted to be a positive driver for the attitude towards the usage of mobile banking. Based on these discussions, we propose the following hypothesis:

H1: Perceived usefulness (PU) positively affects the attitude towards the usage of mobile banking in Thailand.

Perceived Ease of Use of Mobile Banking

The construct 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 response to information technology (Agarwal & Karahanna, 2000; Chau & Hu, 2001; Hong et al., 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 & Davis, 2000). To prevent the problem of a useful system remaining "under-used", customers do not need to expend significant effort on using mobile banking (Lin, 2011). Based on this discussion, we therefore posit:

H2: Perceived ease of use (PEU) positively affects the attitude towards the usage of mobile banking in Thailand.

Perceived Privacy of Mobile Banking

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 mobile 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 consumers' privacy. The privacy concern becomes a major obstacle to the spread of E-commerce (Islam, 2014). The construct perceived privacy can be defined as the possibility that companies collect 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). Based on this reasoning, it is postulated that:

H3: Perceived privacy (PP) positively affects the attitude towards the usage of mobile banking in Thailand.

Perceived Security of Mobile Banking

Yenisey, Ozok, and Salvendy (2005) defined perceived security in E-commerce as the level of security that users feel while they are shopping online. Flavia'n and Guinali'u (2006) presented their view of perceived security as a subjective probability with which consumers believe that their personal information (private and monetary) will not be viewed, stored, and manipulated during transit and storage by inappropriate parties in a manner consistent with their confident expectations. Security has been studied and defined in several prior studies. Luarn and Lin (2005) reported that information security was one of the greatest concerns in the adoption of mobile banking. Roca, Garcia, and De la Vega (2009) defined overall perceived security as a threat that created a circumstance, condition, or event with the potential to cause economic

hardship to data or network resources in the form of destruction, disclosures, modification of data, denial of service, and/or fraud, waste and abuse. Therefore, it is postulated that:

H4: Perceived security (PS) positively affects the attitude towards the usage of mobile banking in Thailand.

Previous Experiences with Mobile Banking

Research indicates that consumers evaluate their online experiences in terms of perceptions regarding product information, payment, delivery, service, privacy and other such factors (Burke, 2002; Parasuraman & Zinkhan, 2002; Mathwick et al., 2001). Consumers' decision to continue future online transactions depended a lot on whether their past experiences were positive (Shim et al., 2001). The following is the hypothesis for this factor:

H5: Previous experience (PEX) positively affects the attitude towards the usage of mobile banking in Thailand.

Normative Beliefs

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. 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 technologies used by their relatives and friends. Normative belief becomes an important factor shaping the direction on how to do business. Sprott, Spangenberg, and Fisher (2003) stated that normative beliefs can lead to a socially desirable behavior in a specific situation, thus should be included as a fundamental component of any predictive variables. Based on the foregoing, we propose the following hypothesis:

H6: Normative belief (NB) positively affects the attitude towards the usage of mobile banking in Thailand.

Technology Competency

Technology competency is defined as the extent to which an individual is knowledgeable about and effectively utilizes Information Technology to manage information (Tippins & Sohi, 2003). Typically, consumers with a high level of self-efficacy are more motivated to use technology-based services. Moreover, they have a more positive attitude and intent to use technology-based services than consumers with a low level of technology self-efficacy. Therefore, consumers with a high technology self-efficacy are expected to have positive attitude and behavioral intentions to use mobile banking. High technology competence consumers are likely to perceive that mobile banking is easy to use than low technology competence consumers (Yang, 2010). We, therefore posit:

H7: Technology competency (TC) of subjects positively affects the attitude towards the usage of mobile banking in Thailand.

METHODOLOGY

This study adapted the instrument used in several prior studies as a measurement for the constructs proposed in the research model (Intana et al., 2013; Pikkarainen et al., 2004; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Vijayasathy, 2004; Wong & Hsu, 2008). The questionnaire consisted of forty-six (46) questions. Thirty-five (35) questions with the five point Likert scale were designed to measure subjects' perceptions on mobile banking. One question (Question# 36) asked "Overall, I prefer to do mobile banking transaction than other forms of banking" as a measurement for subjects' attitude on intention to use mobile banking. Another question (Question# 37) asks "Have you ever used mobile banking?" to measure subjects' actual use of mobile banking. The remaining nine (9) questions were asked to gather some demographic data of the subjects. To validate the clarity of these questions, three professors and three researchers were asked to read through the survey questions. Revisions to the survey were made based on the feedback received.

Four hundred (400) subjects participated in this study. The data were collected from a direct survey administered to student in a northern university in Thailand. Students are deemed as appropriate subjects in this study because they are no doubt the main users of mobile phones and thus become the main target users of mobile banking. In addition, only students who are the current users of mobile banking are included in the data analysis. Of the four hundred (400) subjects, two hundred and fifty-three (253) or 63.25% of them are mobile banking customers. The remaining one hundred forty-seven (147) or 36.75% of subjects have never used mobile banking before and therefore have been disregarded from further analysis. Subjects' demographics are shown in the Table 1 below.

Table 1: Subjects' Demographics (n=253)

	No.	%		No.	%
Gender			Areas of Study		
Male	91	35.97	Science and Technology	52	20.55
Female	162	64.03	Health Science	6	2.37
			Social Science	195	77.08
Age			Monthly Income (in Thai Baht)		
Below 18	1	0.40	Below 15,000	172	67.98
18 - 34	200	79.05	15,000 - 30,000	70	27.67
35 - 44	50	19.76	30,001 - 45,000	7	2.77
above 44	1	0.40	45,001 - 60,000	3	1.19
No answer	1	0.40	Above 60,000	1	0.40
Smartphone			Internet Use per Month		
Yes	248	98.02	None	1	0.40
No	4	1.58	1 - 5	3	1.19
No answer	1	0.40	6 - 10	7	2.77
			More than 10	242	95.65
Have Internet Package for Smart Phone			Make Purchase via the Internet on a Computer per Month		
Yes	226	89.33	None	39	15.42
No	23	9.09	1 - 5	194	76.68
Not applicable	3	1.19	6 - 10	10	3.95
No answer	1	0.40			

Employment Status

Yes	98	38.74	More than 10	10	3.95
No	155	61.26			

DATA ANALYSIS AND DISCUSSION

In order to examine the internal consistency of the research instrument, a reliability test was conducted. The test confirms the reliability of the research items with Cronbach's alpha coefficient of 0.946.

The measurement model for the seven constructs was assessed by a confirmatory factor analysis with Varimax rotation in order to test whether the questionnaire items produced the expected number of factors and whether each item was loaded on their appropriated factor. Results from the factor analysis indicates that all items are loaded into six (6) factors. As shown in the Table 2 below, the result from the factor analysis reveals that the ten (10) questionnaire items designed to measure the perceived privacy and perceived security constructs are loaded into the same factor. We, therefore, combined the two factors and labeled it as "Perceived Trust" (PT) factor. The minimum loading factor from the result is at 0.596 which is beyond the minimum acceptance threshold of 0.5 (Field, 2005; Hair et al., 1998; Stevens, 1992). In addition, the factor loading of 0.1633 on item PU 2 was below the suggested threshold, indicating that this item should not be used to measure the PU factor and thus was removed from the data analysis.

The measurement model was further assessed for construct reliability. The composite reliability for all the constructs was above 0.7, conforming to an acceptable threshold suggested by Nunnally and Bernstein (1994). Table 2 below presents the mean, standard deviation, factor loading, and composite reliability of all items assessed in this study.

Table 2: Summary of Measurement Scales

Constructs	M	SD	Factor Loading*	Reliability
Perceive Usefulness				0.758
PU1	4.462	0.809	0.5963	
PU2 (removed)	3.565	1.131	0.1633	
PU3	4.427	0.787	0.7412	
PU4	4.609	0.762	0.7760	
PU5	4.514	0.795	0.7318	
Perceived Ease of Use				0.908
PEU1	3.806	0.890	0.7726	
PEU2	3.972	0.852	0.7702	
PEU3	3.834	0.893	0.7662	
PEU4	4.040	0.835	0.8170	
PEU5	3.957	0.874	0.7168	
Perceived Trust (PP + PS)				0.943
PT1	3.178	1.029	0.8218	
PT2	3.182	1.050	0.8586	
PT3	3.423	1.003	0.7985	

PT4	3.419	1.042	0.7022	
PT5	3.079	1.044	0.7651	
PT6	3.182	0.903	0.7878	
PT7	3.186	0.922	0.8024	
PT8	3.202	0.919	0.7552	
PT9	3.289	0.886	0.6738	
PT10	3.277	0.892	0.8115	
Previous Experiences				0.906
PEX1	3.866	0.885	0.6264	
PEX2	3.917	0.889	0.7429	
PEX3	3.929	0.884	0.7656	
PEX4	4.162	0.808	0.7227	
PEX5	3.704	0.906	0.6174	
Normative Beliefs				0.768
NB1	3.352	0.877	0.6546	
NB2	3.213	0.977	0.5080	
NB3	2.933	1.087	0.7882	
NB4	3.727	1.004	0.5580	
NB5	3.625	1.014	0.6593	
Technology Competency				0.866
TC1	4.202	1.081	0.6617	
TC2	4.403	0.838	0.7712	
TC3	4.174	0.855	0.8715	
TC4	4.273	0.831	0.8118	
TC5	4.111	0.875	0.8298	

* Rotation Method: Varimax with Kaiser Normalization

A multiple regression analysis was conducted to test the seven (7) hypotheses, which hypotheses 3 and 4 were combined into one hypothesis. Our model, therefore, contains six (6) independent variables. The independent variables include perceived usefulness (PU), perceived ease of use (PEU), perceived trust (perceived privacy (PP) and perceived security (PS) were combined into one factor as suggested by the result of factor analysis), previous experience (PEX), normative beliefs (NB), and technology competency (TC). The dependent variable is the attitude toward the usage of mobile banking (ATT). The analysis controls for three subjects' demographics, which are gender, employment status, and areas of study. All control variables are bivariate dummy variables. DGender was coded to the value of 1 for female and 0 for male. DEmploy was coded to the value of 1 for employed and 0 for others. DStudy was coded to the value of 1 if the respondent studies in the field of sciences and 0 for other fields. The regression equation was written as follow:

$$ATT_i = \alpha_0 + \alpha_1 PU_i + \alpha_2 PEU_i + \alpha_3 PT_i + \alpha_4 PEX_i + \alpha_5 NB_i + \alpha_6 TC_i + \alpha_7 DGender_i + \alpha_8 DEmploy_i + \alpha_9 DStudy_i + \varepsilon_i$$

The results from Table 3 show the R² and Adjusted R² of 54.5% and 52.8% respectively, indicating that the factors investigated are suitable to explain the attitude towards the usage of mobile banking. The F-stat was reported to be at 32.37 and was significant at 1% significant

level. This also indicates that the combined factors are able to simultaneously explain the attitude quite well.

Table 3: Relationship between Factors and Attitude towards the Usage of Mobile Banking

Hypotheses	Independent Variables	β	t	VIF
H1	Perceive Usefulness	0.115	1.35	1.9048
H2	Perceived Ease of Use	0.436**	5.73	2.0218
H3, H4	Perceived Trust	0.144*	2.18	1.7356
H5	Previous Experiences	0.241**	3.00	2.2844
H6	Normative Beliefs	0.170*	2.45	1.5714
H7	Technology Competency	0.084	1.31	1.3863
	Gender	-0.047	-0.52	1.1795
	Employment Status	0.084	1.00	1.0702
	Area of Study	-0.032	-0.31	1.1162
$n = 253$				
	R-Square	0.545		
	Adj R-Square	0.528		
	F-stat	32.37***		

* Significant at 5% level, ** Significant at 1% level

Regarding each factor, the results from the multiple regression analysis demonstrates that four out of the six factors are key determinants on whether subjects intend to use mobile banking. These factors are perceived ease of use (PEU; $\beta = 0.436$), perceived trust (PT; $\beta = 0.144$), previous experiences (PEX; $\beta = 0.241$), and normative beliefs (NB; $\beta = 0.170$). In contrast, the results show that the factors perceived usefulness (PU; $\beta = 0.115$) and the technological competency (TC; $\beta = 0.084$) do not significantly affect the attitude toward the usage of mobile banking. The Variance Inflation Factors (VIF) for all factors range between 1.070 and 2.284, which are not greater than 10, indicating that there is no problem of multicollinearity (Hair et al., 2010; Diamantopoulos et al., 2008).

DISCUSSION AND CONCLUSION

In this study, seven (7) factors are predicted to influence the attitude toward the usage of mobile banking were investigated. Besides the two factors (perceived usefulness and perceived ease of use) included in the original TAM model, the modified model proposed to include five additional factors as determinants of attitude toward the usage of mobile banking. These factors are perceived privacy (PP), perceived security (PS), previous experiences (PEX), normative beliefs (NB), and technology competency (TC). The result from factor analysis suggested that the factors perceived privacy and perceived security should be combined into one factor, and we, thus, label this construct as perceived trust (PT).

The results of this study reveal that four out of six factors examined in the proposed research model play an important role in explaining users' attitudes toward the usage of mobile banking. The first factor is "perceived ease of use". This result supports the TAM findings. Consumers nowadays do not expect to spend a lot of effort in learning how to use technology, thus, they will be more likely to use mobile banking if they believe that it is not difficult to use. The finding suggests that banks should focus on designing the mobile banking features to make it relatively easy to use.

The second factor is “perceived trust”. The result in this study reveals that subjects will be more likely to use mobile banking if they can trust that their banking transactions will be kept confidential and secured. It is apparently that they are not willing to transact via a mobile device if the transaction is not considered safe and secured. This finding is consistent with a study conducted by Shaikh et al (2015), which reported that trust was a crucial factor in mobile banking adoption. The result suggests that banks should consider educating their customers about the privacy and security of mobile banking transactions.

The third factor is “previous experiences”. The study result points out that subjects will be more likely to use mobile banking if they have a good experience with their previous mobile banking transactions. This result suggests that banks may consider collecting feedback from their mobile banking customers to gain an understanding of their experiences with mobile banking transactions. Their feedback should help banks develop or improve mobile banking features to better serve the expectations of their customers, thereby increasing customers' satisfaction and enhancing their experiences with mobile banking.

The last factor is “normative beliefs”. This result points out that subjects' attitude toward the usage of mobile banking can be influenced by their family members, peers, and other social factors. The fact of knowing that someone close to them is using mobile banking makes subjects feel that it is desirable in their lifestyle. The finding suggested that bank could use this strategy to attract more mobile banking customers. For instance, bank managers may consider launching a campaign such as refer-a-friend as a tool to bring in new mobile banking customers.

In contrast to the TAM finding, this study does not find a significant impact of perceive usefulness on subjects' attitude toward the usage of mobile banking. This may due to the fact that Thai consumers are major users of smart phone and thus already realize the benefits of mobile banking. Therefore, the perceived usefulness factor is less important to them than other factors. In addition, banking transactions are usually viewed as high risk activities and thus inhibit them from using mobile banking regardless of their perception on its usefulness. Similar to the perceived usefulness factor, technology competency also does not play an important role in subject's mobile banking adoption. The possible explanation may be because the majority of subjects in this study are ranged between 18-24 years old. This populations usually have a high competency in technology and thus this factor does not reveal to be a significant factor.

As in most empirical studies, there is an inherent limitation in this paper. The sample in this research was limited to subjects in one university. Although only students who are the current users of mobile banking are included in the data analysis, future research should consider expanding demographics to include non-student subjects and users in various countries. A future study may examine these factors in a cross cultural context. In addition, a future study conducted could investigate in more details which feature of mobile banking are deemed necessary or unnecessary to the decision to adopt this technology.

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