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Research Paper

A study on personal information protection behavior in easy payment service: focused on protection motivation theory

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Abstract

Background/Objectives: This paper deals with the easy payment service among fin-Tech, a hot market worldwide.'Fintech' refers to a service that combines 'finance' and 'technology' as it is called, or a company that conducts such services.
Methods/Statistical analysis: In order to understand the behavior of users of personal information in the simple payment service centered on twenties, I conducted empirical studies using the theory of protection motivation.
Findings: The perceived vulnerability of the possibility of personal information infringement and the self - efficacy related to self - confidence of being able to keep personal information were found to have a positive effect on privacy behavior. However, the variables of perceived severity did not have a significant effect on privacy behavior.
Improvements/Applications: it is necessary to conduct research on people of various age groups in future research and to carry out research by selecting detailed items within the simple payment service framework.

Keywords: *Fin-Tec; Easy Payment; Protection Motivation Theory; Personal Information Protection Behavior; Privacy Behaviour*

1. Introduction

Recently, FinTech has been blowing around the world. 'Fintech' refers to a service that combines 'finance' and 'technology' as it is called, or a company that conducts such services. Here, the technology refers to information technology (IT). For example, mobile finance combined with the Internet and communication technology, and simple payment services. In particular, the simple payment service in Korea is a service that is widely used in the 20s. The simple payment service is a service that allows payment by simple self-certification without having to enter the card number, official certificate password and the like every time the information of the credit card or the check card is inputted. Already abroad, FinTech has been a hot market for many years. In 2014, investment in the Fin-tech sector totaled US $ 3.4 billion, or US $ 3.70 billion. The increase in investment is four times faster than in other fields. The money invested in FinTech start-ups increased by more than three times a year. However, due to the mandatory use of official certificates and Active-X in Korea, users have been suffering from online or mobile shopping. Recently, the government has recognized the importance of Fin-tech, Or simple payment services using the Internet are pouring out. [1]
However, personal information leakage accidents frequently occur at financial institutions or telecommunication companies. The scale is also gradually increasing. So users wonder if they can use a simple payment service. But users are using the easy payment service because of convenience. In fact, 65% of non-users are not trustworthy about personal information protection, according to DMC Media's "Mobile Payment Service Usage Behavior (2015.3)".

In this study, we try to understand how the convenience of simple payment service and the concern about security have a correlation with privacy protection behavior in the situation of rapid payment service market.

2. Advanced research

2.1. Easy payment service

A simple easy service refers to a payment system, also called FinTech. But FinTech is not meant to be a simple payment service because it is a concept that refers to the revolution that takes place throughout finance. It is a simple payment service, collectively referred to as a service that allows you to easily pay anywhere, anytime with a smartphone, as it goes beyond the offline payment system that requires payment of an online payment system and physical card .
The simple payment service is a service of the process of performing the easy only by a simple authentication procedure at the time of payment after inputting the credit card information of the user. Since the financial regulation such as the use of the authorized certificate in the past has not enabled the simple easy service It was a situation. Alibaba, PayPal, and other companies with tremendous success have been heard, and the need for the introduction of a simple payment service has become a voice of change. The financial authorities allowed payment methods that excluded the certificate, abolished the payment limit, and deregulated payment methods such as allowing PG card information. As a result, the market has changed so that the same simple easy service can be serviced in Korea.

The domestic simple easy service market is growing rapidly. The market, which was 1.3 trillion won in 2013, grew more than four times to 5.7 trillion won in two years. As the market for simple easy services has been announced, companies have introduced the simple easy service of their own standards, and as a result, the current market has become a form of melee which can not be overlooked. [2].

Recently, government regulations have eased, and as a result, a number of simple payment services have begun to emerge. The purpose of this study is to investigate consumers' personal information protection behaviors in the rapidly growing simple payment market

2.2. Protection motivation theory

Protection Motivation Theory (PMT) describes the effects of threat messages based on the assumption that when exposed to health threats in health care, it triggers a change in behavior that protects one's health by causing motivation to protect Developed. Protection motivation theory explains the process of behavior change by Fear Appeal based on Expectancy-Value Theory and Cognitive Processing Theory. According to the theory of protection motivation, the motivation to protect oneself from danger is formed by psychological factors and changes the behavior. Recently, protection motivation theory has been studied in order to explain certain protective behaviors in the field of information protection.

The motivation for protection comes from the cognitive evaluation process of Threat Appraisal and Coping Appraisal. Threat assessment consists of perceived vulnerability and perceived severity as an individual's assessment of a threatening event. Perceived vulnerability means the degree of likelihood that a threatening event will occur, and perceived severity means the severity of the damage caused by the threatening event.

Countermeasure evaluation consists of self-efficacy, perceived response effectiveness, and perceived barriers as an individual's assessment of ability to prevent and respond to threats. Self-efficacy refers to individual beliefs about the ability to cope with threatening events, and perceived efficiency refers to the degree of effectiveness of action (behavior). Perceived disability refers to factors that interfere with behavior such as money, time, and effort spent in performing the proposed action. [3]

3. Research model & hypothesis

3.1. Research model

The existing simple payment service mainly used the technology acceptance model of Davis (1989) with the perceived ease of use and perceived usefulness as variables in the research on intention to use. Most studies have found that there are new variables to find out about the intention to use simple payment.

In this study, consumers are trying to study privacy protection behavior when they use simple payment, because the competitiveness of simple payment is 'convenience' and security concerns are increasing. We use the theory of protection motivation, which is often used to study privacy behavior. Perceived vulnerability, perceived seriousness, and self - efficacy, which are the main variables of protective motivation theory, were set as factors influencing privacy behavior. Figure 1 shows this research model.

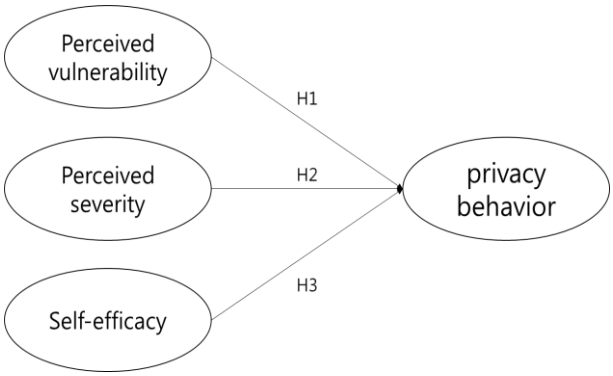

Fig. 1: Research Model.

3.2. Research hypothesis

The following hypothesis is set up based on the results and arguments of various previous studies on the relationship between variables.

In this study, we apply the theoretical framework of protection motivation theory mentioned in previous studies to identify the factors influencing personal information protection behavior. The variables derived from the motivation theory are as follows.

According to the theory of protection motivation, an appreciation of perceived risk, that is, anxiety caused by perceived vulnerability, causes the attitude or action to remove such anxiety by activating the psychological mechanism of cognitive dissonance [3]

Therefore, this study predicted perceived vulnerability as a variable that affects privacy protection behavior.

H1: Perceived vulnerability will have a positive impact on privacy behavior.

Perceived severity is an individual's subjective assessment of the negative consequences of online privacy breaches. In other words, it means the level of how seriously you perceive the negative consequences of privacy infringement online. [3]

Therefore, this study predicted the perceived severity as a variable that affects privacy protection behavior.

H2: Perceived severity will have a positive impact on privacy behavior.

Self-efficacy is an individual's belief that he or she possesses the skills and abilities to perform a given task within a particular domain. [3]

H3: Self-efficacy will have a positive effect on privacy behavior.

4. Analysis of actual proof

4.1. The Collection of data and the characteristics of the sample

This questionnaire was aimed at people in their 20s who knew what a simple payment service was or who used it directly. From June 10, 2016 to June 14, 2016, we conducted the survey for about 5 days and retrieved the questionnaires using 'Google Drive.' The questionnaire was distributed to a total of 150 people, and 130 questionnaires were collected, and 126 questionnaires were used for the final analysis, excluding the untruthful responses. The reason for limiting the questionnaire to the 20s is because the ratio of using simple easy service is higher than other ages. The demographic characteristics of the questionnaire used in the final analysis are shown in Table 1.

Table 1: Demographic Characteristics of the Questionnaire

Classify	Article	Frequency
Sex	Male	79
	Female	47
Age	19~23	48
	24~29	71
	30~34	5
	Rest	2
Total		126

PLS analysis requires convergent validity, internal consistency, and discriminant validity on the constructs and measurement items used. In order to verify the intuitiveness of the measurement items, we analyzed the factor values and T values of the items to measure the construct concept through the bootstrapping method of PLS. As shown in Table 2, all of the variables were over 0.5, which is the guideline value of Fornell&Larcker (1981), and the T-value of all factors was over 1.96.

Cronbach's Alpha is the most widely used reliability coefficient to confirm the reliability of measurement tools. Cronbach's Alpha value is 0.6 or more in perceived vulnerability, perceived seriousness, and self-efficacy.

The internal consistency of measurement items was measured using the composite reliability of Fornell&Lacker (1981). As a result of the analysis, the composite reliability was found to be 0.7 or more. Average Variance Extracted (AVE) values were found to be over 0.5, which is the standard value of Fornell&Larcker (1981) and Chin (1998). As a result of the above analysis, the research model of this study showed high level of intuitive validity and internal consistency.

In PLS analysis, confirmatory factor analysis requires more confirmatory factor analysis rather than exploratory factor analysis. In this study, confirmatory factor analysis was conducted and the results are shown in Table 3. In confirmatory factor analysis, the factor value loaded on the characteristic factor should be greater than 0.5 and the corresponding factor value should be larger than the other factor values.

Table 2: Analysis of Convergent Validity Internal Consistency

Variable	list of measurement	factor loading	t-value	Complex reliability	AVE	Cronbach's α
Perceived vulnerability	Vulnerability 1	0.7955	10.0176	0.923	0.750	0.887
	Vulnerability 2	0.8392	13.8684			
	Vulnerability 3	0.9054	19.7207			
	Vulnerability 4	0.9199	19.5598			
Perceived severity	severity 2	0.6175	2.2042	0.841	0.645	0.797
	severity 3	0.9505	3.7251			
	severity 4	0.8076	3.8549			
Self-efficacy	Efficacy 1	0.5362	4.5957	0.808	0.593	0.684
	Efficacy 2	0.8631	37.0215			
	Efficacy 3	0.8656	32.543			
privacy behavior	privacy behavior 1	0.8939	42.993	0.925	0.805	0.880
	privacy behavior 2	0.9092	62.0062			
	privacy behavior 3	0.8888	47.9868			

Table 3: Cross-Loading and Factor Loading Analysis.

Variable	list of measurement	privacy behavior	Self-efficacy	Perceived severity	Perceived vulnerability
Perceived vulnerability	1_1	0.2152	0.1798	0.1210	0.7955
	1_2	0.2272	0.1464	0.2561	0.8392
	1_3	0.2421	0.1268	0.2012	0.9054
	1_4	0.2437	0.0175	0.1626	0.9199
Perceived severity	2_2	0.0123	0.1813	0.6175	0.3959
	2_3	0.2262	0.2275	0.9505	0.1961
	2_4	0.1175	0.1520	0.8076	0.1600
Self-efficacy	4_1	0.1361	0.5362	0.3984	0.0961
	4_2	0.5037	0.8631	0.2038	0.1123
	4_3	0.5221	0.8656	0.1136	0.1107
privacy behavior	5_1	0.8939	0.4230	0.1658	0.2680
	5_2	0.9092	0.4804	0.1759	0.2529
	5_3	0.8888	0.6001	0.2048	0.2088

Table 4 shows the results of the analysis of discriminant validity. In this study, the discriminant validity was evaluated by whether the square root of the AVE value is larger than the correlation value between the other concepts (Fornell and Larcker, 1981). <Table 4> shows that the smallest value (0.771) of the square root of the AVE value of the variables exceeds the correlation value (0.568) which is the greatest. Therefore, it can be confirmed that the model used in this study has sufficient discriminant validity.

Table 4: the analysis of discriminant validity

	privacy behavior	Self-efficacy	Perceived severity	Perceived vulnerability
privacy behavior	0.897			
Self-efficacy	0.568	0.771		
Perceived severity	0.205	0.225	0.804	
Perceived vulnerability	0.268	0.133	0.214	0.866

5. Conclusion

This study is based on the theoretical framework of protection motivation theory in order to examine the behavior related to personal information protection of users of simple payment. As a result of the research, the perceived vulnerability of the possibility of personal information infringement and the self - efficacy related to self - confidence of being able to keep personal information were found to have a positive effect on privacy behavior. However, the variables of perceived severity did not have a significant effect on privacy behavior.

Therefore, it is necessary to conduct research on people of various age groups in future research. In addition, it seems necessary to carry out research by selecting detailed items within the simple payment service framework. For example, it is necessary to further divide the classification of simple payment services into popular kakao pay and Naver pay.

6. Acknowledgment

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