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A Study On The Relationship Between Adoption Factor, Attitude And Intention Of Mongolian Smartphone Banking Service

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Abstract

The purpose of this study is to examine the relationship between smartphone banking adoption factors, usage intention, and adoption behaviors of Mongolian smartphone users. To accomplish this objective, we review various literature and apply the UTATU model to smartphone banking services. To examine the research model, we collected data from Mongolian smartphone users using smartphone banking services. We used a structural equation model analysis known as PLS to verify the research hypotheses. The results show that performance expectancy, effort expectancy, and social influence positively affect user attitude. Effort expectancy positively influences performance expectancy. User attitude and performance expectancy have a positive effect on usage intention.

Keywords: Smartphone, Banking, Adoption, Intention, Attitude, Mongolia

1 Introduction

Recently smartphone has widely influenced every mobile service. Particularly, mobile banking services have transformed smartphone banking services. Smartphone users are using smartphone banking services for several benefits and many banking companies have competitively launched smartphone banking services to acquire and maintain banking customers.

Though smartphone banking users have increased, smartphone banking research has not received a lot of attention. So this study has focused on smartphone banking service adoption factors, intention and behavior. Smartphone banking services have been diffused around the world, and Mongolia is no exception.

This study concentrates on Mongolia in which mobile communication market over 80% the Mongolian information and communication market. Forty percent of Mongolia's population resides near Ulaanbaatar. Although Mongolia's territory is 7.5 times bigger than the Korean peninsula, the density of the population is very low. Because wire communication costs are high, the mobile communication market has been developed.

Recently the Mongolian mobile market and mobile services have been expanded in the smartphone sector. So this study examines the relationship of smartphone banking service adoption factors and related constructs in Mongolia. To achieve this objective, we chose the UTAUT (Unified Theory of Acceptance and Usage of Technology) model for analysing the relationship [1].

The rest of this paper is organized as follows. Section 2 provides the literature review, hypotheses and research model. The data collection, measurement, and analysis methodology are suggested in Section 3 and 4. Finally, we conclude the paper by suggesting findings and implications.

2 Literature Review and Hypothesis

2.1 Literature Review

UTAUT was developed as a modification of eight prominent models in IS adoption research. This model suggests the four adoption factors of performance expectancy, effort expectancy, social influence, and facilitating conditions. Our research model added perceived credibility because credibility is an important factor in smartphone banking services. These adoption factors positively affect intention in this model. Intention positively influences user behaviour in IS adoption in UTAUT.

Venkatesh et al.[1] defined performance expectancy as the degree to which an individual believes that using the system will help him to attain gains in job performance. Effort expectancy is defined as the degree of ease associated with the use of the system. Social influence is defined as the degree to which an individual perceives that important others believe he should use the new system. Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. Perceived credibility is defined as the degree to which an individual believes that the system will protect private information and system transactions.

This study changed the UTAUT model. The original model of UTAUT explored the relationship between adoption factors, intention, and behaviour. But we modified the UTAUT model to focus on the attitude and intention of smartphone banking users.

2.1 Hypothesis

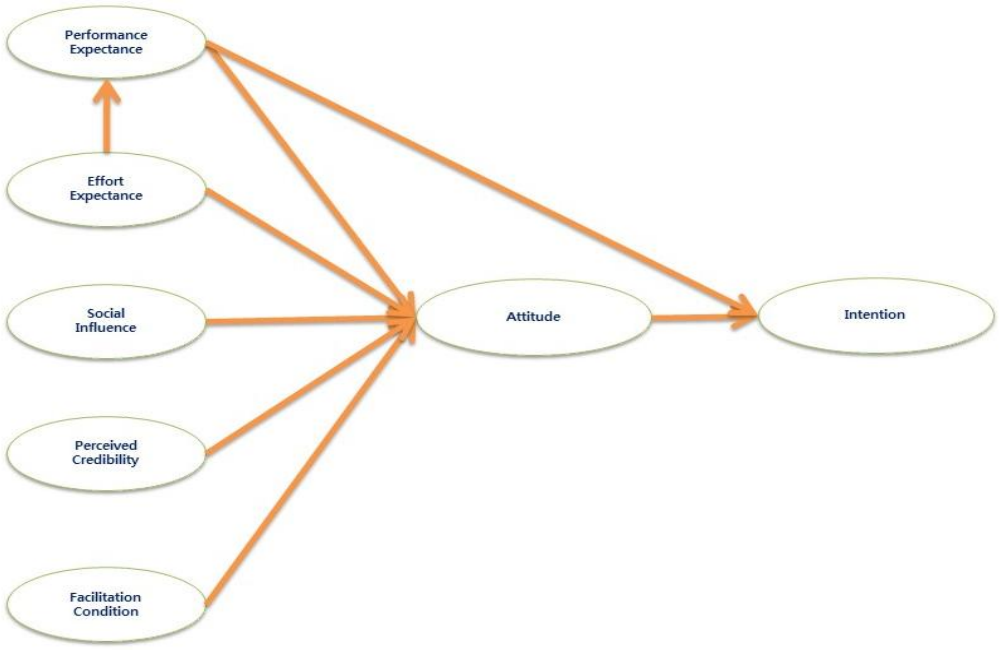

Fig 1. The Research Model

Fig. 1 shows the research framework of this study. We suggest the research hypotheses based on UTAUT.

<H 1> Performance expectance positively affects individual attitude to use smartphone banking services.

<H 2> Effort expectance positively affects individual attitude to use smartphone banking services.

<H 3> Social influence positively affects individual attitude to use smartphone banking services.

<H 4> Perceived credibility positively affects individual attitude to use smartphone banking services.

<H 5> Facilitation conditions positively affect individual attitude to use smartphone banking services.

<H 6> Effort expectance positively affects performance expectance to use smartphone banking services.

<H 7> Performance expectance positively affects individual intention to use smartphone banking services.

<H 8> Smartphone banking attitude positively affects individual intention to use smartphone banking services.

3 . Data Collection and Measurements

To test the research model, a survey was conducted of Mongolian smartphone users using smartphone banking services. Initially, an English version questionnaire was made for experts review. Next, a Mongolian version questionnaire was translated by Mongolian masters who studied internet marketing and electronic commerce. The research period was between August and November 2014. A total of 195 responses were obtained.

The survey questionnaires were used to develop each of the constructs in the study and the items were adopted from UTAUT papers about mobile banking and smartphone banking.

Table 1. Survey Items and Definition

Construct	Definition and Items	References
Performance expectance	Definition: Performance expectance as the extent to which a person believes that adopting smartphone banking will help him/her gain smartphone performance Using smartphone banking would improve my performance(PE1) Using smartphone banking would save me time(PE2) I would use smartphone banking any place(PE3) I would find smartphone banking useful(PE4)	Luarn and Lin [2], Venkatesh and Zhang [3], Yu[9]
Effort expectance	Definition: Effort expectance as the degree to which a person perceives the level of ease associated with smartphone banking adoption Learning to use mobile banking is easy for me (EE1) Becoming skillful at using mobile banking is easy for me (EE2) Interaction with mobile banking is easy for me(EE3) I would find mobile banking is easy to use(EE4)	Luarn and Lin [2], Venkatesh and Zhang [3], Yu[9]

Social influence	Definition: Social influence as the degree to which a person perceives that important others believe he/she should use smartphone banking services People who are important to me think that I should use mobile banking(SI1) People who are familiar with me think that I should use mobile banking(SI2) People who influence my behavior think that I should use mobile banking(SI3) Most people surrounding with me use mobile banking(SI4)	Luarn and Lin [2], Venkatesh and Zhang [3], Yu[9]
Perceived credibility	Definition: Perceived credibility as the extent to which a person believes that the use of smartphone banking will have no security or privacy threats I believe my information is kept confidential(PC1) I believe my transactions are secured(PC2) I believe my privacy would not be divulged(PC3) I believe the banking environment is safe(PC4)	Luarn and Lin [2], Sripalawat et al. [4], Yu[9]
Facilitation conditions	Definition: facilitating conditions as the degree to which a person believes that he/she has the necessary context to support using smartphone banking My living environment supports me to use mobile banking(FC1) My working environment supports me to use mobile banking(FC2) Using mobile banking is compatible with my life (FC3) Help is available when I have a problem using mobile banking(FC4)	Venkatesh et al. [1], Venkatesh and Zhang [3], Yu[9]
Attitude	Definition: Attitude as degree of an objective assessment of the characteristics of Smartphone banking I like to use smartphone banking (ATT1) Smartphone banking makes banking more convenient(ATT2) I am positive towards smartphone banking use(ATT3)	Venkatesh and Zhang [3], Luarn and Lin [2]
Individual Intention	Definition: Intended degree of using smartphone banking in the future I prefer to use mobile banking(INT1) I intend to use mobile banking(INT2) I would use mobile banking(INT3)	Venkatesh and Zhang [3], Luarn and Lin [2]

The survey questionnaires were developed and each of the constructs in the study and the items were adopted from previously suggested research. The source and abbreviated survey items are shown in Table 2. The items of this study were measured on a 7-point Likert scale (1=strongly disagree, 7=strongly agree). Table 2 is suggested as a summary of each construct (definitions and supporting literature) and the items of each construct.

Table 2. Exploratory Factor Analysis

Construct		F1	F2	F3	F4	F5	F6	F7
Performance expectance	PE1		0.927					
	PE2		0.762					
	PE3		0.924					
	PE4		0.789					
Effort expectance	EF1	0.873						
	EF2	0.869						
	EF3	0.762						
Social influence	SI1			0.753		0.926		
	SI3			0.914		0.890		
	SI4			0.890		0.771		
Perceived credibility	PC1				0.897			
	PC2				0.924			
	PC3				0.829			
	PC4				0.887			
Facilitation conditions	FC1							0.861
	FC2							0.925
Attitude	ATT1						0.827	
	ATT2						0.904	
	ATT3						0.883	
Usage Intention	UI1							0.932
	UI2							0.930
	UI3							0.925

Table 3. Constructs of AVE, Composite Reliability, and Cronbach's Alpha

Variables	AVE	Composite Reliability	Cronbach's Alpha
Performance expectance	0.729	0.914	0.873
Effort expectance	0.717	0.910	0.868
Social influence	0.732	0.890	0.816
Perceived credibility	0.784	0.935	0.907
Facilitation conditions	0.799	0.888	0.754
Attitude	0.751	0.923	0.889
Usage Intention	0.862	0.961	0.946

Table 4. Correlation Matrix of Constructs

	EE	SI	PE	INT	PC	FC	ATT
EE	**0.846**						
SI	0.709	**0.855**					
PE	0.746	0.670	**0.853**				
INT	0.632	0.608	0.673	**0.928**			
PC	0.544	0.579	0.420	0.365	**0.885**		
FC	0.574	0.603	0.602	0.505	0.459	**0.893**	
ATT	0.673	0.614	0.660	0.698	0.422	0.529	**0.866**

Note: Bold numbers on the diagonal indicate the square root value of AVE

To test reliability and validity, we first used Cronbach's alpha and the exploratory factor of the items of each construct. Table 2 and 3 show the results. Thus the reliability of research constructs was considered to be fair. Next, to ensure content validity, exploratory factor analysis was conducted. Factors were extracted and suggested as constructs. The results of factor analysis were shown in Table 2. In addition, we assessed internal consistency and reliability by using composite reliability and AVE (Average Variance Extracted). We can calculate them using Smart PLS 3.0. All constructs had a higher composite reliability and AVE than the benchmark of 0.5 suggested [5][6][7]. Table 3 showed the results of composite reliability and AVE. Next, this study tested discriminant validity using the square root of AVE and correlations of constructs. The result was shown in Table 4.

4 Results

To test the hypotheses in this study, this study applied PLS (Partial Least Squares). PLS is generally recommended for predictive and exploratory research models for theory development [8]. The PLS method does not provide significance tests and confidence interval estimates of path coefficients. To estimate the significance of path coefficients, a bootstrapping technique was used. Results of the analysis were presented in Table 5.

Table 5. Results of Path Analysis

Path	Path Coefficient	Standard Error	T-value	Result
PE -> ATT	0.267	0.071	3.761***	<H 1> supported
EE -> ATT	0.302	0.085	3.529***	<H 2> supported
SI -> ATT	0.158	0.076	2.072**	<H 3> supported
PC -> ATT	0.010	0.066	0.153	<H 4> rejected
FC -> ATT	0.094	0.063	0.382	<H 5> rejected
EE -> PE	0.746	0.038	19.44***	<H 6> supported
PE -> INT	0.377	0.038	5.373***	<H 7> supported
ATT -> INT	0.448	0.057	7.845***	<H 8> supported

5 Conclusion

This study has extended our understanding of UTAU for smartphone banking. Results from the empirical analysis of the research hypotheses are as follows. This study shows that performance expectance, effort expectance and social influence as adoption factors of smartphone banking have a positive effect on attitude towards smartphone banking. Hypotheses 1, 2, and 3 are supported. Effort expectance has a positive impact on performance expectance. Hypothesis 6 is supported. Attitude and performance expectance have a positive relationship with intent to use smartphone banking. Lastly Hypotheses 7 and 8 are also supported.

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