ENHANCING LOYALTY TO MOBILE PAYMENT SERVICES:

AN EMPIRICAL STUDY

Jason Xiong, Appalachian State University, xiongjj@appstate.edu
Hoon Seok Choi, Appalachian State University, choihs@appstate.edu
Charlie Chen, Appalachian State University, chench@appstate.edu
Yong Tang, University of Electronic Science and Technology of China, tangyong@uestc.edu.cn

ABSTRACT

The mobile payment market has exponentially increased in the last decade. Notably, in the Asia Pacific area, the market is already saturated with extensive use of the technology and various service providers, where customer retention is becoming increasingly important. This study examines the loyalty of mobile payment service users and its determinants, adopting the theoretical lenses of flow, technology adoption, and task-technology fit (TTF). We surveyed 228 mobile payment users concerning their experiences and perceptions on mobile payment services in China. Our findings suggest that enjoyment, challenges, and task-technology fit lead to user satisfaction, thereby contributing to the increase of user loyalty. Additionally, perceived usefulness increases user loyalty to mobile00 payment services. These findings offer theoretical contributions to the body of knowledge about mobile payment and practical implications for the industry.

Keywords: Flow Theory, Technology Adoption, User Satisfaction, Loyalty, Perceived Usefulness, Asia Pacific, Mobile Payment Service

INTRODUCTION

As the "New Normal" in electronic commerce (Hedman & Henningsson, 2015), the global mobile payment market generated USD 123.5 billion in market value in 2017. It is expected to create a market value of USD 3,3371.6 billion by 2024 (Zion, 2019) as more providers join the domain, such as Alipay, WeChat pay, PayPal, Apple Pay, Samsung Pay, Amazon Pay, Chase Pay, Android Pay, and Google Payment. As more providers are readily available to users, they can switch to another when they are not satisfied with the current provider or find a better option. In addition, while many traditional mobile payment services are available only at specific local markets, the current mobile payment services provided by large international companies cover the global market. The increased competition has enabled constant switching behaviors of users (Le Wang, Luo, Yang, & Qiao, 2019). Thus, customer retention has risen as a primary issue in their business.

Although there are numerous studies concerning mobile payment (Hu, Hsu, Hsiao, & Tsao, 2019; Pipitwanichakarn & Wongtada, 2019), most of the research focused on the adoption of mobile payment. However, to the best of our knowledge, there is very little research examined the retention of mobile payment customers. To fill the research gap, this research examines the determinants of customer retention for mobile payment services, based on flow, technology adoption, and task-technology fit theories. According to flow theory, user satisfaction with completing an activity or a task relies on a good match between enjoyment and challenge levels (Csikszentmihalyi, 1990). There are different levels of challenges that users face when using the mobile payment to perform diverse tasks, such as creating an affiliated banking account, taking and storing pictures, using the phone as a scanner, and exchanging money with others. When the users have an optimal level of challenge and enjoyment in performing the tasks, their satisfaction can be maximized. The Technology Acceptance Model (TAM) asserts that perceived usefulness is one of the primary determinants of adoption and use of technologies (Davis, 1989). Because mobile payment is used to perform specific tasks, perceived usefulness should affect its continuous use. In the same vein, whether their current mobile payment service has appropriate features to perform the tasks effectively should affect their satisfaction with the service, as technology-task fit theory suggests. This study examines the loyalty of mobile payment service users and its determinants, adopting the theoretical lenses of flow, technology adoption, and task-technology fit (TTF). We surveyed 228 mobile payment users concerning their experiences and perceptions on mobile payment services in China.

The rest of this paper is organized as below. *Conceptual Formation* provides relevant literature to identify the gaps in the previous research. Then it further discusses the theories utilized and the main hypotheses of this research. *Research Methodology* presents the research design, data collection process, research analysis method, and the results of the hypothesis test. *Analysis and Discussion* discuss the academic and practical contributions of this study. Finally, *Conclusion, Limitation, and Future Research* provide the conclusion and discuss the limitations of this research and provide suggestions for future studies on mobile payment related issues.

LITERATURE REVIEW

Mobile devices, including smartphones, are considered the next generation of the information platform (Liang, 2014). There has been a considerable amount of research about the new platform (Oliveira, Thomas, Baptista, & Campos, 2016). Concerning mobile payment, many studies investigated diverse issues, such as adoption and mobile payment switching behaviors.

For mobile payment service, one of the most popular topics is the adoption of technology using the technology acceptance model (TAM) or extended TAMs in the context of various countries. In Europe, Schierz, Schilke, and Wirtz (2010) conducted an empirical study for German consumers to understand their mobile payment acceptance. They reported that perceived compatibility has the most significant impact on the intention of use. Pousttchi (2003) examined the determinants of acceptance and usage of mobile payment services in Germany. The study revealed that the essential conditions for the acceptance and the usage are costs, security, and convenience. Linck, Pousttchi, and Wiedemann (2006) studied consumer perception of mobile payment security for German consumers. Their findings conclude that the lack of subjective security affects consumer perception of mobile payment security. In the United Kingdom, Slade, Dwivedi, Piercy, and Williams (2015) found that performance expectancy, social influence, innovativeness, and perceived risk significantly affect mobile payment adoption of the consumers in the country. These factors are moderated by the level of prior knowledge for using mobile payment services. Oliveira et al. (2016) found that that perceived compatibility, perceived technology security, performance expectations, innovativeness, and social influence are key determinants of the mobile payment adoption in Portugal. In South Africa, based on social-cognitive theory and the regret theory, Verkijika (2020) found that affect and anticipated regret influence on behavioral intentions to use mobile payment positively.

Not surprisingly, many studies have been conducted for users in China, where is the largest mobile payment market in the world. Liu, Ben, and Zhang (2019) found that perceived usefulness, perceived risk, social influence, trust, and perceived ease of use are critical factors to the adoption. Adopting the unified theory of acceptance and use of technology model, Luzhuang Wang and Yi (2012) found that performance expectancy and effort expectancy play a critical role in deciding the mobile payment adoption. Similarly, Zhou (2013) suggested that service quality is a significant factor in determining trust on mobile payment, while payment system quality profoundly affects satisfaction with the service. Concerning the impact of social influence and personality traits, Qu, Rong, Ouyang, Chen, and Xiong (2015) studied the acceptability of mobile payment, reporting that social interaction, trust, perceived enjoyment, and use context explain the intention to use the technology. Similarly, S. Yang, Lu, Gupta, Cao, and Zhang (2012) found that behavioral beliefs, in combination with social influences and personal traits, are the most critical factors of mobile payment adoption for users in China. Combining TAM with innovation diffusion theory, Su, Wang, and Yan (2018) found that mobile users' experience of financial activities with computing technologies mediate the major determinants of mobile payment adoption. This includes perceived usefulness, perceived ease of use, compatibility, risk, and privacy concern. In terms of the perceived risks involved in mobile payment, Y. Yang, Liu, Li, and Yu (2015) found that information asymmetry, the uncertainty of technology, regulation, and privacy risks are the primary concerns from Chinese mobile payment users, discouraging the adoption of mobile payment services. Table 1 below provides a summary of the key literature identified in this research.

As discussed, there have been many studies investigating influential factors to mobile payment adoption in various countries (Appendix 1). However, most of the studies heavily focus on antecedents for the adoption of mobile payment. Despite the importance of customer retention in the market, there is little research on the antecedents for the satisfaction and loyalty of mobile payment users. The following section discusses the hypothesizes of the research.

HYPOTHESIS DEVELOPMENT

The Effect of Enjoyment and Challenge on User Satisfaction with Mobile Payment Services

Online gaming studies argue that enjoyment and challenges are closely associated with hedonic feelings, a reflective of user satisfaction (Wulf, Bowman, Velez, & Breuer, 2018). The flow theory confirms the relationship between enjoyment, challenge, and user satisfaction. The theory asserts that a person's mental state of full immersion, involvement, and enjoyment can be achieved when a dynamic balance between challenge and skill is maintained (Tse, Lau, Perlman, & McLaughlin, 2018). The relationship between challenge and enjoyment is dynamic, as the relationship may affect user satisfaction with the tasks to be performed. To conduct mobile payment tasks, users often have a clear goal, such as transaction with others (e.g., money transfer), vendor (e.g., ordering a product or a service), or government (e.g., filing income tax or paying utility bill), using mobile payment services. When performing each transaction, users may feel perceived flow or enjoyment, which has a positive influence on user satisfaction (Marinkovic & Kalinic, 2017). This discussion leads to the following hypothesis:

H1: Perceived enjoyment positively affects user satisfaction with a mobile payment service.

Although perceived ease of use has a significant influence on system use and user satisfaction, it alone does not contribute to satisfactory experiences. The flow theory asserts that an appropriate challenge of tasks can make an independent contribution to user satisfaction and flow experience (Novak, Hoffman, & Yiu-Fai, 2000). The ongoing experience of challenge can moderate emotional exhaustion and help increase momentary job satisfaction (Huang, Chiaburu, Zhang, Li, & Grandey, 2015). When users have some difficulties in using a mobile payment service to complete a certain task (e.g., ordering food to deliver when mobile sites are not user-friendly and have language barriers), they may feel challenged and more motivated to accomplish tasks. As a result, users may experience a high level of user satisfaction when faced with challenging tasks that can stimulate their interest (Riisgaard et al., 2017). Thus, we propose:

H2: Appropriate challenges positively affect user satisfaction with a mobile payment service.

The Effect of Task-Technology Fit on User Satisfaction with Mobile Payment Services

Task-Technology Fit (TTF) refers to "the degree to which technology assists an individual in performing the tasks" (Goodhue & Thompson, 1995). It suggests that when technology capability matches task characteristics that a user conducts, the fit has a positive impact on individual performance and utilization of the technology. We expect that the fit should affect user satisfaction with a mobile payment service for the following reasons. First, mobile payment services require a set of tasks to conduct mobile payments (Tam & Oliveira, 2016). If the services do not have adequate capabilities to complete the tasks, users should be unsatisfied with the services. Second, once the tasks are successfully completed, users can have the outcome without time lag. Thus, the users can immediately evaluate the fit between the technology and the tasks performed, which can affect their satisfaction with the technology. This discussion leads to the following hypothesis:

H3: Task-technology fit positively affects user satisfaction with a mobile payment service.

The Effect of User Satisfaction on User Loyalty to Mobile Payment Services

Affective evaluation or satisfaction with prior IT adoption experience has a positive effect on the continuance usage intention (Bhattacherjee, 2001; Hossain & Quaddus, 2012; C.-P. Lin, Tsai, & Chiu, 2009). Accordingly, users tend to be more loyal to an information system when they have a high level of satisfaction (Xu, 2018). The positive relationship between satisfaction and the intention has been verified in the contexts of diverse IT domains, such as clinical information systems (Hadji, 2016), online communities (Chou, Min, Chang, & Lin, 2010), online blog (Tang & Chiang, 2010), e-learning information systems (T. Lin, & Chen, C. , 2012), fitness-tracking applications (Li, Liu, Ma, & Zhang, 2019), mobile data services (Kim, 2010), and social media (Kaewkitipong, 2016). Besides, a growing number of studies on mobile payment have substantiated the evidence about the positive effect of user satisfaction on

continuance intention of mobile payment services (Cao, 2018; X. Chen & Li, 2017; Zhou, 2013). Therefore, we expect that satisfaction has a positive relationship with loyalty, leading to the following hypothesis:

H4: User satisfaction positively affects the loyalty to a mobile payment service.

The Effect of Perceived Usefulness on User Loyalty to Mobile Payment Services

When users perceive an information technology useful, their loyalty tends to increase. The positive correlation has been supported by multiple theories, such as the information system success theory, technology acceptance model, and affinity theory (Xu, 2018). J. H. Chen and Fu (2018) found that there is a positive relationship between the continuance usage of mobile information systems and perceived utilitarian, which can be considered as perceived usefulness (Zhou, 2013). Perceived utilitarian value is particularly pertinent for task-specific use of information systems (Zeithaml, 1988) because it is an overall judgment of functional benefits over sacrifices (Overby & Lee, 2006). Mobile payment services are primarily used to complete financial transactions. Therefore, the value of mobile payment services should be evaluated by the extent of potential benefit (e.g., convenience and timesaving) versus potential cost (e.g., identity theft, transactional risks). Thus, it is plausible that perceived usefulness has a positive effect on user loyalty to mobile payment services.

H5: Perceived usefulness positively affects the loyalty to a mobile payment service.

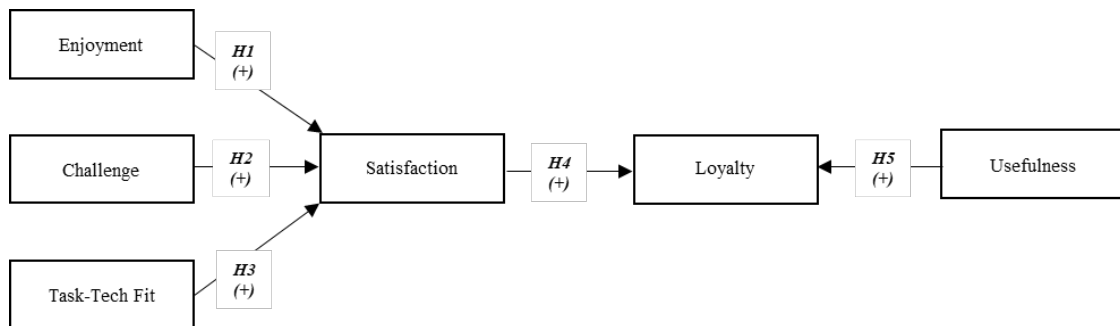Figure 1 below presents the overall research model of this study, summarizing the hypotheses discussed**.**

Figure 1. Research Model

RESEARCH METHODOLOGY

Survey Design and Administration

Given China is the leading country in mobile payment adoption, the market has a huge consumer base, mobile payment technology is highly generalized in China. Thus, data was collected in China. Based on established survey items in the extant literature, a survey was designed to test the hypotheses proposed (Appendix 2). As illustrated in Table 1, each item was modified, given the context of this study. The responses to the questions are in the 7-Likert scale from 1 "strongly disagree" to 7 "strongly agree." To rule out possible influences from technical differences in mobile payment apps, we focus on WeChat, which is one of the major mobile payment services in China.

An online survey was conducted for college students in southwestern China, collecting a total of 228 valid responses (Appendix 3). Approximately 52% of them are males, and 48% are females, which is a balanced gender ratio. Regarding age, most of the respondents (81%) are between 18 and 39, which highly corresponds to the demographics of the main mobile payment users. Most (91%) have been using WeChat for more than a year, and almost all the respondents (99.2%) are active users, using it more than two times per day.

Reliability and Validity of Survey Items

Before the hypothesis test, a series of tests were performed to ensure measurement adequacy, validity, and reliability of the constructs. Bartlett's test of sphericity confirmed that the correlation matrix is not an identity matrix with a p-value smaller than 0.01. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy statistics reported that all KMO values are higher than the threshold (0.5), indicating that further reliability and validity tests are valid (Kaiser, 1974). Cronbach's α coefficients of the measurement range from 0.715 (for Loyalty) and 0.8368 (for Challenge), which are larger than 0.7, confirming the internal consistency reliability of the survey instrument. Concerning indicator reliability, loadings of all items are higher than 0.7, which allows using all the items for the hypothesis test (Chin, 2010). An analysis of average variance extracted (AVE) and composite reliability was performed to ensure convergent validity and discriminant validity. All the AVEs are larger than 0.5, which is an acceptable threshold (Fornell & Larcker, 1981; Hulland, 1999), and the values for composite reliability are also higher than the recommended cut-off, 0.7 (Fornell & Larcker, 1981). In addition to the reliability and validity tests above, variance inflation factors (VIFs) was performed to test multicollinearity among constructs. The VIFs range from 1.44 to 1.97, which are far smaller than a strict cut-off, 5 (Chin, 2010). Table 1 below illustrates the results of the tests above.

Table 1. Quality Indicators of Reliability and Validity

Constructs	Bartlett's test of sphericity	KMO of Sampling Adequacy	Composite Reliability	Average Variance Extracted	Variance Inflation Factor
Enjoyment (ENJ)	< 0.01	0.722	0.899	0.623	1.93
Challenge (CHA)	< 0.01	0.726	0.902	0.632	1.97
Satisfaction (SAT)	< 0.01	0.684	0.864	0.525	1.58
Usefulness (USE)	< 0.01	0.698	0.865	0.559	1.56
Task-Tech Fit (TTF)	< 0.01	0.677	0.859	0.560	1.69
Loyalty (LOY)	< 0.01	0.560	0.875	0.568	1.44

To ensure the discriminant validity of the measurement, the square root of the construct's AVE was compared with their cross-correlations. As presented in Table 2, the square roots are far larger than the correlation. The variance explained by each construct is larger than their error variance, confirming discriminant validity (Chin, 2010).

Table 2. Correlations with Square Roots of AVE on the Diagonal

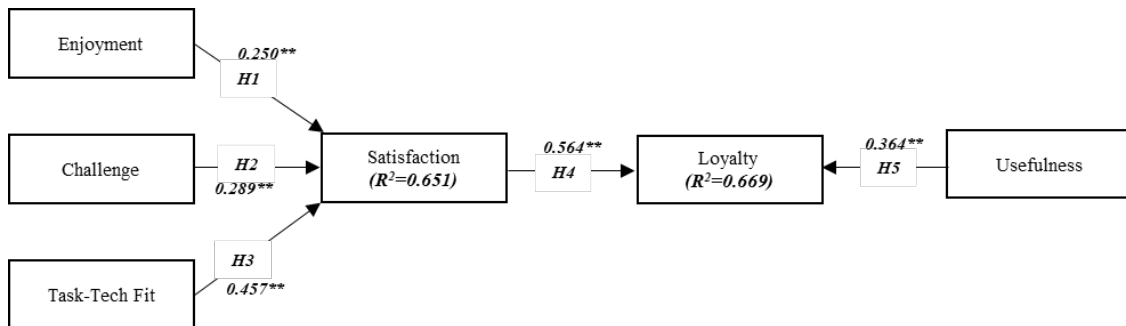|	ENJ	CHA	SAT	TTF	LOY	LOY
ENJ	**0.789**					
CHA	0.125	**0.794**				
SAT	0.224	0.354	**0.725**			
TTF	0.190	0.289	0.144	**0.748**		
USE	0.421	0.160	0.232	0.340	**0.721**	
LOY	0.246	0.098	0.471	0.220	0.343	**0.753**

HYPOTHESIS TEST

Structural Equation Modeling (SEM) with Partial Least Square (PLS) was adopted to test the proposed hypotheses. SEM is a proper approach to examine multiple causal relationships (Henseler, Ringle, & Sinkovics, 2009) in a research model. It also provides reliable analysis results even under potential issues concerning population, the scale of measurement, and residual distribution (Fornell & Bookstein, 1982).

Table 3 and Figure 2 summarize the results of the hypothesis tests. Hypothesis 1 is supported ($\beta=0.250$; $p<0.01$), indicating that enjoyment has a positive effect on the satisfaction of mobile payment service users. Hypothesis 2, which predicts the positive relationship between appropriate challenge and satisfaction, is supported ($\beta=0.289$; $p<0.01$). This finding indicates that users who perceive a mobile payment service has appropriate challenges tend to have higher satisfaction. Hypothesis 3, which predicts the positive relationship between task-technology fit and satisfaction, is supported ($\beta=0.457$; $p<0.01$). This implies that as users perceive a mobile payment service has a task-technology fit, they tend to be satisfied with the service. Lastly, satisfaction ($\beta=0.564$; $p<0.01$) and usefulness ($\beta=0.364$; $p<0.01$) are found to have positive relationships with loyalty, corresponding to the predictions of Hypothesis 4 and Hypothesis 5.

Table 3. Results of Hypothesis Testing

Hypothesized Relationship	Path Coefficient	t-Statistics	Hypothesis Test Result
H1: ENJ → SAT	0.250	3.41**	*Supported*
H2: CHA → SAT	0.289	4.26**	*Supported*
H3: TTF → SAT	0.457	5.03**	*Supported*
H4: SAT → LOY	0.564	6.71**	*Supported*
H5: USE → LOY	0.364	3.80**	*Supported*

※**Significance:** **$p <0.01$

※ Significance: **$p < 0.01$

Figure 2. Graphical Summary of Hypothesis Test Results

CONCLUSION

Discussion

Enjoyment is found to have a positive effect on user satisfaction with mobile payment services. This finding aligns with Zhou (2013), suggesting that enjoyment in the flow positively impacts user satisfaction. This implies that mobile payment service providers should consider having features and components to offer fun and excitement for their users (Zhou, 2011), which can trigger continuance usage of the service (Agrebi & Jallais, 2015). Likewise, the appropriate

challenge is positively related to user satisfaction with a mobile payment service. This finding corresponds to the perspective of the motivational model of video game engagement (Przybylski, Rigby, & Ryan, 2010). According to the model, a certain level of challenge can fulfill different types of needs. The first need is competence need, which is the fundamental human need to exert a meaning effect of users' environment (Elliot, McGregor, & Thrash, 2002). Mobile payment services may empower users so that the need for competence can be accomplished. The second need is autonomy need, which is the users' desire to feel volitional and to experience the psychological freedom (Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010). Mobile payment service enables customers to choose diverse payment methods. For example, customers can select either scanning the barcode from the seller, letting the seller scan the QR code, or sending money directly to the seller's mobile payment account. Given that most of the businesses in China accept these transaction methods, users should have enough freedom of choice in selecting the method. In addition, users can choose an account they use for the service, such as mobile payment service account, money market account, and credit cards, or bank accounts. Such diversity and autonomy in mobile payment services would enhance user satisfaction. The third need is relatedness need, which is the sense of caring relationship (Martela & Riekki, 2018). Mobile payment service enables users to have social interactions and social relationships with sellers as well as other consumers, such as online communities for review, feedback, and suggestion to merchants. The challenges in these activities could fulfill the relatedness need of the users.

Task-technology fit is found to have a positive effect on satisfaction with a mobile payment service. As users perceive a mobile payment service fits with their task of payment, they tend to be more satisfied with the service. This finding is consistent with Zhou, Lu, and Wang (2010), arguing that users are more likely to adopt a mobile banking technology when it fits the task they want to conduct. Naser, Nikhashemi, Hwang Ha, and Michael (2018) and Choudrie, Junior, McKenna, and Richter (2018) also found that the task-technology fit is an important factor to decide the adoption of mobile payment service. Not surprisingly, our finding suggests that user satisfaction with mobile payment service and perceived usefulness are positively associated with the loyalty of mobile payment users, aligning with Zhou (2013) and Turel and Serenko (2006).

Theoretical Implications

The research contributes to the theoretical development of studying mobile payment. This research further explores the feasibility and reliability of adopting the theoretical lenses of flow, technology adoption, and task-technology fit into the loyalty of mobile payment service users and its determinants. The outcomes of the study contribute to the understanding of those theoretical lens in analyzing mobile payment activities.

Practical Suggestions

Our findings suggest that customer satisfaction should be placed in the center when mobile payment providers develop customer retention strategies. The providers may consider highlighting enjoyment, challenge, and task-technology fit to enhance satisfaction. Concerning the positive relationship between enjoyment and satisfaction, one of the strategies to enhance enjoyment is promoting social network services and User Generated Content (UGC) sharing environment. Besides, they can consider adopting gamification features in their services, providing enjoyment in the transaction process. For instance, they could utilize fun sounds or visual elements for fun and excitement. The positive relationship between challenge and satisfaction implies that appropriate challenges in using a mobile payment service can enhance user satisfaction. This indicates that appropriate challenges in a series of tasks for the transaction process, such as opening the app, opening the camera, scanning to the barcode, and verifying payment details, may not negatively affect satisfaction with the service. However, it may help maintain or increase the satisfaction when they are offered at an optimal level. The positive effect of task-technology fit on satisfaction implies the importance of the technical capabilities of the service to conduct payment. Therefore, practitioners in the industry should focus on the usage pattern of mobile payment users to provide adequate features for various tasks in the transaction, which can improve the perceived task-technology fit.

User satisfaction is found to enhance customer loyalty. Given that the Chinese mobile payment market is saturated with many providers such as AliPay, Apple Pay, and Meituan SmartPay, and WeChat, the satisfaction would be more important than in other countries. The service providers need to focus on customer satisfaction management for their extant users to ensure a long-term relationship, which is more profitable than new customer acquisition. For example,

they may employ loyalty programs offering more benefits for long-term users to prevent them from switching to other providers. Another key factor to increase loyalty is perceived usefulness, indicating that the providers should focus on enhancing the usefulness of their services. For instance, they may want to add or enhance features to track expenditure patterns that can provide useful advice for the users or to offer information about cashback promotions.

Limitations and Future Research

As other studies, our study has several limitations. First, all samples were collected at a university in China. This may reduce the generalizability of the study, even with the assistance of qualitative follow-up questions. Second, only one mobile payment service in China is studied in the research. Although this approach could rule out unobservable factors introduced by unique characteristics of each mobile payment service, our findings may not be applicable to other service providers in China or those in other countries. Therefore, future studies may focus on other mobile payment services in other providers in China or those in the United States such as Apple Pay, Samsung Pay, and Venmo for their studies.

REFERENCES

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS quarterly*, 665-694.

Agrebi, S., & Jallais, J. (2015). Explain the intention to use smartphones for mobile shopping. *Journal of Retailing and Consumer Services, 22*, 16-23. doi:https://doi.org/10.1016/j.jretconser.2014.09.003

Anil, S., Ting, L. T., Moe, L. H., & Jonathan, G. P. G. (2003). Overcoming barriers to the successful adoption of mobile commerce in Singapore. *International Journal of Mobile Communications, 1*(1-2), 194-231.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly, 25*(3), 351-370.

Cao, X., Yu, L., Liu, Z., Adeel, L., & Gong, M. . (2018). Understanding mobile payment users' continuance intention: a trust transfer perspective. *Internet Research, 28*(2), 456-476.

Chen, J. H., & Fu, J.-R. (2018). On the effects of perceived value in the mobile moment. *Electronic Commerce Research and Applications, 27*, 118-128. doi:10.1016/j.elerap.2017.12.009

Chen, X., & Li, S. (2017). Understanding continuance intention of mobile payment services: an empirical study. *Journal of Computer Information Systems*, *57*(4), 287-298.

Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690): Springer.

Chou, S.-W., Min, H.-T., Chang, Y.-C., & Lin, C.-T. (2010). Understanding continuance intention of knowledge creation using extended expectation–confirmation theory: an empirical study of Taiwan and China online communities. *Behaviour & Information Technology, 29*(6), 557-570.

Choudrie, J., Junior, C.-O., McKenna, B., & Richter, S. (2018). Understanding and conceptualising the adoption, use and diffusion of mobile banking in older adults: A research agenda and conceptual framework. *Journal of Business Research, 88*, 449-465. doi:https://doi.org/10.1016/j.jbusres.2017.11.029

Csikszentmihalyi, M. (1990). Flow. The Psychology of Optimal Experience. New York (HarperPerennial) 1990.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Mis Quarterly, 13*(3), 319-340. Retrieved from http://www.jstor.org/stable/249008

Elliot, A. J., McGregor, H. A., & Thrash, T. M. (2002). 16: The Need for Competence. *Handbook of self-determination research*, 361-388.

Fornell, C., & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing research*, *19*(4), 440-452.

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models With Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research (JMR), 18*(3), 382-388.

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *Mis Quarterly*, 213-236.

Hadji, B., & Degoulet, P. . (2016). Information system end-user satisfaction and continuance intention: A unified modeling approach. *Journal Of Biomedical Informatics*, 61185-61193.

Hedman, J., & Henningsson, S. (2015). The new normal: Market cooperation in the mobile payments ecosystem. *Electronic Commerce Research and Applications, 14*(5), 305-318. doi:https://doi.org/10.1016/j.elerap.2015.03.005

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In *New challenges to international marketing* (pp. 277-319): Emerald Group Publishing Limited.

Hossain, M. A., & Quaddus, M. (2012). Expectation–confirmation theory in information system research: A review and analysis. In *Information systems theory* (pp. 441-469): Springer.

Hu, J.-L., Hsu, H.-H., Hsiao, C., & Tsao, H.-Y. (2019). Is mobile jumping more efficient? Evidence from major Asia-Pacific telecommunications firms. *Asia Pacific Management Review, 24*(2), 190-199.

Huang, J. L., Chiaburu, D. S., Zhang, X.-a., Li, N., & Grandey, A. A. (2015). Rising to the challenge: Deep acting is more beneficial when tasks are appraised as challenging. *Journal of Applied Psychology, 100*(5), 1398-1408. doi:10.1037/a0038976

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, *20*(2), 195-204.

Kaewkitipong, L., Chen, C. C., & Ractham, P. (2016). Using social media to enrich information systems field trip experiences: Students' satisfaction and continuance intentions. *Computers in Human Behavior*, *63*, 256-263.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36.

Kim, B. (2010). An empirical investigation of mobile data service continuance: Incorporating the theory of planned behavior into the expectation–confirmation model. *Expert Systems with Applications, 37*(10), 7033-7039.

Li, J., Liu, X., Ma, L., & Zhang, W. (2019). Users' intention to continue using social fitness-tracking apps: expectation confirmation theory and social comparison theory perspective. *Informatics for Health and Social Care, 44*(3), 298-312.

Liang, T.-P. (2014). Editorial Introduction: The Effect of Mobile Devices. *Pacific Asia Journal of the Association for Information Systems, 6*(1).

Lin, C.-P., Tsai, Y. H., & Chiu, C.-K. (2009). Modeling customer loyalty from an integrative perspective of self-determination theory and expectation–confirmation theory. *Journal of Business and Psychology, 24*(3), 315-326.

Lin, T., & Chen, C. . (2012). Validating the Satisfaction and Continuance Intention of E-Learning Systems: Combining TAM and IS Success Models. *International Journal Of Distance Education Technologies, 10*(1), 44-54.

Lin, T. C., & Huang, C. C. (2008). Understanding knowledge management system usage antecedents: An integration of social cognitive theory and task technology fit. *Information & Management, 45*(6), 410-417.

Linck, K., Pousttchi, K., & Wiedemann, D. G. (2006). Security issues in mobile payment from the customer viewpoint.

Liu, Z., Ben, S., & Zhang, R. (2019). Factors affecting consumers' mobile payment behavior: a meta-analysis. *Electronic Commerce Research, 19*(3), 575-601. doi:10.1007/s10660-019-09349-4

Marinkovic, V. v. k. a. r., & Kalinic, Z. z. k. a. r. (2017). Antecedents of customer satisfaction in mobile commerce. *Online Information Review, 41*(2), 138-154. doi:10.1108/OIR-11-2015-0364

Martela, F., & Riekki, T. J. J. (2018). Autonomy, Competence, Relatedness, and Beneficence: A Multicultural Comparison of the Four Pathways to Meaningful Work. *Frontiers in Psychology, 9*(1157). doi:10.3389/fpsyg.2018.01157

Naser, V., Nikhashemi, S. R., Hwang Ha, J., & Michael, M. D. (2018). Task Technology Fit in Online Transaction Through Apps. In A.-M. Laura & A.-Q. Francisco José (Eds.), *Optimizing E-Participation Initiatives Through Social Media* (pp. 236-251). Hershey, PA, USA: IGI Global.

Novak, T. P., Hoffman, D. L., & Yiu-Fai, Y. (2000). Measuring the Customer Experience in Online Environments: A Structural Modeling Approach. *Marketing Science, 19*(1), 22-42.

Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior, 61*, 404-414. doi:https://doi.org/10.1016/j.chb.2016.03.030

Overby, J. W., & Lee, E.-J. (2006). The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. *Journal of Business Research, 59*, 1160-1166. doi:10.1016/j.jbusres.2006.03.008

Phonthanukitithaworn, C. (2016). An investigation of mobile payment (m-payment) services in Thailand. *Asia-Pacific Journal of Business Administration, 8*(1), 37-54. doi:10.1108/APJBA-10-2014-0119

Pipitwanichakarn, T., & Wongtada, N. (2019). Leveraging the technology acceptance model for mobile commerce adoption under distinct stages of adoption. *Asia Pacific Journal of Marketing and Logistics*.

Pousttchi, K. (2003). Conditions for acceptance and usage of mobile payment procedures.

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of general psychology, 14*(2), 154.

Qu, Y., Rong, W., Ouyang, Y., Chen, H., & Xiong, Z. (2015). *Social aware mobile payment service popularity analysis: the case of WeChat payment in China.* Paper presented at the Asia-Pacific Services Computing Conference.

Riisgaard, H., Søndergaard, J., Munch, M., Le, J. V., Ledderer, L., Pedersen, L. B., & Nexøe, J. (2017). Associations between degrees of task delegation and job satisfaction of general practitioners and their staff: a cross-sectional study. *BMC health services research, 17*(1), 44-44. doi:10.1186/s12913-017-1984-y

Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. *Electronic commerce research and applications, 9*(3), 209-216.

Shankar, A., & Datta, B. (2018). Factors Affecting Mobile Payment Adoption Intention: An Indian Perspective. *Global Business Review, 19*(3_suppl), S72-S89. doi:10.1177/0972150918757870

Slade, E. L., Dwivedi, Y. K., Piercy, N. C., & Williams, M. D. (2015). Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: extending UTAUT with innovativeness, risk, and trust. *Psychology & Marketing, 32*(8), 860-873.

Su, P., Wang, L., & Yan, J. (2018). How users' Internet experience affects the adoption of mobile payment: a mediation model. *Technology Analysis & Strategic Management, 30*(2), 186-197. doi:10.1080/09537325.2017.1297788

Tam, C., & Oliveira, T. (2016). Performance impact of mobile banking: using the task-technology fit (TTF) approach. *International Journal of Bank Marketing*.

Tang, J.-t. E., & Chiang, C.-h. (2010). Integrating experiential value of blog use into the expectation-confirmation theory model. *Social Behavior and Personality: an international journal, 38*(10), 1377-1389.

Tse, D. C. K., Lau, V. W.-y., Perlman, R., & McLaughlin, M. (2018). The Development and Validation of the Autotelic Personality Questionnaire. *Journal of Personality Assessment*, 1-14. doi:10.1080/00223891.2018.1491855

Turel, O., & Serenko, A. (2006). Satisfaction with mobile services in Canada: An empirical investigation. *Telecommunications policy, 30*(5-6), 314-331.

Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work‐related Basic Need Satisfaction scale. *Journal of occupational and organizational psychology, 83*(4), 981-1002.

Verkijika, S. F. (2020). An affective response model for understanding the acceptance of mobile payment systems. *Electronic Commerce Research and Applications, 39*, 100905. doi:https://doi.org/10.1016/j.elerap.2019.100905

Wang, L., Luo, X., Yang, X., & Qiao, Z. (2019). Easy come or easy go? Empirical evidence on switching behaviors in mobile payment applications. *Information & Management*. Retrieved from http://www.sciencedirect.com/science/article/pii/S037872061830017X

Wang, L., & Yi, Y. (2012). The impact of use context on mobile payment acceptance: An empirical study in China. In *Advances in computer science and education* (pp. 293-299): Springer.

Wu, J.-H., Wang, S.-C., & Tsai, H.-H. (2010). Falling in love with online games: The uses and gratifications perspective. *Computers in Human Behavior, 26*(6), 1862-1871.

Wulf, T., Bowman, N. D., Velez, J. A., & Breuer, J. (2018). Once upon a game: Exploring video game nostalgia and its impact on well-being. *Psychology of Popular Media Culture*. doi:10.1037/ppm000020810.1037/ppm0000208.supp (Supplemental)

Xin, H., Techatassanasoontorn, A. A., & Tan, F. B. (2015). Antecedents of consumer trust in mobile payment adoption. *Journal of Computer Information Systems, 55*(4), 1-10.

Xu, F., & Du, J. T. . (2018). Factors influencing users' satisfaction and loyalty to digital libraries in Chinese universities. *Computers in Human Behavior*, 8364-8372.

Yang, S., Lu, Y., Gupta, S., Cao, Y., & Zhang, R. (2012). Mobile payment services adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. *Computers in Human Behavior, 28*(1), 129-142.

Yang, Y., Liu, Y., Li, H., & Yu, B. (2015). Understanding perceived risks in mobile payment acceptance. *Industrial Management & Data Systems, 115*(2), 253-269. doi:10.1108/imds-08-2014-0243

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing, 52*(3), 2-22.

Zhou, T. (2011). Understanding mobile Internet continuance usage from the perspectives of UTAUT and flow. *27*(3), 207-218. doi:10.1177/0266666911414596

Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. *Decision Support Systems, 54*(2), 1085-1091. doi:https://doi.org/10.1016/j.dss.2012.10.034

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior, 26*(4), 760-767.

Zion. (2019). Global Mobile Payment Technology Market: Industry Size, Share, Trends, Growth, Analysis and Forecast, 2017-2024. Retrieved from https://www.zionmarketresearch.com/report/mobile-payment-technology-market

APPENDIX

Appendix 1. Summary of Literature Review

Region	Country	Article	Major Finding
Africa	South Africa	Verkijika (2020)	Affect and anticipated regret would influence on behavioral intentions to use mobile payment positively
Europe	Germany	Schierz et al. (2010)	Compatibility is the most important determinant of the intention to use mobile payment
		Pousttchi (2003)	Categories costs, security, and convenience are essential factors for the acceptance and usage
		Linck et al. (2006)	Consumer perception of mobile payment security is affected by the lack of subjective security
	United Kingdom	Slade et al. (2015)	Performance expectancy, social influence, innovativeness, and perceived risk affect mobile payment adoption, and these factors are moderated by prior knowledge in using mobile payment
	Portugal	Oliveira et al. (2016)	Compatibility, technology security, performance expectations, innovativeness, and social influence are key determinants of mobile payment adoption
Asia Pacific	Thailand	Phonthanukitithaworn (2016)	Compatibility, subjective norm, perceived trust, and perceived risk are related to the adoption of mobile payment
	Singapore	Anil, Ting, Moe, and Jonathan (2003)	High cost and slow Internet are critical barriers to the adoption of mobile payment
	New Zealand	Xin, Techatassanasoontorn, and Tan (2015)	Trustworthiness is a key factor to determine the adoption of mobile payment
	India	Shankar and Datta (2018)	Perceived ease of use, perceived usefulness, trust, and self-efficacy are associated with mobile payment adoption
	China	Liu et al. (2019)	Perceived usefulness, perceived risk, social influence, trust and perceived ease of use affect the mobile payment adoption
		Luzhuang Wang and Yi (2012)	Performance expectancy and effort expectancy plays a critical role in deciding the mobile payment adoption
		Zhou (2013)	Service quality is the main factor affecting trust on mobile payment, and payment service quality is the major determinant of satisfaction
		Qu et al. (2015)	Social interaction, trust, perceived enjoyment, and use context decide the use of mobile payment
		S. Yang et al. (2012)	Behavioral beliefs and personal traits are important determinants for the mobile payment adoption
		Su et al. (2018)	Users' experience of financial activities with computing technologies mediate the major determinants of mobile payment adoption, such as perceived usefulness, perceived ease of use, compatibility, risk, and privacy concern
		Y. Yang et al. (2015)	Information asymmetry, the uncertainty of technology, regulation, and privacy risks discourage the adoption of mobile payment

Appendix 2. Constructs and Items

Construct	Item	Source
Enjoyment (ENJ)	- Using mobile payment services via WeChat is exciting. - Using mobile payment services via WeChat gives me a lot of pleasure. - I enjoyed using mobile payment services via WeChat.	Wu, Wang, and Tsai (2010)
Challenge (CHA)	- Using mobile payment services via WeChat challenged me to perform to the best of my ability. - Using mobile payment services via WeChat provided a good test of my skills. - Using mobile payment services via WeChat stretched my capabilities to the limits.	Novak, Hoffman, and Yung (2000) Choudrie et al. (2018)
Satisfaction (SAT)	- WeChat satisfies my need to explore mobile payment services. - WeChat satisfies my need to explore the areas. - WeChat satisfies my need to cultivate my skills to use mobile payment services.	Wu et al. (2010)
Usefulness (USE)	- Using WeChat enhances my daily productivity. - I find WeChat useful in my daily activities. - Using WeChat enhances my effectiveness in daily activities.	Agarwal and Karahanna (2000)
Task-Tech Fit (TTF)	- In helping complete my mobile payment tasks, the functions of WeChat are enough. - In helping complete my mobile payment tasks, the functions of WeChat are appropriate. - In helping complete my mobile payment tasks, the functions of WeChat fully meet my payment needs.	Zhou et al. (2010) T. C. Lin and Huang (2008)
Loyalty (LOY)	- WeChat is my first choice when I consider using mobile payment services - I intend to use mobile payment services frequently - I expect to use mobile payment services	Wu et al. (2010)

Appendix 3. Respondents Profile

Category	Group	Frequency	Ratio
Gender	Males	119	52%
	Females	109	48%
Age (Years Old)	18-22	73	32%
	23-39	112	49%
	30-39	16	7%
	over 40	27	12%
WeChat Use Experience (Years)	< 0.5	5	2%
	0.5 – 1	16	7%
	1- 1.5	49	22%
	1.5 – 2	35	15%
	2 – 2.5	123	54%
Frequency of WeChat Use per Day (Times)	< 1	2	0.8%
	2 - 4	36	15.8%
	5 - 6	44	19.3%
	7 - 9	15	6.6%
	> 10	131	57.5%