# A Study on the Influence of the Elderly's Will to Use Mobile Payments in China and Korea

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# A Study on the Influence of the Elderly's Will to Use Mobile Payments in China and Korea

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● 요 약 ●

This article aims to study the influence of the motivation and resistance of mobile payment on the willingness of elderly users to use it. A model for the willingness to use mobile payment is constructed based on the UTAUT model, using elderly people in China and South Korea as the research subjects. We found the following conclusions after analyzing the data with SPSS and AMOS, In general, social influence and performance expectations are the biggest drivers for mobile payment adoption among seniors, while perceived risk and cost are the biggest obstacles. This research can provide useful recommendations for the formulation of corporate strategies and provide new development directions and enlightenments for mobile payment companies.

키워드: Mobile payment, UTAUT model, Perceived risk, Willingness to use

## I. Introduction

With the rapid development of Internet technology, mobile payment, as an emerging convenient payment method, has been developing rapidly, and a "cashless society" seems to be the general trend. With the popularity of smartphones, the number of mobile payment users and the number of transactions are still on the rise. However, the acceptance and learning capabilities of the older consumer groups are rather poor, which makes them more embarrassment or difficult when they need to use mobile payments. Therefore, thinking and analyzing the factors that affect the willingness of the elderly to use mobile payment can promote mobile payment among the elderly in a targeted manner and lay the foundation for smart elderly care and elderly e-commerce, which has certain social practical significance.

## II. Literature review and research hypotheses

### 1. UTAUT model

Venkatesh et al. (2003) presented the UTAUT model, which combines eight classical models and summarizes human willingness to use a technology product or service into four decisive factors: Performance Expectancy, Effort Expectancy, Social Influence, Convenience. And four moderating variables: gender, age, experience, and voluntaries. Venkatesh et al. believe that performance expectations have a significant impact on the adoption of information systems. In mobile electronic banking, performance expectations are also seen as a more influential factor of use intention (Pikkarainen et al. 2004). Lars B. A. K. found through research that efforts to expect to have a significant impact on the acceptance and use of mobile services. Deward W.B.'s research results show that hard expectations have a significant positive impact on the acceptance of mobile

commerce. Nysveen, Hailong Jiang believes that social influence is an important factor influencing users' acceptance of mobile payments. Tao Zhou et al. found that performance expectations, task technology matching, social influence, and convenience all have an important impact on users' adoption of mobile banking. Specifically, Guo Qianyu's research shows that the influencing factors that affect consumers' use of mobile payments are, in order, willingness to use, convenience conditions, performance expectations, effort expectations, social influences, and cognitive risks.

Therefore, this article proposes the following assumptions:

H1: Performance expectancy is positively correlated with the willingness to use mobile payments.

H2: Effort Expectancy is positively correlated with willingness to use mobile payment.

H3: Social Influence is positively correlated with the willingness to use mobile payments.

H4: Convenience conditions are positively correlated with the willingness to use mobile payments.

H5: Mobile payment willingness is positively related to mobile payment behavior.

H6: Convenience conditions are positively correlated with mobile payments.

## 2. Perceived risk and perceived cost

The perceived risk is the level of risk consumers believe they will incur when adopting mobile payments. Shi Zenggong (2008) found that 73% of the surveyed users considered inadequate security mechanisms and high transaction risks as the main problems affecting their acceptance of mobile payment services. The perceived cost is the additional expense that users perceive when adopting mobile payments. According to Sweeney (2001), the higher the purchase cost, the lower the willingness to purchase. Therefore, this paper proposes the hypothesis:

H7: The perceived risk of users plays a negative role in the willingness to use mobile payment.

H8: The cost of using mobile payments negatively affects willingness to use them.

Based on the above theoretical basis and assumptions, the research model established in this paper is shown in Figure 1.
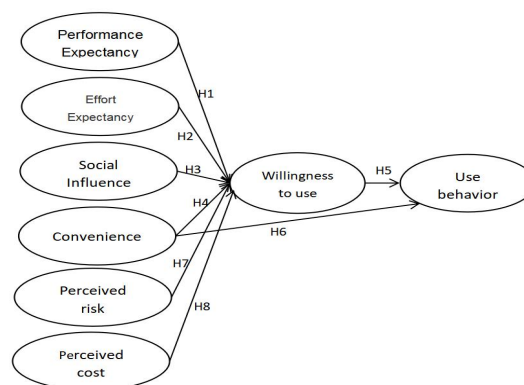


Fig. 1. System Architecture

## III. Questionnaire survey and data analysis

### 1. survey design

We aim to explore the factors that influence the willingness of middle-aged and elderly people to use mobile payments in this study. Based on the research objectives of this article and the specific characteristics of the research objects, questionnaire surveys will be used. Elderly people using mobile payments in China and South Korea will be the research objects. Reliability analysis, factor analysis, and constructive equation model analysis were performed on 243 questionnaires by SPSS V23.0 and AMOS V23.0.

### 2. Reliability analysis and validity analysis

Cronbach's $\alpha$ coefficient is directly proportional to the reliability of the measurement content, that is, the larger the $\alpha$ coefficient, the greater the reliability of the measurement content. Through SPSS23.0 analysis of the reliability of each variable, the Cronbach's $\alpha$ coefficient value of all variables is above 0.7, it can be judged that the internal consistency of each item exists and has good stability, which is fully in line with the scope of the reliability measurement of this research.

KMO and Bartlett test were performed by SPSS23.0, the results showed that the KMO value was 0.808, and the result of Bartlett sphere test was significant at the level of P=0.000, indicating that it is suitable for principal component analysis. After deleting the test items with factor loading less than 0.5, the remaining test items show relatively good structural validity. Recalculating the reliability of the deleted items, the expected validity α is above 0.7, which are all within the acceptable range.

## 3. Hypothesis testing

This paper uses AMOS23.0 to calculate the standardized factor load of each item and the standardized regression coefficient (path coefficient) of each path and its significance, and report the key fitting indicators. The results showed that several factor loads did not meet the requirements, and CFI and GFI did not meet the requirements. Significance requires the P value to be less than 0.05, The AMOS output results show: Perceived risk → Willingness to use (P=0.0); Expectation of hard work → Willingness to use (P=0.0); Convenience → Use behavior (P=0.0); the other P values do not meet the significance requirements. These indicators indicate that the existing model needs to be revised. The correction of this model includes the following steps:

(1) The model was simplified by removing the variable with an insignificant p-value (convenience). This operation shows that the relationship between convenience conditions and user behavior is not significant, which is consistent with the findings of Park et al.

(2) Delete variables with insignificant P values (effort expectation) to further simplify the model. This operation shows that the relationship between effort expectation and willingness to use is not obvious. This conclusion is similar to that of ZHOU et al.

(3) After the above deletion and modification, the direct impact of "perceived risk" on "willingness to use" has not reached a significant level (p=0.30 after the above modification). At the same time, according to the suggestion of the revised index (MI=10.09), a "perceived Risk" has a direct impact on "usage behavior", so modify the hypothesis:

H8: Perceived risk negatively influences usage behavior.

The influence path of mobile perceived risk shows that perceived risk does not affect usage behavior through intention to use, but directly affects usage behavior. After this correction, the fitting index of the model is higher than the ideal value.

(4) To establish a direct correlation between "Performance Expectancy" and "Social Influence" (MI=30.90); to establish a correlation between "Perceived Risk" and "Perceived Cost" (MI=11.69), and therefore hypothesized that:

H9: Performance Expectancy and Social Influence are interrelated.

H10: Perceived risk and perceived cost are interrelated.

Interrelated means that the two influence each other. The greater the performance expectancy, the greater the social influence; the greater the social influence, the greater the performance expectancy. In the early stage of the development of mobile payment, the cost of use is high, and people's perceived risks are also high. As the technology and market mature, costs and risks will decrease.

(5) Items with factor loadings less than 0.6 were deleted. After testing, the reliability and validity of the deletion still met the requirements, and all indicators reached the ideal fitting standard. After the deletion, the scale was further streamlined.

## IV. Conclusions

### 1. Analysis of research results

After data analysis, it is assumed that H1, H3, H5, H7, H8, H9, and H10 are supported, while H2, H4, and H6 are not supported. Although cell phone payment is convenient in use, it is rather troublesome for infrequent users in terms of related procedures. At present, cell phone payment is not widely popular in Korea, and the effort expectancy and convenience conditions of mobile payment cannot be reflected yet. This article shows through empirical research that the biggest motivation for consumers to adopt mobile payments is social influence, followed by Effort Expectancy. If the social influence or Effort Expectancy of mobile payments are increased, consumers' enthusiasm for adopting mobile payments will increase significantly, and consumers will adopt mobile payments. The biggest obstacle to payment is perceived risk, followed by perceived cost. Reducing perceived risk and the perceived cost is also an effective way to increase the market share of mobile payment.

### 2. Discussion

Currently, China's mobile payment business is gradually improving, but the Korean market is still in the development stage. Therefore, companies need to understand the factors that affect the use of mobile payments by the elderly, formulate and improve development policies that adapt to local conditions, and increase user stickiness. Through the research of this article, the following enlightenment can be obtained: ① Perceived risk is the strongest resistance to the use of mobile payment. Enterprises should enhance the security and stability of mobile payment. ② Social relations and word-of-mouth communication play an important role in the spread of mobile payments. Therefore, companies should give full play to the advantages of word-of-mouth marketing, especially to strengthen the promotion of payment security, and establish a good brand image for the company. ③ Companies should improve users' awareness of mobile payments, strengthen market education, and reduce individual user costs.

## 3. The lack of research

This article focuses on the elderly as the research object, Due to the limitation of objective conditions, this study has certain limitations. For example, the influence of trust factors on mobile payment was not considered in the research. In addition, due to time and energy constraints, the number of samples is small. Future research needs to expand the sample range to cover more people with professional and educational backgrounds.

## ACKNOWLEDGEMENT

## REFERENCES

[1] Shankar, A., and Datta, B., "Factors affecting mobile payment adoption intention: An Indian perspective," Global Business Review, Vol. 19, No. 3, pp.72-89, March 2018.

[2] Slade, E. L., Williams, M. D., and Dwivedi, Y. K., "Mobile payment adoption: Classification and review of the extant literature," The Marketing Review, Vol. 13, No. 2, pp.167-190, Nov. 2013.

[3] Keramati, A., Taeb, R., Larijani, A. M., and Mojir, N., "A combinative model of behavioural and technical factors affecting 'Mobile'-payment services adoption: an empirical study," The Service Industries Journal, Vol. 32, No. 9, pp.1489-1504, Sept. 2012.

[4] Garrett, J. L., Rodermund, R., Anderson, N., Berkowitz, S., and Robb, C. A., "Adoption of mobile payment technology by consumers," Family and Consumer Sciences Research Journal, Vol. 42, No. 4, pp.358-368, Apr. 2014.