Utilitarian Value and Hedonic Value of Mobile Service
Focusing on Mobile Addiction

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Abstract: Mobile addiction (MA) has become more prevalent nowadays especially with the advancement of mobile services. This study is focus on studying MA in the context of users' perceived hedonic and utilitarian values. This is done by empirically analysing the moderating effect of MA against three constructs which are users' perceived hedonic value (PHV), perceived utilitarian value (PUV), perceived usefulness (PU) and fun experienced by using mobile service. A total of 166 participants were involved in the survey. The results showed that only the relationship between perceived hedonic value and fun was not moderated by mobile addiction. Meanwhile, the rest of the hypothesized relationships were supported.

1 INTRODUCTION

The wide usage of mobile devices are mostly supported by various mobile services such as short message service (SMS), digital multimedia broadcast (DMB), wireless Internet, and entertainment applications, such as wireless online games and music. Mobile service can have either hedonic or utilitarian value to potential users, and it is necessary to consider both values when investigating user acceptance of mobile service. Deci (1975) suggested that user acceptance is determined by two fundamental types of motivation which is extrinsic and intrinsic. An extrinsically motivated user is driven by the expectation of a reward or benefit external to system-user interaction (perceived usefulness), while an intrinsically motivated user is driven by benefits derived from system-user interaction (perceived fun). Igbaria et al. (1994, 1996) found system usage to be affected by both extrinsic and intrinsic motivation and Bruner II and Kumar (2005) introduced fun in the user acceptance model of handheld Internet devices. The development of mobile technology means users can afford to use fancier mobile equipment and enjoy higher quality mobile services, regardless of time and place. However, easy access to high-quality mobile service may lead users to a compulsive usage state, mobile addiction (MA). The primary purposes of this study are as follows. Firstly, assume that mobile users have at least one of two values which are hedonic or utilitarian. Secondly, the moderating effect of MA is analysed to see its effect on mobile users' intention to use mobile services.

2 THEORETICAL BACKGROUNDS AND RESEARCH MODEL

2.1 Utilitarian/Hedonic Values

Consumer behaviour literature has demonstrated that specific determination of intention to consume depends on the utilitarian or hedonic attributes of the product (Babin et al. 1994; Okada 2005). Based on this finding, this study concluded that user intention to use mobile service is shaped by the utilitarian or hedonic value derived from their experience using mobile services (Chiu et al. 2005). Users' perceived value of mobile services is therefore defined as perceived utilitarian value and perceived hedonic value. In general, an IS possesses various utilitarian attributes, and users perceive the usefulness of utilitarian attributes while experiencing the IS (Adams et al. 1992). It has also been found (Babin et al. 1994; Okada 2005; Voss et al. 2003) that the utilitarian value of products and services influences consumers' perceived usefulness, ultimately affecting consumer behaviour. This is proposed by the following hypotheses:

H1: Perceived utilitarian value of mobile service has a positive influence on perceived usefulness.

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H2: Perceived usefulness of mobile service has a positive influence on intention to use mobile service.

On the other hand, users tend to experience intrinsic motivation (Davis et al. 1992) or fun (Babin et al. 1994; Voss et al. 2003) strongly when they perceive hedonic value on particular IS/ITs (Bruner II and Kumar, 2005). According to Okada (2005), users justify their use of products by continuing to consume them once they perceive fun is connected to hedonic value. Therefore, mobile users will perceive fun in their mobile service if they experience a particular hedonic value about that service:

H3: Perceived hedonic value of mobile service has a positive influence on fun.

2.2 Fun

Triandis (1971) argued that affect, the feelings of joy, elation, pleasure, depression, disgust, displeasure, or hate associated with a particular act, have an impact on a person's behaviour. Sandelands et al. (1983) found that such attitudinal outcomes of positive affect, pleasure, and satisfaction are results from playful experiences. Therefore, individuals who perceive using mobile service as fun will have a positive intention about using them:

H4: Perceived fun in using mobile service will positively affect intention to use mobile service.

2.3 Mobile Addiction

MA is related to a type of addictive behaviour defined (Mendelson and Nancy, 1986) as behaviour that is excessive, compulsive, beyond the control of the person who engages in it, and destructive psychologically or physically. Li and Chung (2006) suggested that Internet addictive behaviour is affected by psychopathology factors such as depression and anxiety and personality factors such as neurosis, openness, and consciousness. Davis (2001) used the cognitive-behaviuor model to explain pathological Internet use, which is similar to Internet addictive behaviour. Similarly, MA can also be defined as compulsive consumption. O'Guinn and Faber (1989) define MA as a response to an uncontrollable drive or desire to obtain, use, or experience a feeling, substance, or activity that leads an individual to repetitively engage in a behavior that will ultimately cause harm to himself and/or others.

Terel, Serenko and Giles (2011) studied the online auction addiction. According to their study, the level of addiction distorts the way information technology artifact is perceived. In this study, MA is a moderating variable used to analyse mobile service users' acceptance behaviour. As users are affected by their addiction, it is expected that their perception towards mobile services will also be affected. Therefore, the following hypotheses are related to MA as moderating variable:

H5-1: Mobile addiction has a negative (-) moderating effect on the relationship between perceived utilitarian value and perceived usefulness.

H5-2: Mobile addiction has a negative (-) moderating effect on the relationship between perceived hedonic value and fun.

H5-3: Mobile addiction has a negative (-) moderating effect on the relationship between perceived usefulness and intention to use mobile service.

H5-4: Mobile addiction has a negative (-) moderating effect on the relationship between fun and intention to use mobile service.

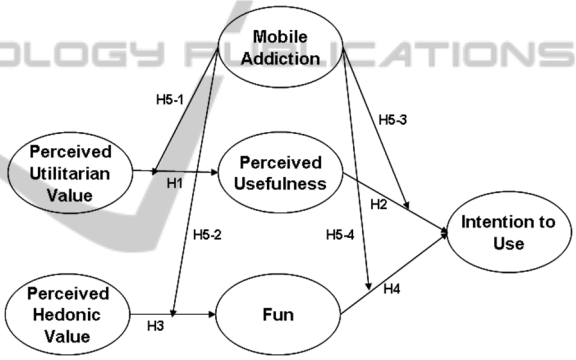

Figure 1: Proposed Research Model.

3 RESEARCH METHODOLOGY

A survey was conducted to gather the necessary user's data among university students in South Korea consisted of 166 respondents. Table 1 shows the demographic characteristics of the sample.

Table 1: Demographic Characteristics of the Sample.

Variables	Sample Composition	
Age Group	20– 23 years old	36
	24 – 26 years old	101
	27 – 29 years old	26
Gender	Female	39
	Male	127
Daily usage of mobile device	1 – 3 hours	8
	4 – 6 hours	44
	7 – 9 hours	57
	More than 10 hours	57

The measurements consisted of intention to use (Ajzen and Fishbein, 1980), perceived usefulness (Davis, 1989), fun (Venkatesh, 2000), MA (Charlton and Danforth, 2007) and perceived hedonic and utilitarian value (Voss et al., 2003). Partial least square (PLS) was used to analyze the field survey data because it places minimal restrictions on sample size and residual distribution (Chin et al. 2003). PLS employs a component-based approach for estimation purposes (Lohmoller 1989). In general, PLS is better suited for explaining complex relationships because it avoids the problems of inadmissible solutions and factor indeterminacy (Fornell and Bookstein 1982). This study thus chose PLS to accommodate the large number of variables and measuring the moderating effects. The reliability, convergent and discriminant validity of the instrument were first examined. Table 2 shows that all but one loading are larger than the suggested threshold of 0.70 (Chin, 1998). Table 3 shows that all composite reliabilities are larger than the suggested 0.70 and all AVE values are greater than the suggested 0.50 indicating a good convergent validity of the measurement model (Barclay et al, 1995; and Fornell and Larcker, 1981).

Table 2: Loadings and Cross-Loadings.

	PUV	PHV	PU	FUN	MA	IU
PUV1	**0.828**	0.417	0.477	0.317	-0.271	0.621
PUV2	**0.874**	0.515	0.549	0.420	-0.299	0.661
PUV3	**0.755**	0.450	0.341	0.447	-0.118	0.463
PUV4	**0.861**	0.508	0.407	0.497	-0.148	0.582
PUV5	**0.873**	0.514	0.441	0.520	-0.176	0.577
PHV1	0.525	**0.811**	0.264	0.725	-0.002	0.455
PHV2	0.538	**0.864**	0.355	0.630	-0.025	0.450
PHV3	0.458	**0.868**	0.211	0.562	0.049	0.412
PHV4	0.423	**0.837**	0.323	0.562	0.016	0.364
PHV5	0.471	**0.873**	0.292	0.646	0.035	0.483
PU1	0.394	0.327	**0.829**	0.235	-0.184	0.349
PU2	0.339	0.301	**0.748**	0.207	-0.140	0.214
PU3	0.498	0.233	**0.867**	0.233	-0.239	0.457
PU4	0.499	0.287	**0.846**	0.281	-0.295	0.478
FUN1	0.432	0.611	0.197	**0.890**	-0.045	0.403
FUN2	0.463	0.719	0.318	**0.938**	0.037	0.363
FUN3	0.526	0.713	0.288	**0.930**	-0.044	0.431
MA1	-0.195	0.033	-0.180	0.025	**0.765**	-0.134
MA2	-0.257	-0.092	-0.263	-0.143	**0.792**	-0.238
MA3	-0.201	-0.072	-0.238	-0.069	**0.785**	-0.110
MA5	-0.116	0.144	-0.049	0.111	**0.675**	-0.033
MA6	-0.239	0.039	-0.202	0.044	**0.787**	-0.223
MA7	-0.089	0.103	-0.118	-0.009	**0.532**	-0.119
MA8	-0.002	0.130	-0.128	0.103	**0.607**	0.102
MA9	-0.077	0.124	-0.191	0.121	**0.700**	-0.052
IU1	0.660	0.493	0.441	0.400	-0.205	**0.949**
IU2	0.659	0.455	0.450	0.402	-0.255	**0.968**
IU3	0.674	0.511	0.467	0.432	-0.123	**0.929**

Reliability was assessed using internal consistency scores, calculated by composite reliability scores. Compeau et al. (1999) suggested that for sufficient discriminant validity to be present, items should load more strongly on their own constructs, and the average variance shared between each construct and its measures should be greater than the variance shared between the construct and other constructs. This can be seen in Table 2 that items load much highly on their own latent constructs than on any other latent constructs (cross-loadings).

Table 3: Composite Reliability, Averages Variance Extracted, and Correlations of First-Order Constructs.

Construct	CR	AVE	Square Roots of AVEs & Correlations*					
			1	2	3	4	5	6
1.PUV	0.922	0.705	0.839[b]					
2.PHV	0.929	0.724	0.572	0.851[b]				
3 PU	0.894	0.678	0.538	0.340	0.823[b]			
4.FUN	0.942	0.845	0.517	0.743	0.293	0.919[b]		
5.MA	0.890	0.506	-0.252	0.016	-0.273	-0.018	0.711[b]	
6.IU	0.964	0.900	0.701	0.513	0.478	0.434	-0.204	0.949[b]

CR: Composite Reliability, AVE: Average Variance, Extracted, [b]$p < 0.01$

* The diagonal elements are the square roots of the variance shared between the constructs and their measurement (AVE).

In addition, Table 3 shows that the square roots of all AVEs are much larger than all other cross correlations. Chin (1998) mentioned that discriminant validity is achieved when the square root of the AVE or a particular construct is larger than the correlations between it and the other constructs. Jointly, these findings suggest adequate convergent and discriminant validity.

The results from standardized PLS path coefficients are shown in Figure 2. The results showed that Hypotheses 1, 2, 3 and 4 are supported.

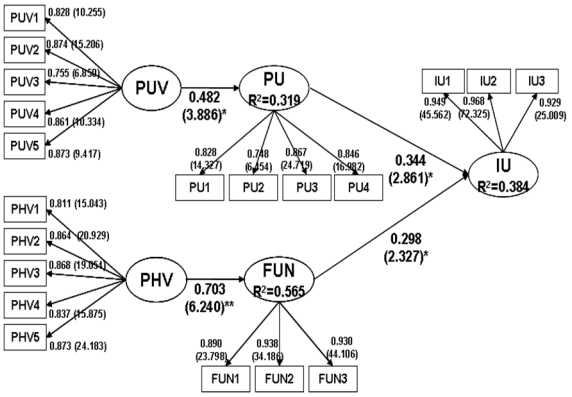

Figure 2: PLS Results.

4 RESEARCH RESULTS

In order to test the moderating effects of Past Experience, this study employed the PLS-PS (product of sum) approach recommended by Goodhue et al. (2003). The sums of the moderating factor (Mobile Addiction) and four variables (Perceived Utilitarian Value, Perceived Hedonic Value, Perceived Usefulness and Fun) were multiplied to generate the product of sums.

Then, a model including both direct and moderating effects were examined and Hypotheses 5-1, 5-3 and 5-4 are supported. However, mobile addiction does not have a moderating effect on the relationship between perceived hedonic value and fun, therefore Hypothesis 5-2 is not supported. The formula recommended by Aguinis and Gottfredson (2010) was used to compute the F-statistic and the effect size (f^2) is calculated by the formula suggested by Mathieson et al. (2001). Meanwhile, the effect size result was concluded based on the suggestion by Cohen (1988) that 0.02, 0.15 and 0.35 as operational definitions of small, medium and large effect sizes respectively. The steps taken to calculate the results are shown in Figure 3. Meanwhile, the overall results of the structural model are presented in Table 4.

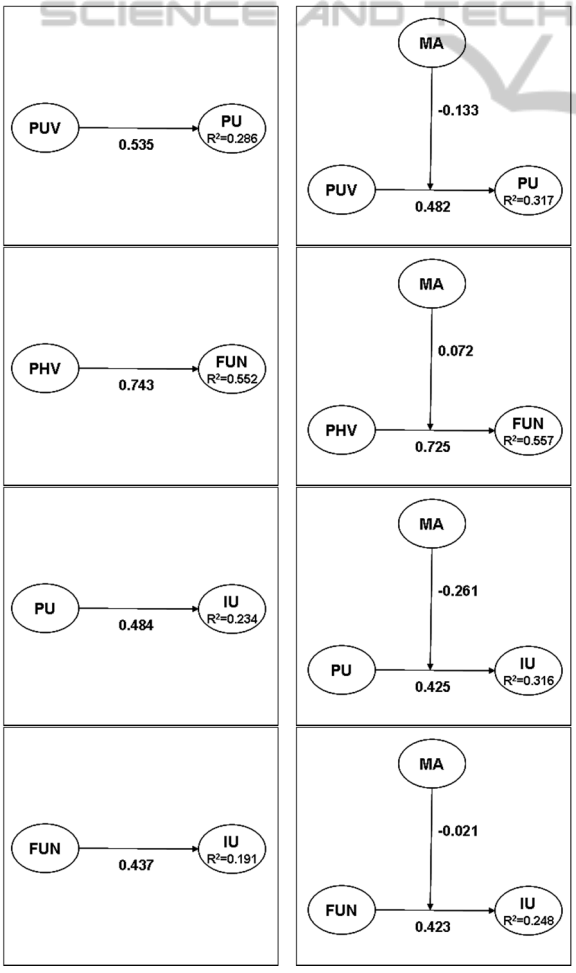

Figure 3: Direct effect and moderating effect.

Table 4: Results of the Structural Model.

	Directs Effects	Direct Effects + Moderating Effects
a. Dependent variable: PU; Independent variable: PUV		
R^2	0.551	0.317
ΔR^2		0.234 (f^2 = 0.043)
PUV	0.535	0.482
PUV x MA		-0.133
b. Dependent variable: Fun; Independent variable: PHV		
R^2	0.552	0.557
ΔR^2		0.005(f^2 = 0.011)
PHV	0.743	0.725
PHV x MA		0.072
c. Dependent variable: IU; Independent variable: PU		
R^2	0.234	0.316
ΔR^2		0.082(f^2 = 0.107)
PU	0.484	0.425
PU x MA		-0.261
d. Dependent variable: IU; Independent variable: Fun		
R^2	0.191	0.248
ΔR^2		0.057(f^2 = 0.070)
Fun	0.437	0.423
Fun x MA		-0.021

Consequently, the results of hypothesis testing are summarized in Table 5.

Table 5: Summary of Hypotheses Testing.

Hypotheses	Supported?
H1: Perceived utilitarian value of mobile service has a positive influence on perceived usefulness.	Yes
H2: Perceived usefulness of mobile service has a positive influence on intention to use mobile service.	Yes
H3: Perceived hedonic value of mobile service has a positive influence on fun.	Yes
H4: Perceived fun in using mobile service will positively affect intention to use mobile service.	Yes
H5a: Mobile addiction has a negative (-) moderating effect on the relationship between perceived utilitarian value and perceived usefulness. H5b: Mobile addiction has a negative (-) moderating effect on the relationship between perceived hedonic value and fun.	Partially supported. H5b is not supported as the effect size is not significant. However, H5a, H5c and H5d are supported.

Table 5: Summary of Hypotheses Testing (cont.).

Hypotheses	Supported?
H5c: Mobile addiction has a negative (-) moderating effect on the relationship between perceived usefulness and intention to use mobile service. H5d: Mobile addiction has a negative (-) moderating effect on the relationship between fun and intention to use mobile service.	Partially supported. H5b is not supported as the effect size is not significant. However, H5a, H5c and H5d are supported.

5 DISCUSSION AND LIMITATIONS

This paper investigated the two important values in user acceptance of mobile services, which are utilitarian and hedonic value. The results gathered shown that all investigated relationships are supported. Both utilitarian and hedonic values are critical perceived values in evaluating users' acceptance of mobile services. Functionality as well as the aesthetic value of a mobile service plays a role in determining users' acceptance. Therefore, mobile service providers should consider both values when developing new services. Secondly, this paper also investigated the moderating effect of mobile addiction on all the relationships proposed. The results gathered shown that three out of the four relationships are moderated by mobile addiction. The relationship that was not moderated by mobile addiction is the relationship between perceived hedonic value and fun. This means that even if a user is addicted to their mobile, the results show that it will not be affecting the relationship between perceived hedonic value and fun. Instead this relationship is only effected by users perception of how fun and enjoyable they are rather than because they are addicted.

There are a few limitations in this study. As the participants are university students, factors such as flexible time could make it easier for them to be addicted to a mobile service compare to full-time workers. Furthermore, factors that make them addicted to mobile service may also be different compare to different group of users since they may be exposed to different kind of services. Therefore, mobile addiction among students is expected to be more common compare to other group of users. Secondly, rather than defining mobile service in general, this study could come out with a better results if focusing on only one mobile service. However, this study's results still are useful in order to further develop a better study on mobile addiction in the future.

6 CONCLUSIONS

This paper has highlighted the mobile addiction in using mobile services. It is important to understand that the availability of mobile services regardless of place and time lead to development of addiction between users and their mobile services. The most interesting finding in this paper is that moderating effect does not exist for relationship between perceived hedonic value and fun. Since perceived hedonic value is related to intrinsic motivation, addiction does not have any effect on this relationship. Instead it is effected by users perception of having fun and enjoying themselves rather than because they are addicted.

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