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December 2004

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### Recommended Citation

Kim, Dan and Steinfield, Charles, "Consumers Mobile Internet Service Satisfaction and their Continuance Intentions" (2004). *AMCIS 2004 Proceedings*. 332.  
<http://aisel.aisnet.org/amcis2004/332>

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# Consumers Mobile Internet Service Satisfaction and their Continuance Intentions

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## ABSTRACT

The mobile (wireless) service market has been rapidly growing along with the development of a variety of wireless applications and services and the increasing number of mobile Internet users. In this rapidly changing market environment, understanding users' satisfaction with mobile Internet service, the dimensions of service quality, and their intentions to use current service is important to both industry players and researchers.

Due to the relative novelty of mobile Internet service, few studies have examined the combination of consumers' perceived dimensions of mobile Internet service quality, service satisfaction, and their continuance intention. Thus this study explores perceived mobile Internet service dimensions, develops a framework for mobile Internet service quality, and tests the relationships between customer's satisfaction with perceived service quality dimensions and overall satisfaction with the service. This study further investigates the relationships between satisfaction and customer's new technology adoption intention. A survey of mobile Internet subscribers in Korea provides the data for this study.

## Keywords

Mobile Internet Service Quality, Service Quality Satisfaction, Continuance Intention, Frequent use of Wireless Internet

## INTRODUCTION

The mobile (wireless) service market has been rapidly growing along with the increasing number of mobile Internet users and the development of a variety of wireless applications and services. More and more people employ tiny screens as gateways to the Internet. They use their phones or personal digital devices (PDAs) for everything from checking movie times, playing games, checking e-mails and instant messages to downloading the latest bell-tones, and even online stock trading.

According to a recent survey of wireless Internet users conducted by Cahners In-Stat/MDR ([www.instat.com](http://www.instat.com)), customer service satisfaction is the most important factor when a consumer decides to retain mobile Internet service. Further, it is generally accepted that the cost of recruiting new customer is more expensive than the cost of retaining an existing customer (Simon and Sullivans, 1993) because doing business with existing customers saves a variety of acquisition costs (Mittal and Lassars, 1998, Simon and Sullivans, 1993, Stewards, 1996). Thus, customer retention and relationship building are important.

While the initial usage of wireless Internet service is an important first step in creating a relationship with service providers, the long-term relationship depends on post-adoption processes (Olivers, 1993). In particular, a satisfactory experience with the provided service is likely to be a major requirement for any decision to continue receiving the mobile Internet service. A satisfactory experience (i.e., overall consumer satisfaction) is a result of consumer's evaluation of the quality of a number of aspects of the services they receive. It is therefore important both for industry practitioners and researchers to have a better understanding of what consumers' perceived to be key mobile Internet service quality dimensions, which are proposed to influence overall user satisfaction and ultimately providers' ability to retain their customers..

Due to the relative novelty of mobile Internet service, few studies have focused on the dimensions of mobile Internet service quality, consumer's service satisfaction, and intentions to use continually their mobile Internet service provider. In this study, we relate the literature on service quality and customer satisfaction to mobile Internet use, and develop a framework for mobile Internet service quality. Data from a large consumer survey of mobile Internet subscribers in Korea is used to explore the relationship of these perceived quality dimensions to overall service satisfaction, and to continuance intentions.

## LITERATURE REVIEW: CONSUMER SATISFACTION AND QUALITY OF SERVICE

Customer satisfaction is a post-choice evaluation of a specific transaction (Selness, 1993). Rust and Oliver (1994) describe customer satisfaction as a summary cognitive and affective reaction to a service incident (or sometimes to a long-term relationship). From a customer's perspective, satisfaction is a specialized form of his or her evaluation to determine the value or worth of what is being used or provided (Frost, Pierson, & Frost, 1991; West, Farmer & Wolf, 1991; Greene, Caracelli, & Graham, 1989). From a company's view, satisfaction is a critical element of consumer retention which leads to a company's successful long-term relationship with consumers (Henning-Thurau and Klees, 1997).

The research on consumer satisfaction continues as a topic of interest throughout the psychological, marketing, management, information system, and electronic commerce literature (Doll and Torkzadeh, 1988, Fornell, et al.s, 1996, Henning-Thurau and Klees, 1997, Olivers, 1980, Olivers, 1999, Oliver and Linders, 1981, Spreng, et al.s, 1996). Customer satisfaction studies can provide not only formative but also summative feedback (Giese and Cotes, 2000). Formative feedback suggests ways to improve products or services, while summative feedback can be used to determine whether or not to continue the product or service.

A number of empirical studies have attempted to specify the nature of the relationship between service quality perceptions, consumer satisfaction judgments, and behavioral intentions such as purchase re-purchase intentions (Anderson, et al.s, 1994, Cronin and Taylors, 1992, Rust, et al.s, 1996, Taylor and Bakers, 1994, Zeithaml, et al.s, 1996). The empirical results suggest that consumer satisfaction is an intervening variable that mediates the relationship between service quality judgments and behavior intentions.

Consumer satisfaction and service quality are studied as distinct constructs (Olivers, 1997, Taylor and Bakers, 1994). Consumer satisfaction results from an experience with a service that favorably compares with a consumer's expectations (Olivers, 1981). There is a positive causal relationship between service quality and satisfaction (Shemwell, et al.s, 1998, Spreng, et al.s, 1996). Service quality leads to higher satisfaction, and higher satisfaction, in turn, produces greater willingness to continue using the service.

There are few studies that focus on the mobile or wireless environment, especially mobile phone.

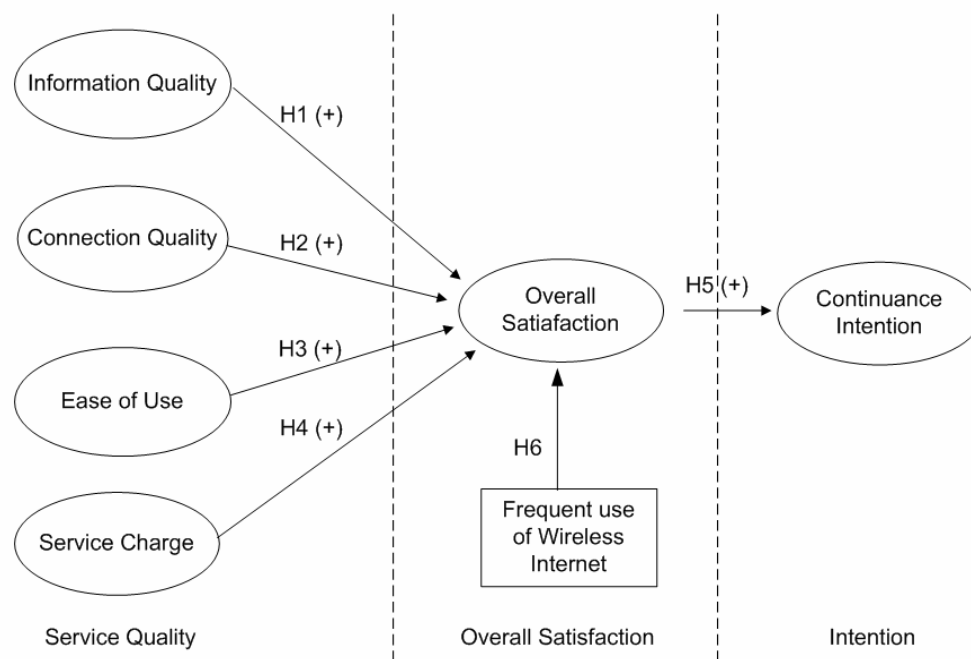
One study (Woo and Focks, 1999) identified four determinants of customer satisfaction with mobile phone use in the Hong Kong market. They are transmission quality and network coverage, pricing policy, staff competence, and customer service. Riel, Liljander and Jurriens (Riel, et al.s, 2001) investigate the way consumers evaluate a new type of interactive service that can be accessed either via mobile phone or via Internet. Their study shows that customers' overall satisfaction was influenced by their satisfaction with the core service, supplementary services and the user interface. A recent survey of mobile Internet users conducted by Cahners In-Stat/MDR ([www.instat.com](http://www.instat.com)) identified four key qualities that comprise customer satisfaction: breadth of applications, ease of use, service quality, and reliability of service.

## RESEARCH MODEL: CONSUMER MOBILE INTERNET SERVICE SATISFACTION

Based on previous literature on the relationships among service quality dimensions, overall satisfaction, and consumers' behavior intentions (intention to continue using a service), the research model (see figure 1) is developed. For the service quality dimensions, four dimensions of mobile Internet use are proposed: connection quality, ease-of-use, information quality, and service connection charge. The underlying logic behind the model is that a consumer's higher service quality perceptions lead to higher overall satisfaction, and higher overall satisfaction, in turn, produces greater willingness to use the service.

Mobile devices give users instant mobile internet access anywhere at anytime, but smaller screens and slower multimedia processing are considered as limitations of mobile information service. Thus there are a lot of efforts to provide enough content or useful information on the small screen for the tasks the user wants to perform.

*Information quality* has been discussed a lot in the information systems and electronic commerce literature. Information quality has also been emphasized in studies on service quality (Berry and Parasuramans, 1997). Information quality is a part of content quality that determines how useful and valuable the mobile service is to a customer, especially on a small screen opposed to a personal computer. The measures of information quality used in this study are information integrity, diversity, and the extent to which content is up-to-date.



**Figure 1: Research Model**

*Connection quality* refers to consumers' ability to access a mobile service without any obstructions or connection delays. A high quality mobile Internet service should provide an acceptable speed for the end user on a variety of devices, as well as being able to stay connected through business meetings, for example.

Compared to fixed-wired network service, mobile network connections have two limitations on connection quality. First, although they are continuously increasing, connection speed is still relatively very low for multimedia mobile Internet service. Most wide area mobile network services only offer connection speeds measured in the tens of Kbit/sec. while local wired and wireless network service provide connection speeds in the Mbit/sec. range.

The second issue is frequent disconnections of mobile Internet service because of cell interference, limited cell capacity or lack of network coverage. If a service provider offers a poor connection to a customer, then there would not be a reason for this person to stay committed to this particular provider. Thus providers need to minimize or eliminate such barriers to connection so that users can accomplish intended tasks. Maintaining a fast and constant connection is a plus for providers that will increase satisfaction in users. Connection quality is measured by consumers' quality perception on the initial time it takes to establish a connection, the time it takes to transmit a desired block of information, and the stability of connection.

Users also need to be able to navigate freely and easily find desired information. Rich looking and large color screens benefit consumers for multimedia purposes such as reviewing data and editing information. However, it is totally different story for the small screen of a mobile device. For example, users have to read and send messages using a small screen and tiny built-in keypad. Therefore, service providers should provide to customers a flexible user interface that is easy to navigate using such input devices as a joystick, touch-screen, full key-pad or soft keys. This can be accomplished by the manufacturers and operating system setup on the mobile devices. An unfriendly mobile user-interface and service will make consumers dissatisfied, which will affect their intention to continue using the service. *Ease-of-use* of mobile device is an important factor in creating happy mobile users. Mobile device ease-of-use is measured by three items: the perceived user friendliness of the unit, the extent to which the device is surfing/operating friendly, and the ease of navigating the screen content.

Depending on the provider, there are different rates, plans, extra charges for going beyond maximum minutes, for example, and other subscription costs. *Service charge* refers to costs involved with connecting a mobile device to a service provider. An inappropriate and unacceptable mobile Internet service charge is undoubtedly a key predictor of mobile users' overall service satisfaction.

#### *Overall Service Satisfaction*

Oliver (1993) defines satisfaction as the consumer's subjective judgment resulting from observations of performance. Adapted from Oliver's satisfaction definition, the overall service satisfaction for mobile internet service is defined here as *the consumer's overall subjective judgment of service performance resulting from observations of the deviation of the expected service compared to the received service*.

Levinthal and Fichman (Levinthal and Fichmans, 1988) studied the determinants of persistent relationships based on past exchanges that resulted in increasing the likelihood of future exchanges. When the relationship persists, the benefit increases because both parties have developed a common understanding. An important point from the consumer relationship management perspectives is that consumer-service provider relationships terminate or continue based on the prior history of the relationships (Van de Vens, 1976). This aspect shows how well the vendors provide services. If customers are satisfied with mobile Internet service providers' service quality, the relationships will be more likely to continue.

*Continuance Intention* refers to consumers' internally estimated likelihood that they will continue to use the service provided by the mobile Internet service vendor. Consumers' continuous intention reflects his or her loyalty to the service provider, and likely to be a significant driver of the service provider's profitability and long-term viability (Coffees, 2001, Pontes and Kellys, 2000). Based on the argument and descriptions of constructs, the following hypotheses are proposed for the study.

H1: Information quality of a mobile Internet service positively affects a consumer's overall service satisfaction.

H2: Connection quality of a mobile Internet service positively affects a consumer's overall service satisfaction.

H3: Ease-of-use of a mobile Internet service positively affects a consumer's overall service satisfaction.

H4: Satisfactory level of service charge of a mobile Internet service positively affects a consumer's overall satisfaction.

H5: A consumer's overall satisfaction level positively affects a consumer's intention to continue using a mobile Internet service.

H6: The more a consumer uses wireless Internet, the more likely it is that he or she is satisfied with mobile internet service.

## RESEARCH METHODOLOGY AND DATA COLLECTION

A nation-wide survey was conducted by the Korean Network Information Center (KRNIC) in 16 major cities in South Korea during September 2002. Questionnaires addressed the following topics: mobile phone (cellular) unit service usage, PDA and other equipment usage, wireless internet recognition/usage, prospect of net generation service usage, cable internet usage, and non-experienced person's wireless internet recognition. Of the 2000 respondents that responded to the questionnaires, only 725 responded that they had a wireless Internet experience in the past 6 months. This study utilizes these 725 respondents.

To test the proposed research models, data analyses for both the measurement model and structural model were performed using Partial Least Squares (PLS). The PLS program used to perform the analysis was PLS-Graph 3.0.1016 with bootstrapping (Ravichandran and Rais, 2000, Wixom and Watsons, 2001). The assessment of the structural model includes estimating path coefficients and R-square. Both R-square and the path coefficients indicate model fit, i.e., how well the model is performing (Chins, 1998, Chins, 1998, Hullands, 1999).

Figure 2 shows the results of assessment and hypothesis testing. As shown in the figure, all four mobile Internet service qualities have a strong positive effect on a consumer's overall satisfaction at the 0.001 level. A consumer's overall satisfaction has a positive effect on intentions to continue using the service at the 0.05 level. The frequent use of wireless Internet does not effect a consumer's overall satisfaction. The R-square for overall satisfaction is .572, reflecting that the model provides a strong explanation of the variance in overall satisfaction.

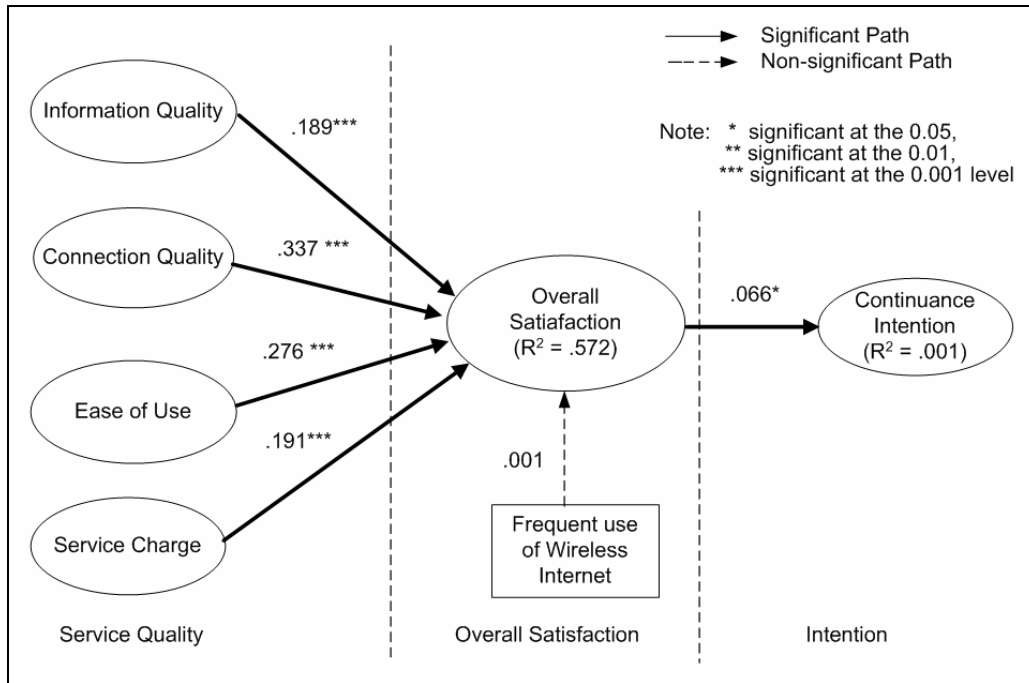


Figure 2: Results of Structural Model

**CONCLUSION**

Due to the novelty of the mobile Internet area, there is little research related to consumer satisfaction and service quality. The results of this study show that the service quality variables (i.e., information quality, connection quality, ease of use, and service charge) are major determinants to overall satisfaction which affects a consumer’s intention to continue using the service. This study contributes to the literature on consumer mobile Internet service quality, satisfaction and consumer retention study. The results of this study may provide some insights for practitioners regarding consumer relationship management. For example, the strength of association between key components of service quality and satisfaction may guide service providers in their decisions to invest in particular aspects of their network and information content. Undoubtedly, the cost-effective provision of such services involves tradeoffs, and it is helpful to know which aspects may have the strongest influence on customer satisfaction and retention.

For academics, this study provides an initial assessment of the components of mobile Internet service quality and their importance to the consumers and users of mobile Internet. Although this study focuses on users in Korea, similar factors may be at work in other cultural contexts. One interesting direction for the research community is to explore whether service quality perceptions are comprised of the same or different factors in different national markets. Moreover, future research should also assess whether the relationship between these factors and satisfaction and retention operates across diverse national markets as well.

**ACKNOWLEDGMENTS**

We thank The Korean Network Information Center (KRNIC) allow us to use the survey data for this study.

**REFERENCES**

References will be provided on request.