Analysis of Factors Influencing Facebook Persistence

Young Ju Joo, Sunyoung Joung, Eugene Lim, and Minyeong Lee

***Abstract*—The current study investigates the relationship between factors influencing Facebook usage and overall rates of Facebook persistence. The study is conducted using Davis's Technology Acceptance Model (TAM) (1989)—a well-known theory for assessing the adoption of new technologies. The study evaluates four hypotheses: 1) Does Facebook self-efficacy affect perceived ease of use? 2) Do Facebook self-efficacy and perceived ease of use affect perceived usefulness? 3) Do Facebook self-efficacy, perceived ease of use, and perceived usefulness affect perceived enjoyment? 4) Do Facebook self-efficacy, perceived ease of use, perceived usefulness, and perceived enjoyment affect Facebook persistence? The study was conducted via a web-based survey that was completed by 237 university students. The following measurement instruments were used in the study: Eastin and Larose's (2000) instrument was applied to the category of Facebook self-efficacy, Davis's (1989) instrument was applied to the categories of perceived ease of use and perceived usefulness, Wei and Zhang's (2008) instrument was applied to the category of perceived enjoyment, and Taylor and Todd's (1995) instrument was applied to the category of Facebook persistence. In the study results, the following relationships were all found to be significant: Facebook self-efficacy affected perceived ease of use; Facebook self-efficacy and perceived ease of use affected perceived usefulness; Facebook self-efficacy, perceived ease of use, and perceived usefulness affected perceived enjoyment; and Facebook self-efficacy, perceived ease of use, and perceived enjoyment affected Facebook persistence. The only relationship that did not present a statistically significant correlation was that between perceived usefulness and Facebook persistence. The research results suggest that perceived ease of use and perceived enjoyment should be improved to increase Facebook persistence.**

***Index Terms*—Facebook, perceived ease of use, perceived usefulness, perceived enjoyment, Facebook self-efficacy, Facebook persistence.**

I. Introduction

Since 2000, the number of Social Networking Service (SNS) users has rapidly increased. Currently, 67.1% of Koreans above the age of six use SNSs (Korean Internet Security Agency, 2013) [1]. The widespread use and influence of SNSs has led to increased interest in both the social and academic aspects of the technology. Numerous studies have been conducted to analyze these growing trends in the adoption of social media. However, recent studies have predominantly focused on the technical aspects SNS usage. Little research has investigated either the behavioral aspects of SNS use or its persistence. As such, an investigation of the factors influencing SNS persistence is required (Jung & Jung, 2013) [2]. The range of SNS platforms is extensive, including Facebook, Twitter, and Myspace. According to the Global Web Index (GWI), in the fourth quarter of 2013 a survey was conducted targeting 170,000 SNS users in 32 different countries. The survey found 83% of respondents used Facebook accounts (Digital Times, 2014) [3], with a majority using their accounts internationally.

Facebook has a number of advantages. It gives users the option to share photos and video clips as well as personal status updates. Facebook also offers a privacy control function. In acknowledging Facebook as the most popular SNS worldwide, this study will examine the factors influencing Facebook persistence in the Korean market.

To determine the structural relationships between the alternative factors influencing Facebook persistence, this study applied Davis's (1989) [4] Technology Acceptance Model (TAM)—this model is the most well known theory for assessing the adoption of new technologies. Davis (1989) suggested that perceived ease of use and perceived usefulness are the two factors most relevant in the adoption of new technologies. Davies defines these two factors as follows: perceived ease of use is "the degree to which a person believes that using a particular system will be free from effort," and perceived usefulness is "the degree to which a person believes that using a particular system will enhance his or her job performance."

According to the Korean Internet and Security Agency (2012) [5], people use SNSs for two reasons: first, to assist communication between friends and build relationships (84.6%), and second, to serve as a leisure activity (66.9%). In light of these statistics, and with knowledge that many people use Facebook for fun, Facebook can be categorized as a satisfying and pleasurable activity. It is an assumption of this study that the enjoyment derived from SNS usage will affect Facebook persistence. As such, we have added the category of perceived enjoyment to be assessed alongside perceived ease of use and perceived usefulness. Perceived enjoyment falls under Davis's TAM 3(Venkatesh & Bala, 2008) [6].

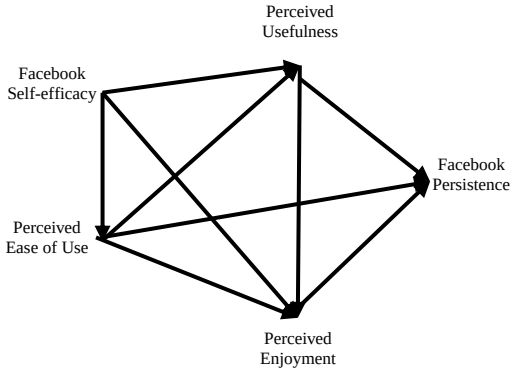

Fig. 1. Hypothetical model.

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To address the research aims of this study, the following four questions are posed as shown Fig. 1: 1) Does Facebook self-efficacy affect perceived ease of use? 2) Do Facebook self-efficacy and perceived ease of use affect perceived usefulness? 3) Do Facebook self-efficacy, perceived ease of use, and perceived usefulness affect perceived enjoyment? 4) Do perceived ease of use, perceived usefulness, and perceived enjoyment affect Facebook persistence? The following research model has been designed to capture the points of connectivity for the above research questions.

II. Research Method

A. Survey Participants

In order to investigate the structural relationship between the alternative factors influencing Facebook usage and Facebook persistence, convenience sampling was conducted among Facebook users in South Korea. A web-based survey with 237 respondents was carried out over the period 19 June-2 July, 2014. After eliminating 40 incomplete responses, the final analysis was conducted on a total survey sample of 197 respondents, (Ed- you need to give the gender and age data for the 197 analyzed respondents, not the original 237) of whom 72 were male (36.5%) and 125 were female (63.5%). The age demographic was as follows: 10-20 years (13.7%), 20-30 years (72.9%), and 30-40 years (7.1%).

B. Measurement Instruments

All measurement instruments of the current study used a five-point Likert scale (1: disagree very much, 2: disagree, 3: it is ok, 4: agree, 5: agree very much). To measure Facebook self-efficacy, Eastin and Larose's (2000) [7] instrument (with a Cronbach's α of .93) was applied. This instrument consists of eight categories (e.g., "I feel confident understanding terms/words relating to Facebook"). To measure perceived ease of use and perceived usefulness of Facebook, Davis's (1989) instrument was applied. For perceived ease of use, a Cronbach's α of .83 was recorded, and six categories of assessment defined (e.g., "It is easy to learn how to use Facebook"). For perceived usefulness, a Cronbach's α of .90 was recorded, and six categories of assessment defined (e.g., "I think using Facebook is useful"). To measure perceived enjoyment, Wei and Zhang's (2008) [8] instrument (with a Cronbach's α of .90) was applied. This instrument consists of five categories (e.g., "I find using Facebook enjoyable."). To measure Facebook persistence, Taylor and Todd's (1995) [9] instrument (with a Cronbach's α of .83) was applied. This instrument consists of three categories (e.g., "I intend to use Facebook this term").

C. Research Analysis Methods

The current study used Structural Equation Modeling (SEM) to analyze the effects of the relevant variables associated with Facebook use. In addition, SPSS and AMOS were used to analyze the survey data. We also used item parceling index methods to manage all single factor variables. Model fitness and error of estimate were measured by applying Maximum Likelihood Estimation (MLE). Furthermore, χ^2, Tucker-Lewis index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were used for fitness examination. We examined the significance at the α level of .05.

III. Research Results

A. Descriptive Statistics and Correlation Analysis

In SEM, mean and standard deviation, skewness, and kurtosis were analyzed to ensure a normal distribution of each variable was achieved. SEM results recorded the following ranges—mean: 3.19-3.78; standard deviation: .64-.74; skewness: .11-.40; kurtosis: .03-.40. The condition of normal distribution in SEM is satisfied when the standard skewness is less than 3 and standard kurtosis is less than 10 (Kline, 2011) [10]. The collected data meet these conditions. The correlation between Facebook self-efficacy, perceived ease of use, perceived usefulness, perceived enjoyment, and Facebook persistence showed significance at the α level of .05 in all variables. To check for Variance Inflation Factors (VIFs), multi-collinearity analysis was applied. The results of this analysis recorded a value less than 10, confirming that VIFs did not present a material impact to the study.

B. Examination of Measurement Model

The fitness of the measurement model was examined using MLE. This assessment was conducted considering the potential of secondary models. Estimates were examined for both the revised model and the original research model. The fitness examination results are presented in Table I.

TABLE I: Fitness Examination Results

	χ^2	*df*	TLI	CFI	RMSEA (90% C.I.)
Measurement Model	48.30	25	.97	.98	.07 (.04~ .10)
Criteria			> .90	> .90	< .08

TLI and CFI were both recorded at a value of .90, thereby satisfying the relevant acceptance levels. RMSEA of the measurement model was .069, which corresponds to a goodness of model fit. Standard factor loading in each path of the measurement model ranged from .77-.96, as displayed in Table II. We confirmed the validity of model fit at the α level of .05.

C. Examination of Structural Model

We estimated the fitness of the structural model to further validate the fitness of the measurement model. The fitness index results for the structural model were: TLI = .968, CFI = .982, and RMSEA = .072. All of these results confirm the goodness of model fit. The results are displayed in Table III.

The results of examining the effects of Facebook self-efficacy, perceived ease of use, perceived usefulness, and Facebook persistence are as follows: 1) the effect of Facebook self-efficacy on perceived ease of use was significant (β = .80, t = 10.702, p < .05); 2) the effect of both Facebook self-efficacy and perceived ease of use on perceived usefulness was significant (the effect of Facebook self-efficacy was β = .32, t = 2.516, p < .05, while that of

perceived ease of use was $\beta = .39$, $t = 3.147$, $p < .05$); 3) with regard to the effect of Facebook self-efficacy, perceived ease of use, and perceived usefulness on perceived enjoyment, Facebook self-efficacy and perceived ease of use were not significant (the effect of Facebook self-efficacy was $\beta = .07$, $t = 0.589$, $p > .05$, while that of perceived ease of use was $\beta = .22$, $t = 1.811$, $p > .05$). However, perceived usefulness were significant ($\beta = .46$, $t = 5.022$, $p < .05$ respectively); 4) concerning the effect of perceived ease of use, perceived usefulness, and perceived enjoyment on Facebook persistence, the effect of perceived ease of use and perceived enjoyment were significant ($\beta = .25$, $t = 3.003$, $p < .05$, and $\beta = .47$, $t = 5.668$, $p < .05$ respectively), but that of perceived usefulness was not ($\beta = .15$, $t = 1.624$, $p > .05$).

TABLE II: CORRELATION

Variables	Correlation Matrix									
	1	2	3	4	5	6	7	8	9	10
1.FSE1	-									
2.FSE2	.72*	-								
3.PEU1	.56*	.67*	-							
4.PEU2	.55*	.66*	.82*	-						
5.PU1	.51*	.53*	.59*	.50*	-					
6.PU2	.48*	.49*	.54*	.47*	.81*	-				
7.PE1	.35*	.47*	.51*	.47*	.54*	.59*	-			
8.PE2	.39*	.47*	.50*	.44*	.46*	.54*	.87*	-		
9.FP1	.36*	.56*	.51*	.51*	.49*	.54*	.60*	.62*	-	
10.FP2	.26*	.41*	.41*	.40*	.35*	.39*	.50*	.52*	.68*	-
Mean	3.36	3.37	3.78	3.95	3.18	3.21	3.62	3.60	3.67	3.65
S.D.	.74	.71	.73	.76	.78	.77	.73	.83	.81	.77
Skewness	.20	.09	-.28	-.51	.13	.14	.07	-.21	-.32	-.38
Kurtosis	-.05	-.01	-.43	-.09	-.11	-.24	-.59	.03	.27	.22

TABLE III: EXAMINATION RESULTS OF FITNESS OF INITIAL STRUCTURAL MODEL ($N = 197$)

	χ^2	*df*	TLI	CFI	RMSEA (90% C.I.)
Measurement Model	52.49	26	.97	.98	.07 (.04 ~ .10)
Criteria			> .90	> .90	< .08

In order to establish a research model with a significant path coefficient, we gradually removed data from those categories of the original structural model deemed most insignificant. We conducted an χ^2 examination to confirm the statistical difference between the original structural model and the revised model. The difference in χ^2 was not statistically significant ($\Delta\chi^2 = 2.928$, $p = .23$), hence the revised model was selected as the final research model. The fitness results of the revised model are presented in Table IV.

TABLE IV: EXAMINATION RESULTS OF FITNESS OF REVISED MODEL

	χ^2	*df*	TLI	CFI	RMSEA (90% C.I.)
Revised Model	55.42	28	.97	.98	.07 (.04 ~ .10)
Initial Model	52.49	26	.97	.98	.07 (.04 ~ .100)
Criteria			> .90	> .90	< .08

The standardized path coefficient of the revised model is shown in Fig. 2.

The results of the path coefficient in the revised model are as follows: first, the effect of Facebook self-efficacy on perceived ease of use was significant ($\beta = .80$, $t = 10.798$, $p < .05$); second, the effect of Facebook self-efficacy and perceived ease of use on perceived usefulness were both significant ($\beta = .31$, $t = 2.441$, $p < .05$, and $\beta = .40$, $t = 3.185$, $p < .05$ respectively); third, the effect of perceived ease of use and perceived usefulness on perceived enjoyment were significant ($\beta = .27$, $t = 3.098$, $p < .05$ and $\beta = .48$, $t = 5.346$, $p < .05$, respectively); fourth, the effects of perceived ease of use and perceived enjoyment on Facebook persistence were significant ($\beta = .32$, $t = 4.281$, $p < .05$, and $\beta = .53$, $t = 7.035$, $p < .05$ respectively).

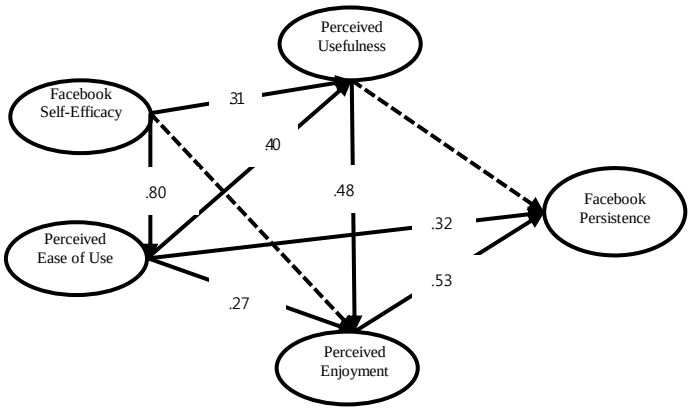

Fig. 2. Hypothetical model.

According to the results of the revised model, Facebook self-efficacy significantly affected perceived ease of use. Similarly, Facebook self-efficacy and perceived ease of use both significantly affected perceived usefulness. While perceived usefulness significantly affected perceived enjoyment, Facebook self-efficacy and perceived ease of use did not significantly affect perceived enjoyment.

Although the perceived ease of use and perceived enjoyment significantly affected Facebook persistence, perceived usefulness did not significantly affect Facebook persistence. According to the examination results of fitness of the revised model, Facebook self-efficacy affected perceived usefulness and perceived ease of use affected perceived enjoyment. In addition, perceived ease of use affected perceived enjoyment and perceived enjoyment affected Facebook persistence.

We used the bootstrap method to measure the indirect effects of variables. The comparative results of direct and indirect effects of factors influencing Facebook persistence are displayed in Table V.

TABLE V: DIRECT AND INDIRECT EFFECT ANALYSIS OF THE REVISED STRUCTURAL MODEL

Relationship variables			Nonstandard			Standard		
			All	Direct	Indirect	All	Direct	Indirect
FSE	→	PEU	.735	.735	-	.800	.800	-
PEU	→	PE	.520	.303	.217	.459	.267	.191
PU	→		.460	.460	-	.476	.476	-
FSE	→	PU	.685	.338	.347	.636	.314	.322
PEU	→		.471	.471	-	.402	.402	-
PEU	→	CUI	.635	.361	.273	.566	.322	.244
PE	→		.526	.526	-	.532	.532	-

IV. CONCLUSION

The current study investigated the effects of Facebook self-efficacy, perceived ease of use, perceived usefulness, and perceived enjoyment on Facebook persistence. Previous studies concerning the adoption of new technologies have primarily focused on e-learning environments or other non-SNS environments. The current study fills this gap. The study results were consistent with those of previous studies. All hypotheses were satisfactorily tested, except for: "Do Facebook self-efficacy and perceived ease of use affect perceived enjoyment?" and "Do Facebook self-efficacy and perceived usefulness affect perceived enjoyment?" We suggest that perceived ease of use and perceived enjoyment should be improved to increase Facebook persistence.

The following recommendations are made for future additional research. First, the subjects in this study were mostly women in their 20s (our sampling methods did not give adequate consideration to gender or age groups); therefore, further study with a wider sample population is necessary. Second, additional variables (such as Facebook system quality, self-innovative character, and loneliness) should be included in further study. Third, it would be useful to assess Facebook usage in environments other than the standard social context, such as an examination of the application of Facebook in educational environments.

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