

The Determinants Influencing Satisfaction On Using Mobile Web And Application

KyungyoungOhk

Department of Consumer Economics, Sookmyung Women's University, Korea
E-mail: okyoung@sookmyung.ac.kr

Seung-Bae Park

Department of System Management, Seoil University, Korea
E-mail: sbpark@seoil.ac.kr

Jae-Won Hong

Department of Business Administration, Dongseo University, Korea
E-mail: jwhong@gdsu.dongseo.ac.kr, Corresponding author

Abstract

This study explore the effects of perceived usefulness, perceived ease of use, ease of navigation, and interactivity, on the satisfaction with mobile web and mobile application. To accomplish the research objective, we expanded upon the Technology Acceptance Model and proposed research hypotheses. The major findings are summarized below. First, in mobile application behavior, perceived usefulness, interactivity and perceived ease of use influenced consumer satisfaction positively, and consumer satisfaction influenced continuous usage intention of mobile app positively. Second, in mobile web behavior, interactivity influenced consumer satisfaction positively and consumer satisfaction influenced continuous usage intention of mobile web positively.

Keywords: web, perceived usefulness, perceived ease of use, Interactivity, ease of navigation

Copyright © 2015KyungyoungOhk, Seung-Bae Park, and Jae-Won Hong. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1 Introduction

Recently, the increasing popularity of smartphones made more information and services available to smartphone users through mobile web and application. According to the growing demand for mobile services, the Korean government also established the electronic government system to effectively facilitate civil services and interactions. Mobile web and application are new innovative media channels through which information can be transmitted electronically. For better services of these channels in the future, it is necessary to look into users' attitude to them.

Therefore, the objective of this study is to explore the effects of perceived usefulness, perceived ease of use, interactivity, and ease of navigation on the satisfaction with mobile web and mobile application.

2 Related Studies and Research Hypotheses

Davis showed that perceived ease of use and perceived usefulness are the factors that encourage the usage of a new technological service in his Technology Acceptance Model [1]. The model explains how the psychology of consumers influences their evaluation of a new technological service such as mobile web and mobile application. Thus the core variables of the model are perceived usefulness and ease of use [1]. The term perceived usefulness can be interpreted as the belief to high performance by using system, and the term perceived ease of use is interpreted the level of freedom in using new technology. Consumers obtain more usefulness and ease of use from the environment which is more convenient for functioning of mobile web or mobile application [2],[3]. Also, perceived usefulness and ease of use affect the evaluation of them. Thus, the following hypotheses are created.

H1: The greater perceived usefulness, the greater satisfaction.

H2: The greater perceived ease of use, the greater satisfaction.

Interactivity is another important variables for evaluating satisfaction of mobile web or application. High level of interactivity indicates that consumer want communicate more with the mobile web or application. Navigation is the most common interaction between consumer and space of mobile web and application. If ease of navigation by artificial method provide for the consumer, they show high satisfaction [4]. Thus, hypotheses as below are created.

H3: The greater interactivity, the greater satisfaction.

H4: The greater ease of navigation, the greater satisfaction.

Also, there are numbers of researches that found that there is positive relationship between satisfaction and continuous usage intention after evaluating decision making [5]. Consumer satisfaction precedes consumer's continuous usage intention. Thus, hypothesis as below is created.

H5: The greater satisfaction, the greater continuous usage intention.

Basis on these hypotheses, we analyzed Korean government's mobile webs and applications next.

3 Sampling and Measures

Since the purpose of this study, we surveyed in consumer who have been used mobile application. We also selected 32 Korean government's websites and applications in mobile. The research sample has a total of 299 observations. By gender, the share of male is 57.2% and female is 42.8%. By age, the shares of 30 to 39, 40 to 49 and 50 to 59 are 33.8%, 26.8% and 35.1%, respectively (see Table 1). The variables used in this study are perceived usefulness, perceived ease of use, ease of navigation, and interactivity. The definitions of the variables follow those in the literature. In detail, perceived usefulness and perceived ease of use were adopted from [6][7], interactivity from [8], and ease of navigation from [9]. In this research, they are measured in a 5-point Likert scale (see Table 2).

Table 1. Sample characteristics

Age	Under 30	30-39 (%)	40-49 (%)	50-59 (%)	Total
Male (%)	9	55	50	57	171
	(3.0)	(18.4)	(16.7)	(19.1)	(57.2)
Female (%)	4	46	30	48	128
	(1.3)	(15.4)	(10.0)	(16.1)	(42.8)
Total	13	101	80	105	299
	(4.3)	(33.8)	(26.8)	(35.1)	(100)

Table 2. Variables Statistics

	PU	IN	EU	EN	SA	CU
IN	.339**					
EU	.532**	.422**				
EN	.391**	.303**	.473**			
SA	.566**	.518**	.676**	.449**		
CU	.521**	.451**	.590**	.495**	.725**	1
Mean	3.405	3.236	3.245	3.487	3.281	3.413
SD	.635	.654	.662	.650	.668	.633

* $p < .05$, ** $p < .01$, *** $p < .001$

4 Results

The result of factor analysis is presented in Table 3. Most of variables were classified by reasonably. But unlike previous studies, satisfaction and continuance intention were same factor in this analysis. So we conducted a second step of factor analysis on these variables.

Table 3.Results of factor analysis

Variables	PU	IN	EU	EN	SA
perceived usefulness(PU1)	76	-10	18	13	33
perceived usefulness(PU2)	77	29	23	14	7
Interactivity(IN1)	14	77	7	5	34
Interactivity(IN2)	2	85	17	16	12
perceived ease of use(EU1)	15	2	76	13	31
perceived ease of use(EU2)	17	13	79	20	24
perceived ease of use(EU3)	17	18	78	21	19
ease of navigation(EN1)	10	11	15	82	24
ease of navigation(EN2)	15	11	26	81	16
satisfaction(SA1)	24	27	38	4	63
satisfaction(SA2)	14	27	40	15	67
continuous usage intention(CU1)	7	16	16	33	72
continuous usage intention(CU2)	23	16	24	21	79

variables	SA	CU
satisfaction(SA1)	92	19
satisfaction(SA2)	78	42
continuous usage intention(CU1)	21	94
continuous usage intention(CU2)	57	68

In the analysis of mobile web, on the other hand, the model fit indexes GFI(.930), AGFI(.869), NFI(.926) and CFI(.969) are near 0.9.And RMR is below 0.06. Overall, the fitness of the model is well. The hypothesis test results are described in Table 4.In the results of analyzing web behavior, interactivity influenced consumer satisfaction positively (H3 supported). And consumer satisfaction influenced continuous usage intention of mobile web positively (H5 supported).That is, if consumers interact with the government openly through mobile web, they can increase satisfaction with mobile web, and finally the greater satisfaction with mobile web, the greater continuous usage intention.

Table 4. Results in mobile web

	Hypotheses	Path coefficients	t-value
H1	perceived usefulness → satisfaction	0.825	1.8
H2	perceived ease of use → satisfaction	-0.010	-0.1
H3	interactivity → satisfaction	0.487	3.8***
H4	ease of navigation → satisfaction	0.090	0.4
H5	satisfaction → continuous usage intention	0.929	7.0***

* $p < .05$, ** $p < .01$, *** $p < .001$

In the analysis of mobile application, the model fit indexes GFI(.953), AGFI(.913), NFI(.941) and CFI(.971) are above 0.9. At the same time, RMR is below 0.05. Overall, the fitness of the model is relatively high. The hypothesis test results are described in Table 5. In the results of analyzing mobile application behavior, perceived usefulness, interactivity and perceived ease of use influenced consumer satisfaction positively (H1, H2, H3 supported). Also consumer satisfaction influenced continuous usage intention of mobile application positively (H5 supported). That is, if consumers perceive usefulness and ease of use when using the Korean government's mobile application, they increase satisfaction in using mobile application [10]. Also, if consumers interact with the government through mobile application, they can increase satisfaction with mobile application, and finally the greater satisfaction with mobile application, the greater continuous usage intention.

Table 5. Results in mobile application

	Hypotheses	Path coefficients	t-value
H1	perceived usefulness → satisfaction	0.362	3.1**
H2	perceived ease of use → satisfaction	0.329	4.7**
H3	interactivity → satisfaction	0.337	4.2***
H4	ease of navigation → satisfaction	0.139	1.8
H5	satisfaction → continuous usage intention	0.822	9.8***

* $p < .05$, ** $p < .01$, *** $p < .001$

We analyzed a moderating effect of personalized service of smartphone on perceived attitude and satisfaction. Personalized service is measured by four items: 1) sufficiency of information on a petition through mobile application. 2) Easy access

and modification of a petition, 3) secured service on a logon basis, 4) simplicity of logon process. We confirm its internal consistency by alpha test ($\alpha=0.843$, $p<0.05$). The result shows that perceived ease of use influenced satisfaction, and personalized service in smart phone influenced satisfaction positively. And there are interaction effect between perceived ease of use and personalized service in smartphone (see Table 6).

Table 6. Moderating effect

Source	DF	Mean Square	F Value	Pr > F
Perceived ease of use ①	1.157	1.147	5.83***	0.001
personalized service in smart phone ②	0.496	0.556	2.81**	0.005
Interaction effect ① X ②	-0.137	-0.761	-2.52*	0.012

Dependent variable: satisfaction * $p<.05$, ** $p<.01$, *** $p<.001$

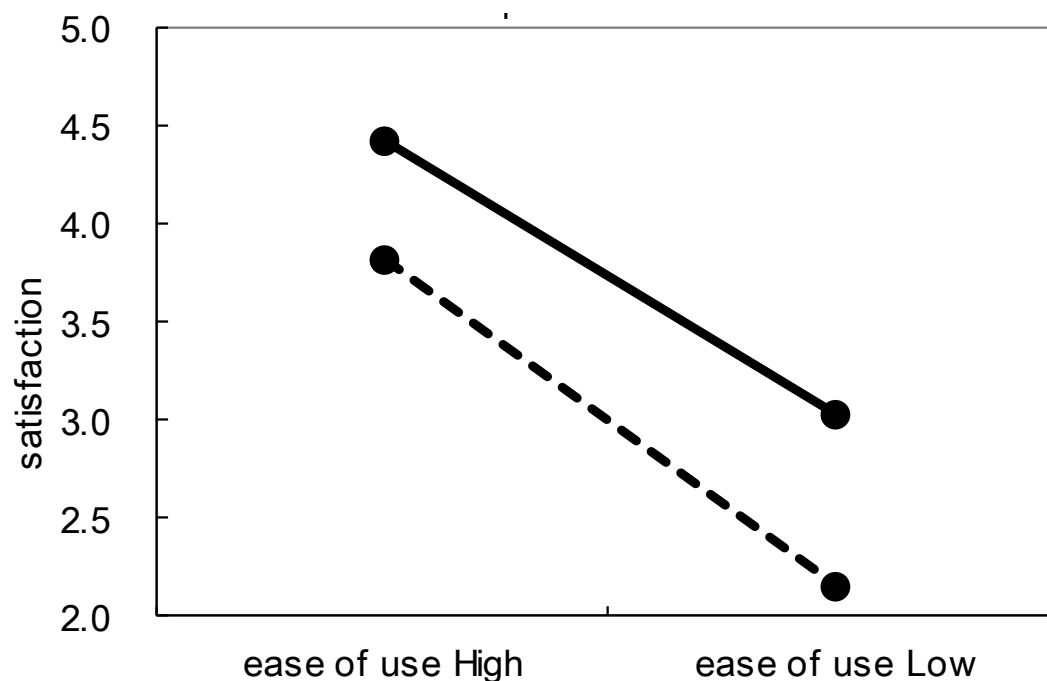


Fig1. Interaction Effect between perceived ease of use and personalized service
Solid line is high group, and dotted line is low group at personalized service.

5. Conclusions

In this study, we examined the effects of consumer's perceived attitudes on the satisfaction Korean government's websites and applications. The findings are summarized below. First, in mobile web behavior, interactivity influenced consumer satisfaction positively and consumer satisfaction influenced continuous usage intention of mobile web positively. Second, in mobile application behavior, perceived usefulness, interactivity and perceived ease of use influenced consumer satisfaction positively, and consumer satisfaction influenced continuous usage intention of mobile application positively. Third, personalized service influence influenced consumer satisfaction positively.

On the basis of above results, we discussed some implications. First, consumer perceived mobile application is more recent channel and technology than mobile web. So they more sensitive variables from technology acceptance model like perceived usefulness, interactivity and perceived ease of use in using Korean government's mobile application. Thus, the Korean government's growing concern about mobile application can provide a user experience design. Second, the Korean government needs to set a communication strategy for providing information through a new multi-channel. To set a strategy, it should understand the consumer and pay attention to our finding that the greater personalized service, the greater satisfaction.

Acknowledgments

This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2013S1A3A2055050). This work was supported by Dongseo University Research Fund (2015).

References

- [1] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS quarterly*, September, (1989), 319-340.
- [2] Chi-Cheng Chang, Chi-Fang Yan, and Ju-Shih Tseng, "Perceived Convenience in an Extended Technology Acceptance Model: Mobile Technology and English Learning for College Students," *Australasian Journal of Educational Technology*, 28, 5, (2010), 809-826.
- [3] J. Nielsen, *Web Usability: Past, Present, and Future*. 1999.
- [4] R. L. Oliver, "A cognitive model of the antecedents and consequences of satisfaction decisions," *Journal of Marketing Research*, 17, (1980), 460-469.
- [5] Sang-Ah Park, "A Study on the Factors Affecting the Continuous Intention of Using Mobile Map: Centered on UI Comparison of Mobile Web and Mobile Application," Graduate School of Information in Yonsei University. 2010.
- [6] Jun-Seong, Bae, "A study on the evaluation system of a new service model in the public sector," Graduate School Chongnam National University. 2012.

- [7] M. Chae, Kim, J., Kim, H., and Ryu, H., "Information Quality for Mobile Internet Services: A Theoretical Model with Empirical Validation," *Electronic Markets*, 12, 1, 2002, 38-46.
- [8] Ju-Hee Son, "An exploratory study on acceptance of mobile service in public sector: Focusing on Business Supporting App of 'H' institution," Graduate school of Jeonnam University. 2012.
- [9] Dae Ho Byun, "Perceived Usability of e-Government Web Sites Affecting the User Satisfaction and the Revisiting," *Journal of Information Systems*, 16, 2, 2007, 51-68.
- [10] Kyungyoung Ohk, Seung-Bae Park, Jae-Won Hong, "The Influence of Perceived Usefulness, Perceived Ease of Use, Interactivity, and Ease of Navigation on Satisfaction in Mobile Application," *ATL Series*, (2015), 88-92.