A CROSS-CULTURAL STUDY ON THE VALUE STRUCTURE OF MOBILE INTERNET USAGE: COMPARISON BETWEEN KOREA AND JAPAN

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ABSTRACT

As the mobile Internet has been used explosively worldwide, the effects of cultural factors on mobile Internet have been an interesting issue. The objectives of this study are to examine the usage patterns of the mobile Internet in different countries and to interpret these differences from a cross-cultural perspective. We propose a value structure in order to investigate the cross-cultural differences in mobile Internet usage. The value structure is an analytic framework that consists of various types of values that the mobile Internet provides. To identify the value structure of the mobile Internet and compare usage patterns, large-scale online surveys were conducted in Korea and Japan simultaneously with the same questionnaire. Results show that value structures of the mobile Internet are significantly different between Korea and Japan, and effects of the values on the degree of satisfaction derived from the mobile Internet vary across the two countries. This paper ends with both theoretical and practical implications and limitations of the study results.

1. Introduction

The use of the mobile Internet, which is defined as the use of Internet via handheld devices, has been increasing rapidly [Francis 1997, Davidson et al. 2000]. The number of mobile Internet users is estimated to exceed 500 million until 2005 worldwide [ARC group 1999]. Currently in Korea, the number of mobile Internet subscribers, which amounts to 30 million in 2002, is expected to exceed the number of stationary Internet users. The number of mobile Internet users rose up to 48 million until 2003 [InfoCom Research 2002].

Interestingly, however, the adoption or usage patterns of the mobile Internet are quite different among different countries [Pedersen 2001]. In Asian countries, a mobile Internet-enabled phone has become recognized as a necessity in daily life, not just as a communication device. It is easy to find people to play games or to trade stocks anywhere and anytime via the mobile Internet [HCI Lab 2001, ECOM 2001]. However, in North America, the mobile Internet is not as popular as in Asian countries [Scully 2001]. In addition, popular mobile Internet services are greatly different by country. For example, download service is the most popular one in Korea, whereas email is the most popular one in Japan [Lee et al. 2002].

We propose that cultural differences among the countries may be one of the main causes for the different usage and adoption patterns of the mobile Internet. More specifically, since people might have different values for using mobile Internet in different cultures, they use different mobile Internet services in other cultural circumstances. This may relate to that mobile communication is intrinsically characterized for a local market, whereas the stationary Internet is for a global market. Stationary Internet can be accessed any where in the world, while mobile communication can only be operated locally. The mobile Internet, therefore, is more dependent on the characteristics of local culture, compared to the stationary Internet. A cross-cultural investigation, therefore, is more in need for mobile Internet research. However, despite the importance of cultural factors, not much research has been conducted on the cultural differences on mobile Internet. Previous research on the mobile Internet mostly focused on technological developments, usability issues, and mobile telecommunication policies [Kristoffersen 1999, Gruber 2001, Gruber and Verboven 2001]. Rarely has research been done to investigate the usage differences of mobile Internet from a cross-cultural perspective.

This study aims to investigate the different usage patterns of mobile Internet users in Korea and Japan and to interpret them with the framework of a value structure. These two countries were selected because they are the two leading countries regarding the mobile Internet and mobile Internet has been introduced around the same time [HCI Lab. 2001, Scully 2001]. In order to view cultural differences between countries, we employed a value structure; an analytical framework that composed of various types of values that mobile Internet users try to satisfy.

This paper is composed as follows: in the next section, we introduce our standpoint on culture and propose a value structure based on relevant literature surveys. In the following section, we present how we measure value structures and usage behaviors throughout the online survey. The following result section consists of three parts: value structures in each country, relationship between values and satisfaction and usage patterns of the mobile Internet. This paper ends with discussion of the results in terms of the value structure, implications and limitations of this study.

2. Research Background and Theoretical Framework

This section consists of three parts as follows. First, we examine the definition of culture and values with extensive literature surveys. Second, we identify the relationship between culture and values. Third, we propose the value structure framework by identifying important values of the mobile Internet.

2.1 Culture and Value

Historically there have been continuous efforts to investigate human cultures and their cultural differences in numerous fields, ranging from anthropology to cross-cultural psychology [Abramson and Inglehart 1995, Hofstede 1980, Schwartz and Ros 1995, Schwartz and Sagie 2000, Triandis 1990]. However, cross-cultural study has not received as much attention as necessary in IS research areas because of its difficulties in explicitly defining and measuring the concept of culture [Straub et al. 2002]. By examining various definitions of culture and value, we present our standpoint of culture and value.

Although there have been multiple definitions of culture, the definition by Hofstede is regarded as a fundamental. Hofstede defined culture as, “the collective programming of the mind which distinguishes the members of one human group from another”[Hofstede 1980, p260]. Including the definition of Hofstede, there is a general notion that culture is based on shared values [Straub et al. 2002, Hofstede 1980]. As for the compositions of culture, Parsons and Shils present that culture consists of a set of values, norms, and symbols that guide individual behavior [Parsons and Shils 1951]. Geertz presents that the culture is composed of three layers: assumptions about existence, values and norms, and explicit products and artifacts [Geertz 1973].

We propose to focus on value as the core concept of culture for two reasons [Parsons and Shils 1951, Kroeber 1952: Murdock 1965, Straub et al. 2002]. First, value is a concept that is apt to change, which is appropriate to explain the change of behavior. Thus, value can affect people’s behaviors more than other components of culture that are relatively less sensitive to behavioral changes [Lachman 1983]. Second, different value and attitudes affect the ways people behave in their lives [Adler 1986, Hofstede 1980, Trompennaars and Hampden-Turner 1993]. Since using the mobile Internet is a daily activity of the mobile Internet users who live in fast changing society, our value-based approach may be appropriate. In the next section, we present various definitions of value and a framework of a value structure as an analytic tool for identifying cultural differences of mobile Internet users in different countries.

2.2 Value Structure

Since value has been of great interest in various research areas, there have been numerous attempts to define or measure it [Cronin et al. 2000, Dabholkar et al. 1996, Dodds et al. 1991, Mdougall and Levesque 2000, Sweeney and Soutar 2001, Teas and Agrawal 2000]. Indebted to previous research on value, value becomes recognized as a key tool for not only understanding human behaviors, but also doing business [Sheth et al. 1991, Sweeney 2001, Woodruff 1997].

Value is viewed as not a single concept but a concept that consists of many heterogeneous sub-components [Sweeney and Soutar 2001, Sheth et al 1991]. Sheth et al. argued that consumption value is made up of multiple value components that influence consumer’s choice behavior, i.e., functional value, conditional value, social value, emotional value and epistemic value [Sheth et al. 1991]. This view broadens the concept of value, which enables consideration of values of consumers beyond the monetary aspects of value [Bolton and Drew, 1991, Cravens et al. 1988, Monroe 1990]. Similarly, in service marketing, value is defined as “consumer’s overall assessment of the utility of a product or service based on perceptions of what is received and what is given”[Zeithaml 1988, p 14]. By employing these perspectives to the use of mobile Internet, we define value as user’s overall assessment of utility of services by using mobile Internet. Furthermore, we propose the framework of a value structure that composed of different types of values that users try to satisfy by using the mobile Internet. Four sub-values of the value structure

are proposed based on the prior research on value and the mobile Internet.

First, *functional value* can be defined as the practical or technical benefits that users can obtain by using the mobile Internet [Sweeney and Soutar 2001]. People may use the mobile Internet because of its useful functions. For example, when a user wants to find a direction to destination he may satisfy his functional value by using a location-based mobile Internet service. Second, *emotional value* means mental or psychological needs of mobile Internet users [Sweeney and Soutar 2001]. For example, when a user can have fun while waiting someone by using a mobile game service, he fulfills his emotional value. Third, *social value* means benefits when users can feel they are connected to others by using the mobile Internet [Sheth et al. 1991]. This is somewhat different from the other values. Social value can be satisfied by belonging to a certain group or socializing actively through mobile Internet, rather than by the actual use of mobile Internet services. For example, Korean youngsters who join a TTL service, one of the most popular mobile Internet services among teenagers, have strong bondage and enjoy their own culture and events in the TTL zone, a physical off-line gathering place. Finally, *monetary value* means how much mobile Internet services are satisfactory compared to cost, time or effort spent in using the mobile Internet [Bolton and Drew 1991, Cravens et al. 1988, Monroe 1990, Sweeney and Soutar 2001]. Monetary value cannot be neglected since users have to pay relatively high usage fee for mobile Internet services, while stationary Internet services often can be accessed free of charge.

3. Research Questions

The objectives of this study are to address three research questions as follows: (1) How much value structures are different in Korea and Japan? (2) Which values most significantly affects satisfaction of mobile Internet services in Korea and Japan, respectively? (3) How much actual use of mobile Internet services differ and how much those differences could be explained by (1) and (2)? The research model is established as shown in Figure1.

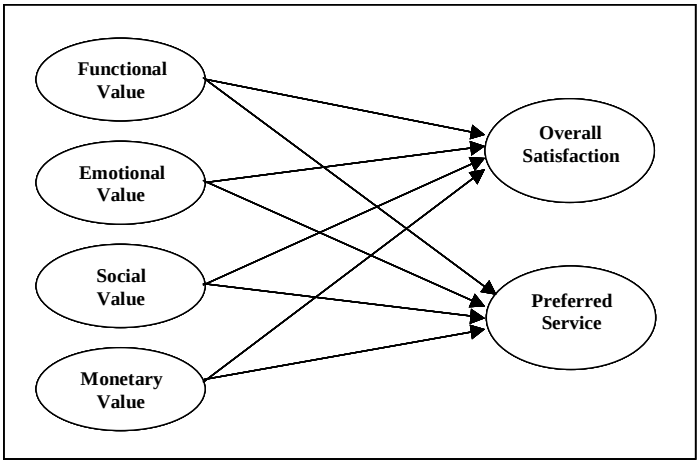

Figure 1. Research Model

4. Research Methods

4. 1 Survey Instruments

A series of pilot studies were conducted to ensure consistency and soundness of measurements of value structures and eliminate similar wordings and logically duplicative items [Palvia 1996]. The initial questions were pilot tested in a paper-based survey with 103 undergraduate and graduate students who had used mobile Internet services and purchased some items more than once in Korea. The initial measurement of value structures consisted of 40 questions. The survey questions for value were developed based on relevant literatures [Bolton and Drew, 1991, Cravens et al. 1988, Monroe 1990, Zeithaml 1988] and satisfaction measurements were adapted from prior research [Cronin et al. 2000, Dabholkar et al. 1996, Dodds et al. 1991, Mdougall and Levesque 2000, Teas and Agrawal 2000]. Based on the results of the pilot studies, 19 items were dropped for not meeting the criteria such as sufficient correlation coefficients and reliability (Cronbach's Alpha). The remaining 21 questions were used for the main survey. A preliminary questionnaire was made in English to facilitate the communication between Korea and Japan. In order to obtain translation equivalence, back-translation method was used [Brislin 1970, Warwick and Lininger 1975]. The questionnaire was translated from the Native language into English and vice versa by two

professional translators separately.

4. 2 Data Collection

A research consortium was organized in order to gather basic usage data efficiently in Korea, while a research center administered the survey with their own research fund in Japan. Sixteen Korean companies participated in the consortium, including the major telecommunication carriers and Internet portals in Korea. Large-scale on-line surveys were conducted in Korea and Japan with the same survey questionnaire simultaneously. Respondents were solicited via banner advertisement on the homepages of the consortium companies in Korea, whereas online panel members were solicited via email requests in Japan. As the results, 12,790 responses were gathered in Korea, while 3,166 were collected in Japan. To purify the data, responses that contained answers with systematic errors and those with inconsistent demographic information were excluded. After data refining, the numbers of effective respondents were 9,872 and 3,298 in Korea and Japan**,** respectively. The survey questionnaire consists of four parts: a question for frequently used mobile Internet services, questions for user satisfaction, those for value structures, and finally those for user's demographic information. The constructs of survey questionnaire are presented in Appendix.

Table 1. Demographics Respondents

Gender	**Korea**		**Japan**	
Male	47.7%	4709	52.8%	1743
Femal	52.3%	5163	47.2%	1555
Total	100.0%	9872	100.0%	3298

Age	**Korea**		**Japan**	
Teens	31.9%	3146	1.5%	51
20~24	36.5%	3604	7.6%	251
25~29	19.1%	1881	19.4%	640
30s	8.9%	879	43.5%	1436
over 40	3.7%	361	27.9%	920
Total	100.0%	9872	100.0%	3298

Occupation	**Korea**		**Japan**	
Professional	24.1%	2382	17.8%	586
Owner	3.8%	377	2.3%	76
Technician	3.4%	337	24.4%	803
Secretarial	1.5%	146	20.8%	685
Student	56.7%	5602	10.0%	330
Housewife	2.9%	285	0.3%	9
Retired	0.2%	22	18.1%	596
Others	7.3%	722	6.5%	213
Total	100.0%	9872	100.0%	3298

The general description of effective respondents is as follows. As for gender, 47.7% were male and 52.3% were female in Korea, and 52.8% were male and 47.2% were female in Japan. The age distributions are shown in Table1. The average age of Korean respondents was 23.5, while that of Japanese respondents was 35. Since age discrepancy between Korean and Japanese respondents was large, we try to divide the respondents into small groups to minimize the effects of age. 55.6% of Korean respondents were in the 20s, while 43.5% of Japanese respondents were in the 30s. In addition, respondents who are under 29 years old and over 30 years old showed significantly different characteristics. Thus, we divided the respondents into two groups on the basis of 30 years old. We named respondents who are under 29 years old as *young* and respondents who are over 30 years old as *old*. For example, Korean respondents who are 25 years old are named as *young Korean*.

4. 3 Measures

Both validity and reliability of our instruments were confirmed. To establish the construct validity of the instrument, a principal component factor analysis was conducted with Varimax rotation method. As shown in Table2 and Table3, twenty-one questions are classified into four factors in Korea and Japan. We named each factor matching with value structures. For example, in Korean data, factor 1 was denominated as *emotional value*, factor 2 as *social value*, factor 3 as *functional value*, and factor 4 as m*onetary value*. Total cumulative percentages of variance explained by the four factors were 72.75% and 70.21% in Korea and Japan, respectively. The *Eigenvalues* of the four factors exceed 1.0, meeting the criteria for determining the number of dimensions. Therefore, the four

constructs of value structures are found to be valid in both Korea and Japan.

The Cronbach's Alpha coefficients were calculated to test for reliability, assessing the internal consistency of the measurement instrument [Cronbach, 1971, Cronbach and Meehl 1955, Straub 1989]. As shown in Table 3, reliability of items in each age group was over 0.9, which meets the standard of exploratory research [Nunnally 1978].

Table 2. Variance Explained by the Factors of Value Structures

Country	Type	Factor1	Factor2	Factor3	Factor4
Korea	Extracted Factors	Social	Functional	Emotional	Monetary
	Eivenvalues	3.868	3.846	3.616	3.413
	% of Variance Explained	18.42	18.316	17.217	16.251
	Cumulative %	18.42	36.736	53.954	70.205
Japan	Extracted Factors	Emotional	Social	Functional	Monetary
	Eivenvalues	4.316	4.143	3.432	3.386
	% of Variance Explained	20.554	19.728	16.345	16.126
	Cumulative %	20.554	40.282	56.627	72.753

Table 3a. Factor Loadings of Value Structures and Reliability in Korea

Value		Factor1	Factor2	Factor3	Factor4	Cronbach's alpha
Social	SV1	0.833	0.159	0.187	0.224	0.936
	SV2	0.812	0.141	0.156	0.166	
	SV3	0.79	0.156	0.245	0.227	
	SV4	0.771	0.199	0.243	0.169	
	SV5	0.719	0.148	0.244	0.208	
Functional	FV1	0.145	0.79	0.161	0.193	0.937
	FV2	0.131	0.756	0.099	0.143	
	FV3	0.167	0.737	0.311	0.226	
	FV4	0.177	0.719	0.324	0.208	
	FV5	0.113	0.661	0.163	0.057	
	FV6	0.184	0.622	0.435	0.186	
Emotional	EV1	0.337	0.217	0.735	0.175	0.936
	EV2	0.328	0.205	0.729	0.247	
	EV3	0.241	0.159	0.713	0.232	
	EV4	0.12	0.388	0.712	0.006	
	EV5	0.111	0.404	0.627	-0.071	
	EV6	0.351	0.165	0.589	0.395	
Monetary	MV1	0.231	0.172	0.125	0.877	0.936
	MV2	0.249	0.151	0.116	0.874	
	MV3	0.198	0.151	0.106	0.86	
	MV4	0.228	0.322	0.241	0.665	
Cumulative % of Explained Variable				70.21%		
Cronbach's alpha (total)				0.937		

Table 3b. Factor Loadings of Value Structures and Reliability in Japan (continued)

Value		Factor1	Factor2	Factor3	Factor4	Cronbach's alpha
Emotional	EV1	0.848	0.175	0.248	0.082	0.930
	EV2	0.832	0.12	0.262	0.081	
	EV3	0.805	0.311	0.201	0.098	
	EV4	0.749	0.138	0.272	0.047	
	EV5	0.722	0.372	0.244	0.173	
	EV6	0.65	0.211	0.327	0.271	
Social	SV1	0.167	0.889	0.131	0.125	0.931
	SV2	0.152	0.889	0.111	0.184	
	SV3	0.244	0.858	0.143	0.151	
	SV4	0.143	0.806	0.118	0.214	
	SV5	0.339	0.755	0.161	0.143	
Functional	FV1	0.272	0.127	0.746	0.122	0.933
	FV2	0.292	0.099	0.707	0.228	
	FV3	0.05	0.216	0.706	0.14	
	FV4	0.249	0.215	0.654	0.259	
	FV5	0.392	0.107	0.651	0.197	
	FV6	0.252	-0.008	0.633	-0.015	
Monetary	MV1	0.067	0.164	0.132	0.905	0.933
	MV2	0.069	0.179	0.091	0.884	
	MV3	0.184	0.139	0.222	0.83	
	MV4	0.156	0.231	0.225	0.799	
Cumulative % of Explained Variable				72.75%		
Cronbach's alpha (total)				0.939		

5. Data Analysis

To achieve our three research objectives, our analyses were performed as follows. First, test of difference was conducted to verify how value structures are different between same age groups in two countries. Second, regression analysis was performed to identify the relationship between value structures and overall satisfaction in each country. Third, general usages of mobile Internet services were overviewed. Interpretations of these results are presented in the following discussion section.

5.1 Test of Difference

T-test was conducted within the same age groups of two countries as shown in Table4 and Table5. In the young respondent groups, functional value, emotional value, social value and monetary value were significantly different between Korea and Japan (functional value $t(1031)=-13.05$, $p<0.01$; emotional value $t(935)=-10.02$, $p<0.01$; social value: $t(978)=-2.87$, $p<0.01$; monetary value: $t(975)=-10.84$, $p<0.01$). However, the satisfaction level was not significantly different in young Korean and Japanese respondents (satisfaction $t(963)=0.339$, $p<0.01$). When we compared the average means of significant variables between Korea and Japan, all the average means of four values were higher in young Japanese than in young Korean. This indicates that young Japanese tends to perceive higher values in the mobile Internet compared to young Korean users.

In the old respondent groups, all the values and satisfaction were significantly different between Korea and Japan (functional value $t(2354)=-9.56$, $p<0.01$; emotional value $t(2734)=-13.30$, $p<0.01$; social value $t(2641)=4.455$, $p<0.01$; monetary value $t(2572)=-5.226$, $p<0.01$; satisfaction $t(2572)=2.53$, $p=0.011$). When we compared the average means of significant variables in two countries, average means of functional value, emotional value, social value and monetary value were higher in Japan than in Korea However, average means of social value and satisfaction were higher in Korea than in Japan. This means old Korean users are likely to use the mobile Internet for social purposes compared to old Japanese users. Also old Korea users are more satisfied with the current mobile Internet services than old Japanese users. On the contrary, old Japanese users tend to perceive functional, emotional or monetary benefits in using the mobile Internet.

Table 4. Descriptive Statistics

Type	Respondents under 29 (Young)				Respondnent over 30 (Old)			
Value	**Country**	**Mean**	**S. D.**	**S. E.**	**Country**	**Mean**	**S. D.**	**S. E.**
Functional	Korea	3.80	1.10	0.01	Korea	3.92	1.13	0.03
	Japan	4.23	0.88	0.03	Japan	4.28	0.91	0.02
Emotional	Korea	3.82	1.18	0.01	Korea	3.77	1.16	0.03
	Japan	4.27	1.21	0.04	Japan	4.32	1.13	0.03
Social	Korea	3.23	1.35	0.01	Korea	3.49	1.34	0.04
	Japan	3.36	1.22	0.04	Japan	3.28	1.24	0.03
Monetary	Korea	2.71	1.34	0.01	Korea	2.88	1.38	0.04
	Japan	3.20	1.22	0.04	Japan	3.13	1.26	0.03
Satisfaction	Korea	4.05	1.19	0.01	Korea	4.07	1.19	0.03
	Japan	4.09	1.12	0.04	Japan	3.97	1.07	0.02

Table 5. Difference Test Results

Age	Value	t	df	Sig.	Mean	Std. Error	95% C.I.	
				(2-tailed)	Difference	Difference	Lower	Upper
Respondents under 29 (Young)	Functional	-13.052	1031.303	0.000***	-0.435	0.033	-0.500	-0.369
	Emotional	-10.020	935.018	0.000***	-0.447	0.045	-0.535	-0.360
	Social	-2.866	978.387	0.004***	-0.130	0.045	-0.219	-0.041
	Monetary	-10.839	975.797	0.000***	-0.491	0.045	-0.580	-0.402
	Satisfaction	-0.957	963.716	0.339	-0.040	0.042	-0.122	0.042
Respondents over 30 (Old)	Functional	-9.596	2354.880	0.000***	-0.358	0.037	-0.431	-0.285
	Emotional	-13.298	2734.948	0.000***	-0.546	0.041	-0.626	-0.465
	Social	4.455	2641.069	0.000***	0.206	0.046	0.116	0.297
	Monetary	-5.226	2595.100	0.000***	-0.249	0.048	-0.342	-0.155
	Satisfaction	2.530	2572.323	0.011*	0.104	0.041	0.023	0.184

(* p< 0.10; ** p< 0.05; ***, p< 0.01**)**

5.2 Regression analysis

The linear regression analyses were conducted to identify the relationship between four types of values and satisfaction. Factor loadings of four value components were used as independent variables and a factor loading of perceived satisfaction was used as a dependent variable. To minimize the age effects, regression analyses were performed within the same age groups. As a result, four different regression models were constituted as shown in Table6. The adjusted R squares met appropriate criterion for explorative study. First, we examined how closely each value component might relate to satisfaction level in a single regression equation. Second, within the same age groups, corresponding regression equations were compared to identify the differences by culture or country. Third, overall differences between age groups were investigated. Two regression equations of young respondents in Korea and Japan are shown below.

Young Korean respondents:

Satisfaction = 0.369 * functional value + 0.365 * emotional value + 0.179 * social value + 0.106 * monetary value

Young Japanese respondents:

Satisfaction = 0.399 * functional value + 0.328 * emotional value - 0.017 * social value [(a)]

+ 0.235 * monetary value

[(a)] ; insignificant at the significant level of 0.1

In young Korean respondents, functional and emotional values closely related to satisfaction to similar extents. Also social and monetary values somewhat influences on satisfaction. In young Japanese respondents, functional value

related to satisfaction most closely, followed by emotional value and monetary value. Social value was not significantly related to satisfaction in young Japanese. Overall, functional and emotional values closely related to satisfaction, while monetary value was slightly related to satisfaction in young respondents in both Korea and Japan. Also influence of social value on satisfaction was hard to find in young Japanese respondents. Furthermore, when we compared the regression equations between young Korean and young Japanese, a regression coefficient of functional value was higher in young Japanese, while that of emotional value was higher in young Korean. The influence of monetary value was relatively small compared to other values. Two regression equations of old respondents in Korea and Japan are shown below.

Old Korean respondents:

Satisfaction = 0.323 * functional value + 0.323 * emotional value + 0.174 * social value + 0.134 * monetary value

Old Japanese respondents:

Satisfaction = 0.383 * functional value + 0.289 * emotional value – 0.003 * social value[(a)] + 0.226 * monetary value

[(a)] : insignificant at the significant level of 0.1

In old Korean, standardized regression coefficients of functional and emotional values were equal. This means both functional and emotional values strongly related to satisfaction. Relatively social and monetary value slightly related to satisfaction in old Korean. On the contrary, functional value closely related to satisfaction, followed by emotional and monetary value in old Japanese. Also, an influence of social value on satisfaction was not significant in old Japanese. When we compared two regression equations between old Korean and old Japanese, regression coefficients of functional value and monetary value were higher in old Japanese, whereas that of emotional value was higher in old Korean. Different from young respondents, monetary value related to satisfaction to an extent in old Japanese. As same as young Japanese, social value in old Japanese was not significantly related to satisfaction.

Combined the above results, we could see the followings. First, in Japanese respondents, functional value related more closely to satisfaction, while emotional value relatively more related to satisfaction in Korean respondents. In both countries, monetary value only slightly related to satisfaction. Especially in Japanese respondents, social value was not significantly influential on satisfaction.

Table 6. Overall Regression Results

Type	Country	R	R Sq.	Adj. R-Sq	S. E.	F	df	Sig.
Respondents under 29 (Young)	Korea	0.559	0.313	0.313	0.829	1033.085	9074	0.000***
	Japan	0.568	0.322	0.319	0.825	94.322	798	0.000***
Respondents over 30 (Old)	Korea	0.507	0.257	0.254	0.863	112.059	1302	0.000***
	Japan	0.531	0.281	0.280	0.849	195.050	1996	0.000***

(* p< 0.10; ** p< 0.05; ***, p< 0.01)

Table 7. Regression Coefficients and Significance

Type		Korea					Japan				
	Value	B	Std. Error	Beta	t	Sig.	B	Std. Error	Beta	t	Sig.
Respondents under 29 (Young)	Functional	0.369	0.009	0.369	42.414	0.000***	0.399	0.029	0.399	13.667	0.000***
	Emotional	0.365	0.009	0.365	41.991	0.000***	0.328	0.029	0.328	11.213	0.000***
	Social	0.179	0.009	0.179	20.525	0.000***	-0.017	0.029	-0.017	-0.570	0.569
	Monetary	0.106	0.009	0.106	12.201	0.000***	0.235	0.029	0.235	8.028	0.000***
Respondents over 30 (Old)	Functional	0.323	0.024	0.323	13.515	0.000***	0.383	0.019	0.383	20.162	0.000***
	Emotional	0.323	0.024	0.323	13.486	0.000***	0.289	0.019	0.289	15.231	0.000***
	Social	0.174	0.024	0.174	7.260	0.000***	-0.003	0.019	-0.003	-0.153	0.878
	Monetary	0.134	0.024	0.134	5.582	0.000***	0.226	0.019	0.226	11.904	0.000***

(* p< 0.10; ** p< 0.05; ***, p< 0.01)

5.3 Frequently Used Mobile Internet Services

Respondents were asked to check which mobile Internet services they currently use to find out preferred mobile Internet services in each country. As summarized in Table 8, different services were preferred between Korea and Japan. Also preferred services were different by age group even within same country. First, young Korean frequently use hedonic services such as download services and game followed by email service and location-based service. Young Japanese are most likely to use email service, followed by download service, news and sports. In general, Korean users preferred entertainment services or communication services, while Japanese users used information services more often. Second, old Korean frequently use download service and email service most frequently, followed by news/sports new and location-based service. Old Japanese are more likely to use email services and news/sports news, followed by weather, download and location-based service. Old respondents in both countries use functional services frequently such as information service, compared to young respondents. Also old Japanese are likely to use functional services more than corresponding Koreans.

Table 8. Frequently Used Mobile Internet Services

Respondents under 29 (Young)				**Respondents over 30 (Old)**			
Service	**Korea**	**Service**	**Japan**	**Service**	**Korea**	**Service**	**Japan**
download	15.5%	e-mail	20.7%	download	10.4%	e-mail	21.6%
game	9.8%	download	13.0%	e-mail	9.6%	news/sports news	11.4%
e-mail	9.8%	weather	9.4%	news/sports news	7.8%	weather	10.7%
location	7.4%	news/sports news	9.0%	location	7.3%	download	9.8%
weather	6.8%	game	5.3%	game	6.5%	location	5.7%
news/sports news	6.3%	location	5.0%	shopping	5.9%	PIM	5.5%
PIM	4.9%	PIM	4.3%	weather	5.9%	banking/finance	4.6%
shopping	4.6%	banking/finance	3.9%	PIM	5.8%	reservation	4.1%
education	3.7%	BBS	2.8%	banking/finance	5.5%	game	3.9%
reservation	2.8%	shopping	2.7%	stock	5.0%	stock	3.5%
banking/finance	2.6%	reservation	2.6%	education	4.3%	shopping	3.2%
chatting(MCQ)	2.4%	stock	1.9%	reservation	3.3%	BBS	1.8%
community	1.8%	education	1.6%	chatting(MCQ)	1.8%	community	1.1%
reading	1.4%	community	1.4%	health	1.8%	education	1.1%
stock	1.3%	reading	1.3%	BBS	1.5%	reading	0.9%
BBS	1.3%	family	1.0%	reading	1.4%	family	0.8%
health	1.1%	health	0.9%	community	1.4%	health	0.7%
family	0.5%	chatting(MCQ)	0.7%	family	1.3%	chatting(MCQ)	0.3%
others	16.0%	others	12.4%	others	13.3%	others	9.6%
Total	100.0%	Total	100.0%	Total	100.0%	Total	100.0%

6. Discussion

This study attempts to investigate the usage patterns of the mobile Internet in Korea and Japan. To analyze the usage patterns from a cross-cultural perspective, we proposed a framework of the value structure that composed of four dimensions of values. We also focused on identifying differences in value structures across two countries. We believe that a value-based approach allowed us to gain insights into the cultural differences that affect usage of the mobile Internet. There are three findings as follows.

First, we can conclude that value structures were significantly different between Korea and Japan. Results of difference test show that each component of value structures is different. This implies that the needs or values of mobile Internet users between the two countries may be different. Actually the most frequently used mobile Internet services among Korean and Japanese users are different. In Korea, download service is the most frequently used mobile Internet service, while e-mail service is used most frequently in Japan. Because Korean users are more likely to perceive emotional value than Japanese users, the result makes sense that services focusing on emotional arousal such as download services are popular. Considering that Japanese users regard the functional value more highly than other values, this seems to be reasonable in that e-mail service is convenient to use anytime and anywhere. In addition, the result shows that Korean users use more often entertainment services such as download service or

game service, while Japanese users use Information services more frequently. In both countries, the effect of monetary value on satisfaction is relatively less than other values, which means that fulfilling subjective values such as functional or emotional values are currently more important than monetary value in the use of the mobile Internet.

Second, the values that affect overall satisfaction of mobile Internet services were significantly different between the two countries. Considering that fulfilling customer satisfaction is an essential goal to services providers, this result provides meaningful implications of study results. The results indicate that what users want in using mobile Internet services should be identified in the individual countries. That implies localized strategies are needed which consider the unique cultural characteristics to increase satisfaction level of mobile Internet users in different countries.

Third, both cultural and other factors need to be considered to identify mobile Internet users' needs or values. Other factors may include demographic or socio-economic factors that may affect the usage behaviors of mobile Internet users. The results indicate that relationships between satisfaction and values are different by both culture and age. In Korea, emotional value is more likely to affect satisfaction, while functional value is highly influential on satisfaction in Japan. Especially social value does not seem to affect satisfaction in Japan. This may result from an introvert characteristic of Japanese. Although mobile Internet is a convenient communication device, Japanese users may not want to use it for socializing with others. In addition, frequently used mobile Internet services affected by culture and age. Even the same mobile Internet services are differently preferred by age. This implies that since mobile Internet users are influenced by various factors, personalized mobile services may be preferred. Therefore, identifying critical factors that highly affect usage behaviors is needed such as cultural factors, demographic or socio-economic factors.

7. Limitations and Implication

This study represents some limitations as follows. First, although we verified value structures are different between two countries, different value structures may not be the only reason for the different usage patterns. As discussed, different usage patterns also might be caused from demographic other than age or socio-economic differences. Thus, future research is necessary to prove causal relationship between value structure and behavioral patterns of users. Second, this study is limited to only Korea and Japan such that it is not feasible to generalize the results to other countries. Therefore, it is strongly recommended to extend this survey to other geographical locations such as Europe and North America, which will be more evident to explain how different cultures and value structures affects user's behaviors of mobile Internet. Third, our research method has inherent limitation in terms of methodology. The online-survey has problems such as self-selection and sampling problem [Pitkow and Recker 1994, Miller 2001]. Therefore, future studies should employ other methods to collect more representative data without the possibility of sampling errors.

Despite the limitations stated above, this study has some noteworthy implications both to academics and to practitioners in IS field. To academics, this study first investigates the cultural effects, represented by value structures, on the usage patterns of the mobile Internet. This is the first attempt not only to verify the differences of mobile Internet usage cross-culturally, but also to explain those differences from cross-cultural perspectives with the framework of a value structure. Considering the importance of cultural factors in IS research, it is particularly important to understand different usage behaviors of mobile Internet users by different cultures. Second, a reliable measurement for value was developed and appropriately validated. The study results indicate that the four sub-components of the value structure can be consistently applied to different countries. This implies that the value structure can be used as a reliable tool for the cross-cultural study not only in mobile Internet but also in other IS research.

This study can also provide practical implications as follows. First, value structures, which constitute a genuine part of culture, differ in Korea and Japan. Given that value structures are different from country to country, the primary goal for the success of mobile Internet services in each country is to identify what users want most or try to satisfy by using mobile Internet services. For example, mobile Internet operators in Korea should focus on services that may provide strong emotional value, whereas those in Japan should invest more attention to service with strong functional value. Second, this study found out preferred mobile Internet services in each country by identifying frequently used mobile Internet services in both countries. This is meaningful to those developing mobile Internet applications. For example, download service in Korea should be focused on more heavily, whereas email service in Japan should be elaborated further to provide more value and satisfaction to mobile Internet users. Third, mobile Internet strategies should be localized or adjusted to unique cultures, since people want different values even from the same services across different cultures. Fourth, mobile Internet services need to be personalized to individual

users because value structures and usage patterns are influenced by various factors across countries. To develop personalized services, mobile Internet service providers need to segment user groups by cultural, demographical or socio-economic factors and monitor them, which may enable them to chase users' fast changing needs or values efficiently.

Acknowledgement

This research was supported by SUAM Education Foundation in the year of 2001. Especially, authors appreciate Kazuaki Naruse at ECOM, Yumi Maeda in InfoCom, Professor Sejoon Hong and Professor Kar Yan Tam in Hong Kong University of Science and Technology for their cooperation.

Appendix. Survey Questionnaire of Value Structure

Instruction: This question is about values of mobile Internet service provides. Please answer the followings based on your own experience in using mobile Internet service.

	Question	Stronly Disagree						Strongly Agree
	Functional value							
FV1	Mobile Internet service is reliable.	1	2	3	4	5	6	7
FV2	Mobile Internet service has good functions.	1	2	3	4	5	6	7
FV3	Mobile Internet provides a timely service.	1	2	3	4	5	6	7
FV4	Mobile Internet service fulfills my needs well.	1	2	3	4	5	6	7
FV5	Mobile Internet service is well provided.	1	2	3	4	5	6	7
FV6	Mobile Internet service has a good standard of	1	2	3	4	5	6	7
	Emotional value							
EV1	Using mobile Internet service is interesting.	1	2	3	4	5	6	7
EV2	Using mobile Internet service is enjoyable.	1	2	3	4	5	6	7
EV3	Mobile Internet service makes me want to use it.	1	2	3	4	5	6	7
EV4	I feel relaxed when I use mobile Internet.	1	2	3	4	5	6	7
EV5	I feel good when I use mobile Internet.	1	2	3	4	5	6	7
EV6	Mobile Internet service gives me pleasure.	1	2	3	4	5	6	7
	Social value							
SV1	Mobile Internet helps me to feel acceptable	1	2	3	4	5	6	7
SV2	Mobile Internet makes a good impression on other people	1	2	3	4	5	6	7
SV3	Mobile Internet makes me familiar with other people.	1	2	3	4	5	6	7
SV4	Mobile Internet improves the way I am perceived	1	2	3	4	5	6	7
SV5	Using mobile Internet gives me a sense of belongings to other users.	1	2	3	4	5	6	7
	Monetary value							
MV1	Mobile Internet is good for the current price level	1	2	3	4	5	6	7
MV2	Mobile Internet is reasonably priced.	1	2	3	4	5	6	7
MV3	The price of using mobile Internet is economical.	1	2	3	4	5	6	7
MV4	Mobile Internet offers value for the money.	1	2	3	4	5	6	7

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