Exploring factors affecting the adoption of mobile payment at physical stores

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Abstract: This study develops and empirically tests a research model to comprehensively examine factors influencing the adoption of mobile payment at physical stores. In particular, this study proposes an integrated theoretical framework that combines the theory of technology acceptance model (TAM) and unified theory of acceptance and use of technology (UTAUT). The results indicate that: attitude is the most important factor influencing users' intention to adopt offline mobile payment compared to perceived usefulness and social influence; personal innovativeness, perceived usefulness and promotional offer also have significant effects on attitude whereas the perceived ease of use is not as important as others but does with significant effect on perceived usefulness.

Keywords: offline mobile payment; mobile commerce; technology acceptance model; TAM; user acceptance.

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1 Introduction

With the rapid development of mobile commerce, the number of mobile smart phone users increases rapidly and one of the new mobile applications called mobile payment has been used widely. It showed that mobile commerce has stepped into a new development phase, since mobile commerce could not exist without payment solutions. For any transaction to take place there must be a way for consumers to pay, that is what the mobile payment provides. Nowadays, with the development of mobile payment technology and as the online market becoming mature gradually, a great number of

internet giants have once again shifted their focus from online to offline, in the hope of a breakthrough in the offline market. Thus it can be seen, represented by quick response code (QR code), the sound waves of internet technology in the application of offline payment area will become the core of mobile payment market in the days to come.

In China, the development of offline mobile payment is becoming more and more popular. In 2011, the leading third party payment platform of Alipay, announced the world's first pay barcode product: barcode pay, which allowed people to pay with mobile phone when buying something in entity shops. Consumers could not only use 'pay face to face' of Alipay wallet in these stores but also choose to scan the QR code to pay. The whole process of payment is just as fast as the traditional way. Nowadays, even some small stores in the street are beginning to support the way of offline payment. According to different market acceptance, offline mobile payment has been applied in selling machines, taxis, cinemas, convenience stores and other retail channels in varying degrees, and it also makes a lot of offline shopping malls and stores begin to change their traditional ways which only support cash or credit card payment.

Nevertheless, researches on offline mobile payment acceptance behaviour is rare. Therefore, by using the technology acceptance model (TAM) as the underpinning and focusing on the offline mobile payment market, this study analysed the attitudes and behavioural intentions (BIs) of consumers toward using mobile payment in entity shops and the relationship between these factors. Through reading and carding a large number of related literatures, we construct a conceptual model which takes factors such as personal innovativeness (PI), promotional offer (PO) and social influence (SI) as independent variables while age and sex as mediation variables, and discussed Chinese customers' willingness to accept offline mobile payment and its influence factors; then analysed the interrelationship among these factors. Finally we verified the model through questionnaire survey and other forms.

2 Literature review

Many researchers have paid their attention on mobile payment, but researches on mobile payment in a certain entity shop are rare. The existing related literatures are mainly focus on mobile commerce, mobile payment, and mobile payment in offline store.

2.1 Mobile commerce

With the development of e-commerce, mobile commerce as a transaction mode become a heated research topic and the current researches about it mainly focus on the analysis of consumer's behaviours (Liébana-Cabanillas and Lara-Rubio, 2017). Some researchers found that mobile devices can now be used to provide advanced mobile services, including banking, commerce, chat room, gaming, parking services, etc. (López-Nicolás et al., 2008). Technology and economic perspectives to gain a better understanding of users' behaviour in adopting 4G wireless technology; they hold the view that mobile users are more likely to adopt 4G wireless technology if they hold positive beliefs pertaining to its use (Lin et al., 2015). Moreover, consumer acceptance of wireless finance and found that variables such as participants' age, computer skills, mobile technology readiness and SI are proved to have moderating effects in the mobile phone usage context (Kleijnen et al., 2004).

Some researchers focus on the influence factors to modify TAM (Johar and Awalluddin, 2011). Okazaki and Mendez (2013) took gender as moderator variables to explore convenience in mobile commerce. Engström et al. (2006) constructed their model on the basis of TAM and they added perceived usefulness (PU), perceived interest, and perceived price as the important factors for consumers' attitude and behaviour intention about mobile commerce service. Using and influence factors about mobile commerce based on the user acceptance theory and they found that consumers' attitude toward using is influenced significantly by PU, perceived cost, perceived entertainment and its own development of mobile commerce, especially the factor of PU (Zheng et al., 2012).

2.2 Mobile payment

Generalised mobile payment is one kind of service for users who use mobile devices such as mobile phone, laptop or PDA to finish payment for the consumption of services and goods (Dahlberg et al., 2009). To understand what influences user acceptance of mobile payment systems, it seems logical to consider the use of some already established and tested acceptance models (Leida, 2008).

Behavioural sciences and individual psychology are strong determinants for adoption of mobile technology. To get meaningful comprehensive insights into customers' perception and usage intention of mobile payment systems, which used a sample of urban population from two metros in India to find that the constructs of performance expectancy, effort expectancy, SI and facilitating conditions have significant impact on mobile payment services adoption (Thakur and Srivastava, 2013). The most important factor explaining whether consumers are likely to use a mobile payment service is perceived ease of use (PEOU).

2.3 Mobile payment in physical stores

With the birth of e-commerce, one of the mobile payment methods: e-wallet has emerged to provide consumer transactions with convenience and confidence not only in virtual marketplace but also in entity shops. With the birth of e-commerce, one of the mobile payment methods: e-wallet has emerged to provide consumer transactions with convenience and confidence not only in virtual marketplace but also in entity shops. Lai (2012) have analysed the factors that enable consumers to use e-wallets for clinic fees in Taipei, and added prior information technology experience to the TAM; they found that the more positive a person's experience about an object is, the more positive beliefs he or she will hold about it. People had preference only for the useful and easily operation of payment (Lai, 2012). In addition to the e-wallet used for clinic fees, mobile payment is available in many offline areas. Cheng et al. (2013) examined high speed rail passengers' acceptance of mobile ticketing services, as indicated by their mobile access for ticketing information inquiries and use of QR codes for payment and gate entrance. The findings demonstrate that personal innovativeness has a positive effect on both the mobile access adoption and QR code adoption (Cheng et al., 2013).

Although all of these researchers study offline mobile payment based on TAM, they all ignore a factor – SI. Therefore, in this paper, we put SI into the TAM in order to increase the rationality of the model. Additionally, a review of literature revealed that social factors, PO and PI should be included in the basic TAM.

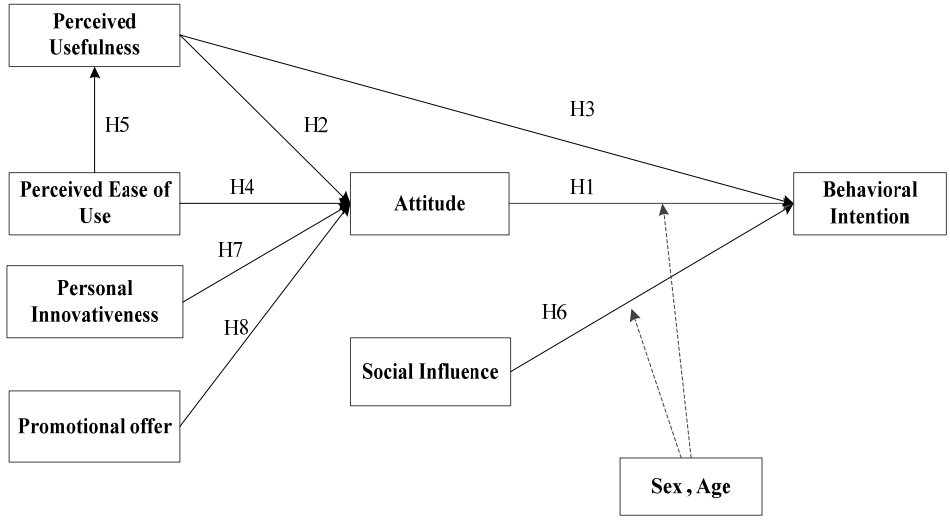
3 Research methodology

3.1 Research model

This study uses the TAM as the underpinning model to analyse the attitude and BIs of consumers toward offline mobile payment. Since its introduction by Davis et al. (1989), TAM has received extensive empirical support through validations, applications, and replications for its prediction power (Taylor and Todd, 1995). However, one of the major theoretical limitations of TAM is the exclusion of the possibility of influence from social and personal control factors (Elliot and Loebbecke, 2000). The attitude toward adopting a technology is believed to be the result of personal and SIs, and the fact that TAM does not account for SI is a limitation.

In response to this, this paper modified TAM in order to be more scientific. After researching on the TAM, according to the characteristics of the offline special field, this paper decided on the basis of TAM while adding several important variables to improve the model, respectively is: PI, PO, SI, in addition to adding gender, age as moderator variables. The research model tested in this paper is shown in Figure 1.

Figure 1 A model for offline mobile payment BIs



3.2 Hypotheses

Following the work of Venkatesh and Davis (2000), we started our hypotheses section with the core construct of TAM and incorporate additional constructs to extend the original theory. We began by discussing five hypotheses that are related to the technology itself. Subsequently, we introduced a factor associated with the social context and a factor pertaining to an individual user's characteristic.

3.2.1 Attitude

Davis argued that people's behaviour can be reasonably predicted from their BIs, and that their intention to accept new technology can be affected by their attitudes. BI in this context refers to the degree to which consumers prefer to use offline mobile payment service. According to the TAM, the main antecedent and key mediator of the influence of other variables on intention to use are a person's attitude towards using a technology (Davis et al., 1989). A positive relationship between the two constructs intention to use and attitude towards using a technology has been found in a number of previous studies (Li et al., 2014). So when users have more positive attitudes toward the usefulness of new technology, their intention to use this technology will be stronger (Chiang et al., 2013).

H1 Attitude has a positive effect on consumers' BI toward using offline mobile payment.

3.2.2 Perceived usefulness

The TAM proposes that PU is a central antecedent to the attitude towards using a technology which will have a significant influence in BI (Davis et al., 1989). Moreover, there are many other scholars who have confirmed this result, for example, Sumedha Chauhan taking below-poverty-line citizens in India as objects found that if poor people are made aware of m-money's usefulness such as transferring money quickly and safely at low cost, it will provide a push for its use. A study showed that especially the factor of PU will significantly influence consumers' attitude toward using mobile commerce (Zheng et al., 2012). Davis contended that even when users hold negative attitudes toward using a system or perceive its operation to be difficult, they might still have a strong intention to use it. This is because they considered the system useful for completing tasks or satisfying task demands (Chiang et al., 2013). The result of the research also indicated that PU is the important factor for consumers' attitude and behaviour intention about mobile commerce service (Carlsson and Kjell, 2006). In which PU is defined as "the degree to which consumers believe that using offline mobile payment service helps to improve its performance." Based on the previous studies, it has been proven that PU has a remarkable impact on attitude, and PU will influence BI greatly.

H2 PU has a positive effect on consumers' attitude toward using offline mobile payment.

H3 PU has a positive effect on consumers' BI toward using offline mobile payment.

3.2.3 Perceived ease of use

Davis defined 'PEOU' as the degree to which the user believes that using a system would be free of effort. Offline mobile payment can be regarded as a new technology system (Davis and Svoboda, 1989). So in this paper, the definition of the PEOU can be inherited. Numerous empirical studies have already validated TAM, and proved the relationship between ease of use and user acceptance in various fields. Studies of mobile payments also suggest that ease of use is an important success factor. PEOU influences attitude, which in turn influences the intention to use m-coupons (Jayasingh and Eze, 2010). Lai

(2012) showed that the PU, the PEOU is positively associated with users' attitude toward using, and the PEOU is positively associated with the PU. Arvidsson (2013) found that the most important factor explaining whether consumers are likely to use a mobile payment service is PEOU. Consequently, we incorporate PEOU of mobile payment services in our consumer acceptance model. It is important to note that, especially for non-users, it is the perception of ease of use rather than an actual system characteristic that underlies this construct (Davis and Venkatesh, 1996). According to previous studies, it has been proven that PEOU have a remarkable impact on Attitude, and PEOU will influence PU greatly (Hung et al., 2004).

H4 PEOU has a positive effect on consumers' attitude toward using offline mobile payment.

H5 PEOU has a positive effect on PU toward using offline mobile payment.

3.2.4 Social influence

SI, as shown in the unified theory of acceptance and use of technology (UTAUT) and other theories (such as the TRA, the TAM2, and the TPB), has reinforced its ability to explain technology acceptance behaviour as the use of technology becomes mandatory. SI is defined as "the degree to which an individual user perceived the importance that others believe he or she should use an innovation" (Chong et al., 2010). When a new technology comes out, it creates uncertainty about people's expected consequences, and individuals who are uncomfortable with uncertainty will tend to interact with their social network before making a decision. Social factors exert an important influence on people's decision to adopt advanced mobile services (López-Nicolás et al., 2008; Kleijnen et al., 2004). People are easily affected by environment, especially in China. If everyone around accepts something, people are likely to accept the same thing. Luo et al. (2005) suggested that while PU and PEOU are strong variables in consumer willingness to adopt mobile technology, variables such as PI and SI must also be taken into consideration in determining consumer acceptance. Overall, using an innovation is seen as a form of public consumption; it can be significantly influenced by friends and colleagues (Luan et al., 2006). Based on literature review, it is expected that SI will exert significant effect on BI in adoption of offline mobile payment in China.

H6 The SI has a positive effect on consumers' BI toward using offline mobile payment.

3.2.5 Personal innovativeness

PI in using IT is a trait reflecting the willingness to try out any new technology (Agarwal and Prasad, 1998). PI represents an individual's willingness to accept new things or new concepts and even to try new products or services (Kuo and Yen, 2009). According to diffusion theory, adoption of innovations is a function of PI or willingness to try the innovations (Jeffres and Atkin, 1996).

Aside from the benefits resulting from using a new product, consumers are also influenced by their own beliefs in innovativeness. There is an evidence that acceptance of innovations depends as much on individual adopter differences as on the innovation itself

(Ahmed et al., 2008). Many studies used PI as a predictor to explain the adoption of innovations. Thakur and Sanyal (2013) using a sample of urban population from two metros in India indicated that innovativeness is the key factor influencing consumers' acceptance of new technology-based financial services. PI has a positive effect on both the mobile access adoption and QR code adoption when they examined high speed rail passengers' acceptance of mobile ticketing services (Cheng et al., 2013). The variables such as PI must also be taken into consideration in determining consumer acceptance (Lu et al., 2005).

Notably, in offline mobile payment market, some of the new forms of offline mobile payment, such as QR code, sound wave and so on, demonstrate strong innovativeness. PI will be a very important factor to determine user's attitude towards the new things and further determine the behaviour of users and then determine whether the user will continue to pursue new things to participate in the society of the latest technology.

H7 The PI of the consumer has a positive effect on his or her attitude toward using offline mobile payment.

3.2.6 Promotional offer

The advent of mobile commerce has resulted in a new form of sales promotion. Specified promotion is a set of stimuli that are offered sporadically which reinforces publicity actions to promote the purchasing of a certain product (Alvarez and Casielles, 2005). The consumer adoption of mobile coupons aims to integrate price consciousness and value consciousness into the promotional effectiveness framework (Jayasingh and Eze, 2010). Kumar and Pratap (2011) investigated the factors influencing the mobile subscribers intention to switch mobile service providers in India and found that there is a good correlation between service quality and POs (Kumar and Pratap, 2011). This paper defines POs as all sales promotion as well as the means of incentive. The results indicate that consumers with a higher degree of coupon proneness are more likely to recognise the usefulness of mobile coupons, and have more positive attitudes and BIs toward coupon use (Chiang et al., 2013). In the offline mobile payment market in China, the flying of the promotional coupons and red envelopes, etc. greatly inspire the consumer to embrace the new technology.

H8 The PO has a positive effect on consumers' attitude toward using offline mobile payment.

4 Research design and data analysis

4.1 Research design

The conceptual framework that guided the hypotheses formulation and questionnaire design was depicted earlier in Table 1. The framework consists of seven research constructs as indicated earlier. Table 1 provides the key variables, items used to operationalise the variables, and their respective sources. Items selected for the constructs were adapted mainly from prior studies to ensure content validity. A pre-test was

conducted to validate the instrument. Feedback was obtained about the layout of the questionnaire and question ambiguity. Some changes were made to the questionnaires as deemed appropriate.

Table 1 Measurement items

Construct	*Measurement items*	
Perceived usefulness	By using mobile payment tools in entity shops, the trading time is shorter than those with other means of payment.	Davis and Venkatesh (1996) and Devaraj et al. (2002)
	Mobile payment tools could be used in many stores.	
	Using mobile payment in entity shops can complete the transaction with bonus point.	
	Using mobile payment tools in entity shops has additional value	
Perceived ease of use	It is easy to download mobile payment application.	Davis and Venkatesh (1996) and Leida (2008)
	It is easy to learn how to use mobile payment tools in entity shops.	
	It is easy to receive transaction details.	
	There are few steps required to complete transactions.	
	The screen size is appropriate to make payments.	
Attitude	Using mobile payment tools in entity shops has attraction for me.	Davis and Venkatesh (1996)
	I feel that using mobile payment tools in entity shops is valuable.	
	I think that using mobile payment tools in entity shops is a wise choice.	
Personal innovativeness	When I hear about new mobile technology I look for possibilities to experiment with it.	Han (2005)
	I am usually the first to try new mobile payment technology.	
	I like to experiment with new mobile payment technologies.	
Social influence	Many people are using mobile payment tools in entity stores, I think I should use.	Shimp and Kanvas (1984)
	Most people who are important to me think I should use m-coupons.	
	If using mobile payment tools in entity shops, people will think I am a fashionable person.	
Promotional offer	Promotional offers and red packets are attractive.	Lichtenstein et al. (1990)
	Promotional offers and red packets are useful.	
	Promotional offers and red packets are reliable.	
Behavioural intention	Assuming that I have access to mobile payment services systems, I intend to use them.	Venkatesh et al. (2008)
	I intend to use m-coupons frequently in personal life.	
	I intend to use mobile frequently at physical stores.	

4.2 Data analysis and result

The general aim of this research is to determine the factors that explain the adoption and use of offline mobile payment by consumers. In this paper, we carried out a survey toward 500 mobile phone users in China to investigate their attitude and intention to use mobile payment in entity shops. The data were gathered from online questionnaire survey (the website: http://www.sojump.com). The revised questionnaires were distributed to 5,000 participants in China, as noted earlier. 456 were returned, with an overall response rate of 91.2%, including 23 invalid responses, which were eliminated before the final data analysis. The main reason given for non-participation was lack of time or knowledge to complete the survey. Of the respondents, 57.8% were female. The majority of the respondents (75%) fell into the age group of 20%–30.65.4% of the respondents were students. Young consumers are sensitive to innovation, and most innovators and early adopters are young consumers. This research took young consumers as research objects. Since college students account for the majority of the young consumers, our research took college students and young workers as the main investigation objects.

4.2.1 Measurement model

We conducted a reliability and validity test to ensure that the constructs and item responses could be used for further analysis.

- Reliability analysis: Reliability is the degree to which a person trusts the measurement results, including constancy and consistency. Higher reliability represents the score of measurement result of different items in the same scale is less influenced by error. This paper used Cronbach's alpha coefficient to analyse items. The Cronbach's alpha, as shown in Table 3, for all the constructs were more than 0.8 and exceeded the suggested value of 0.70. The result demonstrated that the survey results had high reliability and ensured a proper ground for further analysis.
- Validity analysis: Validity is used to measure the availability of result, representing whether the measurement results reflect the correctness of measure target and intention truly. The measurement results can display more actual characteristics of the measured object when the validity is higher. The determination criterion is that the load standard of each factors should be greater than 0.7 and the significance level is equal or greater than 0.05. Moreover, AVE (the extracted average variance value) should be greater than 0.5 and the value of composite reliability (CR) should be greater than 0.7. The results of each factor are listed in Table 3.

Convergent validity shows whether each factor can be reflected by its own items (Gefen et al., 2000). Table 3 lists the standardised item loadings, AVE, CR, and Cronbach's alpha values. The average variance extracted of the measures included in the model ranged from 0.5088 to 0.7537. A variance extracted of greater than 0.50 indicated that the validity of both the construct and the individual variables is high. As shown in Table 2, most item loadings were greater than 0.7 and significant at 0.001. All of the CRs, and alphas exceeded the recommended threshold values of 0.7, which showed good convergent validity and reliability (Gefen et al., 2000).

Table 2 Scale properties of the measurement model

Factor	*Item*	*Standardised item loading*	*AVE*	*CR*	*Cronbach's alpha*
PEOU	PEOU1	0.799	0.5683	0.9008	0.901
	PEOU2	0.845			
	PEOU3	0.889			
	PEOU4	0.708			
	PEOU5	0.69			
	PEOU6	0.616			
	PEOU7	0.692			
PU	PU1	0.755	0.5088	0.836	0.839
	PU2	0.676			
	PU3	0.55			
	PU4	0.743			
	PU5	0.814			
BI	BI1	0.827	0.6532	0.7902	0.842
	BI2	0.789			
PI	PI1	0.727	0.6531	0.8489	0.818
	PI2	0.718			
	PI3	0.879			
PO	PO1	0.843	0.7537	0.9015	0.900
	PO2	0.93			
	PO3	0.828			
SI	SI1	0.883	0.6531	0.8489	0.849
	SI2	0.794			
	SI3	0.741			
ATT	ATT1	0.806	0.7371	0.8936	0.909
	ATT2	0.866			
	ATT3	0.901			

Discriminant validity reflects whether two factors are statistically different (Gefen et al., 2000). As shown in Table 3, for each factor, the square root of AVE was greater than its correlation coefficients with other factors. Thus, the scales had good discriminant validity (Boudreau et al., 2001).

4.2.2 Structural model

We also conducted confirmatory factor analysis using AMOS soft to test the measurement model. Different indicators were used to assess the overall fit qualities of the model. The likelihood ratio chi-square test assesses the overall model fit. Chi-square per degree of freedom (CMIN/DF), the relative chi-square, is 1.908, satisfying the recommend < 3.00 criterion for a good fit. The root mean square error of approximation (RMSEA) is 0.052, which is smaller than 0.06. The CFI is 0.964, IFI is 0.965 and GFI is

0.909 and they are all greater than 0.9 in Table 4. Although AGFI is 0.864 only, it is very close to 0.9, thus the overall model has a good fit.

Table 3 Construct correlations

	PEOU	*PU*	*BI*	*PI*	*PO*	*SI*	*ATT*
PEOU	*0.754*						
PU	0.631	*0.713*					
BI	0.484	0.520	*0.808*				
PI	0.291	0.183	0.680	*0.808*			
PO	0.210	0.132	0.379	0.559	*0.868*		
SI	0.290	0.183	0.600	0.784	0.367	*0.808*	
ATT	0.473	0.478	0.800	0.713	0.404	0.578	*0.859*

Table 4 Fit indices for measurement and structural models

Fit indices	*Recommended value*	*Measurement model*
χ^2/d.f.	≤ 3.00	1.908
GFI	≥ 0.90	0.909
AGFI	≥ 0.90	0.864
NFI	≥ 0.90	0.928
IFI	≥ 0.95	0.965
CFI	≥ 0.95	0.964
RMSEA	≤ 0.06	0.052

4.2.3 The examination of model assumption

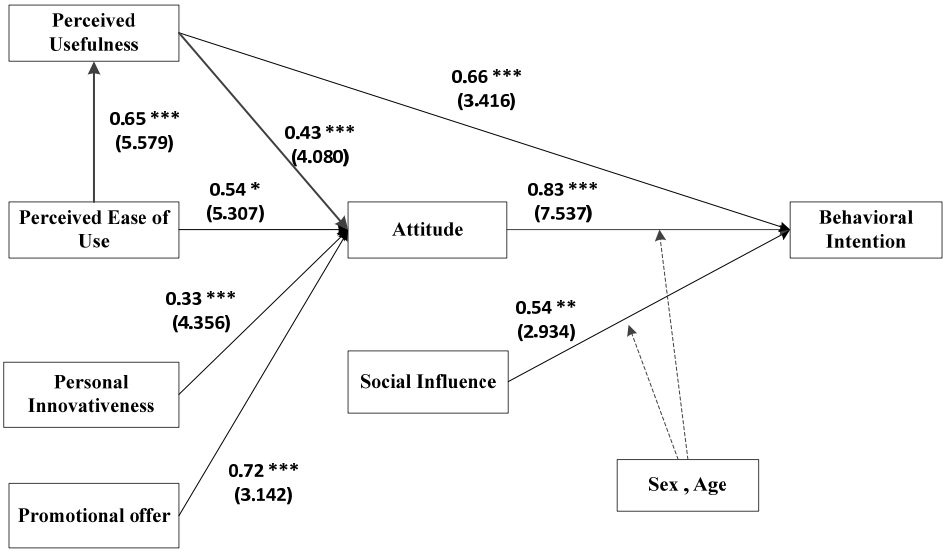
Each path assumption in research model was examined by AMOS, and the computed results were showed in the following Figure 2.

The properties of the causal paths shown earlier in Figure 2, including standardised path coefficients, t-values, and variance explained, for each equation in the hypothesized model. As expected, all of the six hypotheses are supported. To sum up, attitude (ATT), PU and SI significantly influence BI; PEOU, PI and PO significantly influence attitude (ATT). Among these three factors, PI is one major influence factor to consumer's attitude toward using offline mobile payment and the path coefficient of PO is even higher than PEOU. These findings together raise a need to highlight the customer's subjective viewpoint.

4.3 Moderator influence

As moderated variables will influence the coefficient of path analysis, this research attempted to explore the effect of external constructs upon various moderated variables, which included gender and age. The analysis was based on the T-test and analysis of variance (ANOVA) to determine if there was a significant difference among the outcomes of moderated variables in different constructs. The regression analysis demonstrated a new path for the influence of moderated variables and implications of the outcomes.

Figure 2 Results of the structural model



Note: ***p < 0.001; **p < 0.01; *p < 0.05; ( ) T-value.

In the analysis of influence of gender on the constructs, this research adopted the T-test, the results of which demonstrated that subjects of different genders do not reveal significant differences in attitude to BI or SI to BI. According to the analysis, when people think it is convenient to use mobile payment in entity shops, their use intention will be enhanced. Moreover, compared with males, females are easier to be influenced by social environment. Thus, the influence of SI on females' BI will be more significant than males'.

In the analysis of age on the constructs, this research adopted the ANOVA. The test results demonstrate that subjects of different ages below 40 do not reveal significant differences in attitude to BI but reveal significant differences in SI to BI. However, the subjects aged above 40 influences the relationship between attitudes to BI. As to the influence of SI on BI, subjects aged above 40 are more significant. The analysis indicated that when subjects aged below 40 have a positive attitude toward using offline mobile payment service systems, their use intention will be enhanced.

5 Discussions and conclusions

This research proposes an integrated model to examine what influence factors influence consumers' behaviour to offline mobile payment. The primary objective of this study was to examine consumer acceptance of using offline mobile payment in China in the light of the TAM added with new variables derived from UTAUT and other models. The findings of the study strongly support the appropriateness of using the TAM to understand the acceptance of offline mobile payment in China from consumers' perspectives.

5.1 Implications for research

Our result confirms that the behaviour intention of offline mobile payment is directly influenced by PU, attitude, SI, and the attitude of offline mobile payment is directly influenced by PEOU, PI and PO. Overall, the results show that the model demonstrates good predictive powers and explains BIs toward offline mobile payment.

PEOU and PU were the original constructs in TAM, and they have been found to influence users' attitude and intention and then the acceptance of technology by countless prior studies. Thus, it is not surprising to find that they also affect consumer acceptance of offline mobile payment. This model explains 69.84% of variance, which is considered higher for TAMs.

The study contributes to contemporary research on offline mobile payment by offering insights into the factor that PO could contribute to consumers' attitude to use offline mobile payment. The findings of this research may be of interest to US and European IS researchers as it reveals the factors affecting customer's attitude in one of the fastest growing economies of the world.

5.2 Implications for practice and managers

The purpose of this research is to propose a more reasonable, effective and complete consumer influence factor model through the analysis to provide more practical views and suggestions for mobile internet companies when they launch related products for better shopping experience, and to make some contribution to the better and faster development of mobile payment market. The validated model provides a useful framework for managers having to assess the possibility of success for the products of offline mobile payment introductions, and to proactively design promotion strategies.

As a consequence, based on the above research conclusions and targets, this study proposes three management suggestions for companies who want to set foot in the offline mobile payment market to reference.

First of all, research results illustrate the importance of PI related to the attitude of consumers to use offline mobile payment. Increasing the attraction of innovation for offline mobile payment is very necessary for mobile payment practitioners to dig out more potential users.

Secondly, PO also plays a very important role in influencing consumers' attitude. Certain promotion measures, such as mobile coupons and red envelopes, are very important for Chinese consumers in using offline mobile payment, because most people are fond of these small mercies when they go shopping. As to company managers, it's wise taking advantage of the characteristics with Chinese people who is keen on small gains to market their products and improve consumer loyalty.

Finally, the BI of users is still largely influenced by the endorsement of family and friends. The SI factors sometimes will determine whether a certain social group will join the wave of new technology; therefore, it is very important for managers to create a good social atmosphere and sound public praise.

5.3 Limitations and suggestions for future research

Although this study provides new insights into using mobile payment in entity shops and points out that several factors such as PI and PO should be added in the model, there are still various research avenues to pursue, since the influence factors are more than those actually mentioned. Future research is expected to use more different variables to study the reasons for consumers adopting the offline mobile payment and to propose more research hypothesis and verify them in order to improve the explanation of the overall model.

The second limitation is about the sample. Although the sample size is quite large, the young people accounts for the majority and all samples come from China. When it comes to potential users of offline mobile payment, other groups' research in other regions also has certain practical significance. Therefore this study suffers from the limitation of size and geography of the population. This fact has an effect on non-uniform distribution of sample and makes the result not universal. If time and condition allows, a meaningful avenue for further research shall be, for example, an extensible study on different ages of people in different areas across countries.

The third limitation is that our data contain intention measures rather than behavioural measures. Follow-up studies, therefore, shall consider using actual behavioural data. The study results prove several factors that markedly affect the behaviour and attitude of consumers in using offline mobile payment, which could be used for further research.

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