Association for Information Systems
AIS Electronic Library (AISeL)

July 2008

UNDERSTANDING THE DIFFERENCE IN ADOPTION AND CONTINUED USAGE OF MOBILE DATA SERVICES

Byoungsoo Kim Kim

Korea Advanced Institute of Science and Technology, tree9901@business.kaist.ac.kr

Follow this and additional works at: http://aisel.aisnet.org/pacis2008

UNDERSTANDING THE DIFFERENCE IN ADOPTION AND CONTINUED USAGE OF MOBILE DATA SERVICES

Abstract

Attracting new customers and retaining existing users are critical for the success of new information systems such as mobile data services (MDS). Thus, it is important to understand the formation process of behavior toward MDS at different stages. However, relative little attention has been paid to the differences in the determinants of behavior toward MDS between potential adopters and experienced users. This study examines the dynamics of customers' decision processes in the MDS context. This study proposes an advanced theoretical framework from multidisciplinary perspectives. The proposed research model is empirically evaluated by using survey data collected from 120 potential adopters and 354 experienced users. This study investigates some significant differences in the influence of the determinants of behavioral intention toward MDS, depending on customers' direct experience with MDS. The results of this study show that the adoption intention is solely determined by utilitarian value whereas continued usage intention is determined by utilitarian value as well as hedonic value. Keywords: ICT diffusion and adoption; User acceptance of ICT; Mobile Data Services.

1   INTRODUCTION

For the past two decades, both the academia and the industry have much interest in understanding users' information system (IS) adoption and usage decision-making processes. In recent years, researchers in the IS domain have raised questions about the difference between the factors in adoption and continued usage (e.g., Karahanna et al., 1999; Hong et al., 2006). Karahanna et al. (1999) noted that it is important to understand the sequence of activities that leads to the initial adoption and subsequent continued usage of IS.

In order to ensure profitability both at the early stages of business operations (Reichheld and Schefter, 2000) and the post-adoption stages (Eshghi et al., 2007), the providers of mobile data services (MDS) must not only attract potential adopters, but also retain experienced users. However, customers have different decision criteria toward MDS at different stages. Nevertheless, MDS researchers have shed little light on the differences in MDS customers' perceptions and attitudes at the initial adoption and continued usage decision stage. In this vein, this study attempts to develop a theoretical framework for understanding the difference in the determinants between potential MDS adopters and experienced MDS users.

A variety of theoretical perspectives that incorporate attitudinal, social, and control factors have been advanced to address IT adoption and usage (e.g., Davis, 1989; Bhattacherjee, 2001; Rogers, 1995). The expectation-confirmation model (ECM), the innovation diffusion theory, and the technology acceptance model (TAM) are widely used to explain adoption and usage of IT. The main focus of these perspectives has been confined to understanding employees' adoption processes within organizational settings where IT products are widely regarded as a tool to improve task performance. However, MDS is mainly used for personal needs and the cost of using MDS is borne mainly by the individuals, so potential adopters and experienced users of MDS perceive price as an important factor and evaluate MDS based on its benefits and costs. That is to say, MDS users play the dual role of technology users and service consumers in contrast to traditional IT users (Kim et al., 2007; Turel and Serenko, 2006; Wang et al, 2006). Thus, this study attempts to develop the theoretical framework by drawing from literature on IS and marketing domain from the multidisciplinary perspectives. The multidisciplinary perspectives would provide a synergistic framework to study the users' decision process of MDS adoption and continued usage.

In the marketing discipline, the ability of a service provider to offer superior value to its customers is regarded as the success of the service. Several works in the marketing and IS domain showed that perceived value is an important factor in customers' decision processes in pay-per-use service behavior (e.g., Kim et al., 2007; Turel et al., 2007). Batra and Ahtola (1990) stated that consumers use services for instrumental, utilitarian purpose, and consummatory hedonic gratification. In IS discipline, utilitarian and hedonic values cover a broad set of factors that individuals consider important in IT use (Venkatesh and Brown, 2001). Therefore, this study considers utilitarian and hedonic value as the key antecedents of the formation of behavior toward MDS.

The expected theoretical contributions of this study are threefold. First, this is the first research that provides a theoretical framework for understanding the differential influence of a comprehensive set of MDS attributes on both initial adoption and continued usage. Second, this study examines the change in the impact of utilitarian and hedonic value on behavioral intentions, depending on direct experience with MDS. Third, this study empirically investigates the difference in the relative influence of the antecedents for potential adopters and experienced users.

From a practical perspective, understanding the relative influence of the antecedents on adoption and continued usage intention helps MDS managers better target investment and marketing for each group. The measures of the utilitarian and hedonic dimension of attitude enable marketers and investors to

test the effectiveness of advertising campaigns and service types that stress experiential or functional positioning strategies for different groups.

2 THEORETICAL BACKGROUND

2.1 The Role of Direct Experience

According to Zanna and Rempel (1988), customers' attitudes may be formed based on three general types of information: information concerning past behavior, affective information, and cognitive information. First-hand experience is different from indirect experience because it provides consumers with direct sensory contact with the service (Kempf and Smith, 1998). Thus, it is reasonable to assume that potential adopters' attitudes are formed primarily based on indirect experience such as affective and cognitive information while experienced users' attitudes are formed based on both direct and indirect experience (Karahanna et al., 1999).

Cognitive dissonance theory (Cummings and Venkatesan, 1976) reports that the use of a service may change one's beliefs, perceptions, and attitudes. This theory suggests that one's beliefs and perceptions after use of the product or service may not be the same as those at pre-adoption stage. The theory of belief updating suggests that prior knowledge of a new product is considered as an anchor, and new information is considered as an adjustment (Hogarth and Einhorn, 1992). This theory has found that customers' beliefs, perceptions, and attitudes in terms of using a new service are updated as they obtain additional information about the service. The unified theory of acceptance and user of technology (UTAUT) confirms the significant moderating influences of the users' experiences in an IT context (Venkatesh et al., 2003). As a result, the antecedents of initial adoption may be not the same as those of continued use, and the degree to which the antecedents affect behavior may vary at different stages over time.

2.2 Literature Review on the Role of Direct Experience

The IT diffusion literature provides some evidence of the differences in the antecedents of behavioral intention in terms of direct experience with a target system. Taylor and Todd (1995) examined the influence of prior experience on the utilization of IT in a work place. They found that the users place a different emphasis on the determinants of intention to use toward IT, depending on prior experience with the IT. Karahanna et al. (1999) suggested a theoretical framework as to how users' pre-adoption beliefs change after they have already adopted and are using IT. They found that the intention to adopt IT is solely determined by subjective norms whereas the intention to continue usage is solely determined by attitude. However, contrary to expectations, the variance in continued usage intention jointly explained by attitude and subjected norms is lower than the variance in adoption intention. Kim and Malhotra (2005) showed the sequential updating mechanisms of users' beliefs and attitudes in a longitudinal context in the IS domain. Behavioral beliefs, such as perceived usefulness and perceived ease of use, are updated sequentially as users obtain richer and more reliable knowledge though prior experience on the target system.

Some works in marketing and psychology have found that service experiences are a powerful source of information for the formation of behavioral beliefs and attitudes. Previous literature indicates that product experience generates stronger behavioral beliefs and attitudes than indirect information such as advertising, and that it yields a higher level of attitude-behavior consistency (e.g. Fazio and Zanna, 1978; Smith and Swinyard, 1983; Homburg et al., 2006). Moreover, direct experience leads to the formation of behavior intention, which is readily accessible in the memory, resulting in a stronger

relationship between attitudes and behavior intention (Fazio and Zanna, 1978). Kempf and Laczniak (2001) suggested the complementary effects of an advertisement and a product trial. When comparing consumers exposed to both an advertisement and a trial with those exposed to only an advertisement, the former express stronger beliefs and attitudes than the latter, resulting in a better prediction of future behavior. Homburg et al. (2006) showed that the variance in customers' attitudes explained by the cognitive and affective factors increases as the number of experiences increases over time. They found that the influence of affective factors decreases, whereas the influence of cognitive factors increases as experiences accumulate.

3   RESEARCH MODEL AND HYPOTHESES

A research framework is developed by drawing on previous literature on technology diffusion, IS, and marketing. This approach offers a multi-disciplinary perspective to understand the antecedents of MDS adoption and continued usage intention toward MDS. Research on IS and marketing discipline has found that value is related to tangible and hedonic consequences (e.g., Holbrook and Batra, 1987; Venkatesh and Brown, 2001), so this study uses the bi-dimensional conceptualization of consumers' attitudes. The first dimension is a utilitarian value derived from functions performed by MDS while the second is a hedonic value derived from customers' feelings of the affective state that MDS generates (Crites et al., 1994; Sweeney and Soutar, 2001; Voss et al., 2003).

According to Parasuramna and Grewal (2000), perceived value is a function of a 'get' component (customers' benefits deriving from a seller's offering) and a 'give' component (customers' costs of acquiring the offering). Zeithaml (1988) also noted that perceived value is a consumer's overall evaluation of a service based on perceptions of what is received and what is given. This study is primarily focused on the MDS system and information quality as the 'get' components, and perceived fee as the 'give' component. The research model is presented in Figure 1.
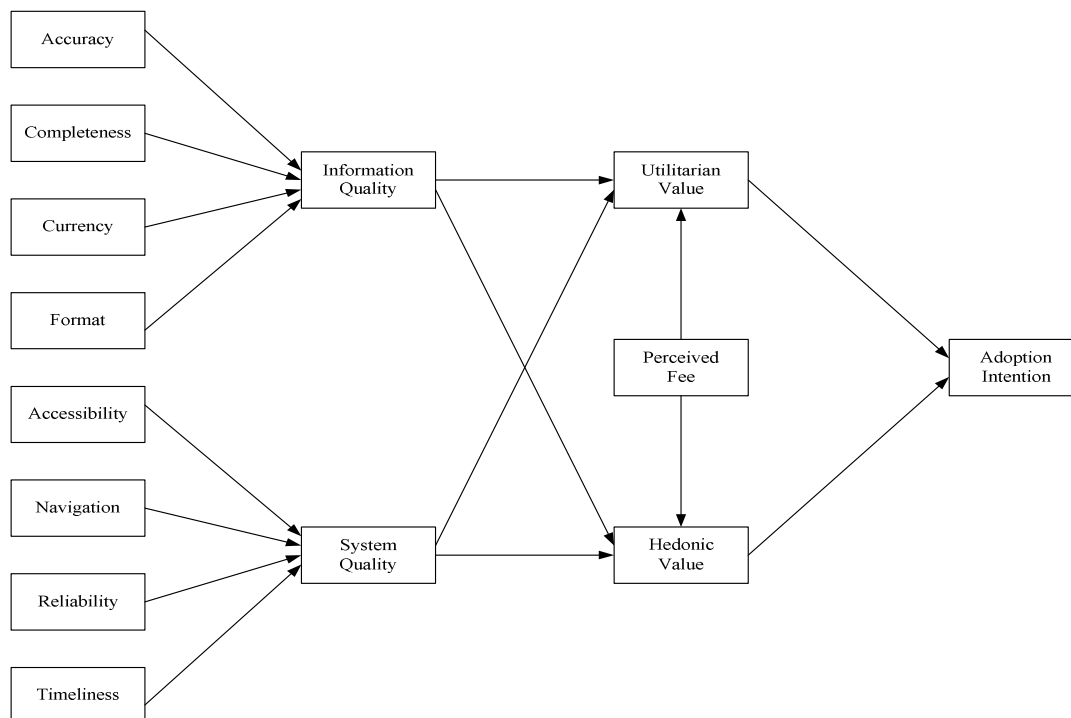
a) Potential Adopters
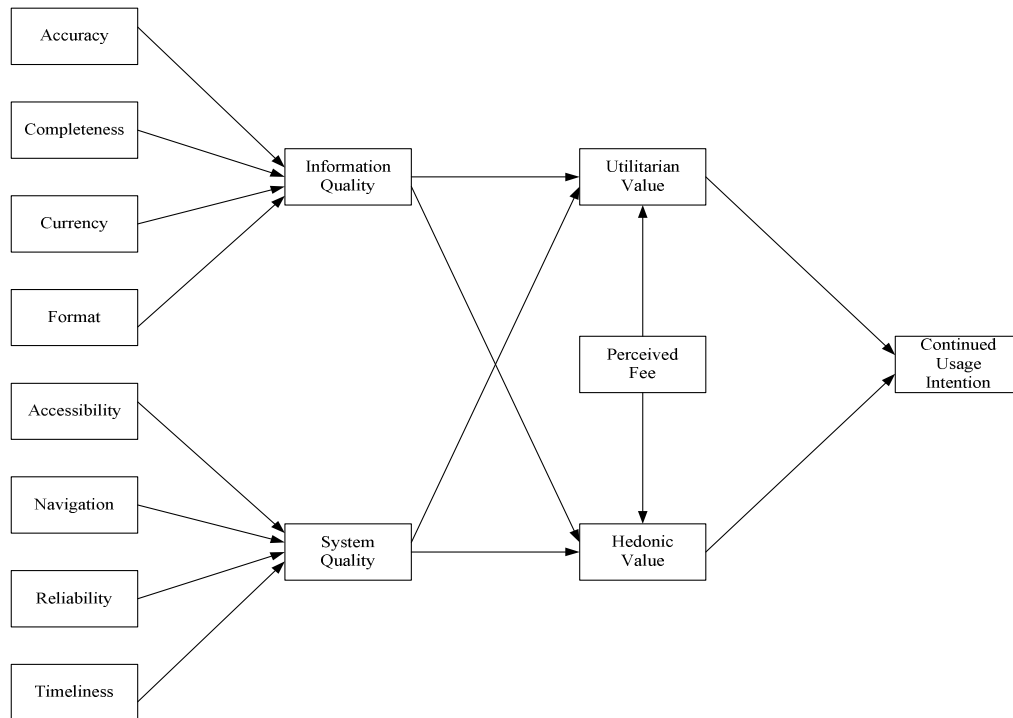
b) Experienced Users

Figure 1 Research Models

3.1 Determinants of Behavioral Intention

Utilitarian value is closely related to the effectiveness and efficiency that result from the use of a service (Venkatesh and Brown 2001). From a utilitarian value perspective, the use of the service is understood as a means of accomplishing some task-related end (Holbrook and Batra, 1987; Babin et al., 1994). Most studies on the IS domain have strongly supported utilitarian value as a crucial determinant of prompting behavioral intention to adopt and use IT because customers make rational, calculated assessments of the functional benefits and sacrifices of using IT (Hong and Tam 2006; Kim et al., 2007). On the other hand, hedonic value is primarily non-instrumental, experiential, and affective (Sweeney and Soutar 2001). Customers experience hedonic value when the activity of using IT is appreciated in its own right aside from its instrumental value (Sheth et al., 1991). Compared to the utilitarian aspects of IT, hedonic value is more subjective and personal than utilitarian value and results from the fun derived rather than task completion (Holbrook and Batra, 1987). Research on IS has empirically shown that hedonic value is also a key determinant that consumers perceive as important in the context of IS use (Turel et al., 2007; Venkatesh and Brown, 2001).

In the context of MDS, both utilitarian and hedonic value would be the key drivers influencing MDS behavior. Since MDS includes several services whose utilitarian performance serves as the primary determinant such as news and navigation services, customers may achieve personal goals by using these services. Moreover, customers use services such as mobile games and MP3 based on emotional wants rather than performance enhancement.

H1(a, b): For potential adopters, (utilitarian value[a], hedonic value[b]) positively influences adoption intention.

H2(a, b): For experienced users, (utilitarian value[a], hedonic value[b]) positively influences continued usage intention.

3.2   Differences in Determinants of Behavioral Intention

When customers encounter a new service, they are faced with a choice as to whether or not to adopt the service. Several studies on the decision-making have shown that customers search for arguments and reasons to justify their choice (Dhar and Wertenbroch, 2000). Since it is easier to justify reasons for utilitarian consumption than hedonic consumption, customers are more likely to see their utilitarian perspectives emphasized before adopting the service (Jones et al., 2006). Hedonic consumption delivers benefits primarily based on experiential enjoyment, which may be more difficult to evaluate and quantify before using the service than the instrumental benefits that utilitarian consumption delivers (Babin et al., 1994). Consistent with this perspective, the prospect theory explains consumers' choice adopting utilitarian value function (Kahneman and Tversky, 1979). MDS potential adopters also have little information regarding MDS, so they would rely on utilitarian value deriving from MDS. In support of this notion, several studies on MDS have found that utilitarian value is strongly related to adoption intention toward MDS (Hong and Tam, 2006; Kim et al., 2007).

H3: Utilitarian value has a stronger impact on adoption intention than hedonic value.

As customers accumulate knowledge about the service, hedonic value becomes a critical determinant of behavior. Dhar and Wertenbroch (2000) found that customers view utilitarian aspects of consumption as a means of preserving or maintaining the status-quo in consumption experiences while they view hedonic aspects of consumption as a way to enhance the consumption experience. Affective-processing mechanisms suggest that fun experiences leave strong affective traces or "markers" in episodic memory (Cohen and Charles, 1991). These strong affective memory elements are more readily accessible to current cognitive operations. When customers evaluate the relevant consumption, the "markers" are readily retrieved and salient in the mental imagery activation. Additionally, since customers have formed positive attitudes toward experiences providing psychological rewards, they increase levels of emotional worth from the pleasant experience (Shiv and Huber, 2000). For experienced users of MDS, the utilitarian perspective derived from MDS may be considered as an anchor whereas the hedonic perspective derived from MDS may be considered as an adjustment. When deciding whether to continue using MDS, experienced users can be more easily recall pleasurable experiences to help them make a decision than potential adopters. Thus, it is expected that hedonic value has a greater impact on continued usage intention than adoption intention.

H4: Hedonic value has a stronger impact on continued usage intention than adoption intention.

3.3   Determinants of Attitudes

Monroe (1990) stated that perceived value is the trade-off between perceived quality and perceived fee. Especially, in the telecommunication industry, Bolton and Drew (1991) have shown that the perceptions of price and quality significantly influence perceived value. DeLone and McLean (1992) divided the perceived quality of IS into information and system quality. Related efforts have focused on empirically assessing the role of information and system quality as antecedents of IS adoption and usage in a variety of settings. Following DeLone and McLean, this study defines the information quality of MDS as the customer's perception of the quality of information provided by MDS, and the system quality of MDS as the customer's perception of MDS performance in terms of information retrieval and delivery. Research in the IS domain has proved that information and system quality are

multi-dimensional and measured by various instruments (Wixom and Todd, 2005; Nelson et al., 2005). The key metrics of MDS information and system are derived from the IS literature based on their widespread use and relevance to the MDS context. This study posits that the accuracy, completeness, currency, and format are antecedents to MDS information quality. Similarly, the accessibility, navigation, reliability, and timeliness serve as antecedents to MDS system quality. Table 1 presents the definitions of information and system characteristics of MDS. Thus, it is expected that the perceptions of quality of information and system about MDS influence utilitarian value and hedonic value, respectively.

H5(a, b): For potential adopters, (information quality[a], system quality[b]) positively influences utilitarian value.

H6(a, b): For potential adopters, (information quality[a], system quality[b]) positively influences hedonic value.

H7(a, b): For experienced users, (information quality[a], system quality[b]) positively influences utilitarian value.

H8(a, b): For experienced users, (information quality[a], system quality[b]) positively influences hedonic value.

Perceived fee is defined as the customer's perception of the fee sacrificed to acquire a service (Voss et al., 1998; Kim et al., 2007). In an organizational setting, the costs of adoption and usage of IT would not be a big issue for users since the cost is borne by the organization. However, since customers use MDS for personal needs rather than for task-related purposes, the monetary cost of MDS plays a powerful role in generating adoption and continued usage intention. According to a recent survey (KNIC and i-news 24, 2006), both potential adopters and experienced users identify high usage fee as the largest barrier to forming a positive attitude toward MDS. Previous works on technology diffusion and marketing have showed that perceived fee is negatively related to perceived value (Cronin et al. 2000). Thus, we hypothesize the following:

H9(a, b): For potential adopters, perceived fee negatively influences (utilitarian value[a], hedonic value[b]).

H10(a, b): For experienced users, perceived fee negatively influences (utilitarian value[a], hedonic value[b]).

4 RESEARCH METHODOLOGY

4.1 Instrument Development

The survey measurements for the constructs are mostly derived from the IS and marketing literatures to ensure their content validity. The question items are reworded to suit the MDS context of the current study. In this study, MDS is defined as wireless access to digitalized contents of the Internet through a cellular phone. A list of possible use of MDS is described, but short message service (SMS) is excluded because SMS is used without accessing the mobile Internet (Yan, 2003). The first question of our survey is designed to divide the respondents into potential adopters and experienced users. Each question is measured on a 7-point, Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

Before implementing the survey, the instrument is reviewed by a professor of MIS, doctoral students of MIS and marketing, and practitioners engaged in the telecommunication industry to identify problems with its wording, content, format, and question ambiguity. After minor changes are made

based on their suggestions, the modified questionnaire is pilot tested on 42 experienced users and 20 potential adopters, and is found to be reliable and valid.

4.2 Sample

In the data collection, we ask six professors to gather data from undergraduate, graduate, MBA students in their classes. Small gifts are given to the respondents. Overall, about 800 are distributed, and we obtain 497 responses. Among them, 24 responses are discarded because they are only partially completed. The final sample for potential adopters is 120 and for experienced users 354.

The results of the two sample independent t-tests tested difference between potential adopters and experienced users on these constructs. Experienced users and potential adopters differ significantly on eight of the fourteen constructs of the study. Both groups view adoption and continued usage negatively. Especially, experienced users have significantly more negative behavioral intention toward MDS than potential adopters. Individuals in the two groups have similar levels of utilitarian value while potential adopters have the higher level of hedonic value than experienced users.

4.3 Instrument Reliability and Validity

This study checks the convergent validity, reliability, and discriminant validity of the scales. First, convergent validity can be established if item loadings are 0.60 or higher (Hair 1998). The lowest loading of this study is 0.68 for potential adopters and 0.81 for experienced users, satisfying convergent validity. Second, to check the reliabilities of latent variables, composite reliability (CR) and average variance extracted (AVE) are calculated using the procedure outlined by Fornell and Larcker (1981). The reliability for both is acceptable if CR is 0.70 or higher and AVE is 0.50 or higher. The CRs and AVEs of our scale exceed the recommended cutoff values. Finally, for discriminant validity, the AVE from the construct should be greater than the variance shared between the construct and other constructs in the model (Chin et al., 1998). The square root of the AVEs exceed the interconstruct correlations, demonstrating discriminant validity.

5 EMPIRICAL RESULTS
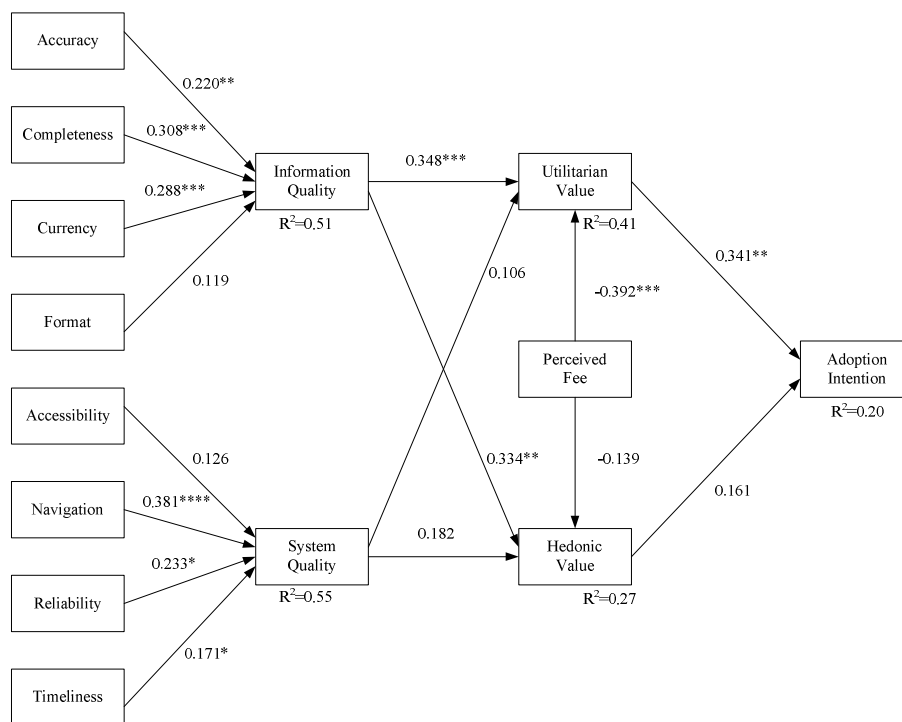
5.1 Potential Adopters

Consistent with H1a, utilitarian value is significantly related to adoption intention. However, hedonic value is found to have an insignificant effect on adoption intention, resulting in rejecting H2a. Utilitarian value has a stronger influence on adoption intention when compared to the influence of hedonic value, so H3 is supported. Our analysis reveals that perceived fee and information quality have a significant effect on utilitarian value and that information quality is significantly related only to hedonic value. Therefore, H5a, H6a, and H9a are accepted, while H5b, H6b, and H9b are not accepted. Perceived fee plays a dominant role in evaluating utilitarian value while information quality takes a dominant role in evaluating hedonic value. The information quality of MDS is significantly associated with the accuracy, completeness, and currency, and explained 51% of its variance. Similarly, the navigation, reliability, and timeliness are significantly related to MDS system quality, accounting for 55% of its variance.
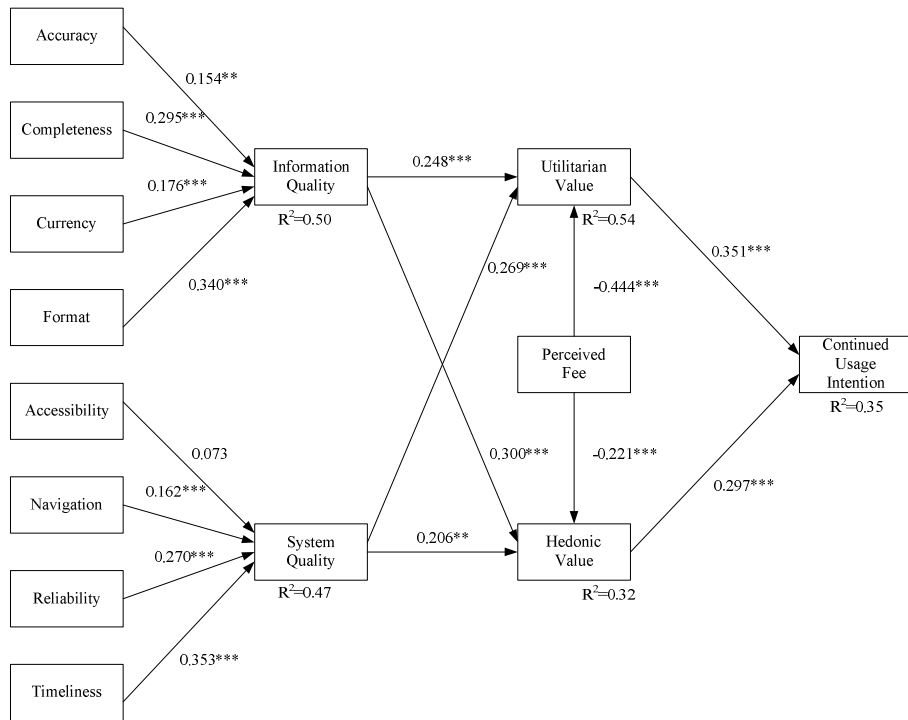
5.2   Experienced Users

Utilitarian value has a significant relationship with the determination of continued usage intention, and hedonic value is also significantly related to continued usage intention, so H1b and H2b are supported. Compared with potential adopters, the strong effect of hedonic value on continued usage intention is noticeable. Information quality, system quality, and perceived fee are all significantly related to utilitarian value, resulting in supporting H7a, H7b, and H10a. In the same manner as utilitarian value, hedonic value is significantly affected by information quality, system quality, and perceived fee. Therefore, H8a, H8b, and H10b are accepted. The accuracy, completeness, currency, and format have a strongly significant influence on the users' perception of the quality of MDS information and collectively accounted for 50% of the variance in information quality. Furthermore, the navigation, reliability, and timeliness significantly influence system quality, accounting for 47% of its variance.

5.3   Comparisons of Potential Adopters and Experienced Users

The explained variance for behavioral intention toward MDS is 20% with potential adopters but 35% with experienced users. The variance in behavioral intention jointly explained by utilitarian and hedonic values increases over time. H4 is tested by statistically comparing the path coefficient from hedonic value to adoption intention with the corresponding path coefficients to continued usage intention. These statistical comparisons are performed using a multi-group analysis presented in Keil et al. (2000). While the relative importance of utilitarian value does not increase (t= 1.158, not significant), the estimated coefficient of the effect of hedonic value on continued usage intention is larger than on adoption intention (t= 14.407, p<0.001). Therefore, H4 is supported.

a) Potential Adopters

b) Experienced Users

Figure 2 Analysis Results

References

Babin, B. J., Darden, W. R. and Griffin, M. (1994) Work and/or fun: measuring hedonic and utilitarian shopping value. Journal of Consumer Research, 20, 644-656.

Batra, R. and Ahtola, O. (1990) Measuring the hedonic and utilitarian sources of consumers attitudes. Marketing Letters, 2, 159-170.

Bhattacherjee, A. (2001) Understanding information systems continuance: an expectation-confirmation model. MIS Quarterly, 25, 351-370.

Bolton, R. N. and Drew, J. H. (1991) A multistage model of customers' assessments of service quality and value. Journal of Consumer Research, 17, 375-384.

Chin, W. W., Gopal, A. and Salisbury, W. D. (1997) Advancing the theory of adaptive structuration: the development of a scale to measure faithfulness of appropriation. Information Systems Research, 8, 342-367.

Crites Jr., S. L., Fabrigar, L. R. and Petty, R. E. (1994) Measuring the affective and cognitive properties of attitudes: conceptual and methodological issues. Personality and Social Psychology Bulletin, 20, 619-634.

Cohen, J. B. and Charles, S. A. (1991) Affective and Consumer Behavior. In: Handbook of Consumer Behavior, Robertson, T. S. and Kassarjian, H. J. (eds.), Englewood Cliffs, Prentice Hall, 189-240.

Cronin, J. J., Brady, M. K. and Hult, G.. T. M. (2000) Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. Journal of Retailing, 76, 193-218.

Cummings, W. H. and Venkatesan, M. (1976) Cognitive dissonance and consumer behavior: a review of the evidence. Journal of Marketing Research, 13, 303-308.

Davis, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13, 319-340.

DeLone, W. H. and McLean, E. R. (1992) Information systems success: the quest for the dependent variable. Information Systems Research, 3, 60-95.

Dhar, R. and Wertenbroch, K. (2000) Consumer choice between hedonic and utilitarian goods. Journal of Marketing Research, 37, 60-71.

Eshghi, A., Haughton, D. and Topi, H. (2007) Determinants of customer loyalty in the wireless telecommunications industry. Telecommunications Policy, 31, 93-106.

Fazio, R. H. and Zanna, M. P. (1978) On the predictive validity of attitudes: the roles of direct experience and confidence. Journal of Personality, 46, 228–243.

Fornell, C. and Larcker, D. F. (1981) Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18, 39-50.

Hair, J., Anderson, R. and Tatham, R, B. (1998) Multivariate Data Analysis. Prentice Hall, Upper Saddle River, NJ.

Hogarth, R. M. and Einhorn, H. J. (1992) Order effects in belief updating: The belief adjustment model. Cognitive Psychology, 24, 1-55.

Holbrook, M. B. and Batra, R. (1987) Assessing the role of emotions as mediators of consumer responses to advertising. Journal of Consumer Research, 14, 404-420.

Homburg, C., Koschate, N. and Hoyer, W. D. (2006) The role of cognition and affect in the formation of customer satisfaction: a dynamic perspective. Journal of Marketing, 70, 21-31.

Hong, S. J. and Tam, K. Y. (2006) Understanding the adoption of multipurpose information appliances: the case of mobile data services. Information Systems Research, 17, 162-179.

Hong, S. J., Thong, J. Y. L. and Tam, K. Y. (2006) Understanding continued information technology usage behavior: a comparison of three models in the context of mobile internet. Decision Support Systems, 42, 1819-1834.

Jones, M. A., Reynolds, K. E. and Arnold, M. J. (2006) Hedonic and utilitarian shopping value: investigating differential effects on retail outcomes. Journal of Business Research, 59, 974-981.

Kahneman, D. and Tversky, A. (1979) Prospect theory: an analysis of decision under risk. Econometrica, 47, 263-292.

Karahanna, E., Straub, D. W. and Chervany, N. L. (1999) Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. MIS Quarterly, 23, 183-213.

Keil, M., Tan, B. C. Y., Wei, K., Saarinen, T., Tuunainen, V. and Wassenaar, A. (2000) A cross-cultural study on escalation of commitment behavior in software projects. MIS Quarterly, 24, 299-325.

Kempf, D. S. and Laczniak, R. N. (2001) Advertising's influence on subsequent product trial processing. Journal of Advertising, 30, 27-38.

Kempf, D. S. and Smith, R. E. (1998) Consumer processing of product trial and the influence of prior advertising: a structural modeling approach. Journal of Marketing Research, 35, 325-338.

Kim, H. W., Chan, H. C. and Gupta, S. (2007). Value-based adoption of mobile internet: an empirical investigation. Decision Support Systems, 43, 111-126.

Kim, S. S. and Malhotra, N. K. (2005) A longitudinal model of continued IS use: an integrative view of four mechanisms underlying postadoption phenomena. Management Science, 51, 714-755.

KNIC and i-news 24 (2006) 2005-2006 Korea Mobile Market. Korea Network Information Center and i-news 24.

Nelson, R. R., Todd, P. A. and Wixom, B. H. (2005) Antecedents of information and system quality: an empirical examination within the context of data warehousing. Journal of Management Information Systems, 21, 199-236.

Reichheld, F. F. and Schefter, P. (2000) E-loyalty: Your secret weapon on the web. Harvard Business Review, 78, 105-113.

Rogers, E. (1995) Diffusion of Innovations. 4th ed. Free Press, New York.

Sheth, J. N., Newman, B.I. and Gross, B.L. (1991) Why we buy what we buy: a theory of consumption values. Journal of Business Research, 22, 159-170.

Shiv, B. and Huber, J. (2000) The impact of anticipating satisfaction on consumer choice. Journal of Consumer Research, 27, 202-216.

Smith, R. E. and Swinyard, W. R. (1983) Attitude-behavior consistency: the impact of product trial versus advertising. Journal of Marketing Research, 20, 257-267.

Sweeney, J. C. and Soutar, G. N. (2001) Consumer perceived value: the development of a multiple item scale. Journal of Retailing, 77, 203-220.

Taylor, S. and Todd, P. (1995) Assessing IT usage: the role of prior experience. MIS Quarterly, 19, 561-570.

Thong, J. Y. L., Hong, S. J. and Tam, K. Y. (2006) The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. International Journal of Human-Computer Studies, 64, 799-810.

Turel, O. and Serenko, A. (2006) Satisfaction with mobile services in Canada: an empirical investigation. Telecommunications Policy, 30, 314-331.

Turel, O., Serenko, A. and Bontis, N. (2007) User acceptance of wireless short messaging services: deconstructing perceived value. Information & Management, 44, 63-73.

Venkatesh, V. and Brown, S. A. (2001) A longitudinal investigation of personal computers in homes: adoption determinants and emerging challenges. MIS Quarterly, 25, 71-102.

Venkatesh, V., Morris, M. G.., Davis, G.. B. and Davis, F. D. (2003) User acceptance of information technology: toward a unified view. MIS Quarterly, 27, 425-478.

Voss, G. B., Parasuraman, A. and Grewal, D. (1998) The roles of price, performance, and expectations in determining satisfaction in service exchanges. Journal of Marketing, 62, 46-61.

Voss, K. E., Spangenberg, E. R. and Grohmann, B. (2003) Measuring the hedonic and utilitarian dimensions of consumer attitude. Journal of Marketing Research, 40, 310-320.

Wang, Y. –S., Lin, H. –H. and Luarn, P. (2006) Predicting consumer intention to use mobile service. Information Systems Journal, 16, 157-179.

Wixom, B. H. and Todd, P. A. (2005) A theoretical integration of user satisfaction and technology acceptance. Information Systems Research, 16, 85-102.

Yan, X. (2003) Mobile data communications in China. Communications of the ACM, 46, 80-85.

Zanna, M. P. and Rempel, J. K. (1988) Attitudes: A new look at an old concept. In: The Social Psychology of Knowledge, Bar-Tal, D. and Kruglanski, A. W. (eds.), Cambridge University Press, 315-334.

Zeithaml, V. A. (1988) Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. Journal of Marketing, 52, 2-22.