BEHAVIORAL INTENTION OF BANGKOKIANS TO ADOPT MOBILE PAYMENT SERVICES BY TYPE OF USERS

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Abstract: *Technology and Trend of mobile payment or cashless wallet have continuously grown and the potential to replace the traditional payment method is large. The purpose of this study is to understand the factors that impact customer behavioral intention to start using mobile payment service in the case of Thai people in Bangkok. Also, investigate the difference between 2 types of user as personal used user and business owner user toward the behavioral intention to adopt mobile payment services. A conceptual model in this study was developed based on element of innovation diffusion theory and technology acceptance. The questionnaire was provided and collected by 400 respondents by convenience, quota and the snow-ball sampling method. The methods used to analyze are linear regression and independent sample t-test. The findings show which factors have impact on customer behavioral intention to adopt mobile payment service.*

Keywords: *Behavioral intention, mobile payment, Bangkok, Innovation adoption*

Introduction

Mobile payment generally defines to the payment service performed via mobile device such as smartphone, instead of traditional payment method (cash, cheque, credit card). A user can use a smartphone to conduct current payment transactions to purchase wide range of goods or services. The rapid developments in mobile communication technologies have led to the progressive technologies of non-coin-based currency systems, and mobile payment adoption of both individuals and business globally in various ways.

Smartphone users in Thailand have increased significantly; they average around 230 minutes per day (Nielson information Mobile insight Q3'2016). Smartphones have obliviously changed people lifestyle including purchase and payment methods. All financial transactions conducted through mobile devices such as mobile banking, mobile payments have been continuously growing up. The most popular m-payment service providers in Thailand are Truemoney Wallet, Major Mobile Plus App, Airpay, mPay App, Starbuck app etc. These showed the increasing confident in Thai users in digital financial transactions. On the contrary, while the growth in the number of mobile device user is compared to the number of m-payment users in Thailand, there is still has a large gap and more opportunity to grow.

However, it is unclear why utilizing of m-payment services growth has lagged behind the high smartphone use rate in Thailand, since, M-payment service aims to give the benefits to user in terms of flexibility and convenience to daily activities. Hence, the research aims to study the factors influencing Bangkok consumers' intention to adopt m-payment services and which factor have the most impact on Bangkokian's behavioral intention. The outcome of the study is expected to develop a better understanding and provide suggestion to those m-payment service providers.

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Literation Review

- ***Perceived Usefulness (PU)***

Perceived Usefulness (PU) is one of the key factors in Technology Acceptance Model to define user attitudes and behavioral intention to use particular system (Kim, Mirusmonov & Lee, 2010). Its concept has been used in many research studies in different fields of adoption the new technology (Nadim and Noorjahan, 2008), Tero Pikkarainen & Kari Pikkarainen 2004). According to TAM, Perceived Usefulness (PU) is explained as the individual perception of undertaking particular system that would improve his/her job performance (Davis, 1989). In the m-payment service adoption context, Perceived Usefulness can be referred as the expectations of users on using m-payment that can improve effectiveness on payment transactions. For example, an individual may feel that using m-payment for purchasing particular products can be more convenient than carrying cash or actual credit card payments.

- ***Perceived ease of use (PE)***

Perceived ease of use is the degree to which an individual trust that adopting any new technology system would be effortless (Davis, 1989). Beside user's perceived that an application could bring more effectiveness and benefits to the transaction, sometimes the difficultly of learning and using unfamiliar system can be obstacle. The key factor for consumer to trail and consider using any new product and service is that those product and services should be not difficult to understand, learn and imply (Rogers 1962). As m-payment is one of the new technology service introduced in Thailand, users may find some difficult or confusion though several steps, such as registration, authorization, lack of technology knowledge.

- ***Compatibility (COM)***

According to Rogers' Diffusion of Innovation Theory (1995), Compatibility refers to the degree to which an innovation is sensed to be consistent with the needs, routine, lifestyle, and existing values, past experiences of potential users. Innovation is an idea, practice, object that is new to the adopters (Roger, 2003). Moreover Roger (2003) also stated that the more compatible the innovation is, the faster the rise of adoption. Many empirical research studies also evidenced in the same direction that compatibility is the key variable of innovation adoption that has significantly impact on individual's intention to employ new technology, including the value that those technology can deliver by mobile phones (Chen, 2008, Mallat and Tuunainen, 2008, Schierz et al., 2010, Wu and Wang, 2005). For instance, m-payment is likely to be used when it fits to the user's shopping behavioral and lifestyle (Chen 2008).

- ***Subjective Norms (SN)***

Regarding the theory of reasoned action (TRA) , Fishbein and Ajzen (1975), Subjective Norms (SN) is one of the significant factors that determine behavioral intention. Ajzen (1991) defines Subjective Norms (SN) as an individual perceived influence from social pressure to make decision to performing particular behaviors. In addition, SN also explains to a behavioral intention of a person or a group of people to behave in particular task, affected from opinions of important peers (e.g. parents, spouse, friends, teachers), (Finlay, Trafimow, & Moroi ,1999). This research adopts SN to measure to what extend peer or other social groups influence

Bangkok's consumers to use mobile payment services on payment transactions. Social opinions may impact consumer's decision.

- ***Perceived Risk (PR)***

Perceived risk (PR) is defined as a consumer fears that may occur regarding negative or unexpected outcome as a consequence of conducting any transaction (Bauer 1967) e.g. purchasing, adopting new technology. PR only emphasizes only subjective risk, not the objective risk. Beside PR can generally come from consumer's feel of uncertainty Bauer 1967; Cox 1967; Taylor 1974) and expected loss (Bettman 1973; Cunningham 1967; Kogan and Wallach 1964; Peter and Ryan, 1976; Roselius 1971; Stone and Winter, 1987). In the mobile payment adoption context, PR can impact a one's intention to use m-payment service, as consumers perceive that this type of financial service will involve a high level of risk, hence, the feeling of uncertainty may dissuade intention to adopt.

- ***Perceived trust (PT)***

In a social context, trust has several implications. Trust can be referred as one party belief other party to perform the particular transactions, expecting that the those other party will have the ability to perform, monitor, and control. (Mayer et al., 1995). Since mobile payment services involve a higher level of risk than a traditional payment transaction, trust becomes a key factor to influence adoption to use mobile payment. (Mayer et al., 1995). Consumer's perceived trust may define both service providers and the technology infrastructure (Mayer et al., 1995).

- ***Perceived Cost (PC)***

Perceived Cost is the degree of user belief that using a particular mobile payment service will charges some additional money. Mobile payment services may involve some additional costs, for instance, transaction fees, membership fees. (Luarn and Lin, 2005). Many researchers suggest that cost can be considered as the significant barrier against person's intention adoption, not only m-payment, but also other innovations such as mobile banking, e-commerce. (Cheong and Park, 2005, Luarn and Lin, 2005, Wang et al., 2006, Wei et al., 2009, Zhou, 2011).

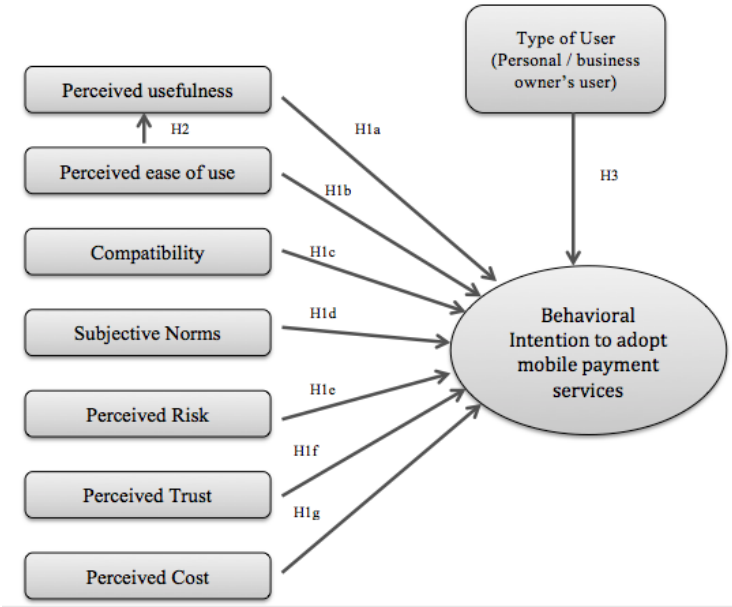
- ***Behavioral intention to adopt***

Behavioral intention (BI) is explained as a person readiness or probability to engage or perform a particular behavior (Committee on Communication for Behavior Change in the 21st Century, 2002, p. 31, Ajzen, 2002b).

Research Framework and Methodology

The conceptual framework of this research (Figure 1) is developed from theoretical framework of Chanchai, Carmine, and Michelle (2016) who investigate the mobile payment services in Thailand. Type of Users (Personal/business owner's user) is considered in this study in order to study impact toward behavioral intention to adopt mobile payment services among users.

Figure 1 : Conceptual Framework



This study examines nine hypotheses in order to achieve the research objectives as showed in Figure 1. The hypotheses are defined as follow:

Hypothesis H1:
Perceived Usefulness (H1a), Perceived Ease of use (H1b), Compatibility (H1c), Subjective Norms (H1d) and Perceived Trust (H1f) have a positive impact on the behavioral intention to adopt mobile payment services.
Perceived Risk (H1e) and Perceived Cost (H1g) have a negative impact on the behavioral intention to adopt mobile payment services.

Hypothesis H2:
Perceived Ease of use has a positive impact on the Perceived Usefulness.

Hypothesis H3.
There is significant mean difference between business owner and personal users toward behavioral intention to adopt mobile payment service

Research Methodology

This study uses a quantitative approach to examine the hypothesis. The convenience sampling, quota and snowball sampling techniques were used to gather the data from the respondents who were the target population. This survey used both online-based questionnaire.

A questionnaire using 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5), was developed to examine the hypotheses in this research.

Measurement of Variables

The target respondents of this survey were Thais who are living in Bangkok and using smartphone.

Population and Sample

The target responses were verified by screening questions to select only Thais who are using smart phones and living in Bangkok. Questionnaires were distributed to 400 respondents in Bangkok smart phone users selected by

convenience, quota and snowball sampling method.

Reliability Test

The reliability has tested when the number of target respondents reached 30 persons, which was conduct by Cronbach's alpha Coefficient. To achieve the reliability research, the result of Cronbach' Alpha has to be greater than 0.6. (Cronbach, 1951)

Regarding Table 1, this research has achieved the reliability test standard.

Table 1: Consistency of the scales test (N=30)

Reliability Statistics

Variable	Cronbach's Alpha	N of Items
Perceived Usefulness	0.946	3
Perceived ease of use	0.799	3
Compatibility	0.903	3
Subjective Norms	0.802	3
Perceived Risk	0.803	3
Perceived trust	0.689	4
Perceived Cost	0.907	3
Behavioral intention to adopt	0.941	3

Results and Discussion

- **Data Analysis**

The research model was evaluated using statistic Application to analyze the data to define the impact between variables and mean differentiate of two groups. Multiple regression technique was employed to measure the impact between seven independent variables (Perceived Usefulness, Perceived ease of use, Compatibility, Subjective Norms, Perceived Trust, Perceived Risk, Perceived Cost) and dependent variable (Behavioral intention to adopt mobile payment). Independent sample T-test was applied to assess the mean differentiate of two group (Business owner and personal users).

- **Respondents demographic factor**

The data used in this research was gathered from the respondents using the smartphone and live in Bangkok. The total of respondents is 400, which presents 100 percent. Table 2 shows all demographic information of respondents. The majority of respondents are female (68 percent), and 32 percent is male. For age range, most of the respondents were age between 20-29 years old at 72 percent, 30-39 years old as 21.27 percent, 40-49 years old as 3.15 percent, above 50 years as 1.75 percent and less than 20 years old is 0.75 percent. For income level per month, respondent earning above 40,001 Baht at 33.50 percent as the majority, earning 30,001-40,000 Baht at 24.5 percent, earning 20,001-30,000 Baht at 21 percent, earning 10,001-20,000 Baht at 14.5 percent and earning 10,000 Baht or less at 7.5 percent.

96.5 percent of respondents know about mobile payment service (3.5 percent) don't know mobile payment before. From all of respondents, 52.25 percent are the personal users and 47.75 percent are the business owner users.

Table 2: Demographic Information of Respondents (N=400)

Total Sample = 400	Frequency	%
Bangkokian	400	100.00%
Use smartphone	400	100.00%
Gender		
Male	128	32.00%
Female	272	68.00%
Age range		
less than 20	3	0.75%
20-29	288	72.00%
30-39	87	21.75%
40-49	15	3.75%
Above 50	7	1.75%
Income		
10,000 Baht or less	30	7.50%
10,001 - 20,000 Bath	58	14.50%
20,001 - 30,000 Baht	84	21.00%
30,001 - 40,000 Baht	98	24.50%
Above 40,001 Baht	134	33.50%
Know about mobile payment service		
Yes	386	96.50%
No	14	3.50%
Type of User		
Business Owner	191	47.75%
Personal	209	52.25%

To examine each variable, the 5-point Likert scale was used as the tool where 1 refers to "Strongly disagree" and 5 refers to "Strongly agree". Table 3 below shows the correlation between independent variables and descriptive analysis.

Table 3: Descriptive Analysis and Correlation Matrix

Variable	Mean	SD	BI	PU	PE	CP	SN	PT	PR	PC
Behavioral intention to adopt (BI)	4.1301	0.96869	1							
Perceived Usefulness (PU)	4.5127	0.71953	0.658***	1						
Perceived ease of use (PE)	4.1484	0.79973	0.476***	0.524***	1					
Compatibility (COM)	4.0158	0.96183	0.772***	0.739***	0.524***	1				
Subjective Norms (SN)	3.2372	1.0343	0.526***	0.414***	0.336***	0.618***	1			
Perceived trust (PT)	3.5674	0.90378	0.579***	0.503***	0.355***	0.611***	0.544***	1		
Perceived Risk (PR)	2.4545	1.44644	-0.367***	-0.238***	-0.155***	-0.287***	-0.258***	-0.274***	1	
Perceived Cost (PC)	2.8992	0.96207	-0.215***	-0.133***	-0.049	-0.181***	-0.03	-0.166***	0.05	1
	*** *Correlation is significant at the 0.005 level (1-tailed)*									

In reference to the evidence above; the majority of independent variables have a positive relationship with each other, while only Perceived Risk and Perceived Cost have negative relationship toward other the independent variables, except PR-PU, PC-PU.

- **Inferential Analysis**

The model examined by Multiple Linear Regression, using seven independent variables which are Perceived Usefulness, Perceived ease of use, Compatibility, Subjective Norms, Perceived Risk, Perceived trust and Perceived Cost. Table 4 shows the summary of the results.

Table 4: Result of Regression for H1a-H1g

Variable	Beta (Standardized Coefficient)	VIF	Result
Perceived Usefulness (PU)	0.158**	2.389	Support H1a
Perceived ease of use (PE)	0.068**	1.468	Support H1b
Compatibility (COM)	0.467**	3.352	Support H1c
Subjective Norms (SN)	0.051	1.808	Not Support H1d
Perceived Risk (PR)	0.112**	1.784	Support H1e

Variable	Beta (Standardized Coefficient)	VIF	Result
Perceived trust (PT)	-0.138**	1.116	Support H1f
Perceived Cost (PC)	-0.079**	1.061	Support H1g
R Square (R^2)	**0.655**		
Adjusted R square (Adjusted R^2)	**0.649**		
Beta coefficients with standard errors in parenthesis, $^{**}p \leq .05$			

Dependent Variable = Behavioral Intention to adopt mobile payment

The result in Table 4 indicates that 64.9% (Adjusted R^2) of the dependent variables (behavioral intention to adopt) was indicated by seven independent variables at the 0.5 significant levels. Six of the independent variable are statistically significant at 0.5 level of significance, and Subjective Norms is the only independent variable that not statistically significant at 0.5 level of significance. Hence, one hypotheses (*H1d*) does not been supported but six hypotheses (*H1a, H1b, H1c, H1e, H1f, H1g*) are supported.

Five corresponding regression coefficients of independent variable are significantly greater than zero *($\beta = 0.158$; $\beta = 0.068$, $\beta = 0.467$, $\beta = 0.051$, $\beta = 0.112$)*, Perceived trust and Perceived cost are less than zero ($\beta = -0.138$, $\beta = -0.079$) which can be interpreted as negative impact to dependent variable (Behavioral intention to adopt).

As Perceived ease of use was found to have indirect impact with user's intention to adopt mobile payment by mediating Perceived usefulness (PU) of mobile payment (Wu & Wang, 2005).

Moreover, in table 4, variance inflation factors (VIF) was investigated in term of multicollinearity problem. The result illustrated that VIF of all variables are below than 5.000. Therefore, the multicollinearity is not critical problem in this study (Studenmund, 1992)

The simple linear regression was used to measure the impact of PE toward PU as shown in Table 5.

Table 5: Result of Regression for H2

Variable	Beta (Standardized Coefficient)	VIF	Result
Perceive ease of use (PE)	0.471**	1	Support H2
R Square (R^2)	**0.524**		
Beta coefficients with standard errors in parenthesis, $^{**}p \leq .05$			

Dependent Variable = Perceived of Usefulness

The result show that Perceived ease of use have a positive impact to the Perceived of usefulness. Each coefficient of independent variables was greater than zero ($\beta = 0.471$, $p \leq 0.05$). The R Square's result can define as the independent variable (PE) can explain the dependent variable (PU) at 52.4%. Therefore, the hypothesis H2 is supported.

Table 6: Result of T-test for H3

User	N	Mean	Std. Deviation
Owner's Business	191	4.2061	0.97382
Personal	209	4.0606	0.96105

Table 7: Result of Independent Sample T-test for H3

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	**0.122**	**0.727**	1.503	398	0.134	0.14555	0.09681

Dependent Variable = Behavioral Intention to adopt mobile payment

The result from Table 6 and 7 indicate that there is no significant mean difference between business owner users (M=4.2061, Std = 0.97382) and personal users (M=4.0606, Std = 0.96105) toward behavioral intention to adopt mobile payment service. The P-value is 0.727 which is higher than 5% significant levels. Therefore, the research represents not to support H3.

Conclusion and Recommendations

This study has focused on the factor impacting to intention of users to adopt mobile payment services in Bangkok by using multiple linear regressions, single linear regression, and independent sample t-test. Regarding to hypothesis 1, the factors considered for the purposed research model are perceived usefulness, perceived ease of use, compatibility, subjective norms, perceived risk, perceived trust, and perceived cost toward intention use adopt mobile payment service. The result of the analysis can explain the dependent variable by 64.9 percent. A subjective norm is the only factor that has no significantly impact toward Bangkok's user intention to adopt mobile payment service.

For the hypothesis 2, the impact between two independent variables, perceived usefulness and perceived ease of use was investigated. The statistical analysis represents that perceived ease of use have strong impact toward perceived usefulness.

Moreover, the research outcome explains the understanding of the intention to adopt m-payment service between two groups of users, business owner and personal users. The result shows there is no significant mean difference between both groups of users for the behavioral intention to adopt mobile payment service

The finding of this study can be benefit to mobile payment service provider whose target in Thai customer in Bangkok in term of strategies adoption in order to achieve greater acceptance in mobile payment and attract more users in the market. The study reveals that compatibility, perceived of usefulness, perceived trust, perceive risk, perceive ease of use, and perceived cost have an important role to Bangkok consumer's intention to adopt mobile payment service. First, mobile payment service provider should ensure that mobile payment service offered meet customer needs fit to their daily routine, and lifestyle.

Second, the purchase feature of mobile payment may not enough to attract people intention to use the m-payment, people may not feel the different in benefit between traditional and digital payment method. To improve the usefulness of m-payment, perceived ease of use must be developed. The support system and machine also have to be sufficient to ensure flawless integrated to customer's shopping process.

Third, perceived trust, perceived risk, and perceived cost are also the factors concerned. The application's features have to be useful to the user, at the same time, create creditability to gain trust, ensure the security confidential on the service, and user's cost concern to improve the intention to adopt mobile payment service. All parties involved such as financial intuitions, merchants, and third party, need to ensure the security of information and transaction in order to enhance trust and confidence of consumers on mobile payment service.

The research is only within Bangkok boundary; it cannot be applied to overall country. It would be more advantage to the service provider if the research can survey other urban areas in the country such as Chiang-Mai, Phuket etc.

Revising the research model can further develop this research study. Subjective Norm factor, which found to have no significant impact toward behavioral intention to adopt mobile payment service could be removed, then apply multiple linear regression again in order to investigate more effective result. Furthermore, expanding larger sample size or selecting respondents in other areas of Thailand and more variables should be considered in order to strengthen the model, and also better assess results.

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