Examination of the influence of personal attributes on consumer use of m-services

Abstract

The rapid uptake of mobile devices has created the capacity to provide services to consumers while they are on the move, and new mobile services (m-services) are constantly emerging. In past research, personal attributes have been found to be important in the adoption and use of information and communication technology. However, little research has been conducted in the area of m-services. To explore factors influencing the use of these services, this paper examines personal attributes in terms of motivational, attitudinal and demographic characteristics. Specifically, it investigates the influence of innovativeness, self- efficacy, involvement and impulsiveness, as well as age and gender on m-services use. Data were collected from a convenience sample of 250 respondents using an online survey and a modified snowball procedure. Age and gender were quite well balanced in the sample. The multiple regression model was significant and the hypotheses relating to the positive relationship between impulsiveness, involvement and gender and m-services were supported. Findings are discussed, further implications for managers are suggested and directions for future research are proposed.

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Mobile devices are claimed to be the 'fastest adopted consumer products of all time' (Clarke III, 2001:134). Changes in the digital environment have lead to the emerging capacity to use mobile technology to communicate with any individual, from any place, over any network, and to any device, regardless of time or geographical location (Kalakota and Robinson, 2002; Sullivan Mort and Drennan, 2002). In turn, these developments are providing enormous potential for the emergence of m-services (Bitner, Brown and Meuter, 2000; Emmanouilides and Hammond, 2000). In this paper, m-services are broadly defined as the delivery of services through mobile devices such as smart phones mobile phones and personal digital assistants (PDA). Services can be delivered via voice applications using vortals, text applications such as Short Message Service (SMS), using email (the current I-mode application), and via web-mediated delivery using the 3G spectrum.

Previous research (eg Agarwal and Prasad, 1997, Compeau and Higgins, 1995, Donthu and Garcia, 1999, Foxall and Bhate, 1999) has indicated that personal attributes have a significant impact on adoption and use of new information communication technology (ICT) and related products and services. The aim of this paper is to examine personal attributes impacting on use of m-services. Specifically, the effect of innovativeness, self-efficacy, impulsiveness, involvement, age and gender are examined.

Previous research

Innovativeness has been considered an influential attribute for explaining uptake and use of new technologies. In their study of the motivations of Internet shoppers, Donthu and Garcia (1999) found that Internet shoppers were significantly more innovative than non-Internet shoppers. Other researchers, (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 usage intentions. In addition, (Foxall and Bhate 1999) who tested a contingency model (Midgley and Dowling 1978) of consumer innovativeness for computer use, found that adaption-innovative attitude and personal involvement explained overall computer use.

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, p408). Moreover, 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

behaviours. 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 behaviours in terms of use.

Involvement. Involvement relates to the perceived importance of a stimulus – "be that stimulus the product itself or the purchase decision task" (Mittal, 1995, p.664). Though rarely articulated succinctly, involvement is thus related to a consumers' motivational state – involvement has been expressed as a combination of situational and enduring involvement leading to overall felt involvement (Celsi and Olsen 1988). Consistent with involvement as a motivational state, Andrews, Durvasula and Akhter (1990) advocated that involvement be viewed is an individual, internal state of arousal with intensity, direction and persistence properties. Involvement has reliably been found, for example, to influence the extent of the decision-making process (Laurent and Kapferer, 1985), interest in advertising (Rothschild, 1979) and frequency of product usage (Slama and Tashchian, 1985). In addition personal involvement has been found to affect overall computer use (Foxall and Bhate, 1999) and message framing for mobile phone print advertisements (Martin and Marshall, 1999).

Impulsiveness has been researched as a motivational characteristic of online shoppers (Donthu and Garcia, 1999) and found to be a significant factor differentiating them from non-Internet shoppers. It has also been argued, however, that for some impulse purchases (eg fast foods) that consumers sitting in front of a computer screen will not have the direct impulse to purchase that would occur if they were driving past a fast food outlet (Leung 2002). Web sites are not perceived as being useful for "producing the serendipity and impulse purchases that come from visits to a shopping centre"(The Economist 2000 pS6). This alters immediately with mobile devices that allow the consumer to roam in the real world and act on impulse when they receive services such as shopping coupons.

Age. Some research (Teo Tim and Lai, 1997) shows that younger people are quicker to adopt the Internet and use it for more often than older users. Others (Perry, Perry and Hosack-Curlin, 1998) found no difference in Internet use between different age groups. In terms of Internet shopping, Koyuncu and Lien (2003) found that the probability of online purchasing increases with age until the range of 56-60 years.

Gender. In relation to gender differences, not only are females slower to adopt, but those who do use the Internet do so less frequently and for a smaller number of tasks than males (Teo et al, 1999). Other research (Gefen and Straub 1997) found that while there were gender differences in the perceptions towards e-mail, no differences in use were shown.

Conceptual model

In this paper, it is hypothesized that m-service use is influenced by innovativeness, self-efficacy, mobile phone involvement, impulsiveness, age and gender. The proposed model is shown in Figure 1.

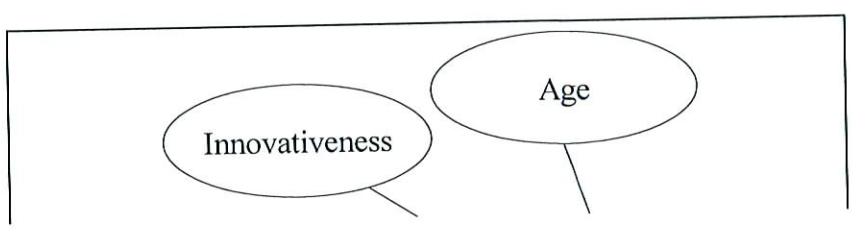

Figure 1 Model showing factors influencing use of m-services

The specific hypotheses tested are as follows:

Hypothesis 1: *Innovativeness* will be positively related to use of m-services.

Hypothesis 2: *Impulsiveness* will be positively related to use of m-services

Hypothesis 3: *Involvement* will be positively related to use of m-services

Hypothesis 4: *Self-efficacy* will be positively related to use of m-services.

Hypothesis 5: Males will be more likely to use m-services than females.

Hypothesis 6: *Age* will be negatively related to use of m-services.

Methodology

To undertake this study, a web-based survey was used and a notice 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 Web site and requesting them to send the invitation to others. 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, Niels, Langerak and Duhamel, 1998) and automated data collation (Comley, 1996). The operational definition for this current study is those connected to the Internet who have access to Web-based tools and are likely to be familiar with ICT products. The sample is a convenience sample and this may be considered a limitation of the present study. However, differences between random and convenience samples in terms of their representitiveness is not as great as has often been implied (Bryman and Cramer 2001). A sample size of 250 respondents was obtained, 59 % women and 41% men. Respondents were aged from between 17 and 19 years to 40+ years. All respondents had at least a secondary school standard of education.

Table 1 Constructs measured[a]

Construct	Items	Scale	Alpha
Innovativeness	I like to take chances I like to experiment with new ways of doing things New products are usually gimmicks[b]	Dunthu and Garcia (1999)	0.54
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 hand set 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 (1996)	0.91
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. 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.	Beardon and Netemeyer (1999)	0.87
Impulsiveness	I often make unplanned purchases I like to purchase things on a whim I think twice before committing myself[b] I always stick to my shopping lists[b]	Dunthu and Garcia (1999	0.77

a Responses to all questions were on a 7-point scale ranging from "Strongly Agree" to "Strongly Disagree".
b Reverse scale.

Variables

The constructs of *innovativeness, self-efficacy, involvement and impulsiveness* are drawn from previous research. Details of the items used, source of scale and Cronbach alphas for the current study are reported in Table 2. An ordinal scale ranging from 1 to 3 was used to indicate the age group to which respondents belonged. A dichotomous scale was used for gender. Both genders were represented across all age groups. To measure use of m-services, respondents were required to respond to a list of 32 examples of m-services to state which services had actually been used. Using SPSS, the occurrences of actual use of each m-service were counted resulting in a new variable that contains 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.

Results

Multiple regression analysis was undertaken to test the hypotheses related to the impact of personal attributes on use of m-services (H1-H6). The procedure used for this analysis involved inspections of the p-value which indicated whether or not the regression model explained a significant portion of the variance of m-services, p-

values to assess whether individual parameter estimates were significantly different from zero; and standardised regression coefficients to assess the relative impact of personal attributes on use of m-services. Results show that the 18 percent of the variance is explained in this regression model ($F=9.014$, $p<.01$) and the significant variables are impulsiveness ($\beta=.145$, $t=2.292$, $p<.05$), involvement ($\beta=.374$, $t=6.250$, $p<.01$) and gender ($\beta=.151$, $t=2.532$, $p<.05$). Therefore hypotheses 2, 3 and 5 are supported.

Discussion and Conclusions

Results indicate that motivational attributes such as involvement and impulsiveness have a significant influence on the use of m-services, while attitudinal variables such as self-efficacy and innovativeness, previously found important in relation to computer and Internet use, are not found to be significant influences. An explanation for this finding is possibly related to the seamless integration of technology when accessing services using mobile devices. While the demographic variable of age was not found to be significant, gender was shown to be an influential factor. In this study, males used significantly more m-services than females. Possibly, males may be more attracted to the types of services currently available, but further research is necessary to confirm this explanation. As hypothesized, higher level of involvement with mobile phones is likely to lead to use of m-services. It is interesting to have the role of involvement confirmed in this context as involvement in the product class was not found to influence the time consumers spent at a Web page devoted to that type of product in previous research (Balabanis and Reynolds, 2001). Importantly perceived self-efficacy was not found to influence use of m-services, which indicates that in contrast to Internet usage consumers feel no barriers with regard to mobile phone technology. Similarly age has no influence on the use of m-services. This indicates that management can pursue the provision of a range of m-services in anticipation of large potential market, one not restricted by techno-savviness or age. Also notable is the confirmation of the hypothesis that impulsiveness is related to higher use of m-services. This is likely to be of particular value for marketing managers who can take advantage of the fact that users of mobile devices are embedded in the real world context, in contrast to personal computer based internet users. The influence of impulsiveness on the use of m-services suggests that consumers are likely to be responsive to offers and purchase opportunities communicated via their mobile devices.

M-services, products delivered to mobile devices via voice, text, email and web-mediated delivery, provide an important area of growth for marketing managers and also for the next generation of e-commerce. However, as with consumer behaviour on the Internet and in regard to e-services before it, little is known about consumer behaviour and mobile phones, and m-services specifically. This study has contributed new insights into the behaviour of consumer in this emerging service area. Future research should further explore the influence of personal attributes on the use of specific types of m-services to gain an understanding of those services that are more likely to fulfill mobile consumer needs and should explore the role of the group influences on the use of m-services.

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