

A Study on the Influencing Factors of Customer Satisfaction and Continuous Use Intention in Mobile Payment Service

Zihao Jin¹ and Chae-Kwan Lim^{2*}

^{1,2*}*Tongmyong University, Busan, South Korea*
¹*jinzihao0024@naver.com*, ^{2*}*cklim@tu.ac.kr*

Abstract

This study aims to verify the structural relationship between service quality, system characteristics, customer trust, customer satisfaction, and continuous use intention of mobile payment service for Chinese people with experience in using mobile payment service. The results of the empirical analyses, it is confirmed that the service quality and systemic characteristics of the mobile payment service have a significant effect on the customer's trust. Also, it is structurally confirmed that customer trust and perceived risk have a significant effect on customer satisfaction. Furthermore, customer satisfaction also has a significant effect on customer's intention of continuous use. However, it is confirmed that the systemic characteristics of the mobile payment service do not affect the perceived risk.

Keywords: *Mobile payments service, Customer satisfaction, Continuous use intention*

1. Introduction

As internet technology develops, the e-commerce sector has also been growing rapidly. In China, the development of internet technology in the early 2000s not only led to the revolution of information technology but also affected various fields. Especially, e-commerce continues to grow rapidly by integrating with the Internet and mobile technology.

Early e-commerce was mainly used as a credit card, a non-cash payment method, in the online environment, which was difficult to be seen as an optimal payment method because users were limited in terms of cost.

In addition, in China, it was difficult to generally commercialize credit cards due to security and technical problems. To solve this problem, Alibaba first launched a mobile electronic payment service called Ali-pay in 2003. As soon as mobile payment service was launched in China, it started to attract consumers and it is growing rapidly until now. The launch of a mobile payment service has been a breakthrough in the transformation of existing payment methods, which was common in online payment.

In this context, this study was conducted to verify the structural relationship among service quality, system characteristics, consumer trust, customer satisfaction, and intention of continuous use mobile payment service for Chinese people who have experience using mobile payment service

2. Theoretical background

2.1. Service quality

Article history:

Received (June 15, 2020), Review Result (July 20, 2020), Accepted (August 25, 2020)

The importance of service quality is put on emphasis as it determines the intention to reuse according to the degree of satisfaction when customers enjoy the service. Parasuraman et al. [1] argued that the service quality was a difference that appears when the service level that customers expect and the service results performed are compared [2]. Grönroos presented a service quality model that evaluates service quality by comparing the service expected by consumers with the service provided. To distinguish between service quality and objective quality, service quality is considered subjective, but consumers define subjective quality as perceived service quality [3].

2.2. Systemic characteristic

Systemic characteristics can be defined by the quality and performance of the system that delivers data [4]. No matter how high-quality information services users use, they will have unstable awareness of the website if it failed to deliver data smoothly, such as slow page conversation speed or frequent disconnection. In such cases, users will stop using the website and leave to find other useful websites to replace the thing they use [5].

2.3. Consumer trust

Trust is a very complex concept that includes integrity, reliability, and belief in one group in another [6]. Gefen defined trust as an expectation that the other party will not act in a wait-and-see policy to take his interests in a certain situation [7]. Choi Hoon and Choi Yu-Jeong [8] stated that the usefulness and trust perceived in the study on simple payment service have a significant effect on the loyalty of simple payment service, and the greater the belief in service provider, the more the continuous use of simple payment service as a payment method, and the more positive word-of-mouth will tend to the people around them.

2.4. Perceived risk

Early studies of perceived risk were proposed by Bauer [9], Cunningham [10], and others. Consumers can produce unpredictable results in the process of purchasing and consumer behavior, resulting in uncertainty and risk. In particular, mobile payment is highly uncertain due to the limitation of checking the other transaction party online, and the perceived risk of the user will increase for this reason. Also, the perceived risk is a subjective variable, so the degree of risk felt by individuals may vary depending on the consumer's tendency to risk and product involvement. Recently, the security interest is increasing under various information technology environments [11]. Because of the vulnerability of sharing and openness of information, mobile payment can be dangerous in that payment information and personal information can be easily exposed in mobile payment.

2.5. Customer satisfaction

Oliver defined customer satisfaction as a judgment on whether the product or service satisfaction state is provided or was provided at a pleasant level from an emotional point of view under the cognitive judgment of the customer [12]. This customer satisfaction has a great influence on the growth and profit of the business and plays an important role in management. Therefore, it provides benefits such as improved profitability, consumer maintenance, positive word of mouth, and marketing cost reduction in the service sector [13].

2.6. Intention of continuous use

Battacherjee and others said that the intention to continue to use is the intensity of the intention or plan either to purchase or continue to use the product and service when receiving the product or service [14]. They asserted that the expected benefits formed based on past experiences play an important role in the formation of an intention to continuous use, which is a key concept for users and companies to maintain a continuous relationship.

3. Research model and hypothesis

The purpose of this study is to analyze the factors affecting the satisfaction of users using mobile payment services and to analyze how each element works within what kind of structural relationships. The survey was conducted for Chinese people who use mobile payment services and the questionnaire was composed of factors such as service quality, system characteristics, customer trust, customer satisfaction, and continuous intention to use.

Based on the theoretical background mentioned before and the previous studies of Han et al. [15], Lee and Park [13], this study set the service quality and system characteristics of mobile payment services as an independent variable, trust and perceived risk as parameters, and customer satisfaction and intention to use as independent variables. This setup focuses on the structural relationship among the variables.

The research hypothesis was set up as follows to test the research model established based on the results of previous studies.

Hypothesis 1. The service quality of mobile simple payment service will have a positive (+) effect on customer trust.

Hypothesis 2. The service quality of mobile simple payment service will have negative (-) effects on perceived risk.

Hypothesis 3. The system characteristics of mobile simple payment service will have a positive (+) effect on customer trust.

Hypothesis 4. The system characteristics of mobile simple payment service will have negative (-) effects on perceived risk.

Hypothesis 5. Customer trust in mobile payment services will have a positive (+) effect on customer satisfaction.

Hypothesis 6. Perceived risk of mobile simple payment service will have negative (-) effect on customer satisfaction.

Hypothesis 7. Customer satisfaction of mobile simple payment service will have a positive (+) effect on intention of continuous use.

4. Empirical analysis and results

4.1. Survey design

The subjects of this study were those who have used mobile payment services among Chinese people. A total of 350 questionnaires were collected from the survey using online, excluding 22 questionnaires containing many missing or insincere responses.

The questionnaire used in this study consisted of five Likert scales for service quality (11 items), systemic characteristics (11 items), customer trust (9 items), perceived risk (seven items), customer satisfaction, and intention of continuous use (three items each) presented in the research model. The question about demographic characteristics was composed of a nominal scale.

SPSS 25.0 was used for the statistical analysis of the data. Frequency analysis was conducted to identify the general characteristics of the subjects, and reliability analysis and exploratory factor analysis were conducted to verify the reliability and validity of the measurement tools used in the empirical study. In addition, structural equation modeling analysis was conducted to confirm the factor analysis and the hypothesis test using AMOS25.0.

4.2. General characteristics of data

As a result of analyzing the general characteristics of data, 46.6% of males and 59.2% of females participated in the survey, and 30.3% of males were in their 20s, 46.9% were in their 30s, 20.9% were in their 40s, and 2.0% were in their 50s or older.

The most common educational background was college graduation: 27.4% of high school graduation, 15.7% of university graduation, 34.0% of university graduation, and 22.9% of graduate school graduation.

The professional background was 15.7% of students, 38.3% of office workers, 20.0% of self-employed workers, 16.0% of professionals, and 10.0% of civil servants.

It was found that 34.9% of respondents earn 5,000 to 10,000 yuan, 25.1% earn 10,000 to 20,000, and 1.1 % earn 20,000 yuan or more, in which the highest ratio was 5,000 to 10,000 yuan.

4.3. Reliability and validity of measurement variables

In this study, reliability analysis and factor analysis were conducted to verify reliability and validity of the concept of configuration such as service quality, system characteristics, trust, customer satisfaction, and intention of continuous use in mobile payment service. In addition, to verify the validity of the composition of the measurement items, the factor analysis was conducted according to the main component extraction and the Varimax Rotation method, and the factor analysis of the eigen value of 1.0 or more was used for analysis.

First, the factor analysis of mobile simple payment service quality showed that three factors (convenience, speed, and economical efficiency) were derived, and the explanatory power of the whole factor was 50.175%. In addition, the reliability analysis showed that Cronbach's α value, which represents internal consistency, was convenience factor = .748, speed factor = .765, and economic factor = .701.

Second, as a result of factor analysis on the systemic characteristics of mobile payment service, three factors (compatibility, responsiveness, security) were derived, and the explanatory power of the whole factor was 47.581%. Also, the reliability analysis showed that Cronbach's α value was compatible factor = .704, responsive factor = .694, and security factor = .741.

Third, as a result of factor analysis of trust in mobile payment service, two factors (service trust, corporate trust) were derived, and the total factor explanatory power was 45.885%. In addition, the reliability analysis showed that Cronbach's α value was = .669 for the service trust factor and = .637 for the corporate trust factor, which means that the reliability of mobile payment customers was secured.

Fourth, the factor analysis of the perceived risk of mobile payment service revealed three factors (personal information leakage risk, technical risk, and financial risk) and the total factor explanatory power was 71.152%. Also, the reliability analysis showed that Cronbach's α value was = .748, technical risk factor = .880, and financial factor = .731, which means that the reliability of mobile payment service perceived risk was secured.

Fifth, as a result of factor analysis on customer satisfaction and continuous intention to use mobile payment service, two factors (intention of continuous use and customer satisfaction) were derived, and the total factor explanatory power was 54.071%. In addition, the reliability analysis results show that Cronbach's α value is customer satisfaction factor =.681, and intention-of-continuous-use factor =.720, which shows that overall, customer satisfaction and intention of continuous use for mobile payment service have been secured.

4.4. Confirmatory factor analysis

In this study, confirmatory factor analysis was conducted to test the single dimension of each measurement item using multi-items, and the final result is the follows.

As the analysis results, the final confirmatory factor analysis results showed that the analysis satisfied the general estimated standard value of recommendation with the fitness index value =113.788($p=.000$), RMR=.018, GFI=.952, AGFI=.911 NFI=.960, CFI=.980, and RMSEA=.057. The value of complex reliability (CR) was measured as more than 0.7 (estimated value) and the average variance extraction value (AVE) was more than 0.5 (estimated value), which proves that the convergent validity, or concentration validity, is secured.

4.5. Correlation analysis

Correlation analysis was conducted between each factor to verify the discriminant validity between each factor whose concentration validity was proved by the confirmatory factor analysis result. As a result, as shown in the table, the correlation coefficient value is not found to be large compared to the square root value of the diagonal variance extraction index (AVE) value, so it can be seen that the discrimination validity is secured.

4.6. Results of research hypothesis verification

This study investigates the structural relationship among service quality, system characteristics, customer trust, perceived risk, customer satisfaction, and intention of continuous use of mobile payment service. The results of verifying each hypothesis are as follows.

As a result of the research hypothesis, the t value of hypothesis 1 was -3.843, $p=.000(p<.01)$, which was statistically significant, so hypothesis 1 was adopted. The t value of hypothesis 2 was 9.228, $p=.000(p<.01)$, which was statistically significant and hypothesis 2 was adopted.

The t value of hypothesis 3 was 3.108, $p=.002(p<.01)$, which was statistically significant, so hypothesis 3 was adopted. However, the t value of hypothesis 4 was -.253, $p=.800(p>.05)$, which was out of the significance level, and hypothesis 4 was rejected.

In addition, the t value of hypothesis 5 was -2.160, $p=.024(p<.05)$, which was statistically significant, so hypothesis 5 was adopted, and the t value of hypothesis 6 was statistically significant as 8.730, $p=.000(p<.01)$. Hypothesis 7 was also adopted because the t value of hypothesis 7 was statistically significant at 7.705 and $p=.000(p<.01)$.

5. Conclusion

The above results showed that the service quality and systemic characteristics of mobile simple payment service had a positive effect on customer trust, and the service quality of simple payment service harmed perceived risk. Furthermore, the service quality and systemic characteristics of simple payment service have a positive effect on customer trust and reduce

the perceived risk, which has a significant effect both on customer satisfaction and on the intention of continuous use.

However, the systemic characteristics of simple payment services did not have a significant effect on the perceived risk, which showed a difference.

Reference

- [1] A. Parasuraman, V. A. Zeithaml, L. A. and Berry, "Conceptual model of service quality and its implications for future research," *Journal of Marketing*, vol.49, no.4, pp.41-50, (1985) DOI:10.1177/002224298504900403
- [2] S. J. Park, Y. R. Lee, and E. H. Lee, "Service strategies and quality dimensions of SERVQUAL," *Journal of Korean Marketing Association*, vol.30, November, pp.91-116, (2015) DOI:10.15830/kmr.2015.30.4.91
- [3] C. Grönroos, "A service quality model and its marketing implications," *European Journal of Marketing*, vol.18, no.4, pp.36-44, (1984) DOI:10.1108/EUM0000000004784
- [4] W. H. DeLone and E. R. McLean, "Information systems success: the quest for the dependent variable," *Information Systems Research*, vol. 3, no.1, pp.60-95, (1992) DOI:10.1287/isre.3.1.60
- [5] V. McKinney and K. Yoon, "The measurement of web-customer satisfaction: An expectation and disconfirmation approach," *Information Systems Research*, vol.13, no.3, pp.296-315, (2002) DOI:10.1287/isre.13.3.296.76
- [6] Morgan and S. Hunt, "The commitment-trust theory of relationship marketing," *Journal of Marketing*, pp.20-38, (1994) DOI:10.1177/002224299405800302
- [7] D. Gefen, "E-commerce: The role of familiarity and trust," *Article in Omega*, vol.28, no.6, pp.725-737, (2000) DOI:10.1016/S0305-0483(00)00021-9
- [8] H. Choi and Y. J. Choi, "The impact perceived risk on user's trust and continuance intention in mobile payment systems," *Journal of the Korea Institute of Information and Communication Engineering*, vol.20, no.6, pp.1096-1102, (2016) DOI:10.6109/jkiice.2016.20.6.1096
- [9] R. A. Bauer, "Consumer behavior as risk-taking," in *Dynamic marketing for a changing world*, R. S. Hancock (ed.), Chicago: American Marketing Association, pp.87, (1960)
- [10] S. M. Cunningham, "The major dimensions of perceived risk," In D.F. Cox(ed.), *Risk-taking and information-handling in consumer behavior*, Boston: Harvard University Press, pp.82-108, (1967)
- [11] J. Khalilzadeh, A. B. Ozturk, and A. Bilgihan, "Security-related factors in extended UTAUT model for NEC based mobile payment in the restaurant industry," *Computers in Human Behavior*, vol.70, no.107, pp.460-474, (2017) DOI: 10.1016/j.chb.2017.01.001
- [12] R. L. Oliver, "Whence customer loyalty?" *The Journal of Marketing*, vol.63, pp.33-44, (1999) DOI:10.1177/00222429990634s105
- [13] H. I. Lee and J. O. Park, "A study on the impacts of manufacture's sales policy of each power source on sales will by agency," *Management Information Systems Review*, vol.29, no.3, pp.23-50, KDC 325 DDC 658.46, (2020)
- [14] A. Bhattacharjee, "Understanding information systems continuance: An expectation confirmation mode," *MIS Quarterly*, vol.23, no.3, pp.351-370, (2001) DOI:10.2307/3250921
- [15] J. H. Han, S. H. Jae, B. H. Kim, and J. S. Park, "Effects of consumer trust and perceived usefulness on mobile payments and online shopping website loyalty," *Journal of Digital Convergence*, vol.13, no.12, pp.75-87, (2015) DOI:10.14400/JDC.2016.13.12.75