

Factors Affecting the Adoption of PromptPay among Online Micro-retailers in Thailand

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Abstract

Anticipating dramatic growth in the country's e-commerce market, Thailand's government initiated the PromptPay system for online retailers. However, many consumers have not yet signed up for the service, and small vendors tend not to offer PromptPay as a payment option. This study aimed to understand the factors that affect online retailers' intention to utilize PromptPay when selling their products on social media. An online questionnaire was used to collect data for quantitative analysis from 247 respondents who were individual merchants selling products or services on social media. The results showed that although the use of online payment systems was universal among the respondents, most used direct money transfers, and only 18% of participants used PromptPay. Security, effort expectation, and social influence have a statistically significant influence on the intention to use PromptPay, whereas privacy and performance are not significant factors. These findings could particularly inform efforts by Thailand's government and banks to ensure that online retailers feel confident adapting this service into their payment systems.

Keywords

PromptPay; Online payment; E-commerce; Online retailer

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Introduction

A social networking service is an online platform that allows users to create profiles, engage in chats, send messages, form groups, upload content (music, photos, and videos) and blog to communicate with people around the world (Kaplan and Haenlein, 2010). The proliferation of users on social networking sites such as Facebook and Instagram has prompted many companies, organizations, and individuals to create an online

presence. Companies create profiles and fan pages, stage events, and accumulate followers as they promote their products and services (Malthouse et al., 2013), and even individual users can easily open online stores on Facebook, Line, and Instagram to sell products or services to group members who share the same interests or to the wider public. This type of micro business has been growing rapidly worldwide, which has in turn prompted the spread of digital payment systems.

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Nearly 50 million people among Thailand's total population of 69.6 million people are online, and the number of online consumers in the country has grown from an estimated 11 million people in 2015 to 39.8 million in 2019 (Business Insider Intelligence [BII], 2016; Statista, 2020). According to a report by GlobalWebIndex (2019), this number includes 85% of the population between 16 and 64 years. Ecommerce user penetration was at 57.4% in 2019 and is projected to reach 67% by 2023 (Statista, 2020). Thailand's Electronic Transactions Development Agency (ETDA, 2019) reported that the country's E-commerce experienced the greatest growth in the Association of Southeast Asian Nations (ASEAN) region in 2018, and the value of Thai eCommerce grew from approximately 2.7 trillion baht (USD 83.1 billion) in 2017 to nearly 3.2 trillion baht (USD 98.5 billion) in 2018.

Thai online consumers have a higher propensity to shop via social media and messaging platforms than any nationality worldwide (PWC, 2016). According to a 2013 marketing survey, Thai internet users primarily used Facebook (99%), followed by Line (84%), Instagram (56%), Google+ (41%), and Twitter (30%; Sakawee, 2013). The high penetration rate of social media makes it an essential strategic tool for marketing across Thai market sectors. The number of Thais online is expected to further increase within the next few years, spurred on by the government's push to transform the country into a cashless society and invest in the digital economy. Much of the recent growth in Thai e-commerce has been driven by the proliferation of PromptPay, a system for digital money transfers launched under the Thai

government's national e-payment initiative in January 2017 (Sirimai and Banchongduang, 2016). Thai shoppers have long been prominent among consumers who purchase directly through social media (BII, 2016), and the national e-payment system has already had an enormous impact on social commerce. With the country shifting toward a cashless model, more global companies are expected to try to develop a social media presence and increase their online sales in Thailand.

The implementation of PromptPay has been divided into two major phases, the first of which has involved the launch of an e-money transfer service for peer-to-peer money transfers, and the of which will enable e-payments for buying goods and services, filing tax returns, and distribution of government welfare and subsidies (BII, 2016). Pinijparakarn (2017) suggested that PromptPay would help the government fight corruption, as carrying large amounts of cash for deposits or payments will prompt suspicions regarding the sources of such monies. Those interested in adopting the PromptPay service are required to register by linking their bank account with their Citizen ID or mobile number. The PromptPay service enables users to transfer money to others using only the recipient's Citizen ID or mobile number free of charge or at a very low fee per transaction.

Based on the analysis from Gausden (2018), the impact of PromptPay has been significant. Over half of the population registered; that is 40 million people with over 173 million transactions and 700 billion baht (\$22 billion) in money transfer value. However, at that time Thai people mostly registered this service because of the

marketing campaign from banks without the awareness and the full understanding of this service. According to interviews reported in The Nation Thailand (2016), major concerns that have caused businesses and individuals to delay signing up for PromptPay include worries about security, privacy, the risk of cybercriminals, and lack of understanding of the system. To encourage more people to use PromptPay, the government will need to better understand these concerns and identify ways to alleviate them. Accordingly, the main aim of this study is to investigate the prevalence of PromptPay use among a sample of Thai online micro-business owners as well as to elucidate factors influencing the adoption of PromptPay among individual merchants operating online stores on social media.

Literature Review

Security

E-service security is widely defined as the service provider's capability of protecting the information and financial transaction data of users from being stolen during transmissions and/or storage (Belanger et al. 2002; Hua, 2009). Lee (2009) investigated the influence of risk on the intention to use online banking and identified five risk dimensions, including security/privacy risk, financial risk, performance risk, social risk, and time risk. Among these dimensions, his results confirmed that financial risk and security/privacy risk have the strongest influence on the intention to use online banking.

Several studies have indicated that users' fear of performing financial transactions online is a major barrier preventing the adoption of e-services (Then and DeLong,

1999). Yang and Jun (2002) found that the intention to use e-services is affected by one's perception of the level of security. Salisbury's (2001) study showed that security has a stronger impact on the intention to use e-service than perceived usefulness and ease of use, and Hua (2009) similarly indicated that the privacy and security are more important than the perceived ease of use toward the decision to use online banking. Belkhamza and Wafa's (2009) study of e-commerce adoption in Algeria also found security issues and system risks to be the major determinants of adoption behavior.

Privacy

According to Lessig (1999), many people who are interested in adopting e-services for purposes of convenience and time-saving are reluctant to do so due to privacy concerns, particularly the safeguarding of confidential and personally sensitive information from distribution to third parties. E-service providers often use customers' personal information to design and develop their products and services to meet individualized demands and expectations; however, they may also misuse users' personal information or sell it to third parties (Lessig, 1999; Shapiro, 2000). Shapiro (2000) suggested that privacy concerns can be resolved by establishing ethical codes of conduct, laws, and industry standards that can ensure that the privacy policies of e-service providers align with legal regulations, which in turn will enable users to have more effective control over their personal information.

Performance Expectations

According to Braun (2013), the concept of performance expectations is similar to perceived usefulness, which refers to users' perception of technological systems' relevance, importance, and value. Venkatesh et al. (2012) defined performance expectancy as the perceived benefits of using technological systems to achieve or enhance value or performance, and they explained that this factor comprises of five dimensions, namely relative advantages, job-fit, outcome expectations, extrinsic motivations, and usefulness.

Several empirical studies have demonstrated that performance expectations significantly influence behavioral intentions and the use of technological systems. Agarwal and Karahanna (2000) and Venkatesh et al. (2012) found that positive performance expectations were correlated with higher intention to engage with information technology. Similarly, Kaba and Touré's (2014) study confirmed that performance expectancy significantly affected the intention to use e-service.

Effort Expectations

Effort expectations can be defined as users' assessment of the level of ease of using a particular technology (Casey and Wilson-Evered, 2012; Venkatesh et al., 2012). Venkatesh et al. (2012) identified three constructs of effort expectations, namely perceived ease of use, systematic simplicity, and operating simplicity. Nasri and Chafeddine (2012) also defined perceived ease of use as a major element of effort expectancy, which represents the effort needed to use a system. As Raida and Néji

(2013) explained, ease of use refers to low complexity, such that users exert less mental and/or physical efforts in system usage. Yu et al. (2012) found that the acceptance of information technology relies heavily on whether or not users can use it. Bugembe (2010) similarly demonstrated that effort expectations significantly influence the acceptance and behavioral intentions of users toward new information technologies.

Social Influence

According to Fulk et al. (1990), an individual cognitively processes stimuli such that perceptions toward information technology are socially and subjectively constructed. They explained that social influence is generated through individuals' absorption of statements regarding the characteristics of the task or media as well as learning from observing others' experiences. When an individual sees that another's behavior is effective, observational learning produces similar behavior. In the context of technology, Fulk et al. (1990) explained that the social influence model proposes that IT adoption and use is a function of media evaluation (attitudes and perceptions), skills and experiences, social pressure in the form of direct statements by others, learning, group behavioral norms, social concepts of rationality, task assessments, and situational factors such as personal factors, facilitating factors, and constraints.

Intention to Use

The decision of consumers to adopt e-services or systems is a complicated process that involves interactions between various factors. Consumers' decisions are commonly

influenced by their attitudes, behaviors, and perceptions as well as external factors (Mirabi et al., 2015), and understanding consumer behavior is essential for marketers to anticipate the evaluation process concerning specific services or systems.

Shah (2010) described the intention to use as an outcome of the consumer's decision concerning the reasons, benefits, and drawbacks of using a particular service or system. Mirabi et al. (2015) similarly defined intention to use as the consumer's determination to use a service or system in a particular circumstance. According to Ghosh (1990), the intention to use is an effective

measure to explain and estimate consumers' behavior; however, such intentions may change over time due to the influence of internal factors, external factors, or a combination of these.

Conceptual Framework and Hypotheses

This research of Thai consumers' attitudes toward the PromptPay system examined the influence of five independent variables, namely security, privacy, performance expectations, effort expectation, and social influence, on the intention to use as the dependent variable. The conceptual framework is shown in Figure 1.

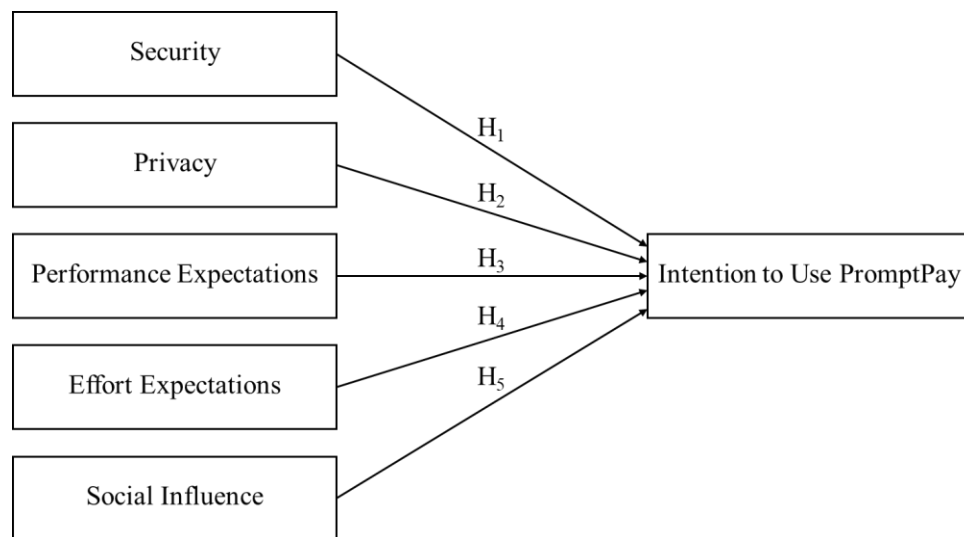


Figure 1. Conceptual Framework

Each of the independent variables is the subject of a hypothesis, for a total of five hypotheses, as enumerated below:

H_{1o}: Security does not have a statistically significant influence on the intention to use PromptPay.

H_{1a}: Security has a statistically significant influence on the intention to use PromptPay.

H_{2o}: Privacy does not have a statistically significant influence on the intention to use PromptPay.

H_{2a}: Privacy has a statistically significant influence on the intention to use PromptPay.

H_{3o}: Performance expectations do not have a statistically significant influence on the intention to use PromptPay.

H_{3a}: Performance expectations have a statistically significant influence on the intention to use PromptPay.

H_{4o}: Effort expectations do not have a statistically significant influence on the intention to use PromptPay.

H_{4a}: Effort expectations have a statistically significant influence on the intention to use PromptPay.

H_{5o}: Social influence does not have a statistically significant influence on the intention to use PromptPay.

H_{5a}: Social influence has a statistically significant influence on the intention to use PromptPay.

Research Methodology

Study Design

This was a descriptive quantitative study that aimed to understand the prevalence of using PromptPay among Thai micro business owners as well as individual microbusiness owners' intention to use the PromptPay system for sales transactions over social media. Descriptive research seeks to identify a phenomenon and gaining an understanding of it by exploring the relationships among variables (Zikmund, 2003). This study aimed to analyze the influence of security, privacy, performance expectations, effort expectations, and social influence on the intention to use PromptPay. The study used the quantitative research approach as it fit the objective in testing and verifying the relationship among variables. The research used the survey method to gather primary data by distributing online questionnaires to 247 respondents who were small individual merchants operating on social media networks.

Respondents and Sampling Procedures

The sample population was defined as Thailand-based individual sellers opening their online stores on social media such as Facebook, Line, and Instagram who were aware of PromptPay as an available e-payment gateway. The actual use of PromptPay was not included as an inclusion or exclusion criterion because a secondary aim of the study was to identify the proportion of microbusiness operators who utilized the service. The sample was recruited using the non-probability sampling technique through convenience sampling technique, which is considered a suitable approach due to its convenience (less time consuming than other methods), accessibility, and proximity for the researcher (Malhotra et al., 2017); Zikmund, 2003) explained that the chance of elements in the population to be selected is unknown.

Research Instruments and Questionnaire

Data from the target population was collected through the distribution of questionnaires on social media networks such as Facebook and Line. The questionnaire was designed based on the research objectives and conceptual framework as follows.

Part I (Screening) consists of two screening questions to ensure that the respondents are a part of the targeted research population: 1) "Are you selling any product(s) or service(s) on social media?" and 2) "Have you ever heard about the PromptPay service?" If the answer to either of these questions was no, then the survey was terminated.

Part II (General information) was designed to collect information on sociodemographic characteristics and vendor behavior such as gender, age, length of time in operation, main product(s) or service(s), average transfers received per day, available payment options, and similar details

Part III (Attitude rating) aimed to elicit participants' responses to items concerning each variable construct, namely security,

privacy, performance expectations, effort expectations, social influence, and intention to use (Table 1). The scales were designed based on several previous questionnaires with confirmed reliability and validity, each of which is cited in Table 1. Each item was scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree)

Table 1. Questionnaire Scale Items

Variable	Items
Security (adapted from Hua, 2009)	<ol style="list-style-type: none"> 1. I feel completely safe using PromptPay. 2. The chance that something bad will happen when I use the PromptPay system is very low. 3. Using PromptPay for money transfers poses no risk of losing money.
Privacy (adapted from Lessig, 1999)	<ol style="list-style-type: none"> 1. I'm confident that third parties such as the Revenue Department cannot access my account information on PromptPay without my permission. 2. Using a mobile phone to link with my bank account on PromptPay is a good idea. 3. Linking my ID card number and my bank account on PromptPay is a good idea.
Performance expectations (adapted from Venkatesh et al., 2003)	<ol style="list-style-type: none"> 1. I believe PromptPay would be a useful service to facilitate my trading activities 2. Using PromptPay will enable my customers to make money transfers to me more quickly. 3. Using PromptPay will help my customers benefit from low transfer fees. 4. PromptPay will provide greater convenience to my customers.
Effort expectations (adapted from Venkatesh et al., 2012)	<ol style="list-style-type: none"> 1. It is easy to make money transfers through PromptPay. 2. Registering for the PromptPay service is easy. 3. It is easy to cancel PromptPay registration. 4. It is easy for customers to use PromptPay to transfer money.
Social influence (adapted from Fulk et. al., 1990)	<ol style="list-style-type: none"> 1. My customers think that using PromptPay is a good decision. 2. My customers think that I should have PromptPay. 3. Most small businesses selling on social media use PromptPay. 4. The government thinks that using PromptPay is a good decision.
Intention to use (adapted from Shah, 2010)	<ol style="list-style-type: none"> 1. I intend to have PromptPay for my online business. 2. If a customer is going to transfer money to me, I will recommend him/her to use PromptPay rather than other choices. 3. I will use PromptPay as long as the service is available.

Data Analysis

Descriptive statistics involved the calculation of means and percentages for the questionnaire items, which were also subjected to reliability testing. Pearson's correlation coefficient was used to test the relationship between security, privacy, performance expectations, effort expectations, and social influence on the intention to use PromptPay service. Multilinear regression analysis was conducted to assess the validity of the model as expressed on the influence of the five independent variables on participants' intention to use the PromptPay service. All statistical analyses were conducted using SPSS statistical software. Results were considered significant when $p < .05$.

Results

Descriptive Profile of Respondents

The sociodemographic and business behavior profiles of respondents are presented in Table 2. Women comprised 71% of the sample, and just under half were between 26 and 32 years. Over 97% of respondents had earned a bachelor's degree or higher. Approximately 47% of the respondents had opened their businesses on a social media platform within a year or less, and nearly 44% had only been operating their businesses for 1–3 years. Over 60% of the vendors averaged 10–20 transfers per

day. All of the participants offered direct money transfers as a choice of payment; however, only roughly 18% used PromptPay.

Reliability Test

Reliability testing is an important data collection tool that how dependably or consistently an instrument measures the characteristics it is intended to measure (Manerikar and Manerikar, 2015). The reliability test results for the questionnaire used in this study are shown in Table 3. The Cronbach's alpha coefficient values ranged from approximately 0.71 to 0.85 thus indicating acceptable-to-good reliability

Correlation Coefficient Analysis

The results of the Pearson's correlation analysis are summarized in Table 4. The significance value of all hypotheses is less than 0.01; therefore, all null hypotheses were rejected and it can be concluded that all five independent variables (security, privacy, performance expectations, effort expectations, and social influence) have a statistically significant influence on the intention to use PromptPay. Coefficient values ranged from 0.565–0.817, thus indicating positive relationships ranging from moderate to strong. Specifically, social influence was identified as the strongest variable affecting the participants' intention to use PromptPay.

Table 2. Demographic Characteristics of the Respondents

Variable	Frequency (N)	Percentage (%)
Gender		
Male	67	27.1
Female	180	72.9
Age		
18 -25 years old	14	5.7
26 - 32 years old	122	49.4
33 - 40 years old	61	24.7
More than 40 years old	50	20.2
Educational Background		
Lower than Bachelor's degree	6	2.4
Bachelor's degree	170	68.8
Master's degree	71	28.7
How long have you opened your shop on social media?		
less than 6 months	30	12.1
6 - 12 months	62	25.1
1 - 3 years	108	43.7
More than 3 years	47	19.0
Average transfers per day		
Less than 10 times/day	66	26.7
10 - 20 times/day	151	61.1
More than 20 times/day	30	12.1
Available payment choices		
Direct money transfer	247	63.8
PromptPay	68	17.6
True money	11	2.8
Paypal	11	2.8
Credit card	3	0.8
Cash on delivery	47	12.1

Table 3. Reliability Test

Variable	No. of Items	Cronbach's alpha coefficient
Security	3	0.743
Privacy	3	0.713
Performance Expectations	4	0.751
Effort Expectations	5	0.812
Social Influence	4	0.762
Intention to Use	3	0.846

Table 4. Hypothesis Testing

Hypothesis	Path	r*
H ₁₀	Security → Intention to use	0.772
H ₂₀	Privacy → Intention to use	0.689
H ₃₀	Performance expectations → Intention to use	0.565
H ₄₀	Effort expectations → Intention to use	0.641
H ₅₀	Social influence → Intention to use	0.817

*Correlation is significant at the 0.01 level (2-tailed).

Multiple Linear Regression (MLR) Analysis

The results of the multiple linear regression analysis presented in Table 5 (Model 1) show a significance level less than 0.05 only for security ($p < 0.01$, $\beta = 0.383$), effort expectations ($p < 0.01$, $\beta = 0.162$), and social influence ($p < 0.001$, $\beta = 0.400$), whereas privacy and performance expectations were not significant in influencing the intention to use PromptPay. Therefore, we conducted a linear regression model removing non-significant factors (Table 5, Model 2). The multiple linear regression (MLR) equation is presented as shown in the below equation. Based on the results of the second analysis, the coefficient of determination (R-squared) of multiples

(R) of 0.761 shows that security, effort expectations, and socially influenced 76.1% of the on the intention to use PromptPay, whereas 23.9% of the participant's intention to use was influenced by factors unaccounted for in the study design. The partial test analysis of the four independent variables identified social influence as exerting the strongest effect among the three variables.

$$\text{Intention to Use PromptPay} = -0.189 + 0.307X_1 + 0.272X_2 + 0.524X_3 \\ (R^2 = 0.761)$$

; where X_1 = Security, X_2 = Effort expectations, and X_3 = Social influence

Table 5. Multiple Linear Regression Coefficients

		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
Model		B	Std. Error	Beta		
1	(Constant)	-.196	.140		-1.403	.162
	Security	.339	.046	.383	7.438	.000
	Privacy	-.026	.051	-.027	-.506	.613
	Performance expectations	.103	.056	.101	1.834	.068
	Effort expectations	.192	.064	.162	3.010	.003
	Social influence	.495	.080	.400	6.182	.000
2	(Constant)	-.189	.139		-1.355	.177
	Security	.307	.042	.347	7.316	.000
	Effort expectations	.272	.046	.230	5.953	.000
	Social influence	.524	.064	.423	8.233	.000

^a Dependent variable: intention to use

Discussion

This study investigated the prevalence of PromptPay usage among a sample of 247 online microbusiness operators in Thailand as well as the influence of five variables, namely security, privacy, performance expectations, effort expectations, and social influence on their intention to use the service. The results show that although other online payment forms were widely used, the majority of the small vendors did not offer PromptPay as a choice for payment. Besides, although the Pearson's coefficient identified all five variables as having moderate-to-strong significant correlations with the intention to pay, the multilinear regression showed that whereas security, effort expectation, and social influence had a statistically significant influence on participants' intention to use PromptPay, privacy and performance were found to be insignificant factors.

The limited use of PromptPay can be related to the finding that selling products and services in the social networking environment was a relatively new enterprise among this sample of Thai microbusiness owners. The fact that only 12% of the respondents had operated their online business for more than three years indicates that e-commerce among small retailers is still in its initial phases in Thailand.

The results of the multilinear regression analysis slightly diverge from those presented in other studies in that security did not exert the strongest influence on intent to use the PromptPay service (Belkhamza and Wafa; 2009; Salisbury, 2001; Then and DeLong, 1999); however, other studies did not incorporate both security and social influence into their analyses. Like Salisbury's study (2001), security was found to be more important than effort

expectations, although both variables were significant. Bugembe (2010) and Venkatesh et al (2012) similarly concluded that the perceived ease of use would positively affect users' acceptance of a given technological application. The model result is also consistent with Fulk et. al.'s (1990) findings, which demonstrated that social influence was a significant factor in technology adoption.

Shapiro's (2000) finding highlighting the positive influence of privacy on the intention to use e-services is largely inconsistent with the results of this study, which identified a strong positive correlation between these variables but also found that privacy had a negative and insignificant effect on intent to use. The results also diverge from the findings of other studies that performance expectancy significantly influences users' intentions (Kaba and Touré, 2014; Venkatesh et al., 2012). More research is needed to identify potential factors that may result in such differences, such as sociocultural differences, types of technology, or level of experience with technology. Further studies could also examine relationships between sociodemographic factors such as gender and length of time in the business with vendors' intent to use PromptPay.

Conclusions and Recommendations

This study aimed to enhance understanding of the prevalence of online retailers' use of the Thai government's PromptPay system as well as identify the key factors influencing their intention to use the service. The findings highlight potential concerns regarding security, perceived ease of use, and social influences that may influence some online small retailers to delay

registering for PromptPay. The results can be useful for the Thai government, banking sector, and related parties to devise measures to enhance the use of PromptPay among micro-business owners, such as marketing and other encouraging communications.

Based on the study findings, three recommendations can be offered to promote the growth of digital economy and productivity in eCommerce. First, the finding that social influence was the most influential factor affecting the intention to use PromptPay among small vendors on social media suggests that the Thai government may need to further promote the use of PromptPay by household consumers to create demand through generating social pressure for the adoption of this service. The government should work to make consumers feel that using PromptPay is a good decision based on the system's convenience and low transfer fees. Second, security was shown to be a major concern affecting the adoption of PromptPay among small online vendors. The system's money safe guarantee should be promoted to enhance users' confidence and trust that the PromptPay is reliable and poses no risk that vendors will lose money using it. Finally, the government should further promote the service's ease of use and convenience of the money transfer process, registration, and cancellation, and changing the registration to another bank. The government can disseminate such messages through advertisements or animation videos to demonstrate each process so that vendors are more educated about the service's benefits.

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