

# Determinants of the customer loyalty in the Korean 3G telecommunications market : The role of the customer's innovativeness

Dong-Joo Lee<sup>a</sup>

Professor, Department of Business Administration, Hansung University

Myoung-Soo Kim<sup>b</sup>

Professor, Department of Business Administration, Kangwon National University

## Contents

Abstract

I. Introduction

II. Theoretical Background

III. Research Model and Hypotheses

IV. Empirical Results

V. Conclusion

References

## Abstract

*In our study, we tried to develop and test a model that aids further understanding of the sources of customer loyalty in the 3G telecommunications service. In addition, as the 3G could be understood as an innovative telecommunications service, we assume that the impact of factors related service attributes affecting customer loyalty is moderated by the customer's innovativeness. We analyzed our research model using 3G service users' data in Korea. Our results will have significant strategic implications for firms in this highly competitive industry. Particularly, it can be useful for mobile carriers interested in customer retention management and supposed to deliver a new telecommunications service like the 4G service that is on the horizon.*

**Keywords:** 3G, Customer loyalty, Telecommunication, Customer's innovativeness

---

• Received 8 June 2015, Revised 20 June 2015, Accepted 25 June 2015

\* This research was financially supported by Hansung University.

<sup>a</sup> First Author, E-mail: [djlee@hansung.ac.kr](mailto:djlee@hansung.ac.kr)

<sup>b</sup> Corresponding Author, E-mail: [mysoo@kangwon.ac.kr](mailto:mysoo@kangwon.ac.kr)

© 2015 The Institute of Management Research (IMR) / The Institute for Industrial Research (IIR). All rights reserved.

## I . Introduction

The Korean mobile telecommunications market was a rapidly growing service sector. The number of subscribers doubled each year between 1996 and 1998 (Choi et al., 2001). In the case of the ARPU (the Average Revenue per User), the annual rate of growth was 0.74% from 2003 to 2006. The mobile phone penetration rate was 95% in 2009. Due to the explosive growth, the developmental phase of the Korean mobile telecommunications industry reaches the saturated stage. Actually, according to the ETRI's report (2002), the fall in the rate of increase in subscriber numbers indicates that Korean mobile telecommunications market is under the matured phase.

In line with this, as the voice-based mobile telecommunications industry reaches the saturation spot internationally, the competing mode is shifting from voice-centered service to a data-centered communications service including the combination of high-speed mobile data and broadband multimedia communication (Kim et al., 2004; Lee et al., 2009).

In this regard, customer churn and retention management have become very important issues, as suggested in previous studies. As a penetration of mobile telephone reaches maturing point, from the mobile carriers' perspectives, how to prevent their subscribers from switching to rival companies and build customer loyalty has become a critical concern for their success in business (Kim & Yoon, 2004). Particularly, owing to the introduction of new technology (e.g., WiFi, Wibro and WIMAX) and due to number portability, Korean mobile carriers have to compete even more in highly competitive market (Ahn et al., 2006). In these situations,

mobile telecommunications companies provide their customers with a flood of "sweet deals" such as discounts of service price, free handsets, and free minutes to call for the purpose of the lock-in their customers (Eshghi et al., 2007).

Generally, in a competitive and saturated market, one of the best strategies for increasing profits is a defensive marketing (Ahn et al., 2006). Compared to the aggressive marketing, the goal of a defensive marketing is the retention of existing customers rather than attraction of new customers by reducing the customer churn and switching rate (Fornell & Wernerfelt, 1987). Actually, in Reichheld and Schefter (2000)'s research, they maintained that an increase of 5% in the customer retention rate results in an increase of 25% to 95% in profit by analyzing various kinds of industrial data collected for a long time.

The purpose of this study is to develop and test a model that aids further understanding of the sources of customer loyalty in the mobile telecommunications industry. In addition, as the 3G service could be understood as an innovative telecommunications service, we assume that the impact of factors related service attributes affecting customer loyalty is moderated by the customer's innovativeness.

Generally in the case of the new service like 3G service, the customer's innovativeness plays an important role in adopting of a service. Therefore, marketing managers sometimes need to identify the potential of consumers in a target segment to adopt a new product by analyzing the consumer's innovativeness (Goldsmith & Hofacker, 1991). Therefore, we analyze the differences in impact of services attributes on customer loyalty in the 3G services market by analyzing

the moderating role of the customer's innovativeness.

Our results will have significant strategic implications for firms in this highly competitive industry. Particularly, it can be useful for mobile carriers interested in customer retention management and supposed to deliver a new telecommunications service like the 4G service in the near future. The research begins with a review of the relevant literature related to the factors that affect customer satisfaction and loyalty, especially in the mobile telecommunications industry. The focus is on recent research findings from the telecommunications literature, as well as published articles on customer loyalty and the customer's innovativeness. After the literature review, the data and the methodology used for the empirical analysis are described in detail. Then analysis results are described and interpreted. Finally, the main implications of the analysis are presented along with the conclusions including further research based on the improved understandings of the factors affecting customer loyalty in terms of the innovativeness of a customer in the 3G mobile telecommunications industry.

## II. Theoretical Background

### 1. Antecedents of customer loyalty in telecommunications market

The concept of loyalty has received a great deal of attention in various disciplines. Past research in marketing reveals that the customer satisfaction and loyalty is connected strongly with the customer retention (Eshghi et al., 2007). Customer satisfaction is in regard

to the customer's evaluation of the product or service in terms of purchasing behavior and consumption experience (Johnson and Fornell, 1991). On the other hand, customer loyalty refers to the customer's intention to purchase repeatedly from the same product/service provider (Edvardsson et al., 2000). Therefore, comparing to the concept of satisfaction, loyalty is more closely associated with the customer retention (Eshghi et al., 2007).

Many earlier studies suggested that customer loyalty provides the basis for a company's sustainability by producing consistent profits and building the customer loyalty is one of the most important activities of the companies for their growth and business success (Lee & Cunningham, 2001; Reichheld, 1996). However, there are few studies have been addressed on the customer loyalty in the context of the new telecommunications service in Korea. This might be due to the short history of the Korean mobile telecommunications industry (Kimetal,2004).

Past research related to customer behavior in the telecommunications industry can be classified into two main issues. One part is the research related to customer churn modeling and the other is about the sources of customer satisfaction or customer loyalty. As for the former, previous studies have a main purpose of identifying some specific factors related to customer churn (Ahn et al., 2006). For example, Bolton(1998) analyzed the role of customer satisfaction in his research model for the estimation the customer's duration with a service provider. Lee, Shin, and Park(2003) found important determinants of customer churn in the Korean broadband Internet access service market. In addition, Madden, Savage, and Coble-Neal (1999) estimated a

binomial probit model relating the probability of subscriber churn in the Australian ISP market to various service attributes and demographic characteristics. Contrary to these studies, Ahn et al. (2006) investigated the sources affecting customer churn and analyzed the mediation effects of partial defection in the Korean mobile telecommunications market using the actual customer transactions and billing data.

As for the latter, researchers in marketing have long been interested in investigating the antecedents of customer satisfaction and loyalty and analyzing the relationship between them (Eshghi et al., 2007). In past studies in the context of telecommunications market, satisfaction is suggested as a main predictor of the customer loyalty toward the service provider (Gerpott et al., 2001; Kim & Yoon, 2004). Gerpott, Rams, and Schindler (2001) maintained that customer retention, loyalty, and satisfaction are regarded as differential constructs which have a causal relationship in the context of the German mobile telecommunications market. In their research, results showed that service price, service benefit perceptions and the lack of number portability are the influential factors of the customer retention. Kim et al. (2004) investigated the adjustment effect of switching barriers on customer satisfaction and customer loyalty. In addition, Kim and Yoon (2004) tried to identify the determinants of both subscriber churn and customer loyalty in the Korean mobile telephony market using a binomial logit model. In their estimation results, customer loyalty was found to be dependent on services attributes such as call quality, handset, and brand image. Eshghi et al. (2007) investigated the determinants of the customer loyalty in the US wireless

telecommunications industry.

Most studies mentioned above focused mainly on prediction rather than explanation of the customer behavior through the analysis using the customer's usage and perception data. Therefore, the comprehensive model including the characteristics of a customer is needed to analyze for the descriptive explanation of customer loyalty in the telecommunications market.

## 2. Innovativeness of a customer

Innovativeness refers to "the degree to which an individual is relatively earlier in adopting an innovation than other members of his social system" (Rogers & Shoemaker, 1971, p. 27). As the every customer has a propensity to adopt new things as an innovator, to some extent (Hirschman, 1980), the innovativeness of a customer is able to play the critical role in various kinds of marketing theories including customer satisfaction, loyalty, and marketing communications. However, there was no consensus in terms of the measurements despite of a vast of diffusion research on the role of innovativeness (Goldsmith & Hofacker, 1991). In addition, there are many empirical studies on innovativeness, the antecedents are remained vague (Hirschman, 1980). Therefore, empirical research on origins and measurements of the innovativeness has long been conducted by many social science researchers steadily until recently.

Generally, conceptualization of innovativeness is classified into two groups (Hirschman, 1980). The first is represented in the above statement of Rogers and Shoemaker (1971)'s research. In addition to that definition, Rogers and Shoemaker (1971) supplemented their

statement as follows; "By relatively earlier is meant earlier in terms of actual time of adoption, rather than whether the individual perceives he adopted the innovation relatively earlier than others in his system" (p. 27). In this explanation, the concept of innovation is regarded as "an idea, practice, or object perceived as new by the individual" (p.19). The second concept of innovativeness is "the degree to which an individual is receptive to new ideas and makes innovation decisions independently of the communicated experience of others" (Midgley & Dowling, 1978, p.236). Midgley and Dowling (1978) regarded the innovativeness as individual's personality trait (Hirschman, 1980).

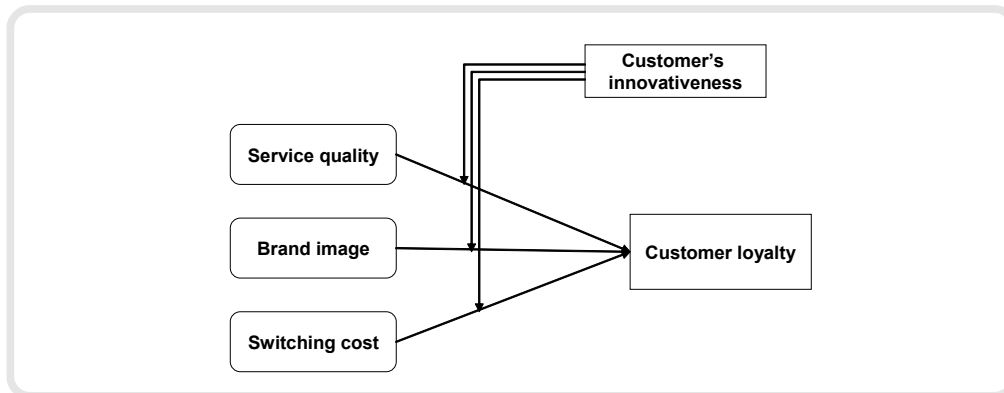
In this regard, many researchers attempted to measure consumer innovativeness by operationalization. However, there is no consensus in the concept of innovativeness from "intrinsic novelty seeking" to "propensity to buy new products." (Roehrich, 2004). Roehrich (2004) discussed the problem related to the definition of innovativeness and analyzed the operational measurements of innovativeness suggested by various researchers. Roehrich (2004) classified the innovativeness scales into two groups. One is "life innovativeness" scales which measure "the ability to introduce newness in one's life." (Leavitt & Walton, 1975; Kirton, 1976; Hurt et al., 1977) These scales are multidimensional and treat the innovativeness at a high level. They are focused on measuring "intrinsic novelty seeking" rather than "specific innovativeness." Therefore, these scales represent poor predictive validity with new product purchase behavior (Roehrich, 2004). The other group is "adoptive innovativeness" which is suggested to measure "tendency to buy new products." (Raju, 1980; Goldsmith &

Hofacker, 1991; Roehrich, 1995; Le Louarn, 1997) These scales included in this group are product or domain-specific level measurements. Among these scales, Roehrich (2004) concluded in his study, Goldsmith and Hofacker's (1991) DSI (Domain-specific innovativeness) scale is highly reliable and show the high predictive validity with new product purchase. In addition, Goldsmith et al. (2003) used to apply DSI in his past research to general market situation for the new product in his further study. In our study, 3G telecommunications service is a newly advanced service in telecommunications market. Therefore, we regard the research context as the general market for the new service and measured the customer's innovativeness using the survey items based on Goldsmith et al.(2003)'s scale.

### III. Research Model and Hypotheses

The research model specifying sources of customer loyalty in the 3G telecommunications industry is represented in Figure 1. Based on past research related to the customer loyalty, we try to evaluate various sources of customer loyalty. In this regard, we assume that customer loyalty in the 3G telecommunications service can be developed by the satisfaction on the service quality and brand image. Furthermore, we add the switching cost as the factor of customer loyalty in the 3G telecommunications service. In addition, to analyze the impact of sources on customer loyalty depending on customer's innovativeness, we set the "customer's innovativeness" as a moderating variable between satisfaction on attributes

Fig. 1. Research Model



related service and customer loyalty.

Past research on the factors influencing customer loyalty generally focused on the role of customer satisfaction and switching barrier in building customer loyalty (Dick & Basu, 1994; Gerpott et al., 2001). A customer who has a high level of satisfaction and switching cost is apt to keep the relationship with a current product/service provider. In addition, Kim et al. (2004) suggested that the switching barrier can be an adjustment variable of the interrelationship between customer satisfaction and customer loyalty.

Zeithamal and Bitner (1996) maintained that the customer's perception of service quality is the main factor in developing the customer loyalty. In earlier studies on mobile telecommunication services, service quality has been measured by call quality, pricing structure, mobile devices, value-added services, convenience in procedures, and customer support etc. (Kim, 2000; Gerpott et al., 2001; Lee et al., 2001). Kim and Yoon (2004) identified the determinants of subscriber churn and customer loyalty in the Korean mobile telecommunications market by using the binomial model based on the

discrete choice theory. In their study, they suggested service attributes of mobile carrier (such as call quality, tariff plans, billings, value-added service, customer services, handset, and brand image) and demographic variables as the sources of customer churn and loyalty. The analysis results showed that call quality, tariff plans, and handset and so on affect the subscriber churn or loyalty. Brand image has long been regarded as an important concept especially in marketing but there is no consensus definition (Keller, 1993). Thus, according to Herzog (1963) and Newman (1957), general definition of brand image is that "perceptions about a brand as reflected by the brand associations held in consumer memory" (Keller, 1993, p. 3). Keller (1993) maintained that the dimensions of brand associations including favorability, strength, and uniqueness make up the brand image. Kim and Yoon (2004) suggested brand image can be a main factor determining customer loyalty and customer churn. Recently, it is difficult for subscribers to evaluate the quality of the telecommunications service among mobile carriers in the market. Therefore, once the brand image is built up,

it can play the role of the switching barrier in the competitive market in this situation (Kim & Yoon, 2004).

The switching barrier means the degree of difficulty to switch to another service/product provider when a customer dissatisfied with the existing provider wants to switch to a new partner (Fornell, 1992). Therefore, the higher the level of the switching barrier, the more a customer is likely to maintain with current service or product provider (Kim et al., 2004).

Therefore, hypotheses for this group of factors are:

- H1:** The service quality of 3G service is positively related to the customer loyalty.
- H2:** The brand image of 3G service is positively related to the customer loyalty.
- H3:** The level of switching cost of 3G service is positively related to the customer loyalty.

Rogers (1995) suggested the "time of adoption of innovations" explaining the customer's difference in their readiness to try new products. There are five adopter groups having differentiated characteristics in his classification. Innovators are apt to try new ideas and products irrespective of some risk. Early adopters are generally opinion leaders in their organization and likely to buy new products early but somewhat carefully. The early majorities are more careful than early adopters and there are rarely opinion leader in this group. They have a tendency to buy the new product before the average people. The late majorities buy the new product only after it is tried by most people in the market. Finally, laggards are suspicious of innovation

and buy the new product only when it becomes the kind of commodity (Rogers, 1995).

This five-adopter classification suggests that an innovative firm should research the characteristics of innovators and early adopters and should direct marketing efforts toward them. Rogers(1995) said that innovators are generally apt to be younger, better educated, and higher in income than later adopters relatively. They are more willing to try out innovative things and run the risk of purchasing unfamiliar products. Therefore, they focus on their own values and judgment in terms of product functions. At the same time, they are less brand-loyal and more sensitive to the promotions including discounts and special coupons comparing to the later adopters (Kotler & Armstrong, 1999). Leavitt and Walton (1975) defined that innovators are apt to enjoying new experience and stimulus. The more innovative consumers are, the more likely to seek sensory stimulation in buying new products through challenging and risky product selections (Baumgartner & Steenkamp, 1996). In line with this, innovative users of telecommunications service might have a tendency to try out innovative service by focusing on the importance of high quality features such as value-added service and tariff plan than brand recognition in market. In addition, the more innovative subscribers may put less emphasis on the degree of switching cost in their purchasing innovative services comparing to the later adopters.

Therefore, hypotheses for this group of factors are:

- H4:** There are the moderating effects of the customer's innovativeness between

services attributes and customer loyalty.

H4a: As a customer is more innovative, the impact of the service quality on customer loyalty will be greater.

H4b: As a customer is more innovative, the impact of the brand image on customer loyalty will be less.

H4c: As a customer is more innovative, the impact of switching cost on customer loyalty will be less.

## IV. Empirical Results

### 1. Data Collection and Method

The instruments in this study were developed based on the existing literature and on the results of the prior interviews with 3G service users. We analyzed our research model using survey data. For the survey, a questionnaire was developed using the five point scale ranging from '1' strongly disagree to '5' strongly agree. The final sample for analysis in our study consisted of 359 3G service subscribers after screening out unusable samples including non-response and inconsistent response.

Samples in this research were primarily in their twenties and thirties, 28% and 36% respectively. As for gender, they were 47% male and 53% female. In terms of current mobile carriers, the samples used in our study consisted of 52% SK Telecom, 30% Korea Telecom, and 18% LG Telecom. These figures reflect the current market share of the mobile operators in Korea.

Factor analysis and Cronbach's alpha with SPSS 18.0 used to test the measurement model

and establish validity of the constructs. In this study, most measurement items were extracted and modified from past research. We evaluated the internal consistency of a set of indicators, ranging from 0, no internal consistency to 1, perfect internal consistency using Cronbach's alpha test. The reliabilities of all constructs were above 0.6. Therefore, the results of Cronbach's alpha test in our research exceeded the acceptable minimum level. Generally, the minimum level of acceptance is 0.6 in the social science (Hair et al., 1998). The results of Cronbach' alpha test are shown in Table 1.

We measured the service quality of the 3G service using the concepts of call quality, quality of the value-added service, and variety of tariff plans (Kim, 2000; Gerpott et al., 2001; Lee et al., 2001). As for the brand image was operationalized by the degree of the brand recognition and familiarity of the brand in the market (Keller, 1998).

Switching cost refers to the cost incurred when changing the product or service of provider from the various aspects including money, time, and psychology (Dick & Basu, 1994). In our study, we classified the switching cost into two based on Kim et al. (2004)'s research. One is the device cost which is related to the purchase of a new mobile phone and adaptation to the new phone. The other is the monetary including the subscription fee and damages for breach contract with the existing mobile carrier.

We measured the customer's innovativeness using four items based on Goldsmith et al.'s (2003) research. The survey items are; "In general, I have a tendency to buy a new product when it appears," "I am always likely to buy a new product," "I know the information on the new product before other



**Table 1.** Measurement Items for Survey

Construct	Measurement items	Reference	Cronbach's alpha
Service quality	Call quality	Kim (2000), Gerpott et al. (2001), Lee et al. (2001)	0.686
	Quality of the value-added service		
	Variety of the tariff plan		
Brand image	Degree of the brand recognition	Keller (1998)	0.743
	Familiarity of the brand		
Switching cost	Device cost	Kim et al. (2004)	0.689
	Monetary cost		
Customer's innovativeness	Tendency to buy a new product 1	Goldsmith & Hofacker (1991),	0.672
	Tendency to buy a new product 2		
	Knowledge of a new product 1	Goldsmith et al. (2003)	
	Knowledge of a new product 2		
Customer loyalty	Intention to recommend	Jones & Saspers (1995), Oliver (1999)	0.893
	Intention to use continuously		

**Table 2.** Results of the Exploratory Factor Analysis

Measurement items	1	2	3	4
Service quality 1	-0.076	0.874	0.001	0.088
Service quality 2	-0.100	0.714	0.343	0.218
Service quality 3	0.127	0.654	0.286	-0.048
Brand image 1	-0.003	0.180	0.785	0.139
Brand image 2	-0.070	0.187	0.809	-0.061
Switching cost 1	-0.023	0.148	0.041	0.768
Switching cost 2	0.053	-0.001	0.027	0.784
Customer loyalty 1	0.948	0.037	-0.039	0.022
Customer loyalty 2	0.944	-0.068	-0.033	0.014

people do," and "People ask me about the new product when it is launched in the market." The Cronbach's alpha is 0.672.

Customer loyalty was measured using the items such as intention to recommend and intention to use continuously (Jones & Saspers, 1995; Oliver, 1999).

Exploratory Factor Analysis (EFA) is a method of searching for structure among a set of variables or as a data reduction (Hair et al., 1998). Therefore, we assessed the validity of constructs in the measurements through the exploratory factor analysis. VARIMAX rotation was used in our analysis. Factor loadings of the measurement items were above 0.5 on the constructs, with the total of 71% of the

variance being explained by the data. The results are shown in Table 2.

## 2. Analysis Results

In our study, to test hypotheses 1, 2, and 3, we conducted the regression analysis. As for the sources of customer loyalty in the 3G telecommunications service, two of the three hypotheses were supported. As expected, service quality (0.221;  $p < 0.01$ ) and level of the switching cost (0.101;  $p < 0.05$ ) had a positive effect on the customer loyalty in the 3G telecommunications service. However, brand image (0.021;  $p > 0.05$ ) was found to be unrelated to customer loyalty in the 3G serv

**Table 3.** Results of the Regression Analysis

Hypotheses	Standardized coefficient	t-value	Sig.	Supported/Not supported
H1	0.221	4.323	0.000	Supported
H2	0.021	0.416	0.678	Not supported
H3	0.101	1.986	0.048	Supported

Adjusted R<sup>2</sup>:0.255

ice. The results of regression analysis are presented in Table 3.

We tested the hypothesis 4 using the moderated regression analysis. The process of the moderated regression analysis has a two-stage procedure (Kim & Ahn, 2007). First, we evaluated the significance of the model including all antecedents and moderating variables. Second, we add the interaction terms to the original regression model and evaluate the increase of R<sup>2</sup>. If the increase of R<sup>2</sup> is significant, it represents that the moderating effect is significant. As for the moderating effect of the customer's innovativeness in our research, we found that two of the three interaction terms were significant such as service quality (0.280; p < 0.10) and switching cost (-0.455; p < 0.10). On the other hand, the interaction term of

brand image was unrelated to the customer loyalty. In addition, the incremental R<sup>2</sup> was also significant. Therefore, the hypothesis 4 was partially supported.

The results from our analysis provide strong support for the research model presented in Figure 1. We confirm that the customer loyalty of the 3G service can be fostered by service quality and switching cost. Another interesting observation in our study is about the role of the customer's innovativeness in building customer loyalty. The impact of both satisfaction with service quality and the level of switching cost on customer loyalty are moderated by the customer's innovativeness.

On the contrary to our expectation, the satisfaction with the brand image was not related to customer loyalty. This result

**Table 4.** Results of the Moderated Regression Analysis

Variables	Standardized coefficient
Independent variables	
Service quality	0.202*
Brand image	0.010
Level of the switching cost	0.103*
Moderating variable	
Customer's innovativeness (CI)	-0.138*
R <sup>2</sup>	0.251
Interaction effects	
Service quality x CI	0.280**
Brand image x CI	-0.087
Switching cost x CI	-0.455*
R <sup>2</sup>	0.273
Incremental R <sup>2</sup>	0.022***

\*p < 0.05; \*\*p < 0.10; \*\*\*Sig.F change (p < 0.05)

indicates that the brand image cannot play the role of an important factor any more in forming customer loyalty in Korean telecommunications market. The main reason is that it is discouraged to use carrier-specific prefixes in phone numbers is discouraged as part of the government's asymmetric regulation. To use 3G service in Korea, subscribers of 2G service have to change the prefixes of their phone numbers to '010' regardless of their own mobile carriers. In the past carrier-specific prefix (SK Telecom: 011, KT: 016, LG Telecom: 019 etc.) regarded as the powerful marketing source from the perspective of the leading company, SK Telecom. Actually, subscribers of SK Telecom tend to perceive the '011' prefix as a symbol of prestige (Kim & Yoon, 2004). In this regard, brand image of mobile carrier is no longer differentiated factor across the service providers.

## V. Conclusion

Customer loyalty is the key driver of success in the all kinds of industry by reducing the customer churn rate. Especially, building customer loyalty can play an important role in increasing profits in the subscription-based service like telecommunications service. Therefore, we analyzed the sources of the customer loyalty and assessed the impact of services attributes on customer loyalty in terms of the moderating effect of the customer's innovativeness.

We believe that this research has several practical implications regarding ways for mobile carriers to build the customer loyalty when they deliver advanced service in the telecommunications market. First, it is

important for the mobile carriers to manage service quality and the level of the switching costs in building customer loyalty and diffusion of a new service. As shown in our analysis, the customer loyalty was found to be dependent on not only the level of switching cost such as handset and price discounts but also user satisfaction with service attributes including call quality, tariff plan, and value-added service. It means that the service quality is the core factor in the customer's evaluation of the overall service and the service quality will still be significant although the mobile carriers have invested in their networks and R&D for the high call quality and a wide range of the coverage. Therefore, mobile carriers should make an effort to improve and develop the level of value-added service and kinds of the tariff plans and so on continuously (Kim et al., 2004). In addition, based on our results we assume that building a switching barrier might be an effective way of the retention of existing customers in a saturated market. Thus, mobile carriers can increase their profit level by extending the life time value of the customers through the increase of switching costs (Kim et al., 2004).

Second, it is necessary for mobile carriers to build the differentiated strategy by investing in brand management. In this study, analysis result showed that brand image was not associated with the customer loyalty. As the competition of a marketing activity becomes fierce and fierce among mobile carriers and the service is evolving toward standardization, brand image may not be a differentiated factor any more across the mobile carriers. However, it does not mean that brand image is not important factor in fostering customer loyalty in the telecommunications market. Brand management

is a critical sector in mobile telecommunications industry. To build the brand image might reduce the customer churn by raising the switching barrier from the perspective of competition. Especially, if the switching barrier is built by the leading company in the market, the effect of that strategy becomes more powerful (Kim & Yoon, 2004). Therefore, mobile carriers should pay attention to the efforts to differentiate their own brand managements from those of the rival companies.

Third, one of the key implications of our study is how to develop customer loyalty in terms of customer's innovativeness. Regarding this, our results showed that the impact of satisfaction with service quality and level of switching cost on customer loyalty was moderated by the customer's innovativeness. The more innovative the subscriber has, the more the subscriber focuses on service quality of the 3G service. On the other hand, the more innovative users may put less emphasis on the level of switching cost in deciding whether they maintain the relationship with the current service providers or not. This means that, according to the innovativeness of the subscribers, the users' targets of concern shifts from the switching cost to the service quality in the 3G telecommunications market. Therefore, it indicates that the innovative subscribers are willing to use the new telecommunications service despite the high level of switching cost only if the service was guaranteed by high service quality. In this regard, the mobile carrier can encourage the development of customer loyalty in terms of innovative users by investing consistently R&D management to improve the service quality. In addition, an aggressive marketing on the novel features of a new service will help

an innovative user to evaluate the feasibility of subscription in the new service. On the other hand, in the case of the later adopters, they put more emphasis on the importance of the switching cost than the service quality. Thus, to induce the late adopters to subscribe in the new service, it can be effective to reduce the switching costs related to the handset and services price and so on.

Our findings provide several important insights on customer loyalty in the mobile telecommunications market. First, the understanding on the moderating effect of the customer's innovativeness sheds the theoretical insights into how to manage the sources of customer loyalty according to the degree of the innovativeness. Although there have been a few studies on the customer's innovativeness in the context of the new product, it is difficult to find the research on the new telecommunications service considering the customer's innovativeness irrespective of the importance of an user's innovativeness in diffusion of a new service. In our research, analysis results showed that the impact of attributes related the service on customer loyalty is moderated by the customer's innovativeness. Second, our study extends customer loyalty related research to a new context, the 3G telecommunications service. Therefore, we hope that this research can be a basis for the further studies in terms of the diffusion of the 4G services considering the issues of customer characteristics. However, our study has some limitations. We did not include other factors affecting customer loyalty which were suggested in past studies such as the demographic variables of individual users and customer's service usage data. Therefore, further research is needed to consider these additional important variables

in this research framework or in the new context like 4G services.

## References

- Ahn, Jae-Hyeon, Han, Sang-Pil, and Lee, Yung-Seop (2006), "Customer churn analysis: Churn determinants and mediation effects of partial defection in the Korean mobile telecommunications service industry," *Telecommunications Policy*, 30, pp. 552-568.
- Baumgartner, Hans and Steenkamp, Jan-Benedict E. M. (1996), "Exploratory consumer buying behavior: Conceptualization and measurement," *International Journal of Research in Marketing*, 13, pp. 121-137.
- Bolton, R. N. (1998), "A dynamic model of duration of the customer's relationship with a continuous service provider: The role of satisfaction," *Marketing Science* 17(1), pp. 45-65.
- Choi, S. K., Lee, M. H., and Chung, G. H. (2001), "Competition in Korean mobile telecommunications market: business strategy and regulatory environment," *Telecommunications Policy*, 25, pp. 125-138.
- Dick, A. S. and Basu, K. (1994), "Customer loyalty: Toward an integrated conceptual framework," *Journal of the Academy of Marketing Science*, 22(2), pp.99-113.
- Edvardsson, B., Johnson, M. D., Gustafsson, A., and Strandvik, T. (2000), "The effects of satisfaction and loyalty on profits and growth: Products versus services," *Total Quality Management*, 11, pp. 917-927.
- Eshghi, A., Haughton, D., & Topi, H. (2007), "Determinants of customer loyalty in the wireless telecommunications industry," *Telecommunications Policy*, 31, pp. 93-106.
- Electronics and Telecommunications Research Institute (2002), "The IT technology and industry outlook of Korea 2002-2006, ETRI, Korea.
- Fornell, C. (1992), "A national customer satisfaction barometer: The Swedish experience," *Journal of Marketing*, 56, pp. 6-21.
- Fornell, C. and Wernerfelt, B. (1987), "Defensive marketing strategy by customer complaint management: A theoretical analysis," *Journal of Marketing Research*, 24(4), pp. 337-346.
- Gerpott, T., Rams, W., and Schindler, A. (2001), "Customer retention, loyalty and satisfaction in the German mobile cellular telecommunications market," *Telecommunications Policy*, 25(4), pp. 249-269.
- Goldsmith, R. E., Flynn, L. R., and Goldsmith, E. B. (2003), "Innovative consumers and market mavens," *Journal of Marketing Theory and Practice*, 11(4), pp. 54-64.
- Goldsmith, R. E. and Hofacker, C. F. (1991), "Measuring consumer innovativeness," *Journal of the Academy of Marketing Science*, 19(3), pp. 209-221.
- Hair, J. F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1998), *Multivariate data analysis*, 5<sup>th</sup> edition, Upper Saddle River, NJ: PrenticeHall.

- Hee-Su, Kim and Choong-Han, Yoon (2004), "Determinants of subscriber churn and customer loyalty in the Korean mobile telephony market," *Telecommunications Policy*, 28, pp. 751-765.
- Herzog, H. (1963), "Behavioral science concepts for analyzing the consumer," in *Marketing and the Behavioral Sciences*, Perry Bliss, ed. Boston Inc., pp. 76-86.
- Hirschman, E. C. (1980), "Innovativeness, novelty seeking and consumer creativity," *Journal of Consumer Research*, 7(Dec.), pp. 283-295.
- Hurt, H. T., Joseph, K., and Cook, C. D. (1977), "Scales for the measurement of innovativeness," *Human Communication Research*, 4(1), pp. 58-65.
- Johnson, M. D. and Fornell, C. (1991), "A framework for comparing customer satisfaction across individuals and product categories," *Journal of Economic Psychology*, 12, pp. 267-286.
- Jones, Thomas O. and Sasser, W. Earl (1995), "Why satisfied customer defect," *Harvard Business Review*, pp. 88-99.
- Keller, K. L. (1993), "Conceptualizing, measuring, and managing customer-based brand equity," *Journal of Marketing*, 57, pp. 1-22.
- Keller, K. L. (1998), *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*, New Jersey, USA, Prentice-Hall.
- Kim, H. (2000), "The churn analysis and determinants of customer loyalty in Korean mobile phone market," *Korean Information Society Review*, pp. 1-18.
- Kim, Hee-Su and Yoon Choong-Han (2004), "Determinants of subscriber churn and customer loyalty in the Korean mobile telephony market," *Telecommunications Policy*, 28, pp. 751-765.
- Kim, M. S. and Ahn, J. H. (2007), "Management of trust in the e-marketplace: The role of the buyer's experience in building trust," *Journal of Information Technology*, 22, pp. 119-132.
- Kim, Moon-Koo, Park, Myeong-Cheol, and Jeong, Dong-Heon (2004), "The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services," *Telecommunications Policy*, 28, pp. 145-159.
- Kirton, M. (1976), "Adaptors and innovators: a description and measure," *Journal of Application and Psychology*, 61(5), pp. 622-629.
- Kotler, Philip and Armstrong, Gary (1999), "Principles of marketing" Eighth edition, Prenticehall.
- Leavitt, C. and Walton, J. (1975), "Development of a scale for innovativeness in advances in consumer research," Mary Jane Schlinger (ed.), *Ann Arbor, MI: Association for Consumer Research*, 2, pp. 545-554.
- Lee, M. and Cunningham, L. F. (2001), "A cost/benefit approach to understanding service loyalty," *Journal of Services Marketing*, 15(2), pp. 113-130.

- Lee, J., Lee, J., and Feick, L. (2001), "The impact of switching costs on the customer satisfaction-loyalty link: Mobile phone service in France," *Journal of Services Marketing*, 15(1), pp.35-48.
- Lee, B. G., Kwak, J. H., Kim, K. Y., and Kim, S. J. (2009), "Technical innovation and 3.5 mobile phone generation: Lessons from Korea," *Telecommunications Policy*, 33, pp.296-308.
- Lee, G. H., Shin, S. M., and Park, Y. W. (2003), "Studies on the determinants of subscribers' churning in the high speed internet service market," KISDI report.
- Le Louarn, P. (1997), "La tendance à innover des consommateurs: analyse conceptuelle et proposition d'une échelle de mesure," *Research of Application and Marketing*, 12(1), pp. 3-20.
- Madden, G., Savage, S., and Coble-Neal, G. (1999), "Subscriber churn in the Australian ISP market," *Information Economics and Policy*, 11, pp. 195-207.
- Midgley, D. and Dowling, G. R. (1978), "Innovativeness: the concept and its measurement," *Journal of Consumer Research*, 4, pp. 229-242.
- Newman, J. W. (1957), "New insight, new progress for marketing," *Harvard Business Review*, 35 (November-December), pp. 95-102.
- Oliver, Richard L. (1999), "Whence consumer loyalty?" *Journal of Marketing*, 63, pp. 33-44.
- Raju, P. S. (1980), "Optimum stimulation level: its relationship to personality, demographics and exploratory behavior," *Journal of Consumer Research*, 7(Dec.), pp. 272-282.
- Reichheld, E. F. (1996), "The loyalty effect: The hidden force behind growth, profits and lasting value," Harvard Business School Press.
- Reichheld, F. F. and Scheffer, P. (2000), "E-Loyalty: Your secret weapon on the Web," *Harvard Business Review*, July-August, pp.105-113.
- Roehrich, G. (1995), "Innovativités hédoniste et sociale: proposition d'une échelle de mesure," *Research of Application and Marketing*, 9(2), pp. 19-41.
- Roehrich, G. (2004), "Consumer innovativeness concepts and measurements," *Journal of Business Research*, 57, pp. 671-677.
- Rogers, E. M. (1995), *Diffusion of innovation*, 4<sup>th</sup>, NewYork, NJ: TheFreePress.
- Rogers, E. M. and Shoemaker, F. F. (1971), "Communication of innovation: A cross-cultural innovation, NewYork: The Free Press.
- Tilson, D. and Lyytinen, K. (2006), "The 3G transition: Changes in the US wireless industry," *Telecommunications Policy*, 30, pp.569-586.
- Zeithamal, V. A. and Bitner, M. J. (1996), *Services marketing*, NewYork: McGraw-Hill.