Factors Influencing Reuse Intention of e-Payment in Thailand: A Case Study of PromptPay

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Abstract: Thai e-commerce is growing rapidly in the past few years. The driving factors for the rapid growth arise from increased Internet and mobile phone use as well as improved e-payment and logistics. Thai government has come up with a national e-payment initiative called "PromptPay" with an aim to reduce the use of cash and catalyze the adoption of e-payment in Thailand. However, the use of e-payment in Thailand is still lagged behind other countires. The objective of this research is therefore to identify factors influencing reuse intension of e-payment in Thailand and their antecedents. For our preliminary study, we survey PromptPay 100 users in Bangkok and analyze the data using PLS-SEM technique. The results suggest that satisfaction and attitude positively impact reuse intention of PromptPay. In addition, perceived usefulness is found to be a driver of user satisfaction and positive attitude towards PromptPay, while positive confirmation affects satisfaction. However, trust is unexpectedly found to be insignificant to reuse intention of PromptPay. Our proposed conceptual model offers an alternative model studying e-payment adoption in other context, while our findings could help Thai government in planning their strategy for improving the diffusion rate of PromptPay in Thailand.

1 INTRODUCTION

Nowadays, e-commerce tends to play an increasingly important role in our life. In order to be able to offer convenience and fast service deliver to consumers, service providers increasingly turn to electronic payment (e-payment). According to the statistics from Let's Talk Payments, it is reported that during 2011 to 2015, e-payment generated and income of over 296 billion USD (Gogoingkron, 2017).

In Thailand, the government has been trying to encourage Thai people to adopt a national e-payment system called "PromptPay" since 2015 which plays an important role in the government's strategy to use technology to drive the economy. (Malabuppha T, 2017). PromptPay is a system that links Thai ID number or mobile number to account is linked to the owner's bank account. A person with a PromptPay account transfer money to or receive money from another person with a PromptPay account with a very small fee.

In the present, e-payment have become very popular in Thailand which can be seen from the e-payment usage statistics from 2016 to 2018 which has went up 3.5%. The number of e-payment registration is approximately 46.5 million accounts and around 1.1 billion transactions in 2018 (Bank of Thailand Statistics, 2018).

However, according to BIS statistics, (2017), while the amount of e-payment transactions in Thailand has increased from 49 times/person/year by the end of 2016 to 63 times/person/year in 2017, it is still quite low when compared to other countries. It is found that, for example, Singaporian uses e-payment 782 times/person/year 500 times/person/year for Korean and 411 times/person/year for British. This low usage rate may be due to the fact that infrastructure supporting e-payment services tends to be available only in big cities, making most Thai people unable to reach the service. In addition, many Thai people still have concerns about risks and computer security when using e-payment as they concern about their personal information such as citizen ID, telephone numbers, e-wallet ID, bank account or email address.

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Because of those reasons, the researchers recognize the importance of studying factors that impact the Thai customers' intention to use e-payment repeatedly. Therefore, our research objectives are to study factors that impact and influence intention to reuse of e-payment in Thailand and develop a conceptual framework of e-payment reuse intention in Thailand. In this article, we start with a literature review on technology reuse intention. As a result, we identify six factors which are trust, satisfaction, attitude, confirmation, perceived usefulness and concerns for information privacy (CFIP) and consequently create a conceptual model for e-payment reuse intention. To verify the proposed model, we collect data using questionnaire. The data are analyzed and reported. Finally, we discuss on the results of research are offer both academic and practical implications.

2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS

2.1 Reuse Intention

Reuse intention can be defined as an intention to buy products or services continually after consumers had bought the products or services once. Besides, reuse intention is associated with personal decision to repeatedly purchase products and services from the same business by considering their current situations (Hellier et al., 2003). According to Bhattacherjee (2001), the decision to reuse an information system (of IS continuance usage) is the same as the decision to repurchase products and services of the consumers because reuse decision is influenced by the first time that a user uses the information system.

Furthermore, it is also found that attitude and perceived behavioral control, which, related to "perceived value" and "perceived service quality", are the factors that influence the intention to repurchase airline tickets of passengers in economy class by using the theory of planned behavior (Jun and Cheol, 2019).

In conclusion, the current study defines reuse intention as the intention to purchase products and services continually which occur when customers are satisfied and have a positive attitude after they had bought and use the products and services for the first time. To put in the context of this study, we argue that reuse intention of "PromptPay" is similar to consumers' repurchase intention. Specifically, consumer satisfaction and positive attitude towards

PromptPay are the results of a positive first-time in turn encourages continuous use of the system.

2.2 Expectation Confirmation Theory

Expectation Confirmation Theory (ECT) is a theory that explains consumers' repurchase intention. From Figure 1, it can be seen that customers' satisfaction is decided by two factors, namely expectation and confirmation. Prior to purchasing products or services, customers usually have a certain level of expectation on the performance levels. After purchasing, they will evaluate the performance of the purchased products or services and finally compare what they get with their expectations. When what customers receive is beyond their expectations, it enhances the customers' positive satisfaction. On the contrary, if what they get is lower than their expectations, their satisfaction will be negative accordingly. Higher levels of satisfaction positively affect repurchase intention, as shown in Figure 1 (Bhattacherjee et. al, 2001).

Note: t_1 = pre-consumption variable; t_2 = post-consumption variable
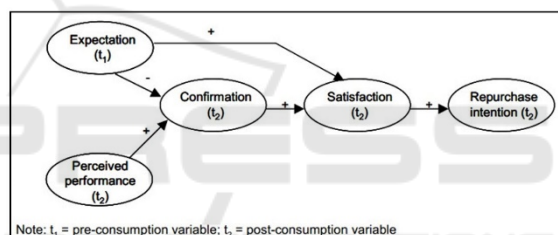
Figure 1: Expectation-Confirmation Theory (ECT).

Even though this theory is developed in consumer product context, we argue that confirmation and satisfaction also make a significant contribution to PromptPay reuse intention. The reasons are explain in the next section.

2.3 Factors Affecting the Use of e-Payment

We reviewed the literature and developed a conceptual model consisting of six factors, namely, trust, attitude, satisfaction, confirmation, perceived usefulness and CFIP (Figure 2).

2.3.1 Satisfaction

Prior works have provided several definitions of satisfaction. For example, Oliver and Richard (1980) proposes that satisfaction is the result of a comparison between expectations and perceptions of the performance of purchased goods or services from
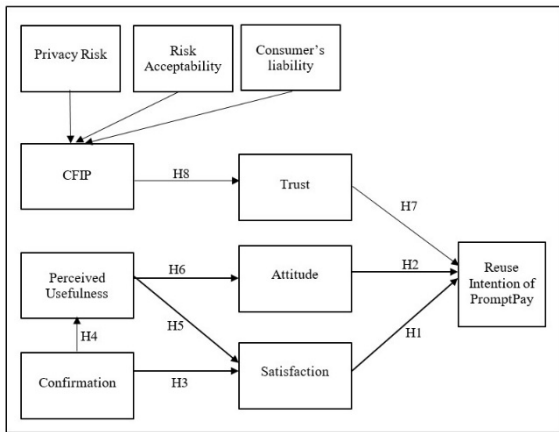
Figure 2: Conceptual framework.

actual use. Gustafsson et al., (2015), satisfaction is the difference between one's expectation and the actual outcomes that one perceives. Therefore, if a customer receives a product or service that meet his/her expectation, his/her satisfaction will be increased. A high level of satisfaction often leads to word of mouth and repurchase intension.

In summary, satisfaction refers to the feeling of satisfaction of what customers receive and what they expect when using e-payment. Customers' satis-faction will occur after using it. According to (Gustafsson et al., 2015), the expectancy confirmation Theory (ECT), indicates that satisfaction is a result of experiences' evaluation after purchasing products and services whether the same as their expectation or not. If the result is similar to their expectations, it will make customers feel satisfied which leads to repurchase intentions of the customers. On the other hand, if customers' evaluation is lower than their expectations, it will make them feel unsatisfied and do not use it again. From the research of Nguyen and Tran (2018), they have studied repurchase intention and factors that motivate people to adopt mobile ride hailing apps in Vietnam. They collected 427 questionnaires from Grab and Uber users, and it was found that perceived service quality and satisfaction of system quality motivates customers to reuse the services.

Therefore, satisfaction is an important factor that motivates customers return to use e-payment again.
H1: Satisfaction Positively Impacts Reuse Intention of e-Payment.

2.3.2 Attitude

Attitude towards e-payment use is influenced by perceived ease of use and perceived usefulness of the

e-payment system (Gustafsson, 2015). It is one of the most important concepts in social psychology and communication. From the literature review, there are several definitions of attitude.

Schiffman and Kanuk (1994) defined that attitude means propensity to express satisfaction towards a thing or expression of inner feeling reflecting that people have propensity of being satisfied or unsatisfied with something, such as brands, shops or e-payment systems.

To put it simply, attitude is thought, feeling or satisfaction towards a certain thing, person or satisfaction of purchasing products and services which lead to related actions or unrelated actions. Therefore, whenever consumers trust an e-payment system that it is easy to use and beneficial, it creates positive attitude, good satisfaction towards e-payment, which is a significant contributor to reuse intention. Norazah et al., (2011) perceived usefulness, ease of use, entertainment and attitude as key antecedents of intention to reuse 3G mobile service. The result indicates that attitude and perceived usefulness are related to the decision to reuse 3G of customers. Thus, attitude is another essential factor of intention to reuse e-payment.
H2: Attitude Positively Affects Reuse Intention e-Payment.

2.3.3 Confirmation

Confirmation is a part of expectation-confirmation Theory of continued IT usage (ECT-IT). The model is developed from ECT which is used to explain repurchase intention in consumer produces context (Bhattacherjee et al., 2001). ECT is a model of expectation and confirmation theories which are developed to explain continuance usage intention of information systems Figure 3.
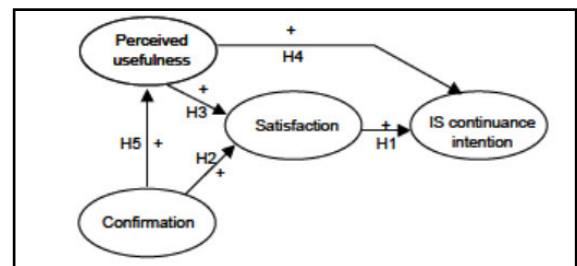

Figure 3: Expectation-Confirmation Model of Continued IT usage (ECM-IT) (Bhattacherjee et al., 2001).

As seen from the model, ECM-IT focuses on three factors. The first is satisfaction. The model proposes that satisfaction has a positive effect on continuance usage of IT products or services. Secondly, perceived

usefulness is a factor that motivates customers' satisfaction because it can tell the benefits that customers will receive from the experiences of using IT products and services which affect on customers' satisfaction as well as expectation-confirmation theory. Lastly, confirmation is proposed to have a positive impact on perceived usefulness can be divided into three types of situations (1) **positive disconfirmation** - what customers get is better than their expectations. (2) **confirmation -** what customers get is similar to their expectations. (3) **negative disconfirmation -** what customers get is lower than their expectations. Based on the ECM-IT model, we propose the following two hypotheses:

H3: Confirmation or Positive Disconfirmation-Positively Influences Satisfaction.

H4: Confirmation or Positive Disconfirmation Positively Affects Perceive Usefulness.

2.3.4 Perceived Usefulness

Bhattacherjee et al., (2001) propose the ECT-IT model and collected the data of 1,000 online banking users. The results points out that perceived usefulness and satisfaction influence reuse intention of information system. Therefore, we propose that perceived usefulness motivates customers' reuse intention of PromptPay because when customers perceived the usefulness of Promptpay such as cheaper fee, saving time and, convenience, it will improve customer satisfaction of the service.

H5: Perceived Usefulness has a Positive Effect on Satisfaction.

In addition, the literature on technology acceptance model (TAM) has suggested perceived usefulness as an antecedent to attitude toward using a technology (Davis, 1989). Based on TAM, for customers to have a positive attitude toward PromptPay, they need to be able to perceived the benefits or usefulness of the system. A positive attitude then lead them to continuously decide to reuse PromptPay.

H6: Perceived Usefulness has a Positive Effect on Attitude.

2.3.5 Trust

Trust is a very important factor for online transactions when compared to face-to-face transaction because it often involves high levels of uncertainty and risk factors. One of the major risks is information privacy which is particularly important to e-payment transaction. Credit card numbers or bank account information leaks could lead to a negative impact on trustworthiness of the website which in turn damage

consumer reuse intention. Generally, trust comes from actual use and reuse of the e-payment system. When customers build trust with the website, they will make other transactions. If customers do not trust the website, untrustworthiness will be and important obstacle to online transactions (Gefen et al., 2003).

From the research of Pavlou, (2003), it was found that trust is the willingness to risk for getting services as it showed that trust involves with benevolent, honest, competence and predictability. So, when trust has been built, good customer relationships, transaction costs reduction and fast service delivery could be achieved. Consistently, studied factors influencing reuse intention of online transactions by collecting 400 responses using an online questionnaire posted on a popular social media site. They analyzed the collected data found a two-way relationship between satisfaction and trust. The two factors also positively influence reuse intention.

Consequently, we argue that trust is very important to reuse intention of e-payment due to the high information privacy risks involved. The system will be accepted and successful when consumers trust in the system. The more consumers trust, the more chance they use again. In addition, when trust has been built consumers will receive the benefits of using e-payment because it saves the costs and time. Therefore, we hypothesize the effect of trust as follows:

H7: Trust Positively Influences e-Payment Reuse Intention of PromptPay.

2.3.6 Concern for Information Privacy (CFIP)

According to Zhou (2011), concern for information privacy reflects users' attitudes toward personal information privacy. For online payment, some consumers concern about revealing their personal information such as identification number, telephone number and bank account. In this article, we have identified three dimensions of concern about information privacy in the context of e-payment.

The first dimension is **privacy risk**. According to Hang et al. (2005), there are six types of perceived risk including financial risk, performance risk, privacy risk, psychological risk, social risk and time risk. For online payment or online transactions in general, privacy risk has often been identified as one of the most important inhibitors to adoption. Privacy risk can be defined as the potential loss of control over one's personal information.

Iris et al,. (2005) and Tao Zhou (2010) have the same opinion that perceived risk has a negative

relationship with reuse intention of e-payment, especially privacy risk. The risk of personal information that might be revealed on the Internet can cause users to perceive high risk and feel insecure, causing them not be willing to use e-payment.

The second dimension is **risk acceptability**. Risk acceptance informs decision to take a particular risk. According to Eid (2016), rink acceptability in e-payment is categorized into two types. First, accepting the risk before using the system or accepting risk during the online payment processes. Second, the risk acceptance level, but it still needs to be controlled, followed, detected and reviewed in order to make sure that if they use e-payment, they have to accept the risk.

Therefore, risk acceptability is a crucial factor and influences concern for information privacy of consumers both before and after deciding to use e-payment. If the consumers cannot accept the risk, they will always have concerns over the use of e-payment which can lead to low levels of trust.

The third dimension is **consumers' liability.** when there are problems or mistakes while using e-payment, they must be an institution that take responsibility or a law that protect the consumer (Eid et al., 2016) From the annual report of e-payment in 2016, it is found that the majority of consumers lack the understanding and knowledge about any responsible organization or institution case of mistakes or fraudulent activities which causes concerns and lack of trust to use e-payment.

To sum up, it can be concluded that concern for information privacy (CFIP) refers to the concerns of threats and insecure feeling about information privacy and risks associated to making online payment. CFIP has, three dimensions which are privacy risk, acceptability and consumers' liability. In e-payment context, we argue that CFIP can have an impact on these three dimensions are the important factors that affect information privacy. If consumers still concern about information privacy while using e-payment, they will not trust the system. In contrast, if consumers trust in the system, it will affect them to have reuse intention of e-payment.

H8: Concern for Information Privacy (CFIP) Negatively Impacts Trust.

3 RESEARCH METHODOLOGY

3.1 Data Collection

The data collection method of this study is survey. We use paper-based questionnaire as our data collection tool. The respondents in this research are PromptPay users in Bangkok, Thailand. We had collected 30 responses for the pilot test. After, the pilot modifications have been made to the questionnaire. We then be able to collect 115 responses. 12 responses of them were filtered out since the respondents never use PromptPay and 3 incomplete responses were also removed. The data collection period was 4 months (from January – April 2019). We personally distributed the questionnaire in banks, department stores, supermarkets and restaurants.

The questionnaire was divided into 4 sections including section 1: general information regarding PromptPay use, section 2: questions for the factors, section 3: demographic data, and section 4: an open-ended question for suggestions.

3.2 Data Analysis

We test the proposed hypothesis using used partial least square structural equation modeling or PLS-SEM method. This method used covariation which aims to estimate model parameters for explaining the variance of latent variables. PLS-SEM has been used increasingly in business management research such as marketing, accounting, or IT. Moreover, PLS-SEM can handle small sample sizes and exploratory models, which is suitable for this research (Hair et al., 2013). The software used for the analysis of this research is Smart PLS 3.2.8.

4 RESULTS

Regarding the demographic data of the responses 52 persons were male, and 48 persons were female. 76 persons of them were single, and 24 persons of them were married. The majority of the respondents are between 21 and 30 years old (58%). Moreover, it is also found that most respondents have at least Bachelor's degree (88%). The details are shown in Table 1.

For the PLS-SEM analysis, we have created a model of 7 latent variables, namely trust, satisfaction, attitude, confirmation, concerns for information privacy (CFIP), perceived usefulness and reuse intention of PromptPay. The model also has a total of 31 observed variables.

We hypothesize CFIP as a formative construct comprising of privacy risks, risk acceptability and consumer's liability. Therefore, the measurement model evaluation is divided into 2 parts. (Hair et al., 2012). First, we evaluate reflective measurement

Table 1: Demographic data.

Description	Unit	Percent
Gender		
- Male	52	52%
- Female	48	48%
Age		
- Less than 20 years	3	3.0%
- 21 - 30 years	58	58.0%
- 31 - 40 years	29	29.0%
- 41 - 50 years	8	8.0%
- 51-60 years	2	2.0%
Educational background		
- High school or below	2	2.0%
- Undergraduate degree	10	10.0%
- Bachelor degree	84	84.0%
- Master Degree	3	3.0%
- Doctoral	1	1.0%

model using Cronbach's α, composite reliability (CR), outer loadings and AVE. We found no internal consistency reliability issues. For all constructs, Cronbach's α are between 0.831-0.907 and CR are between 0.887-0.935 which are more than the acceptable level of 0.7. Regarding convergent validity, outer loadings of all indicators are between 0.736-0.890. Moreover, the AVE values are between 0.657-0.818, well above the recommended value of 0.5. Therefore, it can be concluded that measurement model is reliable. The data are displayed in Table 2.

The second part is the evaluation of the formative measurement model of CFIP. We employ a two-stage approach. For the first stage, a repeated indicator approach was used. Next, the latent variable scores of the first-order constructs are used as indicators for the higher-order construct in the models tested in a separate second stage Figure 4. To evaluate the formative model, the researchers employ VIF to check for multicollinearity and the t-values of the formative indicators' outer weight (Hair et al., 2012). No multicollinearity issues were found and all outer weights are significant.

Table 2: Outer Model : Reflective measurement model.

Latent Variables	Cronbach's α	CR	AVE
Attitude	0.888	0.931	0.818
Confirmation	0.809	0.887	0.724
Perceived Usefulness	0.869	0.905	0.657
Reuse Intention of PromptPay	0.907	0.935	0.783
Satisfaction	0.846	0.906	0.764
Trust	0.831	0.887	0.664

Next, we move on to structural model evaluation. This process consists of three, procedures which are:

(1) collinearity assessment, (2) structural model: path coefficients and (3) coefficient of determination. (R^2).

For collinearity assessment the VIF values of all predictor constructs are lower than 5.0 (Hair et al., 2012).

Secondly, to obtain estimates of the structural model relationships, we run the PLS-SEM algorithm using SmartPLS software version 3.2.8 (Hair et al., 2012) with a path weighting scheme, initial outer weights of +1, maximum iterations of 300, and a stop criterion of 10^7. The results displayed in Figure 4.
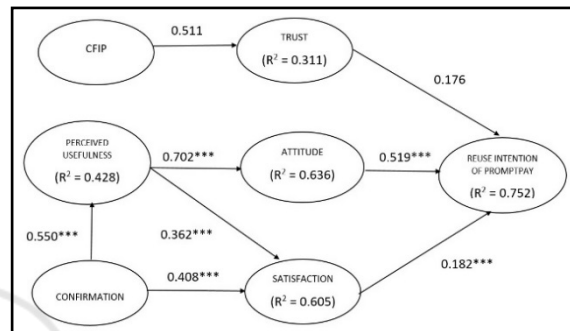

Figure 4: Path Model of PLS-SEM.

The coefficient of determination assesses the model's predictive capabilities. It represents the exogenous latent variables' combined effects on the endogenous latent variable (Hair et al., 2014). The closer the R^2 value is to 1, the higher the levels of predictive accuracy. The R^2 values of the endogenous latent variables: reuse intention of PromptPay, attitude and satisfaction, are 0.752, 0.636 and 0.605, respectively.

Table 3: Path coefficients.

	Coefficients	t-values
Attitude → Reuse Intention of PromptPay	0.519***	4.948
CFIP → Trust	0.511	6.172
Confirmation → Perceived usefulness	0.550***	9.113
Confirmation → Satisfaction	0.408***	5.013
Perceived Usefulness → Attitude	0.702***	10.212
Perceived Usefulness → Satisfaction	0.362***	3.282
Satisfaction → Reuse Intention of PromptPay	0.182***	1.923
Trust → Reuse Intention of PromptPay	0.176	1.360

From the path coefficients analysis, we can summarize that H1, H2, H3, H4, H5, H6 are supported, while. H7, H8 are rejected.

5 DISCUSSION

In this section, we compare and contrast our findings with prior studies as well as discuss on possible reasoning behind each relationship.

To our surprise we find that trust has no influence on PromptPlay reuse intention. The study has indicated that trust has an influence on reuse intention of online transactions. A possible explanation could be that the consumers have already had a high level of trust in the PromptPay service sine it is a service provided by the government. Therefore, they do not really concern about trust when deciding to continuously use PromptPay.

As expected, attitude has a positive effect on a reuse intention of PromptPay. The finding conforms with a research of Norazah et al. (2011) who find a positive relationship between attitude and a decision to repeatedly use 3G mobile services.

Satisfaction, has an effect on a reuse intention of PromptPay. This is consistent with a research by Nguyen and Tran (2018) which uncovers that satisfaction positively affects repurchasing of m-commerce ride hailing in Vietnam.

We also find that confirmation has an effect on satisfaction. Similarly, Chin et al. (2015) point out that satisfaction directly affects on reuse intention of online transactions continuously. When customers found a new channel to make an e-transaction. They will be satisfied and will perceive the benefits of e-transaction which creates a reuse intention because it makes customers convenient, reduce the costs and save their time when making an e-transaction. This will be according to t-values p-values H3: Confirmation or positive disconfirmation-positively influences satisfaction. And H4: Confirmation or positive disconfirmation positively affects perceived usefulness.

Perceived usefulness has been found to have positive effects on satisfaction and attitude. The findings are consistent with TAM (Gefen et al., 2003) and ECT-IT models (Bhattacherjee et al., 2001). PromptPay allows consumers to make payment and transfer money with less fee in no time when compared to the traditional methods. These benefits could make the consumers to be satisfied and have a positive attitude.

Surprisingly, we found a positive relationship between CFIP and trust. The direction of the relationship is opposite to what we initially expected. An explanation to this unanticipated finding is that, even though consumers are concerned about information privacy issues of PromptPay, they still have high levels of trust in the system anyway since it is run by the government.

6 CONCLUSION

This research aims to investigate the factors which motivate customers to reuse PromptPay in Thailand. From data of 100 PromptPay users in Bangkok, we analyze the data using PLS-SEM and discover that satisfaction and positive attitude are the main drivers of reuse intention of e-payment.

Additionally, we suggest that in order to improve user satisfaction and attitude towards an e-payment system is useful to them. Moreover, it is also important that the performance of the e-payment system meets users' initial expectation. If the expectation is met, the users will perceive the system as useful as well as be more satisfied. Unexpectedly, trust is not found to be significant and the direction of the relationship between CFIP and trust is in contrast to our hypothesis.#

In terms of implications, the proposed model could also be a starting point for those who want to study e-payment adoption in other contexts. Moreover, the surprising finding of CFIP and trust should be further investigated reuse. We argue that the role of information privacy and trust in private and public context of e-payment might be different. For practical contributions, the findings provide guidelines for the government agencies that is responsible for encouraging PromptPay use among Thai people.

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