A Study of Factors Affecting the Intention to Use Mobile Payment Services in Vietnam

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The goal of this paper is to spot out factors affecting the intention to use mobile payment service plan in Vietnam. This study attempts to analyze the impact of various variables extracted from mobility, convenience, compatibility, M-payment knowledge, ease to use, usefulness, risk, trust, and safe to use on intention to use mobile payment. Quantitative questionnaire is used to measure responses of participants. The statistical analysis method employed in this study is to apply Structural Equation Modeling to test all hypotheses. The results indicate that the strong predictors of the intention to use M-payment are perceived ease of use and perceived usefulness. All respondents show that they do not care about risk when they have intention to use mobile payment services. Convenience of mobility, compatibility, and mobile payment knowledge have impacts on ease to use and usefulness. Among of them, compatibility has the most significant impact on ease to use and usefulness in the opinion of those surveyed. Specially, it proved that trust of safe to use has no significant impact on usefulness, but instead has direct impact on intension to use mobile payment services. The outcomes of this research have important connotations for the improvement and development of mobile payment services in Vietnam. Therefore, at the end of this paper, some suggestions based on research results are given for the future development of mobile payment service business in Vietnam.

Keywords: convenience of mobility, compatibility, M-payment knowledge, ease to use, usefulness, trust of safe to use, intention to use mobile payment, Vietnam

Introduction

The explosive growth of electronic payment requirements, especially mentions the contributions of the Internet as a key trade channel and extremely exciting potential power but it has not yet been fully exploited. Consumers previously are unfamiliar with the Internet and only treat it as a means of gathering information. But now, consumers are gradually accept this channel for purchasing decisions and their transactions. The increasing of customer's needs in mobility when payment for transaction has created requirement for a new payment tool allowing the transactions more feasible and convenient (Ondrus & Pigneur, 2006). The current payment method gives consumers solvency that is beneficial in dealing with medium and large amount of money. It is inconvenient for customers in small denominations of coins or pennies when making micropayments.

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Moreover, consumers must pay high costs for micropayments when using existing payment services (Mallat, Rossi, & Tuunainen, 2004). So mobile payments have been proposed as a new service tool provided for micropayments in e-commerce and mobile phone creates a certain advantage to customers when they have a need for small transactions (Menke & de Lussanet, 2006; Ondrus & Pigneur, 2006). Mobile phone was found to be the means of payment that opens new development opportunities for the mobile payment parties and participants.

Mobile payment (M-payment) is defined as a transaction method which money is transferred from one person to another through a mobile device without intermediate. Mobile payment is a new payment method for purchases of products and services, which uses all kinds of mobile devices and wireless communication technologies (mobile telecommunication networks, Internet). In this new method, mobile devices can be used to make a varied type of small payments. These devices help users to connect to a server through which transactions are made and confirmed (Antovski & Gusev, 2003). The most common way to conduct transactions by mobile phone service is to send messages with predefined structure to the object to be traded (Menke & de Lussanet, 2006). Payments for goods and services are then charged to the customer's mobile phone bill or deducted from prepaid airtime of prepay subscribers. Instead of using a message to the transaction when using the old technology of cell phone, the advent of smart phones provides a new payment method through Internet connection of smart phone.

Payments via mobile phone in many countries of the world are no longer strange problem because mobile phone has become a necessary tool of each individual. In Vietnam, there are seven suppliers of mobile telecommunications services in action, which have extensive coverage all over the country. According to statistics of the Ministry of Information and Communications, the number of mobile user in Vietnam reaches 80 million in November of 2014. In average, each individual in Vietnam owns one mobile phone. The use of mobile phones is not only popular among the rural or urban area, and it is also common to all generations, even the young and the old. There have been 50 banks operating in the market and participating in Vietnam's retail banking. Therefore, Vietnam is a huge potential market to harness the mobile payment service.

One of the leading banks in the development of mobile banking service is the Asia Commercial Bank (ACB). In 2003, ACB deployed mobile banking service that allowed customers to query balances, transfer money, pay for utilities, cable TV, Internet service, etc. through mobile phones. Besides, other banks such as Vietcombank, Techcombank, Military Bank (MB), VietinBank, Bank for Investment and Development, Bank of East Asia, Ocean Bank, HSBC, VID Public Bank, Eximbank, Sacombank, and Union Bank of Vietnam are competing fiercely through continuously improving and offering new products and services, including mobile payment products. However, products which Vietnamese banks are providing just stop at some certain functions and cannot meet all the needs of customer payments.

Following that trend, the telecommunication companies quickly connect with the banks to deploy mobile banking applications for their activities such as: E-load of VinaPhone, AnyPay Viettel, MobiFone MobiEZ, EVN Telecom, HT Mobile Sfone VTC Intercom, etc. The mobile operators are dominating the remote payment market with very small payments. With the advantage of owning the equipment and system that allow consumer to access the data, some mobile operators enjoy profit about over 50% for services such as ringtone and game. With such high profit, operators have to defend their achievement. Shortly, they understand that the new profit-sharing model with new partners forces to expand the scope of business. In addition to being a partner, they desire to play the key role in the payment value chain. Until now, the mobile operators took

advantage of successful environmental closed solutions to control the access of the payment agents.

In Vietnam today, there are three models, which deploy the mobile payment service, they have a common that allows users to conduct transactions and payments anytime, anywhere via mobile phone. However, the roles of stakeholders in these models have different characteristics, which depend on many factors such as infrastructure, management policies, consumer habits, etc. The first model is mobile company as the leading model, which is called operate-led model. In this model, telecommunication providers stand out to provide payment service for users using services. To use the service, customers simply are subscribers of the network, not necessary to have a bank account. After registering the service, the customer will be provided an account with the form of e-wallet and account number is customer's phone number. Users can recharge money through many ways: recharge at agent of the telecommunication company, or recharge through scratch card. Customers can implement transactions such as transferring money to the other electronic wallet (mobile subscribers), paying for goods and services; withdrawing cash from the electronic purse, etc. The advantages of this type of service are simple, convenient, quick, and cheap. The second model is bank as the leading model (bank-led model). This model is quite common in countries where banking services are developed and most people have the bank account such as UK, USA, and Canada. The banks build applications that allow customer to use their mobile phones to conduct transactions and payments on their accounts. Besides, traditional banking channels such as trading at counter or at ATMs, the emergence of mobile payment have brought the convenience in the transaction method for customers. Customers do not need to go to the banks; they can implement transactions anytime, anywhere as they want. Since all payment transactions are based on a bank account, it owns the high level of safety. The weakness of this model is that the customers are forced to open a bank account before using the service, which is not popular in Vietnam. The last model is cooperative bank-telecommunication model (partnership model). In this model, banks, telecommunication companies, and solution providers work together to make a payment product that ensures the convenience and deep penetration for the mobile subscribers. Simultaneously, they are maintaining the strict management of banking finance. In this model, the bank will act as manager to handle transaction, risk management while mobile companies take care about business to directly deal with customers, retailers, and customer's service.

Since financial institutions, payment service providers, trusted third parties, and system software and supporting service providers can advantage significantly from improved understanding of the key factors regarding mobile users' intention (Dahlberg, Mallat, & Öörni, 2003; Kim, Mirusmonov, & Lee, 2010), research about factors affecting user's intention to use mobile payment is considered interesting to many practitioners and researchers. Moreover, different user groups may sense M-payment's advantages differently and employ new payment technologies subsequently. It is necessary to realize the behavior of different user-group levels, but there is little intent to overcome a deficiency in the user-group level research. On the basis of the present state of the existing research on M-payment, the goal of this research is to try to decide the determinants of the intention to use M-payment. So as to achieve this objective, this study establishes a research model consisting of six independent variables (mobility, compatibility, mobile payment knowledge, convenience, trust, and risk), three belief variables (ease to use, usefulness, and safe to use), and one user acceptance variable. Six control variables (gender, marital status, occupation, location, incomes, and age) are applied to analyze the impact on the dependent variable.

With the above rationale, this study targets at the following question: What factors affect a user's intention to use mobile payment?

Literature Review and Hypotheses Proposal

TAM Model

Many models have been used in previous studies about consumers' behavior in using new technologies. Among of them, TAM (Technology Acceptance Theories) emerged as the most influential model than the remaining models such as TRA, TPB, and UTAUT (Davis, Bagozzi, & Warshaw, 1989). TAM model proposed two variables influencing consumers' intention to apply new tools; they are perceived ease to use and perceived usefulness. The two variables that TAM model proposed are also the leading factors to measure consumers' attitude toward new technologies; therefore, TAM should be considered as a useful model to study consumers' reactions and behaviors when a new product is launched.

Mobility

Mobility is the determinant used to measure the level to which an individual perceives received benefits in the context of time, space, and services access. Mobile technology has provided equipment, infrastructures, and protocol that can help users to communicate and exchange the data anywhere and anytime without intermediaries (Lim, 2007). Mobile services are perfectly suitable with the mobile lifestyle; provide a mean of payment for products and services in any situation of life. One of the important elements of mobile technology is portability. It is a big advantage of mobile payment service to provide consumers the ability to use the services wherever and whenever they want and compared to traditional payment methods (Amberg, Hirschmeier, & Wehrmann, 2004). The new mobile payment method is flexible to use regardless of time and space and has a great fit in today's mobile and active lifestyle. It allows customers to access into the services through a wireless network and a range of mobile devices including smartphones (Au & Kauffman, 2008). By using the new payment tool, customers can actually buy a product without the need of traveling to the stores, which is not easy to do that in Vietnam compared to other developed countries; all they need are to be in an Internet-covered region and a cell phone (Ding, Ijima, & Ho, 2004). In the electronic commerce business, in which transactions are conducted regularly via wireless Internet, mobile payment is the service allowing users to access information to finish the payment procedure accurately and effectively at any location, regardless of counting time (Anckar & D'Incau, 2002). Specially, it is noted that in average, each individual in Vietnam owns one mobile phone and the use of mobile phones is not only popular among urban area but also rural area. Therefore, mobility plays a key role for customers in Vietnam to use mobile payment services to pay for products or services they buy. Accordingly, this study proposes mobility can affect perceived ease of use and perceived usefulness of mobile payment services.

H1a: Mobility positively affects ease to use of mobile payment in Vietnam.

H1b: Mobility positively affects usefulness of mobile payment in Vietnam.

Convenience

Convenience is the ease and the comfort of use as well as the attainment of concrete benefits through the use driven from portability and immediate accessibility (Sharma & Gutiérrez, 2010). Compared to traditional payment services, the convenience of mobile phone services is defined as agility, accessibility and availability, and flexibility of time and space. Besides, the convenience in the space and time, mobile phone service also eliminates the inconvenience of payment devices such as computers, laptops; it allows consumers to make transactions with their mobile phone. Besides, mobile payment services can help small transactions and eliminate the inconvenience to customers who make transactions with the small amount of money (Luarn & Lin, 2005).

Mobile payment services also offer advantages in the payments and reduce transaction costs for customers (Ding et al., 2004). Because of the above reasons, mobile service is great suitable for the mobile lifestyle, offers a convenient payment transaction method to human's life. Convenience has been pointed out to be a benefit of using mobile computing; it is one of determinants of the success of mobile payment services (Xu & Gutierrez, 2006). The convenience of the new tool offers users space, time, and access speed; it helps consumers use the service more easily, and it also improves the performance of payments (Clarke, 2001). In addition, mobile payment services offer consumers the ability to integrate the modern technology with the traditional payment methods via mobile device. Consumers can utilize the availability of the method in all situations to reduce the pressure of time (Mallat, Rossi, & Tuunainen, 2006). In the context of small transactions, with which consumers in Vietnam conduct their payments mostly, mobile payment services help consumers reduce transaction costs; it also helps them eliminate the inconvenience of coins and currency. For the reasons above, this study, therefore, proposes that convenience affects perceived ease of use and perceived usefulness of mobile payment services.

H2a: Convenience positively affects ease to use of mobile payment in Vietnam.

H2b: Convenience positively affects usefulness of mobile payment in Vietnam.

Compatibility

Compatibility is defined as the alignment and operational effectiveness of a new service compared to traditional values of existing services (Mallat et al., 2006). In addition, compatibility is a factor that creates an innovation that is the acceptance of users to the appearance of mobile services (Mallat, 2007). Compatibility also considered that the expectation of consumers for the new service that could be new, useful, and provide many benefits (Ding et al., 2004; Mallat et al., 2004). In the context of mobile payment services, peoples' lifestyles will strongly affect their decision to adopt the technology. Because mobile payment service is the extension of Internet payment service, people who frequently use Internet payment services may have less resistance to accept the mobile version. That is reason to believe that perceived compatibility has a direct impact on the intention to use a technology (Mallat et al., 2006). For a new service as mobile payment, consumers' ability to integrate it into their shopping habits and daily lifestyle is an important element; it is one of the determinants of the success of mobile payment services (Teo & Pok, 2003). Compatibility is the combination of the innovative, potential, and available values; it is also the integration of effective operation of new technologies to enhance job performance (Lee, McGoldrick, Keeling, & Doherty, 2003). Compatibility is a factor related to innovation adopted for mobile payment services, interoperability of mobile services with user's needs and lifestyle, and ability to try out a new service; it raises the awareness of usefulness to customers when using the service (Ding et al., 2004; Mallat et al., 2004). In addition, customers' expectations about the possibility of completing the work easier make compatibility a considerable factor that affects the perceived ease of use (Tornatzky & Klein, 1982). Thus, this study proposes that compatibility affects perceived ease of use and usefulness of mobile payment services.

H3a: Compatibility positively affects ease to use of mobile payment in Vietnam.

H3b: Compatibility positively affects usefulness of mobile payment in Vietnam.

Mobile Payment Knowledge

Knowledge helps the consumers to trade products or services easily (Garcia-Murillo & Annabi, 2002). Compared to users who have the low level of knowledge, users with high level of understanding will use services better, more efficiently and be able to avoid the risks. Knowledge of services can help customers

identify the innovation, the desire from new technologies, thereby applying the service faster and easier. Schreier and Prügl (2008) found that users with high level of knowledge in an innovation tend to be ahead of its market trend and expect high benefits from innovation, and would adopt new commercial products faster and more intensively than ordinary ones. Marcketti and Shelley (2009) also pointed out that consumers' knowledge of products has a significantly positive effect on their perceived ease to use. Customer's knowledge can help them identify what mobile payment can do for them, and why the products/services are important to them. Furthermore, customers will consider what they will gain from the tools comparing with what they are having at the time regarding the services' quality, prices, insurance of privacy, etc. Customers will use mobile payments easily and efficiently if customers have a high level of knowledge about the tool they are conducting for mobile payments. Thus, this research proposes that mobile payment knowledge affects perceived ease of use of mobile payment services.

H4: MP knowledge positively affects ease to use of mobile payment in Vietnam.

Trust

Trust is defined as a willingness to use the new service with a sense of comfort, safety, and risk acceptance (Kim et al., 2010). Trust is the willingness of individuals to take risks with desire that their needs will be met. It is the possibility that one party will perform their duties in an honest manner consistent with the expectations of the party trust (Kim, Shin, & Lee, 2009). In the study by Siau and Shen (2003), trust can be divided into two categories: trust in the ability of mobile technology that will reduce transaction risk; and trust about service providers will meet the expectations of customers. Customer's trust has been recognized as an important factor for the success of mobile banking in the context in which the transactions are made in a telephone network that is more vulnerable and uncertain than the traditional payment transaction (Bhattacherjee, 2002). The transactions conducted through a mobile network are vulnerable and more uncertain than traditional settings, thus entail greater potential risk. Trust in the payment system will help reduce the need to understand, control, and monitor activities, thereby allowing customers to use services easily and efficiently without much effort in translation of online service (Munoz, Esparza, Aguilar, Carrascal, & Forne, 2010). Customers that have a high confidence level for the mobile payment services will feel the honesty and reliability of the service providers; it will make customers increase the intent to use service (Gefen, Karahanna, & Straub, 2003). Besides, while making a transaction, the consumer is paying for the services they want. During that process, they expect their personal information must be guaranteed not to share with any inappropriate parties (Zhou, 2011). Therefore, this study proposes that trust affects the safety to use mobile payment services.

H5: Trust positively affects safe to use of mobile payment in Vietnam.

Risk

For mobile payment systems, the research materials before have stressed the importance of risk perception; this is the concern of consumers when using a new service, and is an obstacle for the development of mobile payment services. Risk is defined as the lack of security during paying process due to unexpected errors or transactions made without honesty between the buyer and the seller (Havlena & DeSarbo, 1991). Risk is also regarded as the loss of information leading to financial losses due to the disturbing hacker (Ganesan, 1994); the risk is the unexpected, unintended, and undesired loss (Pavlou, 2003). The evaluation of risk level is calculated by the level at which an individual expects possible negative results or errors when a transaction is being proceeded (Peter & Tarpey, 1975). In the context of mobile technology, risk is expected and acceptable; it is

what customers have to take at a certain level of danger when trying a new service (Sweeney, Soutar, & Johnson, 1999). Mobile payment is a form of online transactions. It will include those transactions occurring between individuals unknown to each other which increase the risk of financial loss and the uncertainty about the identity or the quality of products. Without appropriate measures, the faulty transaction that is possibly occurred may result in unwanted loss for customers and potential larger costs for providers. Thus, this research proposes that risk affects safe to use of mobile payment services.

H6: Risk positively affects safe to use of mobile payment in Vietnam.

Ease to Use

For the contemporary service as mobile payment, one thing that customers will certainly question is whether or not it is easy to use; this is a significantly important factor affecting the intention to use mobile payment services of customers (Moore & Benbasat, 1991). The ease to use is defined as the level at which users would believe that using a new service is simple, easy, and effortless (Davis, 1989). Perceived ease to use refers to the clear and understandable interaction that users experience with the new system, and it is also about how comfortable they feel when using the system to do what they want (Ndubisi & Jantan, 2003). Theoretically, the ease of use is perceived when a customer feels the new invention is not difficult to understand, to learn, and to use (Rogers, 1962). For this reason, ease of use is considered to be one of the important factors affecting the acceptance and use of the new technologies by users. In addition, perceived ease of use is proposed to be an antecedent of the perceived usefulness (Davis et al., 1989). Consumers easily using the service will generate the high-performed results, and they can simply integrate many new applications of new services in their daily life activities. Thus, two hypotheses are proposed:

H7a: Ease to use positively affects intention to use mobile payment in Vietnam.

H7b: Ease to use positively affects usefulness of mobile payment in Vietnam.

Usefulness

Beside the ease of use, customers will be concerned about the usefulness of the new services which is also a crucial factor in determining the customers' adaption to the change, thus usefulness is one of the determinants of the intention to use new services as mobile payment services by customers (Venkatesh & Davis, 2000). Usefulness is defined as customer's feeling about the potentiality of a new service to provide many benefits for them and to help improve their job performance when using the service (Mathwick, Malhotra, & Rigdon, 2001). It will measure the willingness to adapt something new compared to traditional values of the customers (Tan & Teo, 2000). Likewise, the behavior of the users will be determined by the perception of a higher level of benefits achieved when using the service (Adams, Nelson, & Todd, 1992). According to Gong and Xu (2004), usefulness is considered as: customers trust that their expectations will be met when applying new technologies. Awamieh and Fernandes (2005) added perceived usefulness is that the new service will offer more advantages than traditional services to individuals intending to use it. Therefore, this research proposes that usefulness affects intention to use mobile payment services.

H8: Usefulness positively affects intention to use mobile payment in Vietnam.

Safe to Use

Besides ease of use and perceived usefulness, with new services such as mobile payment services, customers will definitely be concerned about the safety issues when they have intention to use the service; it becomes an indispensable element for the success of mobile payment services (Gefen et al., 2003). According

to Egger (2001), perceived safe to use is the trust in any payment system that ensures user's information to be confidential and secured with high levels. It is also about the amount of control that users have and the reliable level of providers. Customers have to believe that the transaction will be completed as expected and any data will not be shared with parties not fit (Chellappa & Pavlou, 2002). Safety of customers' information is very important for all businesses to serve clients; customers need to feel safe when making a purchase and wait for the completion of transactions with no worry. The significance of customer's safety in general against e-commerce and e-banking in particular and is the critical factor when the risk level of economic transactions in a virtual environment is higher than that in the traditional environment (Grabner-Krautera & Kaluscha, 2003). Safe to use not only has been found to be a prerequisite for e-banking environment (Kassim & Abdullah, 2006), it also affects the intention to use mobile payment services of customers (Suh & Han, 2002). Therefore, the perceived security can increase a number of customers to make transactions in an online environment. When users trust the safety of the service, they will comfortably enjoy the benefits that services provide. Thus, safe to use significantly affects customer when using electronic banking services (Alsajjan & Dennis, 2006). Therefore, two hypotheses are given:

H9: Safe to use positively affects usefulness of mobile payment in Vietnam.

H10: Safe to use positively affects intention to use mobile payment in Vietnam.

The Initial Research Model

Based on Technology Acceptance Model (TAM) and the above literature review, the initial proposed research model includes nine factors that have impacts on consumer's intention to use mobile payment and these factors (Figure 1) significantly relate to consumer's intention such as mobility, convenience, compatibility, M-payment knowledge, ease to use, usefulness, risk, trust, and safe to use. This initial proposed research model also applies six controller variables including gender, marital status, occupation, location, income, and age to analyze the influence to the dependent variable.
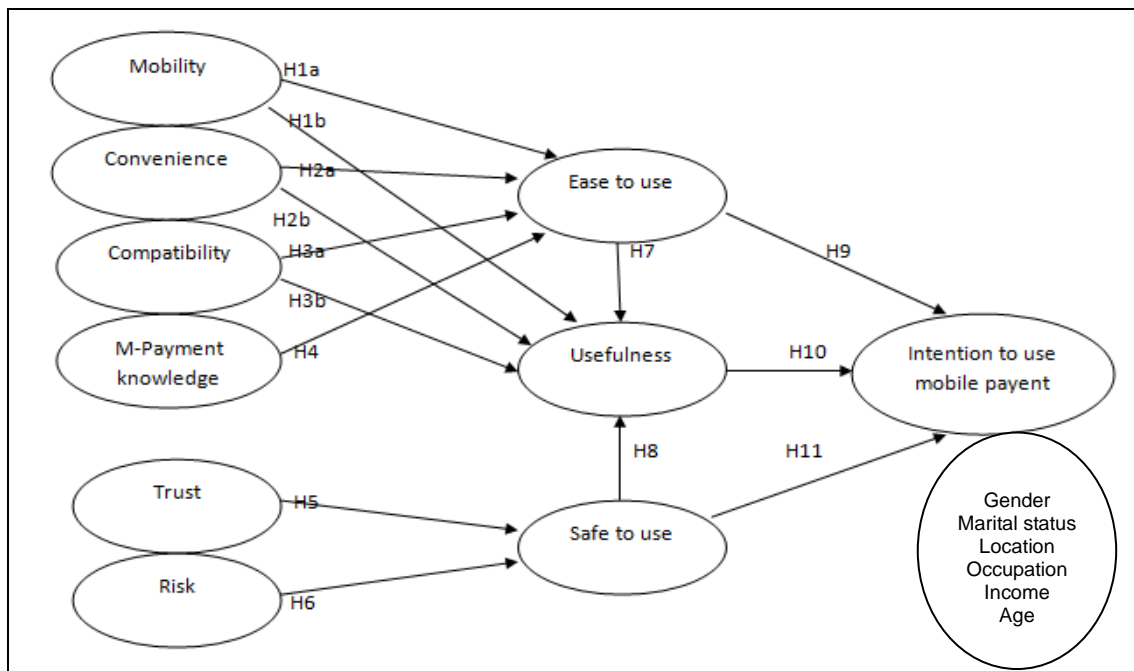

Figure 1. The initial proposed research model with hypotheses.

Research Method and Hypothesis

Data

After reviewing previous literature, researcher selected nine factors that were found to significantly affect intention to use mobile payment. The survey is constituted by 34 item statements that represent 10 variables; six control variables question is designed for demographical profiles of respondents. The survey was conducted over the period of 16 weeks from December of 2014 to April of 2015. Most responses come from companies, universities, schools, as well as direct interviews and e-mail surveys in Vietnam. Quantitative measure, in conjunction with five-point Likert scale (1 = total disagree to 5 = total agree) is used to measure responses/rating of participants to all survey items. The sample size is 604 questionnaires.

Statistical Packages for Social Sciences (SPSS) and Amos software are used for the data analysis. Set of statistical data analysis methods include descriptive analysis, reliability analysis, EFA (Exploratory Factor Analysis), CFA (Confirmatory Factor Analysis), SEM (Structural equation modeling), and ANOVA.

Development of Questionnaire

The questionnaire uses the five-point Likert scale to collect the data elements of the research model. Items measure mobility, convenience, compatibility, mobile payment knowledge, ease to use, trust, risk, usefulness, safe to use, and intention to use mobile payment. The following survey questions are developed by this research or modified based on previous studies; these questions are also translated from English into Vietnamese because this survey is intended to conduct for consumers in Vietnam.

1. Measuring Mobility (mobility of mobile payment services) (Kim et al., 2010)

(1) I believe mobile payment is independent of time

(2) I believe mobile payment is independent of place

(3) I can use mobile payment whenever I want

2. Measuring Convenience (convenience of mobile payments services) (Kim et al., 2010)

(1) Mobile payment is convenient because I always carry a mobile phone

(2) Mobile payment is convenient because I can use it anytime

(3) Mobile payment is convenient because I can use it in any condition

(4) Mobile payment is convenient because mobile payment service is not complicated

3. Measuring Compatibility (compatibility of mobile payments services) (Kim et al., 2010)

(1) I believe mobile payment is compatible with current technology

(2) I believe mobile payment is compatible with other provided mobile services

(3) I believe mobile payment is compatible with my daily routine activity

4. Measuring M-payment knowledge (knowledge of mobile payments helps consumers use services easily) (Kim et al., 2010)

(1) I will use mobile payments easily and effectively

(2) I mainly use mobile payments to purchase goods or services through the mobile phone

(3) I will be confident to use mobile banking services for financial transactions

5. Measuring Ease to use (ease of use directly affects intention to use service of customer)

(1) Interaction with mobile payment is clear and understandable

(2) Interaction with mobile payments does not require mental effort

(3) I think it is easy to use mobile payment to do what I want to do

(4) In general, mobile payment is easy to use

6. Measuring Risk (risk when using mobile payment services)

(1) Other people may know about online transactions if I use my mobile payments

(2) There is a great potential to lose money if I buy goods on the Internet/social networking using mobile payments

(3) There is significant risk in Internet shopping/social network using mobile payments

(4) I think dealing with mobile payments is a risky choice

7. Measuring Trust (the trust of mobile payment services)

(1) Service providers always provide accurate financial services

(2) Service providers always provide reliable financial services

(3) Service providers always provide safe financial services

8. Measuring Usefulness

(1) Using mobile payments will allow me to pay faster

(2) Using mobile payments makes it easier for me to carry out transactions

(3) I will find a useful mobile payment to pay for services

9. Measuring Safe to Use (safety directly affects intention to use service of customer)

(1) The risk of abuse of user's information (e.g., names of business partners, payment amount) is low when using mobile payment services

(2) The risk of abuse of billing information (e.g., credit card number, bank account data) is low when using mobile payment services

(3) I would find more secure mobile payment to conduct my payment transactions

10. Measuring Intention to Use (intends to use services of customer)

(1) Now I pay for purchases with a mobile phone

(2) I am likely to use mobile payment services in the near future

(3) I am willing to use mobile payment services in the near future

(4) I intend to use mobile payment services when the opportunity arises

Pretesting and Final Format of Questionnaire

Pretesting. To complete the best research model and questionnaire for the study, the model will be tested by surveying with 90 samples. The data are obtained from 90 customers with different age and occupation. Then, EFA (exploratory factor analysis) will be applied to test the research model.

In the first round, 10 initial components are converted into eight components. Items Risk 3 and Risk 4 are deleted because of cross-loading factor and 32 remaining items are kept for the next step. Table 1 shows the details because of cross-loading factor and 32 remaining items are kept for the next step. In the following tables, Con represents convenience, Mob represents mobility, Saf represents safe to use, Com represents compatibility, Kno represents M-payment knowledge, Eas represents Ease to use, Ris represents risk, Tru represents trust, Usefulness represents use, Saf represents safe to use, Int represents intention to use.

In the second round, eight previous components are converted into seven components. Item Risk 2 is removed because of cross-loading factor and there are 31 remaining items. In the third round, seven of these components continue to be seven major components. Item Risk 1 is excluded because of cross-loading. Finally, these 30 variables are tested again in the final round. The result is described in the following Table 2.

Table 1

The First Round of Pattern Matrix[a]

Factor	1		2		3		4		5		6		7		8	
	Con 4	901	Saf 1	0.942	Int 4	0.938	Eas 2	0.785	Kno 1	0.949	Com 2	0.714	Ris 3	----	Ris 1	0.745
	Mob 1	0.897	Saf 2	0.927	Int 2	0.796	Eas 4	0.774	Kno 2	0.779	Com 1	0.687	Ris 4	----	Ris 2	0.571
	Con 1	874	Saf 3	0. 914	Int 1	0.743	Eas 1	0.752	Kno 3	0.748	Com 3	0.666	Use 1	0.758		
	Con 3	854	Tru 3	0.821	Int 3	0.692	Eas 3	0.736					Use 3	0.75		
	Con 2	834	Tru 2	0.784									Use 2	0.552		
	Mob 2	754	Tru 1	0.702												
	Mob 3	744														

Notes. Extraction method: Principal axis factoring; Rotation method: Promax with Kaiser normalization. Rotation converged in six iterations.

Table 2

The Fouth Round of Pattern Matrix[a]

Factor	1		2		3		4		5		6		7	
	Mob 1	894	Saf 2	0.930	Int 4	0.935	Eas 2	0.790	Kno 1	0.925	Com 2	0.769	Use 1	0.782
	Con 4	0.884	Saf 1	0.928	Int 2	0.799	Eas 1	0.767	Kno 2	0.808	Com 3	0.748	Use 3	0.747
	Con 1	0.862	Saf 3	0.886	Int 1	0.749	Eas 3	0.750	Kno 3	0.739	Com 1	0.682	Use 2	0.626
	Con 3	0.856	Tru 3	0.815	Int 3	0.704	Eas 4	0.726						
	Con 2	0.832	Tru 2	0.749										
	Mob 2	754	Tru 1	0.706										
	Mob 3	732												

Notes. Extraction method: Principal axis factoring; Rotation method: Promax with Kaiser normalization. Rotation converged in six iterations.

Results of pretesting were presented in the final round of EFA, it shows mobility and convenience can be combined into one factor, which is named as convenience of mobility. The convenience of mobile phone services is defined as agility, accessibility, and availability. Availability is the flexibility of time and space that the mobile phone services can provide to customers and also is the core of the idea of mobility. Mobility of mobile phone services allows customers to communicate and exchange data anywhere and anytime without intermediaries. Therefore, it is reasonable that these two factors can be combined into one as "Convenience of mobility". Safe to use and trust can also be combined into one factor. A new factor is named as "trust of safe to use", because safe to use includes the trust of customer when using the service and the service provider assure that customers' transactions will be done safely and quickly. Risk factor is also deleted because the pretesting results show that risk factor does not affect the respondent's intention to use mobile payment services. Accordingly, the proposal model of this study will be changed into the following modified model. Thereby, the initial model of this study can be modified into the final version of research model with seven factors (convenience of mobility, compatibility, mobile payment knowledge, trust of safe to use, ease to use, usefulness, and intention to use). Figure 2 shows the detailed structure and related hypotheses of this research model.
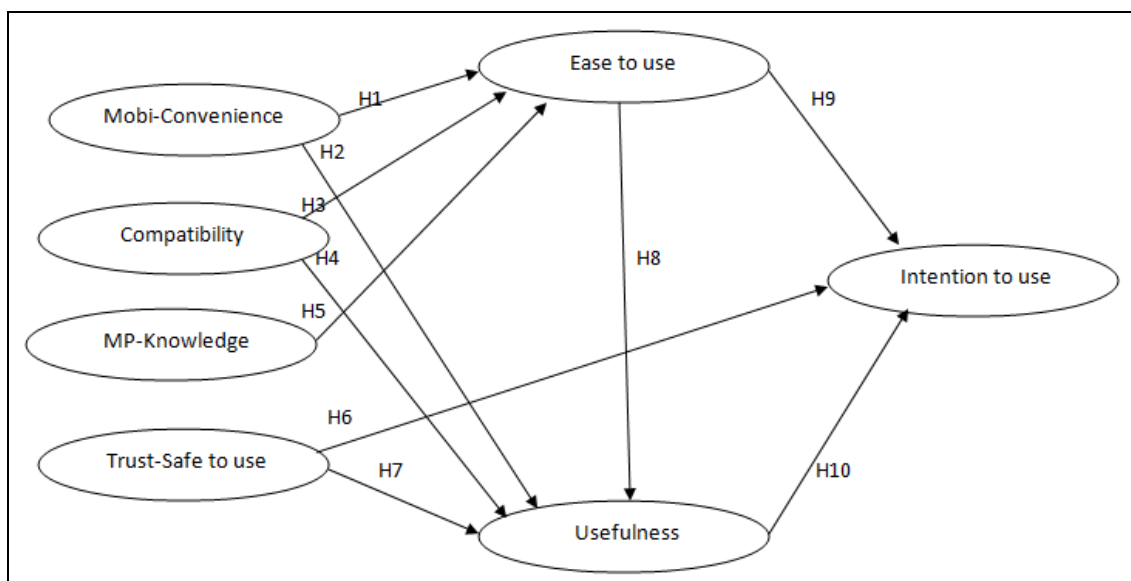
Figure 2. The final research model with hypotheses.

Modifying the hypothesis proposed in the above literature review, there are 10 new research hypotheses of the research model.

H1: Convenience of mobility positively affects ease to use of mobile payment in Vietnam.

H2: Convenience of mobility positively affects usefulness of mobile payment in Vietnam.

H3: Compatibility positively affects ease to use of mobile payment in Vietnam.

H4: Compatibility positively affects usefulness of mobile payment in Vietnam.

H5: MP-Knowledge positively affects ease to use of mobile payment in Vietnam.

H6: Trust of safe to use positively affects intention to use mobile payment in Vietnam.

H7: Trust of safe to use positively affects usefulness of mobile payment in Vietnam.

H8: Ease to use positively affects usefulness of mobile payment in Vietnam.

H9: Ease to use positively affects intention to use mobile payment in Vietnam.

H10: Usefulness positively affects intention to use mobile payment in Vietnam.

Final format of questionnaire. Based on 10 new research hypotheses obtained from pretesting results, the first draft of the questionnaire is redesigned and refined to make all words in statements more intelligible and all items of measurements appropriate for conducting a full-scale study.

1. Measuring Convenience of Mobility (Kim et al., 2010)

(1) Mobi_Conven 1: I believe mobile payment is independent of time

(2) Mobi_Conven 2: I believe mobile payment is independent of place

(3) Mobi_Conven 3: I can use mobile payment whenever I want

(4) Mobi_Conven 4: Mobile payment is convenient because I always carry a mobile phone

(5) Mobi_Conven 5: Mobile payment is convenient because I can use it anytime

(6) Mobi_Conven 6: Mobile payment is convenient because I can use it in any condition

(7) Mobi_Conven 7: Mobile payment is convenient because mobile payment service is not complicated

2. Measuring Compatibility (Kim et al., 2010)

(1) Compatibility 1: I believe mobile payment is compatible with current technology

(2) Compatibility 2: I believe mobile payment is compatible with other provided mobile services

(3) Compatibility3: I believe mobile payment is compatible with my daily routine activity

3. Measuring M-payment knowledge (Kim et al., 2010)

(1) Knowledge 1: I will use mobile payments easily and effectively

(2) Knowledge 2: I mainly use mobile payments to purchase goods or services through the mobile phone

(3) Knowledge 3: I will be confident to use mobile banking services for financial transactions

4. Measuring Ease to Use (ease of use directly affects intention to use service of customer)

(1) Easetouse 1: Interaction with mobile payment is clear and understandable

(2) Easetouse 2: Interaction with mobile payments does not require mental effort

(3) Easetouse 3: I think it is easy to use mobile payment to do what I want to do

(4) Easetouse 4: In general, mobile payment is easy to use

5. Measuring Trust of Safe to Use

(1) Safetouse 1: Service providers always provide accurate financial services

(2) Safetouse 2: Service providers always provide reliable financial services

(3) Safetouse 3: Service providers always provide safe financial services

(4) Safetouse 4: The risk of abuse of user's information (e.g., names of business partners, payment amount) is low when using mobile payment services

(5) Safetouse 5: The risk of abuse of billing information (e.g., credit card number, bank account data) is low when using mobile payment services

(6) Safetouse 6: I would find more secure mobile payment to conduct my payment transactions

6. Measuring Usefulness

(1) Usefulness 1: Using mobile payments will allow me to pay fast

(2) Usefulness 2: Using mobile payments make it easier for me to carry out transactions

(3) Usefulness 3: I will find a useful mobile payment to pay for services

7. Measuring Intention to Use (intends to use services of customer)

(1) Intention 1: I am likely to use mobile payment services in the near future

(2) Intention 2: I am willing to use mobile payment services in the near future

(3) Intention 3: I intend to use mobile payment services when the opportunity arises

Results and Discussion

Descriptive Statistics for Demographics

To conduct this survey with high reliable ratio level, the researcher had designed questionnaires separating two parts to collect data. First of all, the participants in this research are living and working in Da Nang City where they have chances to use mobile payment services. They have the objective evaluation about all elements related to mobile payment services. Second, the survey was delivered online which offers large communication network. The authors can identify the person they send the request to complete the survey. A total number of 604 responses were used in the analysis. About gender, males (55%) dominated over females (45%). About marital, 52.2% are single and 47.8% are married. In terms of age, 20 to 30 years old constitute the majority, at 40.9%, whereas 30 to 40 years old constitute 34.8% of the respondents. Concerning profession, the respondents are roughly evenly distributed. With income, 37.9% of respondents earn about eight millions of VND, 29.6% earn about five to eight million of VND and 32.5% earn about three to five million of VND. Respondents

residing in city constitute approximately 56.1%, whereas those living in countryside constitute 43.9% of the total respondents.

Reliability Measures

The descriptive statistics and Cronbach's α coefficient of this survey were showed in Table 3 below. The Cronbach's α was calculated to test the reliability of the questionnaires. The reliability of this survey was tested for seven factors based on framework structure of this study.

Table 3

The Cronbach's α Coefficient

Variable	Cronbach's alpha	*N* of item
Convenience of mobility	0.963	7
Compatibility	0.923	3
Mobile payment knowledge	0.882	3
Trust of safe to use	0.898	6
Ease to use	0.916	4
Usefulness	0.955	3
Intention to use	0.899	4
All variables	0.935	30

First of all, the reliability of brand equity dimensions will be tested. Hair, Anderson, Tatham, and Black (1998) presented the Cronbach's α should be higher than 0.7; this means that it has high reliability (Cronbach, 1971; Nunnally, 1978). According to results of Table 3, the reliability of all variables in this study is .935, which is so high, thus, it can be concluded that the questionnaire has a high internal consistency. Moreover, Cronbach's α of mobile payment knowledge, trust-safe to use, and intention to use are 0.882, 0.898, and 0.899. That means the measurements of these three factors are slightly high in reliability and the questionnaire has high internal consistency. Finally, Cronbach's α of mobi-convenience, compatibility, ease to use, and usefulness are especially high reliability of 0.963, 0.923, 0.916, and 0.955, respectively.

The Results of Factor Analysis

Exploratory Factor Analysis (EFA) is a technique to evaluate interdependence. It studies all interrelationships without defining variables to be dependent or independent. In this research, EFA is applied to test the model with Kaiser-Meyer-Olkin (KMO) and Bartlett's test by using the Principal Axis Factoring with Promax rotation. KMO is an index used to examine the appropriateness of factor analysis. High values of KMO (between 0.5 and 1.0) and Bartlett's test with statistical significance level less than 0.05 indicate the factor analysis is appropriate. In other words, values below 0.5 imply that factor analysis may not be appropriate (Gerbing & Anderson, 1988; Rietveld & Van Hout, 1993; Field, 2000). Gerbing and Anderson (1988) insisted that principal-axis factoring is relatively equal in their capacities to extract the correct model and is more commonly reported in social and behavioral science research reports than principal components with varimax rotation. To ensure the practical significance of EFA, factor loading should be equal or higher than 0.5 (Hair et al., 1998), and total variance explained must be over 50% (Gerbing & Andension, 1998). In this research, the factor analysis process with KMO is about .921 (> 0.5), Bartlett's test with statistical significance level of .000, which are showed in Table 4. Furthermore, Table 5 shows that total variance explained is over 74% (> 50%), which proves the appropriateness of factor analysis.

Table 4

KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin measure of sampling adequacy	0.921
Bartlett's test of sphericity approx. Chi-Square	16,128.428
Df	435
Sig	0.000

Table 5

Total Variance Explained

	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings
Factor	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total
1	10.802	3.008	36.008	10.568	35.228	35.228	7.426
2	3.876	12.919	48.927	3.664	12.213	47.441	4.987
3	3.259	10.864	59.791	2.925	9.751	57.192	6.509
4	2.013	6.710	66.502	1.769	5.896	63.088	6.199
5	1.597	5.322	71.823	1.361	4.537	67.625	6.166
6	1.314	4.380	76.204	1.128	3.761	71.386	5.985
7	1.112	3.705	79.909	0.892	2.973	74.359	5.460
8	0.521	1.738	81.64				
9	0.509	1.695	83.342				
10	0.469	1.564	84.906				
11	0.446	1.487	86.39				
12	0.375	1.251	87.644				
13	0.370	1.234	88.878				
14	0.339	1.131	90.008				
15	0.294	0.981	90.989				
16	0.290	0.965	91.954				
17	0.255	0.851	92.805				
18	0.249	0.828	93.634				
19	0.240	0.798	94.432				
20	0.232	0.773	95.205				
21	0.203	0.676	95.881				
22	0.180	0.598	96.480				
23	0.170	0.568	97.047				
24	0.155	0.517	97.564				
25	0.141	0.468	98.033				
26	0.135	0.451	98.484				
27	0.133	0.442	98.927				
28	0.122	0.406	99.332				
29	0.107	0.358	99.690				
30	0.093	0.310	100.000				

According to Table 6, the factor analysis has pulled out seven major factors from 30 variables, whereas the number of factors in the initial research model is 10. Two factors including mobility and convenience are grouped into a component and the new component is named as convenience of mobility which includes

Mobi_Conven 1, Mobi_Conven 2, Mobi_Conven 3, Mobi_Conven 4, Mobi_Conven 5, Mobi_Conven 6, and Mobi_Conven 7. Two factors including trust and safe to use are grouped into a component and the new component is named as trust of safe to use that includes Trust_Safe 1, Trust_Safe 2, Trust_Safe 3, Trust_Safe 4, Trust_Safe 5, and Trust_Safe 6.

Table 6 also shows that items of five remaining factors which are alternatively compatibility (Compatibility 1, Compatibility 2, and Compatibility 3), mobile payment knowledge (Knowledge 1, Knowledge 2, and Knowledge 3), ease to use (Easetouse 1, Easetouse 2, Easetouse 3, and Easetouse 4), usefulness (Usefulness 1, Usefulness 2, and Usefulness 3), intention to use (Intention 1, Intention 2, Intention 3, and Intention 4) are initially kept as a final format of the questionnaire.

Table 6

Pattern Matrix of Variables

Factor	1	2	3		4		5		6		7	
	Mob_Con 6 0.941	Tru_Saf 5 0.901	Eas 2	0.924	Int 4	0.980	Use 2	0.945	Com 2	0.937	Kno 1	0.919
	Mob_Con 3 0.921	Tru_Saf 6 0.857	Eas 4	0.881	Int 3	0.780	Use 1	0.943	Com 1	0.878	Kno 2	0.793
	Mob_Con 7 0.862	Tru_Saf 2 0.741	Eas 3	0.861	Int 2	0.768	Use 3	0.900	Com 3	0.846	Kno 3	0.776
	Mob_Con 5 0.856	Tru_Saf 1 0.721	Eas 1	0.689	Int 1	0.720						
	Mob_Con 4 0.832	Tru_Saf 3 0.716										
	Mob_Con 2 0.754	Tru_Saf 4 0.677										
	Mob_Con 1 0.732											

Notes. Extraction method: Principal axis factoring; Rotation method: Promax with Kaiser normalization. Rotation converged in six iterations.

Confirmatory Factory Analysis (CFA)

Confirmatory Factory Analysis is a better method to assess the validity and reliability of measures (Bagozzi & Foxall, 1996). The goodness-of-fit of CFA is used to further assess the uni-dimensionality and convergent validity among the constructs. CFA is applied with following indexes: Chi-square, Chi-square/df, Comparative Fit Index (CFI), Tucker & Lewis Index (TLI), and Root Mean Square Error Approximation (RMSEA). All factors are reliability for the next analyzing steps if GFI, TLI, and CFI are equal or above 0.9 (Bentler & Bonett, 1980), Chi-square/df is equal to or less than 2 (Chisquare/df ≤ 3 can be accepted in some cases) (Carmines & McIver, 1981), and RMSEA is equal to or less than 0.08 (RMSEA ≤ 0.05 is excellent) (Steiger, 1990).

Therefore, these evidences, which are GFI = 0.904, TLI = 0.959, CFI = 0.964 (> 0.9), Chi-square/df = 2.518 (< 3), and RMSEA = 0.050 (= 0.05) prove the validity and reliability of measurements. Additionally, the result of Figure 3 demonstrates the uni-dimensionality among the constructs. According to Steenkamp and Van Triijp (1991), as the goodness-of-fit is good, then the constructs are unidimensional except for the correlation between variable errors.

Furthermore, Table 7 demonstrates the convergent validity among the constructs, which standardized regression weights are higher than 0.5 with the significant level lower than 0.05 (Gerbing & Anderson, 1988). Therefore, no item of factors in this model needs to be deleted. In other words, all the items of factors should be kept in this research for the next step of the data analysis process.
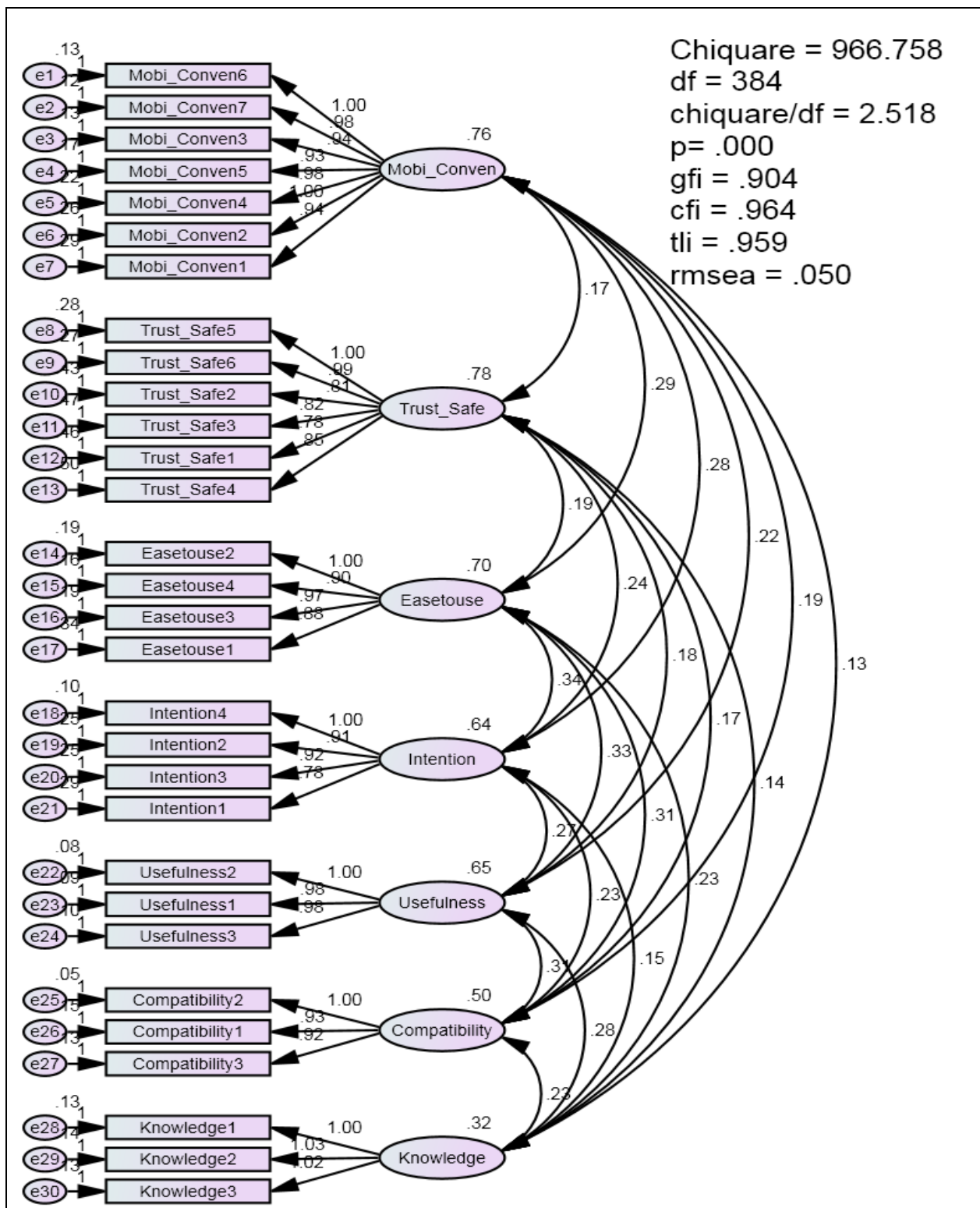
Figure 3. CFA result.

Table 7

CFA Result—Standardized Regression Weights

Standardized regression weight	Estimate	P	Standardized regression weight	Estimate	P
Mob_Con 6 <--- Mob_Con	0.922	***	Intention 4 <--- Intention	0.933	***
Mob_Con 7 <--- Mob_Con	0.925	***	Intention 2 <--- Intention	0.827	***
Mob_Con 3 <--- Mob_Con	0.915	***	Intention 3 <--- Intention	0.825	***
Mob_Con 5 <--- Mob_Con	0.891	***	Itention 1 <--- Intention	0.756	***
Mob_Con 4 <--- Mob_Con	0.877	***	Usefulness 2 <--- Usefulness	0.942	***
Mob_Con 2 <--- Mobi_Conven	0.862	***	Usefulness 1 <--- Usefulness	0.938	***
Mob_Con 1 <--- Mobi_Conven	0.837	***	Usefulness 3 <--- Usefulness	0.929	***
Tru_Saf 5 <--- Tru_Saf	0.858	***	Compatibility 2 <--- Compatibility	0.953	***
Tru_Saf 6 <--- Tru_Saf	0.860	***	Compatibility 1 <--- Compatibility	0.859	***
Tru_Saf 2 <--- Tru_Saf	0.735	***	Compatibility 3 <--- Compatibility	0.873	***
Tru_Saf 3 <--- Tru_Saf	0.729	***	Knowledge 1 <--- Knowledge	0.849	***
Tru_Saf 1 <--- Tru_Saf	0.717	***	Knowledge 2 <--- Knowledge	0.843	***
Tru_Saf 4 <--- Tru_Saf	0.726	***	Knowledge 3 <--- Knowledge	0.844	***
Eas 2 <--- Eas	0.886	***			
Eas 4 <--- Eas	0.885	***			
Eas 3 <--- Eas	0.878	***			
Eas 1 <--- Eas	0.786	***			

Note.*** The regression weight has significantly different from zero at the 0.001 level (two-tailed).

From above-mentioned statistical analysis, the initial research model with previous hypotheses is kept as below.

There are 10 research hypotheses of the research model:

H1: Convenience of mobility positively affects ease to use of mobile payment in Vietnam.

H2: Convenience of mobility positively affects usefulness of mobile payment in Vietnam.

H3: Compatibility positively affects ease to use of mobile payment in Vietnam.

H4: Compatibility positively affects usefulness of mobile payment in Vietnam.

H5: MP-Knowledge positively affects ease to use of mobile payment in Vietnam.

H6: Trust of safe to use positively affects intention to use mobile payment in Vietnam.

H7: Trust of safe to use positively affects usefulness of mobile payment in Vietnam.

H8: Ease to use positively affects usefulness of mobile payment in Vietnam.

H9: Ease to use positively affects intention to use mobile payment in Vietnam.

H10: Usefulness positively affects intention to use mobile payment in Vietnam.

Structural Equation Modeling (SEM) and Hypothesis Testing

Structural Equation Modeling is applied to test hypotheses about the relationships between factors in the research model.

The model of SEM in Figure 4 has Chi-square statistic of 1,026.810, degree of freedom is 389 with p-value = 0.000. The Chi-square/degree of freedom is 2.732 lower than 3. The other indexes as CFI is 0.958, GFI = 0.896 and TLI = 0.953, three indices CFI, TLI larger than 0.9 while GFI are close to 0.9 and RMSEA is 0.054 below the 0.08 standard. All indexes are satisfied to the conditions; and it needed improved by setting up covariance for couples of error again based on modification indices. Therefore, the relevance of the model with measured data can be acceptable.
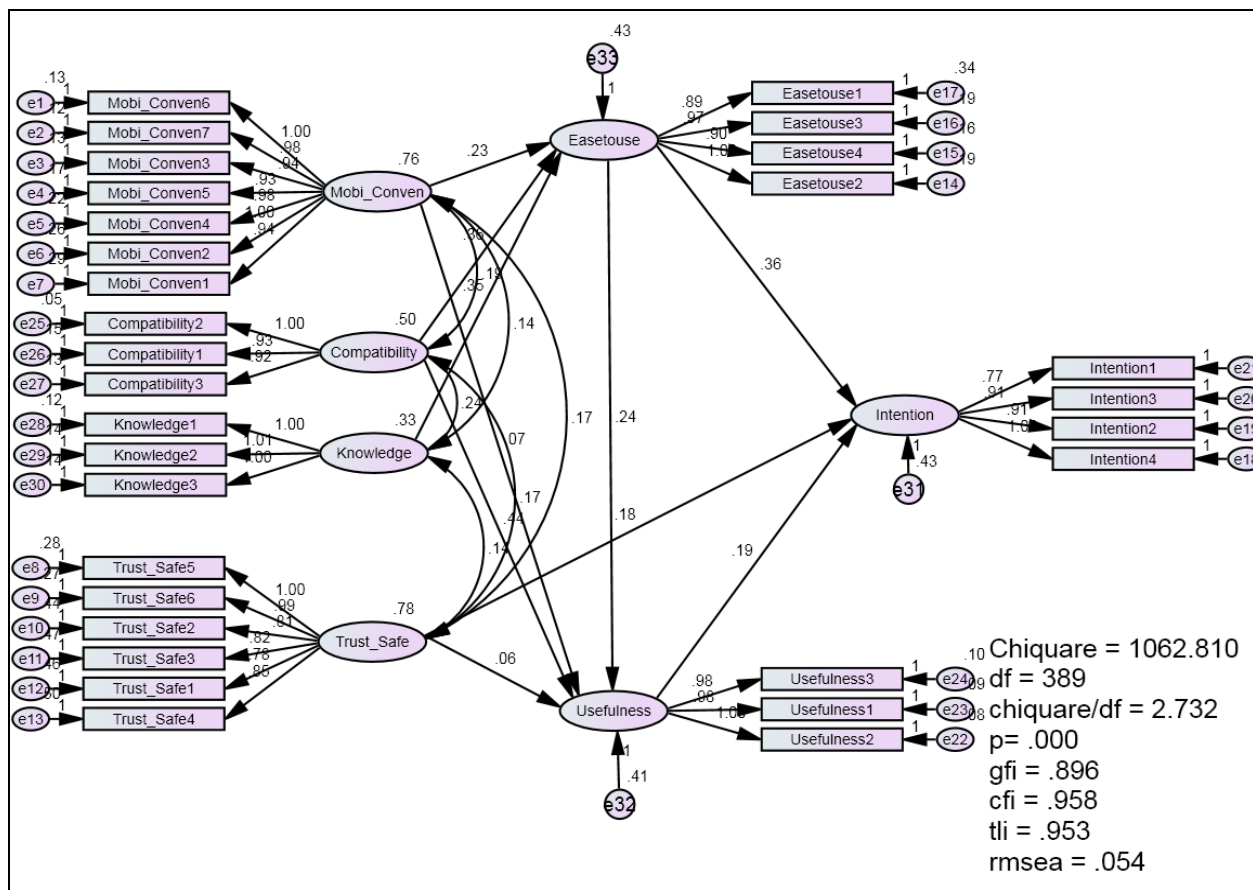
Figure 4. Structural Equation Modeling analysis after adjusting theoretical model.

Hypothesis Testing

Table 8

Results of Hypotheses Testing

	Estimate	S.E.	C.R.	P
Ease to use ← Convenience of mobility	0.233	0.036	6.437	***
Ease to use ← Compatibility	0.364	0.056	6.548	***
Ease to use ← Mobile payment knowledge	0.353	0.069	5.092	***
Usefulness ← Convenience oF MObility	0.072	0.036	2.006	0.045
Usefulness ← Compatibility	0.436	0.050	8.735	***
Usefulness ← Trust of safe to use	0.062	0.034	1.809	0.070
Usefulness ← Ease to use	0.236	0.044	5.436	***
Intention to use ← Trust of safe to use	0.182	0.036	5.119	***
Intention to use ← Usefulness	0.186	0.043	4.315	***
Intention to use ← Ease to use	0.359	0.043	8.405	***

Based on standardizing regression weights and *p*-value estimation in Table 8, researcher can argue that:

1. Regression weight of ease to use on convenience of Mobility is .233 with *p*-value less than .001. Thus, convenience of mobility positively affects ease to use. The hypothesis H1 is supported.

2. Regression weight of ease to use on compatibility is .364 with *p*-value less than .001. Thus, compatibility positively affects ease to use. The hypothesis H3 is supported.

3. Regression weight of ease to use on knowledge is .353 with p-value less than .001. Thus, MP-knowledge positively affects ease to use. The hypothesis H5 is supported.

4. Regression weight of usefulness on convenience of mobility is .072 with p-value = 0.045 less than 0.05. Thus, convenience of mobility positively affects usefulness. The hypothesis H2 is supported.

5. Regression weight of usefulness on compatibility is .436 with p-value less than .001. Thus, compatibility positively affects usefulness. The hypothesis H4 is supported.

6. Regression weight of usefulness on trust of safe to use is .062 with p-value = 0.072 higher than .005. Thus, trust of safe to use does not significantly correlate with usefulness. The hypothesis H7 is not supported.

7. Regression weight of usefulness on ease to use is .236 with p-value less than .001. Thus, ease to use positively affects usefulness. The hypothesis H8 is supported.

8. Regression weight of intention on trust of safe to use is .182 with p-value less than .001. Thus, trust of safe to use positively affects Intention to use. The hypothesis H 6 is supported.

9. Regression weight of intention on ease to use is .359 with p-value less than .001. Thus, ease to use positively affects intention to use. The hypothesis H9 is supported.

10. Regression weight of intention on usefulness is .186 with p-value less than .001. Thus, usefulness positively affects intention to use. The hypothesis H10 is supported.

According to the above results, all proposed hypotheses in this study are proved but Hypothesis 7 is not supported. It can be explained that trust-safe to use prefers to directly affect intention to use without passing through usefulness because Hypothesis 6 is supported. Moreover, there are totally 11 paths to affect the intention to use mobile payment service:

Path 1: Convenience of mobility --> Ease to use --> Intention to use

Path 2: Compatibility --> Ease to use --> Intention to use

Path 3: MP-knowledge --> Ease to use --> Intention to use

Path 4: Convenience of mobility --> Ease to use --> Usefulness--> Intention to use

Path 5: Compatibility --> Ease to use --> Usefulness--> Intention to use

Path 6: MP-knowledge --> Ease to use --> Usefulness--> Intention to use

Path 7: Convenience of mobility --> Usefulness--> Intention to use

Path 8: Compatibility --> Usefulness--> Intention to use

Path 9: Ease to use --> Intention to use

Path 10: Usefulness--> Intention to use

Path 11: Trust-safe to use--> Intention to use

The Results of ANOVA by Personal Profile

Table 9 showed the personal information that makes sense in evaluating the intention to use mobile payment in Vietnam. With p-value smaller than 0.05 mean, the demographic factor has significantly different results on main factors in the research model. Hence if p-value is smaller than 0.01 mean, the demographic factors have very strong significant effects on main factors. The result shows that "gender" has significant effects on "compatibility" (p = 0.039), which means that female have a higher compatibility than male to use mobile payment services. Second, location status has significant effects to convenience of mobility (p = 0.04), which means that use of mobile payment services in the areas of the city will create more convenient for customers than the use of services in rural areas. Third, the age has significant effects on three factors of

compatibility, easy to use and intention to use ($p = 0.046$, $p = 0.002$, $p = 0.049$) which means that more young people have a higher compatibility when using mobile payment services compared with the older people, so the use of the service will be easier for young people. Using the service easier will increase the intention of using mobile payment service, thus young people have more intention to use mobile service payment compared to older people.

Table 9

The Results of One-Way ANOVA and T_Test by Personal Profile

Factor	Gender	Marital	Occupation	Location	Income	Age
Convenience of mobility	0.226	0.985	0.066	0.040	0.860	0.078
Compatibility	0.039	0.224	0.227	0.208	0.614	0.046
Mobile payment knowledge	0.559	0.721	0.467	0.974	0.207	0.245
Trust of safe to use	0.607	0.057	0.744	0.336	0.997	0.097
Ease to use	0.687	0.255	0.111	0.663	0.766	0.002
Usefulness	0.610	0.354	0.545	0.921	0.321	0.346
Intention to use	0.711	0.348	0.358	0.553	0.073	0.049

Conclusion Remarks

The primary goal of this research tries to decide the factors that influence the application of M-payment service. To achieve this goal, a research model is built and comprised of four external variables (convenience of mobility, compatibility, mobile payment knowledge, and trust of safe to use), two belief variables (ease of use and usefulness), and one dependent variable (intention to use M-payment service).

The findings of this research have important means for the improvement and growth of mobile payment services in Vietnam. Intention to use by consumers is essential for the growth of mobile payment services. According to the results have been found, ease to use, usefulness, and trust of safe to use have the direct impact on intention to use by consumers. Moreover, factors which directly affect ease to use are convenience of mobility, compatibility, MP-knowledge, and factors which directly affect usefulness are convenience of mobility, compatibility, and ease to use. Services providers should take practical action to meet those elements for the user.

The results show that among the four external variables of the system, compatibility has the most significant impact on ease of use and usefulness. The consumers with high compatibility felt it is useful and easy to use mobile payment services. Compatibility of services helps users complete their work easier, helps them achieve high productivity in work, thereby making them feel the usefulness and ease of use of services.

The results also show that the characteristics of mobility along with the convenience of mobile payment services increase awareness of the ease of use and usefulness of the system. Therefore, it will increase the intention to use mobile services payment by the users. Moreover, the mobile payment users with high-level knowledge did not find it difficult to use M-payment services, but instead they use it more effectively than those with low-level of knowledge.

The results indicated that both of perceived ease of use and perceived usefulness have significant impact on the intention to use M-payment. Between two variables, perceived ease of use was the greater predictor on intention to use mobile payment. Compared to traditional payment methods, new payment approaches trying to become popular must have higher usefulness, which is an indispensable requirement that payment service

providers must meet for customers. However, more important concern is that it must be easy to use, because when customers use services easily, they can feel the usefulness of the service more easily; the outcome of ease to use positively affecting usefulness obviously proves this viewpoint.

Perceived usefulness is proved to have a positive impact on the intention to use M-payment. The usefulness could further be enhanced by offering better mobile payment services without raising the complication of the M-payment services. As compared to traditional offline payment, the development for opportunities of M-payment is produced. As telecommunication technologies advance, M-payment service providers can promote these system characteristics without adding more cost by seizing an opportunity of the decreasing cost of mass producing, thus resulting in greater adoption by users.

TAM model previously proposed two belief variables including the perceived ease of use and the perceived usefulness to influence consumers' intention to apply new tools. This study proposes to add one more variable, which is trust of safe to use, in the model. For a new service such as mobile payment service, besides these two previous important factors, the research results show that trust of safe to use is also very important to the intention to use service by customers in Vietnam. Although mobile payment service is easy to use and has high usefulness, but if it is not safe, the customers will not accept it as an alternative service to the traditional payment methods.

Besides, the results also indicate that the young people aged from 20 to 30 have more opportunities to access the service, and higher compatibility makes the service easier to use and more efficient compared to older people. Therefore, young people have higher intention to use mobile payment services than older people have in Vietnam. For the remaining age groups, service providers need to understand why they do not intend to use the service. Accordingly, given the appropriate management strategies to promote marketing and services, it will make mobile payment service more popular with consumers.

The explosive growth of electronic payment requirements, through the rapid development of Internet, is extremely excitingly potential but has not yet been fully exploited. Consumers previously were unfamiliar with the Internet and only applied it as a means of gathering information. But now, they gradually use this channel for purchasing decisions and their transactions. The emergence of mobile phone services was found to be potential for the next generation of new payment service, opening up development opportunities for those participants. In many countries, the number of mobile subscribers surpassed fixed subscribers. Even in Vietnam there also had the idea that within the next three to five years, the number of mobile subscribers will exceed the number of fixed subscribers. It is an opportunity for the future development of mobile payment services in Vietnam.

Although mobile payment services have many advantages such as convenience, cost savings, and quick response, many limitations and risks are affecting the intention to use of consumers. For this reason, the factors are affecting the intention to use mobile payment services by consumer in this study. Based on the results obtained from this study, the related service providers in Vietnam can conduct an appropriate allover strategy for the development of mobile payment services which is beneficial to the customers and themselves.

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