

Association for Information Systems AIS Electronic Library (AISeL)

ECIS 2008 Proceedings

European Conference on Information Systems
(ECIS)

2008

Understanding Consumer Recommendation Behavior in a Mobile Phone Service Context

W Chen

d91007@im.ntu.edu.tw

H Huang

bhchuang@management.ntu.edu.tw

Seng-Cho T. Chou

National Taiwan University, chou@im.ntu.edu.tw

Follow this and additional works at: <http://aisel.aisnet.org/ecis2008>

Recommended Citation

Chen, W; Huang, H; and Chou, Seng-Cho T., "Understanding Consumer Recommendation Behavior in a Mobile Phone Service Context" (2008). *ECIS 2008 Proceedings*. 47.

<http://aisel.aisnet.org/ecis2008/47>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

UNDERSTANDING CONSUMER RECOMMENDATION BEHAVIOR IN A MOBILE PHONE SERVICE CONTEXT

Chen, Wen-Kuo, Department of Information Management, National Taiwan University, Taipei, Taiwan, d91007@im.ntu.edu.tw

Huang, Heng-Chiang, Department of International Business, National Taiwan University, Taipei, Taiwan, bhchuang@management.ntu.edu.tw

Chou, Seng-Cho T., Department of Information Management, National Taiwan University, Taipei, Taiwan, chou@im.ntu.edu.tw

Abstract

Mobile service usage has become an important research topic in the field of MIS. In the past decade, research results have important implications for marketing managers with regard to the development of mobile services or advertising content employed to increase a consumer's intentions to use. We consider that a customer is not only a service user, but also the partner of a firm. Therefore, we focus on two determinants of customer recommendation behavior, namely, overall satisfaction and flow experience. We also propose a number of hypotheses related to the constructs of overall satisfaction, and test them using data provided by 3G mobile service subscribers. The results contribute to our understanding of how customers are willing to make recommendations to others. Besides increasing customer satisfaction, we should consider a mediating factor—users' flow experiences. Our findings provide empirical support for most of the hypotheses. The theoretical and practical implications of our findings are also discussed, and suggestions for further research are offered.

Keywords: Customer recommendations, Flow experience, Hedonic value, Utilitarian value, Third generation (3G) services.

1 INTRODUCTION

This article focuses on investigating third generation (3G) mobile phone services. We considered this investigation because 3G mobile phones combine communication and computing capabilities with mobility (Jarvenpaa and Lang 2005). The 3G mobile phone has introduced a new wireless service platform to deliver information and services between service providers and individuals. Despite this, the return on investment (ROI) of 3G mobile phone services is less than that of 3G communication. According to the 3G investigation report of Taylor Nelson Sofres (TNS) marketing research companies, both cost and content explain why users are choosing not to use 3G mobile phone services. 3G users would prefer for their 3G services packaged as either 'pay once for unlimited use', 'fixed monthly sum for unlimited use' or having the service bundled as part of their overall contract. We can consider that while 3G users would like to utilize 3G services, but they would not like to pay money without first using them. Consequently, we believe that investigating how customers recommend mobile phone services to other potential users based on their experiences is important for improving the diffusion of mobile phone services.

Recommendation by positive word-of-mouth is increasingly seen as a marketing tool that generates the greatest benefit for supplier firms (Morgan and Rego 2006, Reichheld 2006). There is evidence that recommendations have a strong influence on consumer choice, particularly in the pre-purchase stage (East et al. 2005). It stands to reason that in a purchase decision-making context, consumers rely more on customer recommendations rather than either marketing content or advertising by the provider (Biyalogorsky et al. 2001). Therefore, since existing customers can be good sales people, customer recommendations must be considered an important driver for diffusing products and services.

From a review of past research, it is clear that customer satisfaction can affect post-purchase behavior such as re-purchase and customer recommendations (e.g. Gremler et al. 2001, Yeung and Ennew 2001). According to Anderson (1998) however, customers may not recommend services to other people, even though they satisfied with the service. That is, customer satisfaction and word-of-mouth have a U-shaped relationship. This means that if customer does not have a high level of satisfaction, he/she will not be willing to recommend his/her service experience to other people. Similarly, Santos and Boote (2003) posited that the perceived performance of a product or service should be above a consumer's desired expectations. Otherwise, this will not affect a positive action such as a compliment or a recommendation.

In this study, we propose that the flow experience is representative of a high level of customer satisfaction. Based on Flow Theory, a flow experience is both an overall assessment and a kind of mental state that engages an individual into one activity (Csikszentmihalyi 1975). Moreover, a necessary condition of being immersed in the state of flow is to have a clear set of goals that require appropriate responses (Hoffman and Novak 1996). Furthermore, customer satisfaction is a reaction to the 'plausible fulfillment' of needs or desires (Oliver 1997). It stands to reason that the clear goal of service purchase is the satisfaction of customer needs or desires. Therefore, we may consider that customer satisfaction is one of the goals for a customer to achieve flow experience. Flow experience is similar to a high level of satisfaction and influence on customer recommendations.

This research is important for a variety of reasons. First, it addresses an extremely important topic in the field of IS and marketing. Customer recommendation is an important driver for the diffusion of products and services. How then, do we increase that customer recommendation to others? Second, we develop and test a more comprehensive model of several key customer perceptions.

Next, we review the relevant literature and develop our research model and hypotheses. Then, we describe the methodology, report the results of our analysis, and consider the implications of the results. We conclude the paper with a discussion of the contributions and limitations of the present study and make suggestions for future research.

2 CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

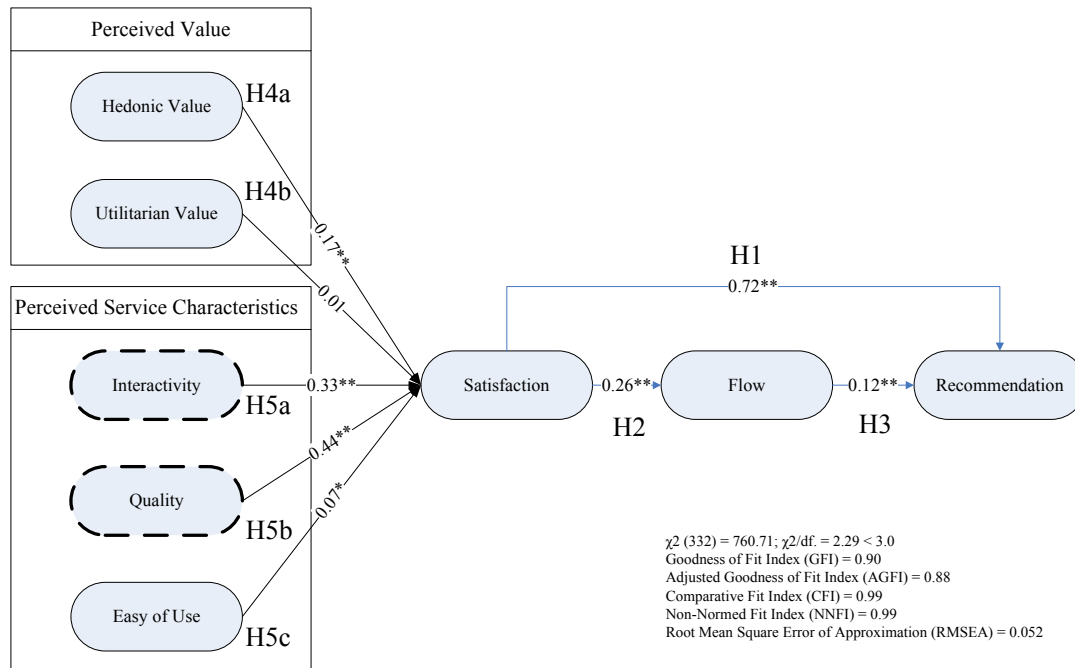


Figure 1. Theoretical Model.

2.1 Determinants of Customer recommendations

A number of studies seek to explore the determinants of consumer recommendations (Brown et al. 2005, Shabbir et al. 2007). The majority of work suggests that consumer post-purchase responses are the key underlying antecedents of customer recommendations. In particular, most researchers note that satisfied customers are willing to recommend services to others (e.g. Palmatier et al. 2006, Morgan and Rego 2006). On the other hand, Csikszentmihalyi (1990) proposes that flow experience emphasizes an individual's subjective experience state made by interacting with activities that may also act as a kind of post-purchase responses. Hence, besides customer satisfaction, we posit that flow experience is important to the study of customer recommendation behavior.

2.1.1 Satisfaction, Customer Recommendations and Flow experience

The customer recommendations construct derives from word-of-mouth. Word-of-mouth may be categorized as positive, neutral, or negative. Chung and Darke (2006) noted that positive word-of-mouth occurs when consumers are willing to recommend services to others. Moreover, word-of-mouth also impels potential customers to seek advice or actual customers to give advice (East et al. 2005). Thus, using the term of word-of-mouth may be made ambiguous; we use customer recommendations when customers give positive advice about products or services to others voluntarily. Hence, this study defines customer recommendations as the action that occurs when customers voluntarily recommend their experiences with mobile phone services to their relatives and friends.

Overall satisfaction plays a critical role in the study of customer recommendation behavior because it affects individual motivations to recommend products or services to potential customers (e.g. Lam et al. 2004, Morgan et al. 2005). Overall satisfaction includes the total consumer experience after the evaluation of services or products (Anderson et al. 1994, Sweeney and Soutar 2001) and is the reaction to the 'plausible fulfillment' of needs and desires, (Oliver 1997).

There was substantial evidence that users' evaluation of service satisfaction had a strong direct impact on customer recommendations. The literature on customer loyalty suggests that satisfaction with products, services, or firms is an important post-purchase response that leads to the spread of customer

recommendations to other consumers (Mittal et al. 1999, Del Rio et al. 2001). For example, Morgan et al. (2005) suggested that overall customer satisfaction relates to the post-purchase phenomenon, such as future purchase intentions and the likelihood to recommend. Similarly, Lam et al. (2004) showed that a customer satisfied with a service provider might be willing to recommend the services to other customers. Thus, customer satisfaction plays an important role in facilitating customer recommendations. Therefore, 'willingness to recommend' and 'making recommendations to others' metrics are widely used to assess the impact of customer satisfaction. As a result, we assume that customer satisfaction is a determinant of customer recommendations. Thus, we propose the following hypothesis:

Hypothesis 1 (H1): Mobile phone service users who experience greater satisfaction are more likely to recommend mobile phone services to others.

Csikszentmihalyi (1975) proposed Flow Theory to determine why people expend large amounts of energy in the interesting activities that interest them. Csikszentmihalyi (1975, p. 36) defines flow as "holistic sensation that people feel when they act with total involvement." Research suggests that flow experience may be a useful construct for understanding information technology applications, such as mobile services and network navigation (Hoffman and Novak 1996).

A necessary condition of being immersed in the state of flow is to have a clear set of goals that require appropriate responses (Hoffman and Novak 1996). By focusing on those goals, the individual engages in activities and experience flow. According to Anderson et al. (1994), overall satisfaction is "an overall evaluation based on the total purchase and consumption experience with a good or service over time." It stands to reason that the satisfaction of customer needs or desires provides a clear goal for a customer to purchase the service. Therefore, we posit that overall satisfaction is one kind of goal and drives a customer to archive a great level of customer satisfaction: flow experience. Hence, we propose the following hypothesis:

Hypothesis 2 (H2): Mobile phone service users who experience greater satisfaction are more likely to achieve a greater flow experience.

2.1.2 Flow Experience and Customer Recommendations

While to the best of our knowledge, no customer recommendations research has confirmed the relationship between flow experience and customer recommendations, there is some indirect evidence to support it. For example, four consequences of flow from Hoffman and Novak's (1996) network navigation model are similar to customer loyalty: namely, increased learning, increased perceived behavioral control, increased exploratory and participatory behavior, and positive subjective experiences. Similarly, Siekpe (2005) confirmed that flow was positively related to the intention to purchase and the intention to return.

In the literature on loyalty, there are two kinds of loyalty: attitude dimension of loyalty and behavior dimension of loyalty (Palmatier et al. 2006). Jones and Sasser (1995) considered that we can measure customer loyalty from intention to repurchase (attitude loyalty), primary behavior (behavior loyalty), and secondary behavior (behavior loyalty). Primary behavior occurs when a consumer actually repurchases the products or services and secondary behavior occurs when a consumer is willing to recommend the products or services to others. It stands to reason that increased exploration and participation is one kind of behavior loyalty. Hence, we believe that it is important to consider the relationship of flow experience to customer recommendations in mobile phone services for theoretical reasons. Thus, we propose the following hypothesis:

Hypothesis 3 (H3): Mobile phone service users who have better flow experiences are more likely to recommend mobile phone services to others.

2.2 Antecedents to Satisfaction

2.2.1 Perceived Value

Past research has shown that perceived value is an important antecedent for overall satisfaction. Research has conceptualized value simply as the price for which a customer pays to receive a product service (Zeithaml 1988). However, a number of recent researchers argue that value is not the only price. For example, Babin et al. (1994) and Babin and Attaway (2000) considered two value dimensions: utilitarian value and hedonic value.

Utilitarian value is defined as that value that a customer receives based on a task-related and rational consumption behavior (Babin et al. 1994). Hedonic value is defined as that value a customer receives based on the subject experience of fun and playfulness (Hirschman and Holbrook 1982, Babin et al. 1994). Traditionally, studies of information technology application usage, such as mobile services, believed that users adopt technologies or use information services for utilitarian purposes (e.g., Chiou 2004). It stands to reason that because technologies or information services are tools for solving customers' problems, past research has focused on technology effectiveness to understand why a customer adopts technology.

However, users do not adopt such applications only for functional benefits but also for entertainment purposes (Holbrook and Hirschman 1982). Customers may have emotional feelings, which they desire, by using technology. Moreover, utilitarian value and hedonic value do not have a mutually exclusive relationship (Babin et al. 1994) so that customers may not only get hedonic value from using mobile phone services but can satisfy their specific purposes (Hirschman and Holbrook 1982, Babin et al. 1994).

Thus, we consider that the perceived value construct, namely, hedonic value and utilitarian value, are useful for understanding users' evaluations of mobile phone services. Based on the literature, we hypothesize that there is a link between perceived value and user satisfaction as follows:

Hypothesis 4a (H4a): Perceived Hedonic Value increases user satisfaction with mobile services.

Hypothesis 4b (H4b): Perceived Utilitarian Value intensifies user satisfaction with mobile services.

2.2.2 Perceived Service Characteristics

We suggest that perceived service characteristics that construct interactivity, quality, and ease of use, can help us understand users' evaluations of mobile phone services, particularly customer satisfaction which derives from such services.

Perceived Interactivity: Regarded as the crucial element in a successful human-computer interaction (Hoffman and Novak 1996, McMillan and Hwang 2002, Liu and Shrum 2002, Teo et al. 2003), interactivity is one of the key characteristics of the new media (Hoffman and Novak 1996). Individuals rate interactivity on the basis of their perceptions of two-way communication, control choices, and time to load (McMillan and Hwang 2002). It stands to reason that interactivity is the degree to which mobile phone service users have control over items such as video phone, media, objects, and other similar items.

According to Teo et al. (2003), it has been shown that interactivity increases user satisfaction. Similarly, Liu and Shrum (2002) showed that interactivity increases positive attitudes of the human-computer interaction. While consumers use mobile phone services to focus on human-computer interaction, they also interact with other people and information through mobile phones. They experience some feelings about the interaction with services that will help them assess the performance of mobile phone services.

Perceived Quality: High product or service quality is the crucial topic for providers to gain increased market share or become a market leader. High quality is necessary to satisfy user's needs and expectations. Therefore, mobile phone service providers must satisfy customers when they are using services. An information system process perspective from DeLone and McLean (1992, 2003) and Pitt et al. (1995), suggests that a successful system must have high levels of system quality, information quality, and service quality. They believe these factors explain both why consumers use a system and also how they influence subsequent feelings of satisfaction. Moreover, Nelson et al. (2005) also

suggested that information quality and system quality may influence user satisfaction.

Thus, we consider that mobile phone service quality include three parts: information quality, system quality, and service quality. The definition is shown below. System quality is defined as that system quality which represents users' perceptions of interaction with mobile phone services over time (Nelson et al. 2005). Information quality is defined as that which provides integration and useful, updated information to satisfy users' needs (Mckinney et al. 2002). Service quality is defined as that with which service providers should satisfy user expectations (Jiang et al. 2000). Thus, we consider that it is perceived quality, namely, system quality, information quality, and service quality, that influences user satisfaction.

Perceived ease of use: Third-generation mobile phones are called interactive medium platforms. The main interaction with services is through a mobile phone. Therefore, an easy-of-use mobile phone is essential to ensure customer satisfaction. For example, Stone et al. (2007) found support for the notion that IT users have more satisfaction when they feel the system is easier to use. In addition, mobile devices that are easy to use are less threatening to an individual (Moon and Kim 2001). Thus, the following hypotheses can be proposed.

Hypothesis 5a (H5a): Higher Perceived Interactivity results in enhanced user satisfaction when using mobile phone services.

Hypothesis 5b (H5b): Higher Usage Quality results in enhanced user satisfaction when using mobile phone services.

Hypothesis 5c (H5c): Higher Perceived Ease of Use results in enhanced user satisfaction when using mobile phone services.

3 RESEARCH METHODS

We designed our study to survey 3G subscribers who used mobile phone services. It is important to note that we are more concerned with service usage in general than usage of a specific service. That is, we focus on users' experience with using multiple services.

3.1 Questionnaire Development

We describe below the measures of questionnaire that was used for assessing customer recommendations of mobile phone service. The measures of our framework were adapted from the validated measures of prior studies from the literature. We adapted them to suit the context of our study. The respondents assessed all items via a seven-point Likert scale ranging from 1 = "strongly disagree" to 7 = "strongly agree." The measures are listed in full in Appendix A and the descriptive statistics of the individual scales are shown in Table 1.

	M	SD	1	2	3	4	5	6	7	8
1. Overall Satisfaction	5.02	1.22	1.00							
2. Flow Experience	3.66	1.60	0.26	1.00						
3. Recommendation	4.99	1.37	0.74	0.28	1.00					
4. Hedonic Value	5.07	1.22	0.73	0.19	0.54	1.00				
5. Utilitarian Value	5.43	1.13	0.52	0.14	0.39	0.63	1.00			
6. Perceived Interactivity	4.95	1.14	0.88	0.23	0.65	0.72	0.51	1.00		
7. Perceived Quality	4.83	1.14	0.88	0.23	0.65	0.65	0.47	0.88	1.00	
8. Perceived Ease of Use	5.10	1.24	0.60	0.16	0.45	0.53	0.43	0.58	0.57	1.00

Table 1. Means, Standard Deviations, and Intercorrelations Among Latent Variables.

3.2 Sample and Data Collection

Data was collected from subscribers who had used 3G mobile phone services. The data was obtained

from three online web-sites that are well known forums for sharing information about mobile phones and mobile phone services.

We posted a message on the websites asking for respondents to complete an online questionnaire. Respondents were limited to website members who had used 3G mobile phone and mobile phone services. We paid US\$ 3 for every valid response, and the survey period covered one month. A total of 568 surveys were received, but we eliminated 88 surveys that had incomplete data. The remaining 480 questionnaires represent a useable response rate of 84.51%.

Of these respondents, Sixty-seven percent was male. Eighty-one percent of respondents ranged in age from 18 to 35 and fifty-one percent had earned a university degree. Fifty-eight percent of the respondents had used mobile phone services for less than six months and twenty-two percent of the respondents had used the services from six months to one year. Finally, twenty-four percent of the respondents worked in a service business and twenty-three percent of the respondents were students. The services used most frequently were video phones (37.5%), download ring tones or upload/download pictures (18.3%), and information searches (10%).

4 DATA ANALYSIS AND RESULTS

The research model was tested through structural equation modeling (SEM) with LISREL 8.72. Following Anderson and Gerbing (1988) and Hair et al. (1998), we used a two-stage approach to test the model. First, we conducted Confirmatory Factor Analysis (CFA) to assess the construct's reliability and validity in terms of convergent and discriminant validity. Second, we performed structural equation modeling analysis to test the research hypotheses empirically.

4.1 Second-Order Factor Estimation

We estimated two second-order factor models of perceived interactivity and perceived quality. The model of perceived interactivity includes three first-order factors: real-time conversation, no delay, and engaging. The posited model fit the data acceptably ($\chi^2(32) = 82.84$; GFI = .97; AGFI = .94; NFI = .99; CFI = .99; and RMSEA = .058) (Hu and Bentler 1999). Next, we conceptualized perceived quality as a higher-order factor. The model of perceived quality includes three first-order factors: information quality, system quality, and service quality. The posited model fit the data acceptably ($\chi^2(32) = 108.11$; GFI = .96; AGFI = .93; NFI = .99; CFI = .99; and RMSEA = .070) (Hu and Bentler 1999). All composite reliability coefficients greater than .60 demonstrate good reliability of the measures (Bagozzi and Yi 1988). Thus, we believe that perceived interactivity and perceived quality represents the second-order factors.

4.2 Measurement Model Estimation

With respect to the quality of the measurement model, construct reliability and two types of validity were assessed, in terms of convergent and discriminant validity (Boudreau et al. 2001). We examined the composite reliabilities of each of all constructs to provide evidence of construct reliability. The values of the composite reliability range from .80 to .92, exceeding the .7 threshold (Fornell and Larcker 1981, Hair et al. 1998). Therefore, all the construct measures in the measurement model achieve construct reliability.

In addition, all observable indicators loaded significantly on their intended factors ($p < .01$). The average variance extracted (AVE) from all eight constructs ranges from a low of .50 to a high of .73, well above the critical value of .5 (Fornell and Larcker 1981). Overall, the analysis demonstrates a good convergent validity of the measures. We provide a summary of the factor loadings, composite reliabilities, average variance extracted, and model-fits in Appendix A. Next, we assessed the discriminant validity by using chi-square difference testes, in which correlations are derived between constrained and unconstrained models (Algesheimer et al. 2005). We ran a series of nested CFA model comparisons (a total of 28 tests in all), and most of pairs were significantly different indicating discriminant validity. Finally, the measurement model indicates an adequate fit of the model to the data

((χ^2 (322) = 622.71; GFI = .92; AGFI = .89; NFI = .98; CFI = .99; and RMSEA = .044). This procedure, along with the CFA results, suggests that all the measurements in this study are adequately reliable and valid.

4.3 Structural Model: Hypothesis Testing

Figure 1 shows that the fit of this model is excellent: χ^2 (332) = 760.71, GFI = .90, AGFI = .88, CFI = .99, NFI = .99, RMSEA = .052. Thus the model fits well with the data from the study. With the exception of the main effect of the perceived utilitarian value (H4b), all the hypotheses were supported by our research results (see Figure 1).

The purpose of our research is to consider the effects of customer satisfaction and flow experience on customer recommendations. Hypothesis 1 suggests that overall satisfaction has a positive influence on willingness to make recommendations to friends. From the structural equation modeling results and the standardized path coefficient (SPC) of 0.72 ($p < .001$), this contention is supported. As predicted by Hypothesis 2, customer satisfaction exerts a positive influence on a user's flow experience (SPC = .26, $p < .01$). The results support our hypothesis. Regarding Hypothesis 3, there is consistent support that a user's flow experience significantly increases a willingness to make recommendations to friends (SPC = .12, $p < .01$).

The results partially support Hypothesis Set 4. The effect of hedonic value on overall satisfaction was found to be significant (SPC = .17, $p < .01$). However, the effect of utilitarian value on overall satisfaction was not supported (SPC = .01, $p > .05$). Finally, as predicted by Hypothesis Set 5, the effects of perceived service characteristics on overall satisfaction were supported. In terms of relative effect size, perceived quality had the largest effect on overall satisfaction (SPC = .44, $p < .01$). Mobile phone service users' perceptions of interactivity positively related to the overall satisfaction of services (SPC = .33, $p < .01$) while users' perception of ease of use (SPC = .07, $p < .05$) had the lowest effect on overall satisfaction.

5 DISCUSSION

The primary goal of this study was to develop and empirically test a model of user recommendations for mobile services that incorporated both user psychology and the unique features of mobile services. The hypothetical model is characterized by flow experience, overall satisfaction, and customer perceptions. Based on the findings of this research, we now consider first the implications of our results for research and practice followed by the limitations of the study.

5.1 Theoretical Implications

It has been argued that mobile services have unique characteristics that differentiate them from other media, such as the Internet or television. The contribution of this study is perhaps the development a new approach to the diffusion of mobile services. In particular, we address the question, "How might a company that provides mobile services encourage higher levels of recommendation behavior among its customers?" The objectives of the study are twofold: (1) to verify customer's flow experiences and user satisfaction that strengthen customer recommendations; and (2) to examine the factors that influence user satisfaction. This study specifies an explicit structure for direct and indirect influences on customer recommendations and provides a mechanism for marketers to determine external marketing variables relevant to mobile services.

This study introduced overall satisfaction and flow experience as potentially important characteristics that induce customer recommendations for mobile services. Our findings show that satisfaction and flow experiences exert significant influence on customer recommendations. Previous studies focused on the idea that high levels of customer satisfaction could increase the effect of customer recommendations (e.g. Mittal et al. 1999, Del Rio et al. 2001). However, they neglected the effect of user's flow experience. When customers use such services, they feel connected and involved in such a way that they lose track of time and their environment. The results of the study also show that

customers' flow experiences could be a mediating factor that influences satisfied customers to recommend services or products to other potential customers.

Although perceived hedonic and utilitarian values, are believed to be positively linked to user satisfaction (e.g. Cottet et al. 2006), only the effects of hedonic values on satisfaction was supported by this study. There is one possible explanation for this. The survey showed that customers use video phones, download ring tones, and upload/download pictures more frequently than they use other mobile services. In other words, consumers use 3G mobile services more for fun rather than utilitarian purposes. This may explain the insignificant utilitarian value. Perceived service characteristics have a direct and positive relationship with satisfaction. This finding shows that a mobile service provider that seeks a mobile service presence must understand the fundamental importance of the following constructs: interactivity, quality, and ease of use.

5.2 Practical Implications

The results of this study also have some practical implications. In the past, the development of customer satisfaction was a key objective of marketing managers. However, this research has demonstrated that flow experience appears to influence customer recommendations with regard to mobile services. Our results suggest that the concept of flow experience could be used as a driver to encourage customers to recommend services or products to potential customers. Mobile service providers should not only focus on developing customer satisfaction, they also need to understand how to help customers enjoy the services. Moreover, customers' value and service characteristics increase both customer satisfaction and the indirect influence on flow experience. Our findings can help mobile service providers design formal programs designed to encourage existing customers to make recommendations. For example, service providers can provide high quality, and highly entertainment services.

5.3 Limitations and Suggestions for Future Research

We now consider some limitations of our study. First, the study was conducted in the context of mobile services. Although we drew general findings from mobile service contexts, we should investigate which services allow users to derive more hedonic value or utilitarian value. Possibly the differences in mobile services could moderate the impact of perceived value on overall satisfaction. Second, we tested the construct of flow experience by survey method. Flow experience emphasizes the temporary subjective psychological experience. According to Webster et al. (1993), they found that a measure of the reliability of flow experience by experimental method is better than a measure by survey. Future research should consider a measure of the flow experience by experimental method.

Future research should consider other kinds of information system applications, such as online games and mobile television, because their interaction would produce different degree of flow experiences for users.

6 CONCLUSION

This research was motivated by a broad interest in understanding customer recommendation behavior. The model contributes to our understanding of how customers are willing to make recommendations to others. Besides developing customer satisfaction, we should understand a key mediator—users' flow experiences. Moreover, our model considers that the elements of perceived value and perceived service characteristics could directly influence customer satisfaction and indirectly influence flow experience. Consequently, we believe that customer satisfaction and customer's flow experience induces behavior that can lead to the phenomenon of customer recommendations which, in turn, becomes free advertising for a firm and attracts new customers. Finally, we hope that this study will encourage researchers to identify the effects of flow experience in other information system applications.

References

- Algesheimer, R., Dholakia, U.M., and Herrmann, A. (2005). The Social Influence of Brand Community: Evidence from European Car Clubs. *Journal of Marketing*, 69(3), 19-34.
- Anderson, E. (1998). Customer Satisfaction and Word of Mouth. *Journal of Service Research*, 1(1), 5-17.
- Anderson, E.W., Fornell, C., and Lehmann, D.R. (1994). Customer Satisfaction, Market Share and Profitability: Findings from Sweden. *Journal of Marketing*, 58(3), 53-66.
- Anderson, J.C. and Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- 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(4), 644-656.
- Babin, B.J. and Attaway, J.A. (2000). Atmospheric Affect as a Tool for Creating Value and Gaining Share of Customer. *Journal of Business Research*, 49(2), 91-99.
- Bagozzi, R.P. and Yi, Y. (1988). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 16 (1), 74-94.
- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation- Confirmation Model. *MIS Quarterly*, 25(3), 351-370.
- Boudreau, M.C., Gefen, D., and Straub, D. (2001). Validation in IS Research: A State-of-the-Art Assessment. *MIS Quarterly*, 25(1), pp. 1-16.
- Brown, T.J., Barry, T.E., Dacin, P.A., and Gunst, R.F. (2005). Spreading the Word: Investigating Antecedents of Consumers' Positive Word-of-Mouth Intentions and Behaviors in a Retailing Context. *Journal of the Academy of Marketing Science*, 33(2), 123-138.
- Chiou, J.S. (2004). The antecedents of consumers' loyalty toward Internet Service Providers. *Information & Management*, 41(6), 685-695.
- Chung, C.M.Y. and Darke, P.R. (2006). The Consumer as Advocate: Self-Relevance, Culture, and Word-of-Mouth. *Marketing Letters*, 17(4), 269-279.
- Cottet, P., Lichtle, M.G., and Plichon, V. (2006). The role of value in services: a study in a retail environment. *Journal of Consumer Marketing*, 23(4), 219-227.
- Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety*. Jossey- Bass, San Francisco.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper Collins, New York.
- Del Rio, A.B., Vazquez, R., and Iglesias, V. (2001). The effects of brand associations on the consumer response. *Journal of Consumer Marketing*, 18(5), 410-425.
- DeLone, W. and McLean, E. (1992). Information System Success: The Quest for the Dependent Variable. *Information System Research*, 3(1), 60-95.
- DeLone, W. and McLean, E. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19(4), 9-30.
- East, R., Hammond, K., Lomax, W., and Robinson, H. (2005). What is the Effect of a Recommendation? *Marketing Review*, 5(2), 145-157.
- Fornell, C. and Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Gremler, D. D., Gwinner, K. P., and Brown, S. W. (2001). Generating Positive Word-of-Mouth Communication through Customer-Employee Relationships. *International Journal of Service Industry Management*, 12(1), 44-59.
- Hair, J.F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1998). *Multivariate Data Analysis*. 5th Edition. Prentice-Hall, Inc, New Jersey.
- Holbrook, M.B. and Hirschman, E.C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings and Fun. *Journal of Consumer Research*, 9(2), 132-140.
- Hoffman, D.L. and Novak, T.P. (1996). Marketing in Hypermedia Computer-Mediated Environments: conceptual foundations. *Journal of Marketing*, 60(3), 50-68.
- Hu, L. and Bentler, P.M. (1999). Cutoff Criteria for Fit Indices in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modeling*, 6(1), 1-56.
- Jiang, J.J., Klein, G., Crampton, S.M. (2000). A note on SERVQUAL reliability and validity in information system service quality measurement. *Decision Sciences*, 31(3), 725-744.
- Jarvenpaa, S.L. and Lang, K. R. (2005). Managing the paradoxes of mobile technology. *Information Systems Management*, 22(4), 7-23.
- Jones, T. and Sasser, W.E. (1995). Why Satisfied Customers Defect. *Harvard Business Review*, 73(6), 88-99.
- Lam, S.Y., Shankar, V., Erramilli, M.K., and Murthy, B. (2004). Customer value, satisfaction, loyalty, and switching costs: an illustration from a business-to-business service context. *Journal of the Academy of*

- Marketing Science, 32(3), 293-311.
- Liu, Y. and Shrum, L.J. (2002). What is interactivity and is it always such a good thing? Implications of definition, person, and situation for the influence of interactivity on advertising effectiveness. *Journal of Advertising*, 31(4), 53-64.
- McMillan, S.J. and Hwang, J.S. (2002). Measures of Perceived Interactivity: An Exploration of the Role of Direction of Communication, User Control, and Time in shaping Perceptions of Interactivity. *Journal of Advertising*, 31(3), 29-42.
- McKinney, V., Yoon, K., and Zahedi, F. (2002). The measurement of Web-customer satisfaction: An expectation and disconfirmation approach. *Information Systems Research*, 13(3), 296-315.
- Mittal, V., Kumar, P., and Tsiros, M. (1999). Attribute-Level Performance, Satisfaction, and Behavioral Intentions over Time: A Consumption-System Approach. *Journal of Marketing*, 63(2), 88-101.
- Morgan, N.A. and Rego, L.L. (2006). The Value of Different Customer Satisfaction and Loyalty Metrics in Predicting Business Performance. *Marketing Science*, 25(5), 426-439.
- Morgan, N.A., Anderson, E.W., and Mittal, V. (2005). Understanding Firms' Customer Satisfaction Information Usage. *Journal of Marketing*, 69(3), 131-151.
- Moon, J.W. and Kim, Y.G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management*, 38(4), 217-230.
- 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(4), 199-235.
- Oliver, R.L. (1997). *Satisfaction: A Behavioral Perspective on the Consumer*. McGraw-Hill, Boston.
- Palmatier, R.W., Dant, R.P., Grewal, D., and Evans, K.R. (2006). Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis. *Journal of Marketing*, 70(4), 136-153.
- Pitt, L.F., Watson, R.T., and Kavan, C.B. (1995). Service quality: a measure of information systems effectiveness. *MIS Quarterly*, 19(2), 173-187.
- Reichheld, F. (2006). The Microeconomics of Customer Relationships. *MIT Sloan Management Review*, 47(2), 73-78.
- Teo, H.H., Oh, L.B., Liu, C., and Wei, K.K. (2003). An empirical study of the effects of interactivity on web user attitude. *International Journal of Human-Computer Studies*, 58(3), 281-305.
- TNS marketing research company, <http://219.232.228.152/infopulse/newsletter%20dec/page2-en.htm>
- Santos, J. and Boote, J. (2003). A theoretical exploration and model of consumer expectations, post-purchase affective states and affective behaviours. *Journal of Consumer Behaviour: An International Research Review*, 3(2), 142-156.
- Shabbir, H., Palihawadana, D., and Thwaites, D. (2007). Determining the Antecedents and Consequences of Donor-Perceived Relationship Quality— A Dimensional Qualitative Research Approach. *Psychology & Marketing*, 24(3), 271-293.
- Siekpe, J.S. (2005). An examination of the multidimensionality of the flow construct in a computer-mediated environment. *Journal of Electronic Commerce Research*, 6(1), 31-43.
- Stone, R.W., Good, D.J., and Baker-Eveleth, L. (2007). The impact of information technology on individual and firm marketing performance. *Behaviour & Information Technology*, 26(6), 465-482.
- Sweeney, J. C. and Soutar, G. N. (2001). Consumer Perceived Value: The Development of a Multiple Item Scale. *Journal of Retailing*, 77(2), 203-220.
- Webster, J., Trevino, K.L., and Ryan, L. (1993). The dimensionality and correlates of flow in human-computer interactions. *Computers in Human Behavior*, 9(4), 411-426.
- Yeung, M. C.H. and Ennew, C.T. (2001). Measuring the Impact of Customer Satisfaction on profitability: A sectoral Analysis. *Journal of Targeting, Measurement and Analysis for Marketing*, 10(2), 106-116.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22

Appendix A. Estimated Parameters for the Measurement Model from CFA Analysis

Factors and Items	Standardized Loading	Factor	Reference source
Overall Satisfaction (CR = .89; AVE = .72)			
● I am satisfied with the mobile services I use.		0.83	Bhattacharjee (2001)
● I am satisfied with the mobile services offered by the telecommunication company.		0.86	
● Overall, the mobile services meet my expectations.		0.86	
Flow Experience (CR = .90; AVE = .70)			
● I once experienced flow when using a mobile service.		0.84	Trevino and Webster (1992) and Novak et al. (2000)
● I focus on using a mobile service so I do not notice changes in the environment.		0.90	
● Using a mobile service makes me curious.		0.81	
● When using a mobile service, I feel in control.		0.78	
Customer Recommendations (CR = .84; AVE = .64)			
● I have recommended the mobile service to my friends or relatives.		0.76	Brown et al. (2005)
● I have often explained the benefit of using the mobile service to my friends.		0.86	
● Generally, I have recommended the mobile service to acquaintances.		0.78	
Hedonic Value (CR = .83; AVE = .50)			
● While using the mobile service, I felt happy.		0.65	Babin's et al. (1994)
● Compared to other things I could have done, the time spent using the mobile service was truly enjoyable.		0.62	
● When using the mobile service, I felt excited.		0.74	
● I had a very nice time while using the mobile service.		0.81	
● While using mobile service, I was able to forget my problems.		0.67	
Utilitarian Value (CR = .80; AVE = .57)			
● While using the mobile service, I used only the service(s) that I must.		0.80	Babin's et al. (1994)
● While using the mobile service, I accomplished my goals		0.76	
● I have often used mobile services that I really needed.		0.71	
Ease of Use (CR = .92; AVE = .93)			
● 3G mobile phone is easy to use.		0.78	Staplesa et al. (2002)
● Learning how to use a 3G mobile phone is easy.		0.85	
● I find 3G mobile phones easy to use.		0.90	
● Overall, 3G mobile phones are easy to use.		0.88	
Perceived Interactivity (second-order factor) (CR = .82; AVE = .61)			
● Real-time conversation		0.66	McMillan and Hwang (2002)
● NO delay		0.80	
● Engaging		0.86	
Perceived Quality (second-order factor) (CR = .86; AVE = .68)			
● Information Quality		0.80	DeLone and McLean (2003)
● System Quality		0.84	
● Service Quality		0.83	

Notes: All t-value are significant at the .001 level. CR = composite reliability and AVE = average variance extracted. Goodness of fit statistics: χ^2 (322) = 622.71, GFI = .92, AGFI = .89, NFI = .98, CFI = .99, and RMSEA = .044.