Mobile Communications: A Study of Factors Influencing Consumer Use of m-Services

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New mobile digital communication technologies present opportunities for advertisers to capitalize on the evolving relationships of consumers with their mobile devices and their desire to access enhanced information services while mobile (m-services). Consumers already use mobile devices (cell phones, personal mobile digital assistants) for traditional phone calls and message handling (e.g., Kalakota and Robinson, 2002; Sullivan Mort and Drennan, 2002). The combination of rapidly developing mobile digital technology and high uptake rates of mobile devices presents enormous potential for delivery of m-services through these devices (Bitner, Brown, and Meuter, 2000). M-services encompass a wide variety of types including the ability to trade stock, to book theater and movie tickets while accessing seating plans online, to send and receive text and pictures, and receive personalized direct advertising such as alerts for shopping bargains. Marketing communications, and specifically advertising, may be delivered as an m-service and termed m-services advertising, forming part of the broader category of m-services. However, advertising research has not yet addressed the area of m-services and needs to do so to be able to take advantage of the advanced interactivity (Yadav and Varadarajan, 2005) of mobile communication devices. Such advertising research is likely to help develop open attitudes and responses to new business models as has been advocated for other new technology such as advanced television (Tauder, 2005). In this article, we model the factors influencing the use of m-services, in the context of consumers' existing relationships with mobile devices. First, we address the value propositions underpinning consumer involvement with mobile devices. Next, we canvass the types of involvement relevant to this consumption domain and argue that involvement, together with personal attributes innovativeness and self-efficacy, will influence use of m-services. Finally, implications for advertising delivered as an m-service are discussed, the potential for m-services advertising as part of m-commerce are canvassed, and directions for future research identified.

MOBILE COMMUNICATIONS

The seamless integration of mobile digital technology with daily activities has a growingly pervasive impact on consumers (Sullivan Mort and Drennan, 2002). Wilska (2003), in a study of young people's use of mobile phones as part of their consumption styles, states that mobile communications are undoubtedly an important part of everyday life. As well as providing the core mobile "delivery of individualized/customised relationship based, timely and location specific" services to the user (Sullivan Mort and Drennan, 2002, p. 17), it [mobile communications] enhances efficiency and entertainment as well as increasing spontaneity (Anckar and D'Incau, 2002). It is widely acknowledged that mobile digital devices and mobile communications have become integrated into personal identity, for example through personalization of mobile devices (color and design options, ring tones, screen savers, and carry cases) and through connectivity within reference groups (Pura, 2003; Wilska, 2003). Indeed, the phenomenon of "grooming calls," the frequent mobile phone calls within friendship networks that have primarily a socio-emotional function of showing concern, solidarity and commitment, nearness and sympathy has been identified (Palen, Salzman, and Youngs, 2001). For many people, mobile devices are increasingly regarded as a necessity. Fitzgerald and Drennan (2003) have examined consumption practices surrounding mobile phones and found that some consumers express a strong sense of the embeddedness of mobile phones in their lives, both from a communications capability and from a security perspective.

Consumers internalize technology such as mobile devices, e-commerce, and the internet into their lifestyles (Forrester Research Group, 2001). This integration of technological change may provide an indication of why some people come to feel empowered through the use of technology, specifically their mobile devices (Funston and McNeil, 1999). This empowerment may result from freer communication without the constraints of physical proximity and geographic location, the ability to perform tasks more efficiently, both of a work-related and social nature, or the enabling of private communications (Lacohee, Wakeford, and Pearson, 2003).

Increasingly, the lifestyles and consumption habits of young people are influencing the consumption patterns of many other markets (Wilska, 2003). In other words, not only do youths manifest consumption styles, they also create them. For instance, the widespread use of text messaging was largely unforeseen by the mobile telecommunications industry. Nonetheless, it became very popular with young adults who even developed their own SMS language and abbreviations to make messages nearly unintelligible to outsiders (Lacohee, Wakeford, and Pearson, 2003). Text messaging has subsequently become popular with many other consumer segments.

Despite the importance of the mobile device itself, we suggest the relationship between the devices and the services linked to the devices, m-services, must also must be examined as important indicators of the way consumers are embracing mobile communications. Little reported empirical research is available that examines this connection and such a gap in the literature is surprising given the increasingly important role of mobile devices and services in the lives of many people and the growing potential of m-services as an advertising medium.

FACTORS INFLUENCING CONSUMER USE OF M-SERVICES

Hedonic and utilitarian value of mobile phones

Consumer choice is driven by utilitarian and hedonic considerations (Babin, Darden, and Griffin, 1994; Dhar and Wertenbroch, 2000). The consumption of many products involves both dimensions to varying degrees (Batra and Ahtola, 1991). Hedonic considerations relate to feelings, fantasy, and fun (Hirschman and Holbrook, 1982) while utilitarian attributes relate to qualities of usefulness (Batra and Ahtola, 1991). It has recently been argued that the origins of involvement are little understood (Coulter, Price, and Feick, 2003) despite the large amount of prior research. Here we argue that involvement with a product and its purchase are influenced by the perceived degree of utilitarian and hedonic value of the product. We focus on these product dimensions because, as others have argued (e.g., Babin, Darden, and Griffin, 1994), they form a basic underlying presence across consumption phenomena. Bruner and Kumar (2005) found that the hedonic factor of fun significantly affected attitude toward the act of using handheld internet devices. In the case of the mobile phone, we hypothesize that perceptions that it is both highly useful and highly pleasurable will affect, separately and jointly, involvement with the product itself and the purchase of a particular product for personal use.

Involvement

Much research has been directed to the construct of consumer involvement (see Laaksonen, 1994; Laurent and Kapferer, 1985). In particular it has been advocated that involvement be viewed as an individual, internal state of arousal with intensity, direction, and persistence properties (Andrews, Durvasula, and Akhter, 1990), clearly linking involvement to a consumer's motivational state. Involvement is considered to derive from the perceived importance of the stimulus, "be that stimulus the product itself or the purchase decision task" (Mittal, 1995, p. 664). Hunt, Keaveney, and Lee (1995) in their consideration of the two major types of involvement-product involvement and purchase involvement-found that they did not refer to the same concept. Broderick and Mueller (1999) argue that each may have a separate impact on behavior. Here we consider involvement with the mobile phone product itself and with purchase of the mobile phone, and thus argue that each will have a separate and distinct effect on use of m-services. Consistent with prior research on the impact of involvement on variety of product purchased (Coulter, Price, and Feick, 2003), we hypothesize that high levels of involvement with the product class is likely to lead to greater use of m-services. In a similar way, we hypothesize that high involvement with the purchase of a mobile phone for personal use is likely to lead to greater use of m-services.

Innovativeness

The influence of individual innovativeness on the use of new technology has long been recognized by research and has been investigated in relation to internet shoppers (Donthu and Garcia, 1999). Donthu and Garcia (1999) found that those who had appropriated the internet for shopping were significantly more innovative than noninternet shoppers. Other researchers (e.g., Agarwal and Prasad, 1997) developed and used the construct of personal innovativeness in the domain of information technology (PITT) to identify those who were likely to use IT innovations earlier than others. Results of their study showed a significant correlation between PITT and use intentions. In addition, Foxall and Bhate (1999), who tested a contingency model of consumer innovativeness for computer use, found that adaption-innovative attitude and personal involvement explained overall computer use. We therefore hypothesize that innovativeness will be positively related to m-service use.

Self-efficacy

Self-efficacy is defined as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood and Bandura, 1989, p. 408). These beliefs vary on three dimensions: (1) magnitude (particular level of task difficulty), (2) strength (certainty of successfully performing a particular level of task difficulty), and (3) generality (the extent to which magnitude and strength beliefs generalize across tasks and situations) (Bandura, 1986). Individuals with low self-efficacy will tend to focus on their personal deficiencies and foresee failure, which not only undermines effective use of capabilities, but diverts attention from strategies to succeed. In contrast, individuals with high self-efficacy will set higher goals for themselves and have firmer commitment (Bandura and Wood, 1989). More recently, studies have examined the relationship between self-efficacy with regard to using computers and other computer behaviors. For example, Compeau and Higgins (1995), who define computer self-efficacy as a "judgement of one's capability to use a computer, and … incorporates judgements of the ability to apply those skills to broader tasks" (p. 192), found that it plays a significant role in shaping individuals' computer behaviors in terms of use. We thus hypothesize that higher levels of self-efficacy will be associated with m-service use.

System of relationships: The conceptual model

In this article, it is hypothesized that m-service use is influenced by innovativeness, self-efficacy, mobile phone product involvement, and mobile phone purchase involvement. It is further hypothesized that mobile phone product involvement and mobile phone purchase involvement are influenced by perceived hedonism and utilitarianism of mobile phones. The proposed model of the system of relationships presented for empirical estimation is shown in Figure 1.

The specific hypotheses relating to the structural paths in the model are as follows:

H1: Perceived utilitarianism of mobile phones will be positively related to mobile phone purchase involvement

H2: Perceived utilitarianism of mobile phones will be positively related to mobile phone product involvement.

H3: Perceived hedonism of mobile phones will be positively related to mobile phone purchase involvement.

H4: Perceived hedonism of mobile phones will be positively related to mobile phone product involvement.

H5: Mobile phone purchase involvement will be positively related to use of m-services.

H6: Mobile phone product involvement will be positively related to use of m-services.

H7: Innovativeness will be positively related to use of m-services.

H8: Self-efficacy will be positively related to use of m-services.

METHODOLOGY

The sample

To undertake this study, a web-based survey was used and a notice was placed in a prominent position on a university school's homepage inviting respondents to access and complete the survey. Email invitations were sent to a number of staff and students directing them to the website and requesting them to send the invitation to others, in particular those outside the university community. The choice of a web survey for data collection is justified on the basis of its appropriateness for the target sample, its response speed (Schillewaert, Langerak, and Duhamel, 1998), and automated data collation (Comley, 1996). The operational definition for the sample of this current study was consumers with access to the web who used mobile phones. Differences between random and convenience samples in terms of their representativeness are not as great as have often been implied (Bryman and Cramer, 2001). While the survey was not administered to students in a class situation, we acknowledge that the use of a university website to collect the sample means that it is likely that many who responded to the survey would likely be current students or prospective students of the university. However, we argue that the sampling is appropriate for the purposes of this research and may be used to make inferences about the general population of consumers with web access who use mobile phones and are the likely target market for m-services. A sample size of 250 respondents was obtained, 59 percent women and 41 percent men. Respondents were aged from between 17 and 19 years to 40+ years with 81 percent aged between 20 and 40 years. All respondents had at least a secondary school standard of education. Moreover, 94 percent of respondents had home internet connection.

Web-based surveys

As mentioned above, one of the benefits of using a web-based survey for this research is access to our targeted population. Another advantage is its ability to overcome incomplete and inappropriate responses (Schmidt, 1997). Respondents who submitted their survey responses were reminded with a display notifying them of missing questions and directing them to backtrack to complete the missing data and resubmit. Unacceptable responses were avoided by the application of an adapted computer graphic interface program to detect problems such as out of bounds and inappropriate responses. In keeping with customary ethical guidelines, the web survey was reviewed and approved by a university ethics committee. Appropriate ethical procedures for data integrity, security, and anonymity were followed. Informed consent was obtained by presenting the electronic consent form to the respondents, detailing the ethical procedures in place for anonymity, data integrity, and security, prior to their viewing of the survey and requiring a separate click to signal consent before proceeding to the survey itself.

Operational measure of constructs

To measure use of m-services, respondents were required to respond to a list of 31 m-services (see Table 1) and state which services had actually been used. The m-services items were presented in random order. Using SPSS 11.5 for Windows, the occurrences of actual use of each m-service were counted resulting in a new variable that reflects the total number of m-services used for each respondent. To address the issue of positive skewness, the variable was recoded to combine the 17 cases with values of 10 or greater.

The constructs of innovativeness, self-efficacy, hedonic and utilitarian value, and product and purchase involvement are modified from scales developed for previous research to reflect the context of mobile phones. Details of the actual items used and source of scales for the current study are reported in Table 2.

Confirmatory factor analysis

Confirmatory factor analysis (CFA) using AMOS 4.1 (Arbuckle, 1999) was performed on the sample of survey respondents to assess the adequacy of behavioral measures and to test for discriminant validity of all constructs used in the study. The criteria for evaluating the goodness of fit of the model and estimation were the chi-square test and comparative fit index. CFA for the three-item innovativeness scale of Donthu and Garcia (1999) indicated that convergent validity could not be established, so the item with lowest factor loadings (new items are usually gimmicks) was dropped, resulting in a two-item indicator for innovativeness. The remaining indicators loaded in their respective constructs as theory suggested, and the overall model fit with χ^2 = 272.735, 170 degrees of freedom (df), p = 0.000; GFI = 0.9, RMSEA = 0.049, CMIN/DF = 1.604 (independence model with χ^2 = 600.189, df = 191): χ^2 was significant as might be expected given the sample size (Anderson and Gerbing, 1988). To assess discriminant validity, correlations between factors over 0.60 were fixed to 1.00 (Rodriguez and Wilson, 2002), the model was recalculated and a chi-square measure was used as the model fitting criteria (Anderson and Gerbing, 1988). There was one factor correlation above 0.60 (hedonic value of mobile phones and product involvement 0.69) and after recalculation, the resulting model fit significantly less well than the unconstrained model ($\Delta\chi^2$ 278–272 = 6; df (171–170); p <

0.05) establishing discriminant validity for hedonic value and product involvement factors and thus for all constructs in the model. Fit indices for the CFAs and Cronbach alphas for each indicator are shown in Table 2. All fit indices and Cronbach alphas were satisfactory (Anderson and Gerbing, 1988; Nunnally, 1978).

RESULTS

Estimating the structural model produced the following results: &KHgr;^{2} = 287.427, 170 df, p = 0.000; GFI = 0.904; RMSEA = 0.049; CMIN/DF = 1.633. As noted previously, the significant chi-square statistics might have been expected given the large sample size (Anderson and Gerbing, 1988), but the other fit indices provide evidence of adequate fit to the sample data with the ratio CMIN/df being below three. Standardized regression weights and t-values for the model are shown in Table 3. T-values in excess of 1.96 were accepted as significant (Anderson and Gerbing, 1988).

It was hypothesized that utilitarian value would drive both mobile phone purchase involvement (Hypothesis H1) and mobile phone product involvement (Hypothesis H2). Both Hypotheses H1 and H2 were supported (H1 beta = 0.378, t = 4.059H5; H2 beta = 0.622, t = 6.357). Similarly it was hypothesized that hedonic value would drive both mobile phone purchase involvement (Hypothesis H3) and mobile phone product involvement (Hypothesis H4). Hypothesis H3 was supported, but Hypothesis H4 was not (H3 beta = 0.172, t = 2.009; H4 beta = 0.136, t = 1.757). It appears that hedonic value of mobile phones only drives purchase involvement. These results suggest that involvement with the mobile phone product is a result of the usefulness of the product, but that the purchase involvement with a mobile phone for personal use is influenced by both pleasure and usefulness. It is notable, however, that usefulness of mobile phones appears to be more influential than the hedonic aspects.

As predicted by Hypotheses H5 and H6, high purchase involvement and high product involvement were found to be a positive influence on use of m-services (H5 beta = 0.499, t = 2.392; H6 beta = 0.476, t = 2.233). Consumers with high purchase involvement, who chose their mobile phone carefully, considered the choice an important decision, and those who cared which mobile phone they bought were also likely to appropriate more m-services. Similarly, those consumers with high product involvement who considered that their mobile phones were very important to them, were part of their lives, and mattered to them were likely to appropriate more m-services.

The results indicate that innovativeness positively influences the extent of use of m-services supporting Hypothesis H7. Consumers who have innovative characteristics will be more likely to try new m-services (H7 beta = 0.470; t = 2.226). Finally, Hypothesis H8 predicted that consumers with high perceived self-efficacy would be likely to have high m-service use, but this hypothesis was not supported (H8 beta = 0.071, t = 0.355). There appears to be no relationship between self-efficacy and the extent of use of m-services.

DISCUSSION

Consumers' evolving relationships with their mobile devices and their desire to access m-services require conceptualizations appropriate for advertising research. Predicated on the central role of involvement, this study developed a system of relationships and used structural equation modeling to test the factors influencing the use of m-services, in the context of consumers' existing relationships with mobile devices. The specific relationships tested were among perceived value (hedonic and utilitarian), involvement (with the product category and in purchasing a mobile phone for one's own use), and personal attributes of innovativeness and self-efficacy and the use of m-services, drawing on theories of product value, involvement, and attributes of innovativeness and self-efficacy, previously found to be important in explaining use of new products. Support for the overall system of relationships proposed in the model is significant. Use of m-services is strongly related to the perceived importance to consumers of mobile phones as a product category, and the importance of the purchase of their own particular mobile phone; utilitarian and hedonic value differentially influence involvement in product and purchase while consumer innovativeness also plays an important part. The model provides support for the overall proposition that consumers begin to understand value propositions, organize their perceptions of products and services in meaningful, personally relevant ways, and begin to adopt patterns of use relating to benefits that enhance life activities, interests, and pursuits. A large number of the m-services investigated in this research, such as personalized shopping alerts, shopping coupons, comparison of prices, email, SMS, MMS, and buying products online, are highly relevant to advertisers attempting to harness the potential of m-services. Advertisers could use these media for direct advertising communication or to embed advertising as part of these services. Moreover, many of the other m-services, such as location/map/direction services and calendar/reminder messages, could be integrated as part of the overall communication strategy.

Results indicate that while perceived utilitarian value of mobile phones drives both involvement in the mobile device itself and purchase involvement, perceived hedonic value drives only purchase involvement in deciding which particular phone should be purchased for one's own use. The extent to which consumer feel that their mobile phones are useful, valuable, and beneficial increases their involvement with mobile devices as well as the purchase of a specific device. On the other hand, the perception of the hedonic value of mobile phones as instruments that are pleasant, nice, and agreeable drives the purchase of a particular mobile phone. We can infer from these findings that for consumers, mobile phones in general are useful, but those consumers who also value mobile phones for hedonic attributes will be more likely to be particular about selecting a particular mobile phone that enables them to enhance their life by accessing fun activities.

As hypothesized, a higher level of involvement with the product category of mobile phones is likely to lead to use of m-services. It is notable that the role of involvement is confirmed in this context, as involvement in the product class, contrary to the researchers' expectations, was not found in previous research to influence the time consumers spent at a web page devoted to that type of product (Balabanis and Reynolds, 2001). Importantly, involvement in purchasing a mobile phone for one's own use also led to a higher degree of use of m-services. It is likely that higher purchase involvement, captured by responses to "Which mobile phone I buy matters a lot to me," is linked to purchasing the type of mobile phone that allows or facilitates certain types of m-services use.

As hypothesized, innovativeness did influence use of m-services, again confirming the role of innovativeness for new products (Donthu and Garcia, 1999). However, the socio-emotional function of mobile communication in showing concern, solidarity and commitment, nearness and sympathy (Palen, Salzman, and Youngs, 2001) is likely to contribute to wide and rapid use beyond those highly innovative consumers.

Interestingly, mobile self-efficacy was not found to influence the use of m-services, which indicates that, in contrast to the internet and other ICT-based products, consumers feel no barriers with regard to use of mobile phone technology. This finding provides some empirical support for the argument advanced concerning the seamless integration of mobile digital technology into everyday life of consumers

(Sullivan Mort and Drennan, 2002).

CONCLUSIONS AND IMPLICATIONS

This article contributes to advertising research in the new area of mobile communications in a number of ways. In this research we conceptualized the relationship between consumers, mobile devices, and m-services use in terms of the involvement concept. The significance of the system of relationships suggests we have effectively captured the importance of the relationship of consumers with their own particular mobile devices and with the purchase of these devices. Advertising strategy developers should be aware that consumers are thus likely to expect and respond to m-services advertising that respects and is consistent with this high level of involvement. Marketing that allows consumers to opt-in to receiving the messages and that allow the customization of the communication to fit needs is likely to be welcomed and effective. There is also potential to bundle m-services based advertising with enhanced information also delivered as an m-service, for example the provision of location information for restaurants with special offers on meals. This approach is likely to improve receptiveness and responsiveness to m-services advertising and potentially to provide new business models with direct response facilities.

Innovativeness is also implicated in the initial use m-services captured in this research. However, the socio-emotional context of mobile devices and m-services use is likely to support rapid diffusion across social networks. Advertising strategists should target innovators using m-services and support communication with other members of their social networks and incorporation of advertising messages into the repertoire of "grooming" and support contacts in social groups.

Mobile devices and m-services are supported by complex technology, although consumers apparently perceive no barrier to use of m-services, indicated by the lack of significance of the pathway for mobile self-efficacy in the model. This suggests that m-services advertising is likely to be effective with a wide range of consumers, not only those that are confident with new technology. In this way responses to m-services communications are more likely to be akin to responses in the early years of television, rather than the e-marketing communicated via the internet and desktop computers that required more confidence with new technology.

Mobile payments are any payment transaction completed via a mobile device (Song, 2001). Mobile payments may facilitate transactions in traditional retail environments, but they also have the potential when coupled with m-services to provide a complete m-commerce package. New business models are likely to emerge that enmesh m-services advertising, core m-service product offerings, and mobile payment systems. Advertising strategists need to be alert to new business models that allow consumers and business to interact and transact via advanced mobile devices and to the role of advertising in this new era.

Future research should build on this initial understanding of mobile communications and m-services use in a number of ways. First, the potential of mobile communications for direct response advertising should be further explored. This would involve both direct response targeted at consumers in a specific geographic locality identified through the geo-positioning function of advanced mobile devices and direct response advertising for core m-service product offerings delivered via the mobile device itself. In addition, in future work researchers should differentiate among the various types of m-services: core m-service product offerings such as ring tones or mobile television, m-services advertising, and m-services that are payment related such as m-smart cards and browser activated payment systems. This would enable the sequential effects of different types of m-services and their relationship to be more clearly modeled. As a first foray into the practical opportunities available to advertisers in using mobile communications, this research should act as an effective springboard for a future stream of research addressing mobile specific advertising issues.

BIOGRAPHIES

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NOTES & EXHIBITS

FIGURE 1
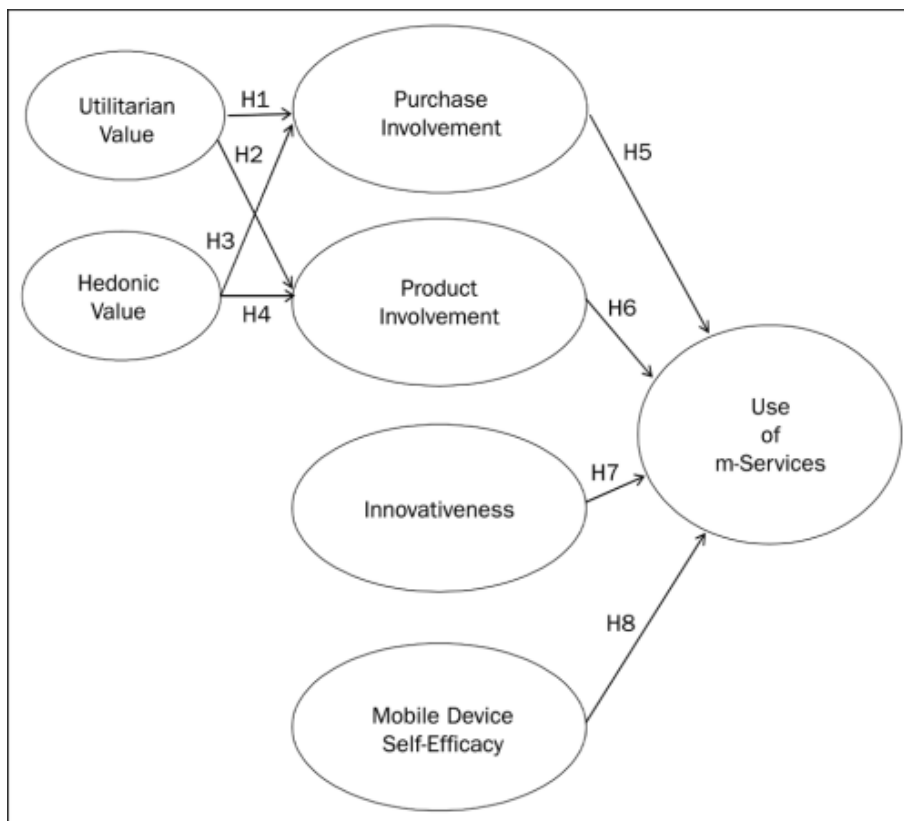
TABLE 1

TABLE 1
List of m-Services

m-Services Items			
Access adult entertainment	Place bets online	Remote activation of appliances	Take part in online auctions
Access and use transaction services	Play online games	Search for and compare prices of products while shopping	Trade stock
Book cinema/theater tickets	Receive and read news	Search for/receive product information while shopping	Use advanced banking services (e.g., apply for loans)
Book travel tickets	Receive calendar/reminder messages	Send insurance coupons	Use location/map/directions services
Buy products online	Receive personalized shopping alerts (of bargains)	Send/receive email	Use online currency conversion services
Chat online with strangers	Receive shopping coupons	Send/receive MMS	Use personal locator service
Listen to/download music	Receive sports information	Send/receive pictures	Use routine banking services (pay bills, etc.)
Make micropayments in shops or elsewhere	Receive weather reports	Send/receive SMS	

TABLE 2

TABLE 2
Measurement of Constructs[a]

Construct	Items	Scale	X^2	GFI	RMSEA	Alpha
Utilitarian	Mobile phones are: Useful/useless (7 point SD scale) Valuable/worthless Beneficial/harmful Wise/foolish	Batra and Ahtola (1991)	0.241 $p = 0.887$	1.000	0.000	0.77
Hedonic	Mobile phones are: Pleasant/unpleasant Nice/awful Agreeable/disagreeable Happy/sad	Batra and Ahtola (1991)	6.748 $p = 0.034$	0.987	0.098	0.78
Mobile phone purchase involvement	I choose a mobile phone very carefully. Which mobile phone I buy matters a lot to me. Choosing a mobile phone is an important decision for me.	Mittal (1995)	3.451 $p = 0.063$	0.991	0.099	0.93
Mobile phone product involvement	Mobile phones are very important to me. For me, mobile phones do not matter.[b] Mobile phones are a very important part of my life.	Mittal (1995)	1.250 $p = 0.264$	0.997	0.032	0.90
Innovativeness	I like to take chances. I like to experiment with new ways of doing things.	Donthu and Garcia (1999)[c]				0.75
Self-efficacy	I could use my mobile to access services if there was someone giving me step by step instructions. I could use my mobile to access services if I had the mobile handset manuals for references. I could use my mobile to access services if I could ask someone for help if I got stuck. I could use my mobile to access services if someone showed me how to do it first.	Adapted from Compeau and Higgins (1995)	7.494 $p = 0.024$	0.984	0.105	0.91

[a]Responses to all questions were on a 7-point scale ranging from "Strongly Agree" to "Strongly Disagree."
[b]Reverse scale.
[c]The confirmatory factor analysis for innovative indicated that convergent validity could not be confirmed for Donthu and Garcia's (1999) three-item scale. Upon examination of the factor loadings, two items were retained that resulted in a two-item indicator with an alpha of 0.75.

TABLE 3

TABLE 3

Standardized Regression Weights for Structural Model

Path		Regression Weights	t-Value
H1	Utilitarian → purchase involvement	0.378	4.059*
H2	Utilitarian → product involvement	0.622	6.357*
H3	Hedonic → purchase involvement	0.172	2.009*
H4	Hedonic → product involvement	0.136	1.757
H5	Purchase involvement → m-services	0.499	2.392*
H6	Product involvement → m-services	0.476	2.233*
H7	Innovativeness → m-services	0.470	2.226*
H8	Self-efficacy → m-services	0.071	0.355

*t-values in excess of 1.96 were accepted as significant (Anderson and Gerbing, 1988).