INVESTIGATING THE DETERMINANTS OF CUSTOMER SATISFACTION, SWITCHING BARRIER, AND CUSTOMER LOYALTY IN THE MOBILE TELECOMMUNICATIONS MARKET: THE CASE OF KOREA

By

CHO, In Young

THESIS

Submitted to
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Committee in charge:

Professor Yoon Cheong CHO, Supervisor

Professor Jinsoo LEE

Professor Kwon JUNG

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ABSTRACT

Investigating the Determinants of Customer Satisfaction, Switching Barrier, and Customer Loyalty in the Mobile Telecommunications Market: the Case of Korea

By

INYOUNG CHO

Customer satisfaction, switching barriers (or switching costs), and customer loyalty are significantly important concepts to stakeholders of the Korean mobile telecommunications market because luring new customers is very costly to carriers in the Korea mobile telephony market that already entered a mature stage, (Kim & Yoon, 2004; Kim et al., 2004). The purpose of the study is to investigate the determinants of customer satisfaction, switching costs, and customer loyalty in the Korean mobile telecommunications market by using the research model modified from the model of Kim et al. (2004). This research examines what functions or elements affect customer satisfaction, switching barriers, and customer loyalty. In addition, it studies the effect on customer loyalty of customer satisfaction, switching barrier, and brand image. Finally, it verifies the relationship between relative attitude and repeat patronage that are elements of the loyalty model that is proposed by Dick and Basu (1994). This study conducts an online survey of 275 employees and applies regression analysis with the gained survey data. This research provides policy, managerial, and academic implications for the Korean mobile telecommunications market.
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I. Introduction

1.1 Objectives of the Study

This study investigates the predictors of switching costs, customer satisfaction, and customer loyalty in the Korean mobile telecommunications market by using the research model modified from the model proposed by Kim et al. (2004). This research topic is chosen because of the following reasons. First, it is to help stakeholders of the Korean mobile telephony market to understand the traits of the Korean mobile telephony market. Major stakeholders of the Korean mobile telecommunications market, consumers, carriers, and the Korean Government, have different objectives and needs according to their positions. However, all of them commonly feel it necessary to be aware of the characteristics of the current Korean mobile telephony market. This study could give them information about the characteristics of the Korean mobile telecommunications market. Second, customer satisfaction and switching barriers are highly significant concepts to the stakeholders of the Korean mobile telecommunications market because the Korea mobile telephony market already entered a mature stage (Kim & Yoon, 2004; Kim et al., 2004). At a mature phase, it is the most important for carriers to retain the existing customers because as the number of subscribers become saturated, luring new subscribers is more costly and difficult than retaining existing customers (Kim & Yoon, 2004; Liu et al., 2011). Hence, in order to reduce churn, mobile carriers have developed marketing strategies such as building up customer loyalty and increasing costs that existing customers have to pay when they want to switch to a new service provider (Fornell, 1992; Kim & Yoon, 2004). This study investigates the relationship among switching barriers (or switching costs), customer satisfaction, and customer loyalty that is a significant construct to all stakeholders of the Korean mobile telephony market. Lastly, it is to contribute to maximizing the national welfare gained from the Korean mobile telephony market. The mobile service industry uses the spectrum as a
production input (Freyens, 2007). Here, the spectrum used by the mobile service industry is one of key important public resources (Freyens, 2007). Accordingly, the mobile service industry should be managed to maximize the national welfare that the society gains from the use of the spectrum (Cave & Webb, 2007). Customer satisfaction can be utilized as a barometer to evaluate how well the spectrum is being used to maximize the national welfare. Even though the stakeholders' positions may be mutually exclusive, they have the same objective in terms of improving service quality (Turel & Serenko, 2006). Improving service quality, the common goal of all stakeholders of the telecommunication industry, is in accordance with the maximization of the national welfare. Customer satisfaction measures the quality of output that industries produce (Fornell, 1992, see Figure 1). Therefore, customer satisfaction can be an excellent barometer to all the stakeholders.

1.2 Background

Korea's first analogue mobile service was launched in 1984 by Korea Mobile Telecom, predecessor of SK Telecom, which was owned by the Korean Government and then in 1995, Korea's first digital mobile service was launched (Kim et al, 2004; Kim & Yoon, 2004; Ahn, han, & Lee, 2006; KOTRA, 2005). Until 1996 when Shinsegi Telecom entered the Korean mobile telecommunications market as the second carrier, the Korean mobile telecommunications market was monopolistic (Kim et al, 2004; Kim & Yoon, 2004; Ahn, han, & Lee, 2006). In such a monopolistic market, subscription and usage fees were expensive and
the price level of mobile devices was high and as a result, the growth rate was not high (Kim et al., 2004). However, the Korean mobile telecommunications market started to change after new carriers appeared; Shinsegi Telecom entered in 1996, and Korea Telecom Freetel (hereafter, KTF), Hansol M.com and LG Telecom (hereafter, LGT) launched their PCS service in 1997 (Kim et al., 2004; Kim & Yoon, 2004; Choi et al., 2001). The competition among 5 carriers was severe (Kim & Yoon, 2004). As a result, the annual growth rate of the subscriber base came to more than 100% from 1996 to 1998 and as of September 1999, the number of the mobile service subscribers reached 21 million and was the fifth largest in the world (Choi et al., 2001). The Korean mobile telephony market grew fast until 2000 when the Korean Government prohibited handset subsidies (Kim et al., 2004; Kim & Yoon, 2004; Ahn, han, & Lee, 2006). However, carriers provided handset subsidies for customers in order to attract a new subscriber in the fierce competition (Kim & Yoon, 2004). Handset subsidies resulted in that some carriers suffered from financial difficulties (Kim & Yoon, 2004). As a result, in 2000, SK Telecom merged with Shinsegi Telecom and KTF (currently, KT) took over Hansol M.com (Kim et al., 2004; Kim & Yoon, 2004).

Figure 2. Market Share Change after the Introduction of the MVNO Policy

Source: Reconstructed from the Homepage of the Ministry of Science, ICT and Future Planning

After the acquisition, SK Telecom, KT, and LGT had shared the Korean mobile telephony market until new carriers appeared. In 2009, the Korean Government enforced the mobile
virtual network operator (hereafter, MVNO) policy to lower mobile rates (Shin & Chung, 2012). Since the MVNO policy was implemented, the market share has changed as shown in Figure 2.

II. Literature Review

2.1. Previous Studies

Kim et al. (2004) researched how customer satisfaction and switching barriers influence customer loyalty in the Korean mobile telephony market. In the study, service quality including call quality, value-added service (e.g., mobile data service, multimedia services, location-based service, and camera function), and customer support affects positively customer satisfaction (Kim et al., 2004). In addition, the study shows that the switching barrier affects customer loyalty and that as the components of the switching barrier, loss cost, move-in cost, and interpersonal relationship have an effect on the switching costs (Kim et al., 2004).

Figure 3. The Model for the Determinants of Customer Loyalty, Switching Costs, and Customer Satisfaction (Kim et al., 2004)

Kim and Yoon (2004) investigated the pre-factors of customer churn and customer loyalty in the Korean mobile telecommunications market by using a binomial logit
model based on survey data of 973 users in the Korean mobile Telephony market. In the study, Kim and Yoon (2004) defined customer loyalty as "willingness to recommend his company (or its service) to other people" in order to filter 'spurious loyalty' and measured customer loyalty by how much a customer intend to recommend her or his mobile carrier to others. The result of the research shows that subscriber churn is affected by the level of satisfaction with alternative particular service factors such as call quality, price level, handset type, brand image, earnings, and subscription duration, whereas that customer loyalty depends on few factors such as call quality, brand image, and handsets (Kim & Yoon, 2004). Ahn, Han, and Lee (2006) researched the determinants of customer churn in the Korean mobile telephony market by using customer data about transaction and billing from the database of one of South Korea's major mobile telecommunication service providers. The results show that customer churn depends on factors related to call quality. Whereas, according to the result, membership card program is not effective to hinder customer churn (Ahn, Han, & Lee, 2006).

2.2. Customer Satisfaction

There are diverse definitions of consumer satisfaction (hereafter CS) based on various perspectives. Boulding et al. (1993) divide CS into two types: "transaction-specific and cumulative". CS definitions that come from transaction-specific perspective are as follows; first, according to "emphasizing CS either as an outcome or as a process", Yi (1990) classifies the definitions of consumer satisfaction as a process-oriented definition and an outcome-oriented definition. An outcome-oriented definition is that CS is viewed as an outcome from the previous consumption experience (Yi, 1990). Howard and Sheth (1969), Westbrook and Reilly (1983), and Oliver (1981) define CS as the outcome of the consumption experience (Yi, 1990). On the other hand, from a process-oriented perspective, the definitions of CS view the evaluative process as one of significant elements that combine to CS (Yi, 1990). Hunt (1977), Engel & Backwell (1982), and Tse and Wilton (1988) define
CS from a process-oriented perspective (Yi, 1990). Secondly, the definitions of CS are classified according to their level of specificity (Yi, 1990). Yi (1990) summarizes the adopted levels as follows: "products, a consumption experience, a purchase decision experience, the salesperson, a store, an attribute, and a pre-purchase experience". Meanwhile, from cumulative perspective, Anderson et al. (1994) define CS as "an overall evaluation based on the total purchase and consumption experience with a good or service over time".

2.3. Methods of Customer Satisfaction

There are two ways of measuring CS: direct methods and indirect methods (Yi, 1990). The most popular direct methods are direct survey methods (Yi, 1990). The main advantage of direct survey methods is directness; the objective, the responses, and the corresponding rules between CS and measures are clear (Yi, 1990). Meanwhile, the primary disadvantage is reactivity that means that respondents' answers might be affected by the act of measurement itself (Yi, 1990). In addition, selection bias, interview bias, and non-response bias are the disadvantages of direct methods. Meanwhile, gathering data on consumer complaints and repeat purchase is indirect methods of measuring CS (Yi, 1990). The advantage of indirect methods is reduced reactivity (Yi, 1990). On the other hand, there are two disadvantages of indirect methods (Yi, 1990); first, the corresponsive rules between the concept and the methods to measure are not clear. Secondly, indirect methods may fail to find out the typical characteristics because the result is gained by using statistics (Yi, 1990).

2.4. Antecedents of CS

Variables such as expectation, disconfirmation, perceived performance and prior attitude have been found to influence consumer satisfaction (Yi, 1990). What demographic or socio-psychological factors affect consumer satisfaction was studied by some scholars such as Pickle and Bruce (1972), and Westbrook and Newman (1978) (Yi, 1990). It is found that
demographic or socio-psychological factors such as age, education, personal competence, total family income, and marital status influence CS (Yi, 1990). However, support for the relationship between these factors and CS is meager (Westbrook & Newman, 1978; Yi, 1990). On the other hand, some scholars pay attention to the effects of expectation and confirmation/disconfirmation on consumer satisfaction (Yi, 1990). These studies show that expectation and confirmation/disconfirmation are key factors affecting evaluation of performance (Yi, 1990). However, the effects of expectations on consumer satisfaction are not simple; raising expectations about a product may increase perception of product performance but also enhance the disconfirmation (Anderson 1973; Olshavsky & Miller, 1972; Yi, 1990). In other words, raising expectations change both the perception of product performance and customer satisfaction; the perception of product performance enhances and consumer satisfaction decreases because disconfirmation increases (Yi, 1990). Meanwhile, Yi (1990) distinguishes between the perception of product performance and factual product performance. Objective product performance is assumed to be constant across consumers because the level of product performance is an actual value (Yi, 1990). However, perceived product performance depends on consumers’ expectations, and as a result, the level of perceived product performance may differ across customers (Yi, 1990). Due to two types of product performance, there are two types of disconfirmation: "objective disconfirmation" that is discrepancy between expectations and objective performance, and "subjective disconfirmation" that is discrepancy between expectations and perceived performance (Yi, 1990). Many researchers such as Bearden and Teel (1983), Churchill and Surprenant (1982), Fisk and Young (1985), Oliver (1980a, 1981), have investigated the determinants of CS (Yi, 1990). Expectation, disconfirmation, perceived performance and prior attitudes are key factors that affect CS have been found (Yi, 1990).

2.5. Customer Loyalty
Oliver (1999) views loyalty as "a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, therefore causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior". In addition, Dick and Basu (1994) describe customer loyalty as the relationship between customers’ relative attitude toward a certain object and continued patronage (Jensen, 2011). Dick and Basu (1994) define an attitude as "an association between an object and an evaluation". They divide relative attitude into four groups according to attitude strength and attitudinal differentiation: (1) low relative attitude; (2) lowest relative attitude; (3) high relative attitude; (4) highest relative attitude, and then according to two levels (high and low) of the behavioural (repeat patronage) and attitudinal (relative attitude) dimensions, they classify loyalty into four groups as:

(1) No loyalty

Customers in no loyalty group do not differentiate between entities (for instance, brands or services) and do not purchase a certain entity repeatedly (Dick & Basu, 1994; Jensen, 2011);

(2) Spurious loyalty

Spurious loyalty is characterized by a low relative attitude and a high patronage (Dick & Basu, 1994; Jensen, 2011). Therefore, customers with spurious loyalty tend to switch to other entities due to situational factors such as other brands on sale (Dick & Basu, 1994; Jensen, 2011);

(3) Latent loyalty

Customers with latent loyalty have preferences for a particular entity but do not purchase it repeatedly because of some reasons (Dick & Basu, 1994; Jensen, 2011). Jensen (2011) presented as an example customers who may not always be able to purchase their preferred grocery brand because they sometimes buy their groceries in different stores;

(4) True loyalty
True loyalty is characterized by a high preference for a certain entity with a high repeat patronage (Dick & Basu, 1994; Jensen, 2011).

Figure 4. A Framework for Customer Loyalty (Dick & Basu, 1994)

Table 1. Dick and Basu's Relative Attitude (Dick & Basu, 1994)

<table>
<thead>
<tr>
<th>Relative Attitude</th>
<th>Attitudinal Differentiation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Strong</td>
<td>Low Relative Attitude</td>
</tr>
<tr>
<td>Low</td>
<td>Highest Relative Attitude</td>
</tr>
<tr>
<td>Weak</td>
<td>Lowest Relative Attitude</td>
</tr>
</tbody>
</table>

Table 2. Dick and Basu's Loyalty Model (Dick & Basu, 1994; Garland & Gendall, 2004)

<table>
<thead>
<tr>
<th>Relative Attitude</th>
<th>Repeat Patronage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Loyalty</td>
</tr>
<tr>
<td>Low</td>
<td>Spurious Loyalty</td>
</tr>
</tbody>
</table>

In the telecommunication studies, customer loyalty acts as a predictor of customer retention (Eshghi et al., 2007; Kim & Yoon, 2004). However, high customer loyalty does not guarantee retention (Dick & Basu, 1994). On the other hand, disloyal customers can continue subscribing current mobile service providers because service providers can lock in customers.
for a long time (Turel & Serenko, 2006).

2.6. Switching Barrier (Switching Costs)

Fornell (1992) mentioned that the switching barrier is the difficulty that consumers encounter when they switch to other providers or all kinds of burdens felt financially, socially, and psychologically by customers when they switch. In addition, Dick and Basu (1994) define switching costs as costs occurred by customer churn. Switching costs include time, money, and psychological cost (Dick & Basu, 1994). Switching costs are classified into three types of costs: continuity, learning, and sunk costs (Jones et al., 2002; Lee et al., 2006).

2.5.1 Continuity Costs

Continuity costs include lost performance and additional benefits gained through patronage of a provider such as frequent flier miles, discounts (Jones et al., 2002). In addition, continuity costs include uncertainty costs incurred when consumers switch to a new provider (Jones et al., 2002). Psychologically feeling uncertain or risky in terms of the new service provider's service quality is an example of uncertainty costs (Jones et al., 2002).

2.5.2 Learning Costs

Learning costs can be classified into three types: prior-switching search and evaluation costs, post-switching behavioral and cognitive costs, and setup costs (Jones et al., 2002). Prior-switching search and evaluation costs indicate consumer perceptions of the time and effort needed to search for alternatives and evaluating the performance of alternatives (Jones et al., 2002). Post-switching behavioral and cognitive costs represent costs occurring when customers learn new service routines and procedures and include time and efforts (Jones et al., 2002). When customization is high, there is service-provider learning (Jones et al., 2002). When consumers purchase from a new service provider for the first time, service-provider learning often results in costs that consumers have to pay (Guiltinan, 1989; Jackson,
The incurred costs are referred to as setup costs (Jones et al., 2002). Filling out forms or paying membership fees when changing service providers such as banks, carriers is the example of setup costs (Jones et al., 2002).

### 2.5.3 Sunk Costs

Sunk costs refer to unrecoverable costs (Jones et al., 2002). When customers spend certain costs such as time, financial expenses, and effort to establish and maintain a relationship, if the costs are unrecoverable, the costs could be classified as sunk costs (Jones et al., 2002).

### 2.5.4 The Role of the Switching Costs

Because when customers switch to other providers, switching costs are incurred, when consumers determine whether to switch providers, their decision is based on their net utility change (Lee et al., 2006; Dick & Basu, 1994; Kim et al., 2004). For example, when the switch costs are greater than an increment in utility, consumers decide not to switch providers (Lee et al., 2006). Thus, existing providers can use high switching costs as a lock-in tool to hold their customers (Lee et al., 2006). Meanwhile, the lower the switching costs, the more benefits customers get because when switching costs are low, the service providers try to lower price and improve the quality of service to maintain or attract customers (Lee et al., 2006).

#### Table 3. Switching Cost (Jones et al., 2002)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Lost performance costs</td>
<td>Perception of the performance and additional benefits lost when switching</td>
</tr>
<tr>
<td>(2) Uncertainty costs</td>
<td>Perception of the possibility of lower performance when switching</td>
</tr>
<tr>
<td>(3) Pre-switching search</td>
<td>Perception of the time and effort of collecting and assessing information needed to switch</td>
</tr>
<tr>
<td>(4) Post-switching behavioral and cognitive costs</td>
<td>Perception of the time and effort of learning a new service routine after switching</td>
</tr>
<tr>
<td>(5) Setup costs</td>
<td>Perception of the time, effort, and expense of informing a new provider of information</td>
</tr>
<tr>
<td>(6) Sunk costs</td>
<td>Perception of unrecoverable costs incurred in establishing and maintaining a relationship with the previous carrier</td>
</tr>
</tbody>
</table>
III. Theoretical Background

3.1 Theories about Product Performance

The following theories explain how expectation and disconfirmation affect perceived product performance (Yi, 1990).

3.1.1 Contrast Theory

The contrast theory assumes that when product expectations and product performance are not matched, the contrast between expectation and outcome will make consumers exaggerate the discrepancy (Yi, 1990). According to this theory, perceived performance relies on disconfirmation (Yi, 1990). In this theory, disconfirmation is defined as difference between the performance and expectation; when performance is larger than expectation, positive disconfirmation happens, and negative disconfirmation occurs when performance is smaller than expectation (Yi, 1990). Therefore, an understatement of product performance will result in perceived performance higher than product performance, but overstatement will result in perceived performance lower than objective performance (Yi, 1990).

3.1.2 Assimilation-Contrast Theory

The assimilation-contrast theory asserts that "there are latitudes of acceptance and rejection in one's perceptions" (Yi, 1990). If the discrepancy between expectation and performance is so small that it can fall into the consumer's latitude of acceptance, the consumer will tend to assimilate the product rating toward one's expectations; on the contrary, if the discrepancy between expectation and performance is so large that it fall into the consumer's latitude of rejection, a contrast effect happens (Anderson, 1973; Yi, 1990). Accordingly, within the zone of acceptance, overstatement of product performance is needed, but if it exceeds the range of acceptance, a contrast effect will occur (Yi, 1990). The effect of a disconfirmed expectation on product evaluations varies depending on the magnitude of disconfirmation (Yi, 1990). However, it is difficult to find out the magnitude of
disconfirmation for the contrast effect to happen (Yi, 1990).

3.1.3 Dissonance Theory

The cognitive dissonance theory asserts that disconfirmed expectations make persons dissonant or discomfortable (Yi, 1990). When dissonance or psychological discomfort occurs, the person will seek to reduce dissonance and achieve consonance and in addition, the person will actively avert states and information that are likely to enhance the dissonance (Yi, 1990). According to the dissonance theory, when there is a discrepancy between product expectations and product performance, consumers may be psychologically uncomfortable and try to lessen dissonant feeling by converting their perceived product performance (Yi, 1990). When this hypothesis is true, promotional slogans considerably increase expectations about product performance because high expectations lead to a high performance evaluation (Yi, 1990). Researchers such as Cardozo (1965), Olshavsky and Miller (1972), and Olson and Dover (1979) found support for the dissonance theory, while Cohen and Goldberg (1970) failed to find the support for this theory (Yi, 1990).

3.2 Theories about Customer Satisfaction

CS is a construct of standards and perceived disparity from the standard (Yi, 1990). Scholars such as Engel and Blackwell (1982), and Howard and Sheth (1969) found that CS depends on the perceived disparity between standards and performance (Yi, 1990).

3.2.1 Expectancy-Disconfirmation Paradigm

The expectancy-disconfirmation paradigm has dominated consumer satisfaction/dissatisfaction research since it emerged as a legitimate field of inquiry in the early 1970’s (Erevelles & Leavitt, 1992). Theoretical support for this model comes from the adaptation level theory and the expectancy theory (Erevelles & Leavitt, 1992; Yi, 1990). Here, the adaptation level theory asserts that "one perceives stimuli only in relation to an adapted
standard" (Yi, 1990). According to the expectancy-disconfirmation paradigm, consumers form satisfaction judgments with a product by comparing their expectations about the product performance (Oliver, 1977, 1980a, 1981). When consumers compare their expectations with perceived performance, their expectancy is used as an adaptation level of the adaptation level theory (Oliver, 1980a). The gap or difference between expectations and perceived performance is termed as disconfirmation of expectations or expectancy disconfirmation (Oliver, 1997). Here, disconfirmation scales are bipolar (positive, negative or zero): negative disconfirmation occurs when performance is below expectation, and positive disconfirmation occurs when performance is above expectation (Oliver, 1997). In brief, consumer satisfaction can be compared to a function whose elements are expectations and disconfirmation, whereas expectations are acting as criteria of comparison (Yi, 1990).

The expectancy-disconfirmation originally has been applied in marketing studies in order to examine how the consumer expectation affects the formation of consumer satisfaction judgments with products. Recently, researchers such James (2009), Poister and Tomas (2011), and Van Ryzin (2004) have used the expectancy-disconfirmation model to explore the cognitive processes affecting satisfaction with government service (Morgeson, 2012); two local public services in England, state highways, police, trash, police, and New York city services (subways, buses, fire, and so on) (Ryzin, 2004). However, there has been little research on satisfaction with national policy.
3.2.2 Comparison Level Theory

LaTour and Peat (1979) argue that the confirmation-of-expectation paradigm assumes that the main determinants of CS is the predictive expectations made by manufactures, test reports, unspecific sources, and this assumption does not include other sources of expectations such as consumers' past experience (Yi, 1990). LaTour and Peat suggest modified comparison level theory and asserted that comparison level for a product has three determinants: "(1) consumer's prior experience with similar products, (2) situationally-produced expectations (e.g., those created through manufacturers' advertising or retailers' promotional efforts), and (3) the experience of other consumers who serve as referent persons" (Yi, 1990; Thibaut & Kelly, 1959). In addition, by conducting a field test, LaTour and Peat (1980) found that prior experience expectations acted as the primary determinant of CS, but situationally-produced expectations had little effect on CS (Yi, 1990). Here, only situationally-induced expectations have been used as standards by many studies applying an expectation-disconfirmation paradigm (Olshavsky & Miller, 1972; Anderson, 1973; Oliver, 1976, 1977, 1980a; Yi, 1990). Their study shows that information created by manufacturers may be less important to consumers when they have prior experience and information about the experience of other consumers (Yi, 1990).

3.2.3 Equity Theory
Major equity theory concerning social equity has been developed by Homans (1961) and Adams (1963) (Fisk & Young, 1985). In a field of consumer satisfaction, researchers such as Fisk and Young (1985), and Swan and Oliver (1985) studied the application of the equity theory to consumer satisfaction (Yi, 1990). The fundamental assumption of equity theory is that in two persons' exchange situation, one person compares his/her outcome-input ratio with those of the other (Swan & Oliver, 1985; Fisk & Young, 1985; Yi, 1990). Walster, Walster, and Bersheid (1978) suggested the two basic propositions of equity theory: 1) individuals in an exchange seek to maximize their outcome-input ratios; 2) individuals perceive that the way of maximizing their outcomes is to behave equitably (Fisk & Young, 1985). In the light of the propositions, individuals in an exchange are selfish and they know that the most profitable way to be selfish to be fair (Fisk & Young, 1985). When consumers perceive that the outcome-input ratios are fair, they are satisfied (Yi, 1990). Fisk and Young (1985) tested the application of the equity theory to customer satisfaction and found that inequity results in dissatisfaction and decreases repurchase intention (Yi, 1990). Swan and Oliver (1985) studied the relationship among equity, disconfirmation, and consumer satisfaction by investigating automobile buyer's satisfaction with the salesperson. Swan and Oliver (1985) found that: (1) disconfirmation and inequity are the determinants of satisfaction; (2) disconfirmation was a more important predictor than inequity; (3) contrary to the equity theory, positive inequity increased satisfaction. The high level of negative inequity resulted in dissatisfaction (Swan and Oliver, 1985).

3.3 Expectation and Trust

Many researchers such as Möllering (2001) and Luhmann (2000) mention that expectation and trust are closely connected. According to Möllering (2001), trust is defined "as a state of favorable expectation regarding other people’s actions and intentions". Here, the state of favorable expectation towards other people’s actions and intentions need to be understood as the ‘output’ of the trust process (Möllering, 2001). Luhmann (2000) defines
trust as a mode of asserting expectation. Scholars such as Gambetta (1988), and Solomon and Flores (2001) argue that trust has future-oriented features because it includes anticipation and risk (Khodyakov, 2007).

3.4 American Customer Satisfaction Index

The American Customer Satisfaction Index Model is used as a cross-industry model for measuring market-based performance of companies, services, sectors and countries (Kim & Lee, 2013). The American Customer Satisfaction Index Model measures the quality of goods and services based on customers’ experience (Fornell et al., 1996; Kim & Lee, 2013).

3.4.1 Antecedents

Customer satisfaction of the ACSI model has three antecedents: perception of quality, perception of value, and customer expectations (Fornell et al., 1996). Perception of quality is the market’s evaluation of recent service consumption experience (Fornell et al., 1996; Kim & Lee, 2013). There are two staple components of consumption experience: customization and reliability (Fornell et al., 1996). Customization refers to how much customized the firm’s service is to meet various customer's needs. Meanwhile, reliability represents how much reliable, standardized, and indefectible the firm’s service is (Fornell et al., 1996). Perceived value represents “the perceive level of product quality relative to the price paid” (Fornell et al., 1996). Customer expectations refer to customers’ (or the served market’s) prior experience with the company’s service (Fornell et al., 1996).

3.4.2 Consequences

Increasing the level of customer satisfaction reduces the occurrence of complaints and enhances customer loyalty (Fornell et al., 1996). The direction and size of the relationship between customer complaints and customer loyalty influence a company’s customer satisfaction and complaints-handling systems (Fornell, 1992; Fornell et al., 1996).

Figure 6. The American Customer Satisfaction Index (ACSI) Model (Fornell et al., 1996; Kim & Lee,
3.5 Brand

3.5.1 Brand and the Purpose

The American Marketing Association (1960) views brand as "a name, term, sign, symbol, or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors" (Keller, 1993; Wood, 2000). As mentioned in the definition, the main purpose of brands is differentiation (Wood, 2000). In addition, a brand increases the value of products or services above their functional purpose (Farquhar, 1989).

3.5.2 Brand Equity and Brand Image

Brand equity was introduced to define the relationship between brands and customers (Biel, 1992). Many accounting and marketing literatures have dealt with the concept of brand equity from different perspectives (Wood, 2000). Accordingly, there are a lot of opinions about the definition of brand equity (Biel, 1992). Feldwick (1996) divides various meanings of brand equity into three classifications: brand valuation, brand strength, and brand image (or brand description) (Wood, 2000). First, brand valuation that comes from an accountant's perspective refers to "the total value of a brand as a separable asset" (Wood, 2000). Secondly, brand strength means how strongly consumers attach to a brand (Wood,
Thirdly, brand image refers to attributes and associations that consumers have about a brand (Biel, 1992). Feldwick (1996) argued that brand valuation, brand strength, and brand image compose the brand equity chain as shown in figure 1. Meanwhile, Biel (1992) mentioned three components of brand image as: image of maker, image of product, and image of user. The effect of these three components varies according to brands or sorts of products but the contribution of image of consumer could be greatest among them (Biel, 1992).

Figure 7. The Brand Equity Chain (Feldwick, 1996)

Figure 8. The Three Components of Brand Image (Biel, 1992)

3.6 What is Spectrum?

According to the International Telecommunication Union (hereafter, ITU), a specialized agency of the United Nations, radio waves are described as “electromagnetic waves of
frequencies arbitrarily lower than 3,000 GHz propagated in space without artificial guides” (MED, 2005) and the radio spectrum is the part of the electromagnetic spectrum that conveys radio waves (ITU, 2011). The radio spectrum is a unique resource; it is invisible and renewable unlike other natural resources but scarce and it can convey information over distances without wires or other physical media (Hatfield, 2005). In addition, when the spectrum propagates in the air, the spectrum has an important feature which limits its application: spectrum of higher frequencies can carry more information but reaches shorter distances; spectrum of lower frequencies can carry less information but reaches longer distances (Ard-paru, 2010). ‘Renewable’ means being able to be reused repeatedly without being consumed but although the spectrum is renewable, it is treated as a scarce resource because of the following reasons: (i) theoretically, the radio spectrum can be shared in its frequency, time and space dimensions but practically due to cost and complexity in sharing the radio spectrum, the number of users to share the radio spectrum is limited; (ii) because different frequency bands within the radio spectrum have their own technical features, some bands are preferred for special purposes to others (Hatfield, 2005).

Figure 9. Schematic representation of the division of radio spectrum (Cave et al. 2007)

3.7 Overview of Spectrum Management
In respect to the purpose of spectrum management, Cave and Webb (2007) argued that the key purpose of spectrum management is to maximize the society's welfare obtained from the spectrum by enlarging the number of efficient users while governing firmly the interference between users. The ITU (2011) classifies the purposes of spectrum management as an economic objective and a technical objective: from an economic perspective, the purpose of spectrum management is maximizing the valuation of outputs of the available spectrum produced by various stakeholders, including the government or other public authorities; from a technical perspective, the purpose of spectrum is to use the available spectrum most fully.

Then, how is the spectrum managed? At the beginning of the spectrum management, the government played a key part in it (Cave et al., 2007; Wellenius & Neto, 2008; Baumol & Robyn, 2006). This initial spectrum management regime is command and control model (Cave et al., 2007; Wellenius & Neto, 2008; Baumol & Robyn, 2006). As mentioned above, under this regime the government controls mainly the management of the radio spectrum (Cave et al., 2007; Wellenius & Neto, 2008; Baumol & Robyn, 2006). When the main aim of spectrum management was intervention of interference, the command and control model was an efficient spectrum management method (Cave et al., 2007; Wellenius & Neto, 2008). However, as recently demand for wireless services has grown rapidly and the way of spectrum use has been changing, the old bureaucratic model of spectrum management has not been able to control the spectrum effectively (Faulhaber, 2006; Snider, 2006; Brito, 2007; Wellenius & Neto, 2008).

Hence, alternative regimes were suggested to solve the failures of the command and control model. There are two primary alternative regimes; one is market based model, and the other is commons and open access model (cave et al., 2007; Baumol & Robyn, 2006; Freyens, 2007; Wellenius & Neto, 2008). Baumol and Robyn (2006) suggested six points that should be considered when spectrum policy is designed: (1) control of prospective
interference; (2) encouragement of investment in innovation; (3) prevention of monopoly power; (4) preservation of diversity; (5) recognition of the widespread desire to encourage provision of broadband service to rural areas; (6) preservation of adaptability to evolving circumstances, such as advancing technology and changing consumer needs and preferences.

In contemporary spectrum management, spectrum management task is that regulators select among three options, command and control model, market based model, and commons and open access model while considering six points mentioned above (Hazlett, 2006; Freyens, 2007; FCC, 2002; Cave et al., 2007; Noam, 1997; Snider, 2006; Hatfield, 2005). Table 4 is about division of allocation of the United Kingdom (Ofcom, 2004; Cave et al., 2007). It shows the change in the spectrum management of the United Kingdom (Cave et al., 2007).

<table>
<thead>
<tr>
<th>Spectrum Allocation Method</th>
<th>Percentage of Spectrum Allocated in</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td></td>
<td>95.7%</td>
<td>21.6%</td>
</tr>
<tr>
<td>Market</td>
<td></td>
<td>0%</td>
<td>71.5%</td>
</tr>
<tr>
<td>License-Exempt(commons)</td>
<td></td>
<td>4.3%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

3.8 Command and Control Model

The command and control approach in spectrum management was started in the US as a way to limit overcrowding and interference in 1927 (Baumol & Robyn, 2006). Thus, in managing spectrum, the command and control model is referred to as conventional management (Hazlett, 2002; Baumol & Robyn, 2006). As in the command and control model, regulators give users exclusive licenses to be able to utilize certain spectrum bands, the command and control regime is also called 'the licensed model' (Snider, 2006). Since the US first adopted this approach, all governments of the world have been using this model for controlling the radio spectrum (Faulhaber, 2006).

One of the main characteristics of the command and control model is the
bureaucratic form of spectrum allocation (Faulhaber, 2006). Under this regime, regulators divide the spectrum into some blocks and then arbitrarily allocate them to uses (Baumol & Robyn, 2006; Freyens, 2007). Also, regulators scarcely permit modification of the use that is assigned to the spectrum rights and transferability of the rights (Baumol & Robyn, 2006). This results in the rigidity of the spectrum assignment, one of the main characteristics of the command and control model (Baumol & Robyn, 2006).

In addition, as regulators chiefly decide who uses bands and which wireless services are allocated to bands under the command and control model, the approach adopted by regulators could be more prescriptive for regulators’ easy spectrum management (Cave et al., 2007). Meanwhile, Leibovitz (2003) mentions that in the command and control regime, the spectrum management fundamentally is composed of four regulatory steps: allocation, adoption of service rules, assignment, and enforcement. First, the uses of band are allocated to frequency bands (Cave et al., 2007). When wireless services are allocated under the command and control regime, the allocation is conducted at the international and national levels (Cave et al., 2007; Wellenius & Neto, 2008). The spectrum management at the highest global level is operated by the International Telecommunication Union (ITU) (Cave et al., 2007). The ITU convenes world and regional conferences every three or four years (Wellenius & Neto, 2008). At the conferences, regulations, agreements, and plans for the international use of the radio spectrum are established to ensure that wireless services of member countries are compatible and interference among countries is prevented (Wellenius & Neto, 2008). After the global level spectrum management is set up by the ITU, each member country makes a national table of frequency allocations that contain allocation of the use of bands and under what conditions, and ensure that these allocations are compatible with neighboring countries’ (Wellenius & Neto, 2008). Second, service rules are adopted (Leibovitz, 2003); service rules that specify power limits, build-out requirements, and other rules for the service are allocated to a particular frequency band (Leibovitz, 2003). The third
step is assignment: deciding which organization can use it (Cave et al., 2007). The last step is enforcement (Leibovitz, 2003). The regulators of the command and control model establish the regulations to monitor the spectrum use of license holders: for example, frequency in use of the spectrum, power limits, interference with other bands, and etc (Leibovitz, 2003).

3.9 Market-Based Model

As the command and control model has been showing more proofs that it cannot allocate the radio spectrum efficiently, needs for alternative approaches to manage the spectrum have been increasing (Baumol & Robyn, 2006; ACMS, 2007; Cave et al., 2007). The market-based model was firstly suggested as an alternative to the command and control model by Nobel laureate Coase (Brito, 2007). Coase (1959) mentioned that government control of the radio spectrum cannot be justified by the fact that the radio spectrum is a scarcer source because all most resources are scarce and scarcity of a resource does not always necessitate government control. In addition, Coase (1959) argued that government control over the spectrum necessarily leads to rent-seeking and inefficient allocation and suggested market-based alternatives in his study (Brito, 2007; Freyens, 2007; Noam, 1997). That the command and control model has not given licensees enough incentives to maximize use of the spectrum results in inefficient use of the spectrum such as hoarding of the spectrum (Baumol & Robyn, 2006; Wellenius & Neto, 2008; Cave et al., 2007). In order to compensate such a shortcoming of the command and control model, the market-based model adopts price mechanism as an incentive for spectrum holders to optimize their use (Cave et al., 2007). Thus, while under the command and control model governments control the direction of the spectrum, under the market-based model, the price of the spectrum decided by buyers and suppliers (spectrum holders and governments) controls the direction of the spectrum (Coase, 1937). Namely profit motive promotes spectrum rights transfer by providing the incentive for voluntary sharing (Hatfield, 2005; Baumol & Robyn, 2006). Spectrum management methods
of the market-based regime are auctions and spectrum trading (Freyens, 2007; Wellenius & Neto, 2008; ITU, 2005; Cave et al., 2007). Auctions are the most preferred and simplest method of market-based model (Cave et al., 2007). Spectrum auctions have been used by a growing number of countries to assign spectrum effectively and raise revenue (ITU, 2005).

However, introducing only auctions cannot solve the rigidity problem of the assignment of spectrum that causes inefficient allocation (Cave et al., 2007; Wellenius & Neto, 2008). For complete operation of the market-based model, both of auctions and spectrum trading are necessary to introduce (Cave et al., 2007; Wellenius & Neto, 2008).

There are four basic types of spectrum auctions: (1) the ascending-bid auction (also called the English auction), (2) the descending-bid auction (or the Dutch auction), (3) the first-price sealed-bid auction, and (4) the second-price sealed-bid auction (Klemperer, 2004; Cave et al., 2007). In the ascending-bid auction, the price starts at a low price and is continuously increased until one bidder accepts the price (Klemperer, 2004; Cave et al., 2007). On the contrary, in the descendent-bid auction, the price starts at a high price and is successively lowered until a bidder accepts the price (Klemperer, 2004; Cave et al., 2007). In the first-price sealed-bid auction and the second-price sealed-bid auction, the bidders independently make an offer only once and cannot change their bid after submitting it (FCC, 1997; Klemperer, 2004; Cave et al., 2007). In the first-price sealed-bid auction, the bidder who submits the highest bid wins the object and the price she pays is the first price or the highest price, whereas in the second-price sealed-bid auction, the bidder who submits the highest bid wins the object and the winner pays the price the amount equal to the second-highest bidders’ bid (Klemperer, 2004; Cave et al., 2007).

3.10 Commons and Open Access Model

The commons approach (or the commons and open access model) is based on the idea that spectrum is a common resource (Freyens, 2007). The ‘commons’ is a part of the
spectrum where anyone can transmit without a license (Cave et al., 2007). The commons is sometimes called license-exempt or unlicensed spectrum because it is used without license (Cave et al., 2007). The commons approach was until recently of little interest, but since the late 1990s it has been debated more widely because of deployments of new technologies like Wi-Fi, ultra-wideband (UWB), and cognitive radio (Cave et al., 2007). In contrast with the command and control regime, and the spectrum rights regime, based on individual licenses, the commons approach is predicated on a sharing of spectrum resource among users without guarantees of preventing interference (Wellenius & Neto, 2008). The commons approach developed by scholars like Ostrom (1990), Noam (1995, 1998), and Benker (1998, 2002) has two sub-regimes for managing the spectrum in a non-administered, nor privatized way: the commons regime and the open access regime (Freyens, 2007). Often these two regimes are used interchangeably, but they are two separate concepts with different meanings (Brito, 2007). Buck (2002) and Brito (2007) explain the 'commons' as follows; a commons is a resource that is owned or managed conjointly by a group of individuals and it is characterized by restrictions on using the commons. The commons regime is somewhat analogous to grazing land are used in common by a community, or to public lands that can be accessed by anyone (Hatfield, 2005). On the other hand, the open access regime is a regime under which anyone utilizes an unowned resource without limitation; no one governs access to the resource under the open access regime (Brito, 2007). As in the commons and open access model, there is no guarantee that interference never happens when spectrum users communicate, the controllers of the commons and open access model, generally governments, suggest just minimum technical specifications of spectrum commons equipment to access the spectrum commons (Wellenius & Neto, 2008).

Figure 10. Methods for Managing Spectrum as a Common Pool Resource (Freyens, 2007)
IV. Hypotheses Development

4.1 Research Model

This research investigates the determinants of switching barriers, customer satisfaction, and customer loyalty in the Korean mobile telecommunications market. First, as the determinants of customer satisfaction, 5 variables are included: (1) call quality, (2) value-added service, (3) customer support, (4) pricing structure, and (5) mobile device. Second, as the determinants of switching barriers, 5 variables are suggested: (1) loss cost, (2) adaptation cost, (3) move-in cost, (4) interpersonal relationship, and (5) uncertainty cost. Thirdly, 3 factors are included as the determinants of customer loyalty: (1) customer satisfaction, (2) switching barrier, and (3) brand image. Lastly, in terms of customer loyalty, this research accepts Dick and Basu's definition (1994): repeat patronage and relative attitude. In addition, the method of Kim and Yoon (2004) to evaluate customer loyalty is accepted in this research.

Table 5. Operational Definition and Measurement of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Operational Definition</th>
<th>Measurement Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call quality</td>
<td>Customer's perception of call quality</td>
<td>· Connectivity when you attempt to call</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Voice quality while you are on the phone</td>
</tr>
<tr>
<td>Value-added service</td>
<td>Type and convenience of value-added service</td>
<td>· Variety of value-added service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Quality of mobile data service</td>
</tr>
<tr>
<td>Pricing structure</td>
<td>Pricing and price schedule</td>
<td>· Reasonability of price</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Variety of price schedule</td>
</tr>
<tr>
<td></td>
<td>Mobile device functionality and design</td>
<td>Customer support system and complaint processing</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Quality of mobile device</td>
<td>Variety of customer support systems</td>
</tr>
<tr>
<td></td>
<td>Variety of mobile device types</td>
<td>Complaint processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality of service center staff</td>
</tr>
<tr>
<td><strong>Switching cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Loss cost</strong></td>
<td>Perception of loss in performance and additional benefits associated with the churn of service from an existing carrier</td>
<td>Loss of additional benefits such as mileage program</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adaptation cost</strong></td>
<td>Perception of cost of adaptation associated with switching to a new carrier</td>
<td>Difficulty of searching for an alternative</td>
</tr>
<tr>
<td><strong>Move-in cost</strong></td>
<td>Perception of economic cost involved in switching to a new carrier</td>
<td>Cost of re-purchasing mobile device</td>
</tr>
<tr>
<td><strong>Uncertainty cost</strong></td>
<td>Perception of the likelihood of lower performance when switching to other carrier</td>
<td>Likelihood of lower service quality</td>
</tr>
<tr>
<td><strong>Interpersonal relationship</strong></td>
<td>Customer's perception of social and psychological relationship with carrier</td>
<td>Carrier’s care for customer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customer Loyalty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relative attitude</strong></td>
<td>Composition of attitude differentiation and attitudinal strength toward carrier</td>
<td>Strength of the intention to recommend the carrier to others</td>
</tr>
<tr>
<td><strong>Repeat patronage</strong></td>
<td>Re-subscribing to carrier</td>
<td>Strength of the intention to re-subscribe to carrier</td>
</tr>
<tr>
<td><strong>Customer loyalty</strong></td>
<td>Association of customer's relative attitude toward the carrier and repeat patronage</td>
<td>Customers' perception of their loyalty toward carrier</td>
</tr>
<tr>
<td><strong>Customer satisfaction</strong></td>
<td>Customer's perception of satisfaction</td>
<td>Overall satisfaction with the carrier</td>
</tr>
<tr>
<td><strong>Brand image</strong></td>
<td>Attributes and associations that customers have about the brand</td>
<td>Customer's evaluation about brand image of the carrier</td>
</tr>
<tr>
<td><strong>Switching costs</strong></td>
<td>Costs incurred when customers switch</td>
<td>Customer's perception of costs related with switching</td>
</tr>
</tbody>
</table>

*Source: Main format and contents are modified from Kim et al., 2004 (Other Reference: Dick and Basu, 1994; Jones et al., 2002; Kim and Yoon, 2004; Biel, 1992; the Homepage of Wiseuser).*
4.1.1 Customer Loyalty

Kim and Yoon (2004) intended to filter out spurious loyalty in the research. Kim and Yoon (2004) accept Griffin (1995)'s redefinition of Dick and Basu's (1994) "true loyalty". Griffin (1995) renamed Dick and Basu's "true loyalty" "premium loyalty" (Kim & Yoon, 2004). Griffin (1995) described customers with premium loyalty as people who advocate the products or services and recommend them to other people (Kim & Yoon, 2004). Kim and Yoon (2004) accepted Griffin's definition and according to the definition, they measured customer loyalty by asking the intention to recommend an existing service provider to others. In this research, loyalty is measured by asking how much a customer intend to recommend her or his mobile carrier to others as Kim and Yoon (2004) did.

4.1.2 Customer Satisfaction
In many studies, it has been found that customer satisfaction is one of predictors of customer loyalty and is positively correlated with customer loyalty (Fornell, 1992; Gerpott, Rams, and Schindler, 2001; Kim et al., 2004; Kim & Yoon, 2004). Namely, customers feeling a high level of satisfaction are expected to be loyal (Fornell, 1992; Kim et al., 2004). However, being loyal does not mean being satisfied (Fornell, 1992).

H1: Customer satisfaction positively influences customer loyalty.

4.1.3 Switching Barrier

As customer satisfaction influences customer loyalty, the switching barrier (switching cost) influences customer loyalty (Fornell, 1992; Kim et al., 2004; Liu et al., 2011). Like customer satisfaction, high switching costs restrain customer churn (Fornell, 1992; Kim et al., 2004). High switching costs are used by the means of customer retention (Fornell, 1992; Kim et al., 2004). Therefore, when Dick and Basu's (1994) definition is considered, because customer retention is one of components of customer loyalty, that high switching costs influence customer loyalty is expected.

H2: Switching barriers positively influence customer loyalty.

4.1.4 Brand Image

Kim and Yoon (2004) investigated the predictors of customer loyalty in the Korean mobile telecommunications market by using a binomial logit model based on a survey of 973 mobile service subscribers. According to the study, few factors affect customer loyalty; brand image is one of the factors to influence customer loyalty (Kim & Yoon, 2004).

H3: Brand Image positively influences customer loyalty.

4.1.5 Repeat Patronage and Relative Attitude

This research adopts Dick and Basu's definition of customer loyalty (1994). Dick
and Basu (1994) viewed customer loyalty as a construct of relative attitude and repeat patronage. Dick and Basu (1994) argue that attitude is an interaction between an entity and an appraisal. Relative attitude is the attitude that provides a stronger implication to repurchase a certain entity than the attitude for an entity solely (Dick & Basu, 1994). Meanwhile, Jones et al. (2002) found that switching barriers relate positively with repurchase intentions through their research. The same result is expected in terms of the Korean mobile telephony market.

Repeat patronage is measured by asking total subscription periods with the current carrier. In Korea, if a customer does not demand subscription cancellation after the minimum subscription period, generally 2 years, the subscription contract automatically will be extended. For example, a customer who have subscribed to a carrier for 6 years can be shown as a customer who purchases a certain item three times. Thus, how long customers have subscribed to a carrier is more important data to know about consumers' repeat patronage in the Korean mobile telecommunication market. In addition, relative attitude is measured by asking favorability toward the carrier compared to other carriers (Dick & Basu, 1994).

H4: Customer satisfaction influences positively repeat patronage.
H5: Customer satisfaction influences positively relative attitude.
H6: Switching barriers influence positively repeat patronage.
H7: Switching barriers influence positively relative attitude.
H8: Brand image influences positively repeat patronage.
H9: Brand image influences positively relative attitude.

4.1.6 Call Quality

As defined by Kim et al. (2004), call quality refers to customer perception of call quality. Call quality is measured by customer evaluation of call clarity (Kim et al., 2004). According to Kim and Yoon (2004), and Kim et al. (2004), call quality affects customer
loyalty positively.

H1a: Call quality influences positively customer satisfaction.

4.1.7 Value-added Service

Extra services can make customers highly satisfied (Liu et al., 2011). Liu et al. (2011) investigated how switching costs and relationship quality influence customer loyalty in Taiwan mobile telecommunications market. The result of this study shows that playfulness positively influences satisfaction. In addition, the study of Kim et al. (2004) indicates that value-added service positively affects customer satisfaction. Value-added services include mobile data service, multimedia service, location-based services, camera-enable phones, and so on (Kim et al., 2004). Accordingly, value-added service can be viewed as extra services that give playfulness to customers.

H1b: Value-add services influence positively customer satisfaction.

4.1.8 Customer Support

Customer support includes customer support system and customer complaints management (Kim et al., 2004). Customer support is measured by variety of customer support, complaint processing, and quality of service center staff (Kim et al., 2004). Customer support is a type of relationship marketing (Berry, 1995). To develop solid relationships with customers is an effective method to hinder existing customers' churn (Liu et al., 2011). The study of Kim et al. (2004) shows that customer's perception of customer support quality influences customer satisfaction.

H1c: Customer support influences positively customer satisfaction.

4.1.9 Pricing Structure

According to researches of Kim and Yoon (2004), and Kim et al. (2004), pricing structure does not influence customer satisfaction. However, the Korean mobile
telecommunications market has been changing a lot since they researched. Most of all, after the Korean Government enforced the MVNO policy in 2009, customers have been able to have more choice among three major carriers, and MVNOs that provide mobile service at a cheap price (Shin & Chung, 2012). Moreover, thanks to the Korean Government's effort to lower communication charges of households, three major service providers are lowering the price level of the services. Hence, in this study, pricing structure is considered as one of factors that have an effect on customer satisfaction.

H1d: Pricing structure influence positively customer satisfaction.

4.1.10 Mobile Device

The handset models offered by carriers are different among carriers. Customers' perception of the function and design of handsets could be correlated with customer satisfaction. According to Kim and Yoon (2004), handsets have an effect on customer satisfaction with the carrier. On the contrary, Kim et al. (2004) investigated the effect of mobile device on customer satisfaction but did not find.

H1e: Mobile devices influence positively customer satisfaction.

4.1.11 Loss Cost

Loss costs include lost performance benefits and additional benefits gained by repeated patronage of a provider such as mileage program (Jones et al., 2002; Kim et al., 2004). The study of Kim et al. (2004) shows that loss costs have an effect on switching costs positively. Furthermore, Jones et al. (2002) found that lost performance costs affect more strongly customer's perception of service quality than other switching cost categories.

H2a: Loss costs influence positively the switching barrier.

4.1.12 Adaptation Cost
Adaptation costs refer to costs incurred by adaptation to a new provider (Jones et al., 2002; Kim et al., 2004). Adaptation cost includes consumer perceptions of the time and effort involved in searching for alternatives, evaluating the performance alternatives, and learning new service procedures (Jones et al., 2002; Kim et al., 2004). In addition, adaptation costs include setup costs when customization is high (Jones et al., 2002). According to Kim et al. (2004), adaptation costs do not have a positive impact on switching costs.

H2b: Adaptation costs influence positively the switching barrier.

4.1.13 Move-in Cost

Kim et al. (2004) define move-in cost as perception of financial cost needed to switch to a new service provider. As the measurement items of move-in costs, Kim et al. (2004) mention cost of purchasing a new mobile device and subscription fee. Kim et al. (2004) investigated the relationship between move-in costs and switching costs. The study shows that move-in costs influence switching costs positively (Kim et al., 2004). However, subscription fees were abolished in 2015. This means that move-in costs decreased.

H2c: Move-in costs influence positively the switching barrier.

4.1.14 Interpersonal Relationship

Interpersonal relationship is defined as customer's perception of social and psychological relationship with a service provider (Kim et al., 2004). Interpersonal relationship can be measured in terms of service provider's care for customer, trust in a provider, intimacy with a provider, and level of communication with a provider (Kim et al., 2004). In an aspect of the switching barrier, interpersonal relationship relates with sunk costs and continuity costs; as part of continuity costs, perquisites such as a membership program are attributed to strong service relationships that need the personalized knowledge and respect, and time and effort that is once invested to build interpersonal relationships become sunk.
H2d: Interpersonal relationship influences positively the switching barrier.

4.1.15 Uncertainty Cost

Uncertainty costs refer to "customer's perception of the likelihood of lower performance when switching" (Jones et al, 2002). Uncertainty costs are classified as continuity costs (Jones et al, 2002). Since the MVNO policy was enforced, there have been a variety of carriers in the Korean mobile market. Customers could assume that MVNOs' service quality could be lower than major carriers'. Hence, it is expected that customers pay an amount of uncertainty costs when they switch to MVNOs.

H2e: Uncertainty costs influence positively the switching barrier.

V. Methodology

5.1 Data Collection

The survey for this research is subject to Koreans who have been subscribing to any carrier of Korea. Due to the strengthened Personal Information Protection Law, the online survey had to be conducted carefully. As most Koreans are not familiar with an English questionnaire, the questionnaire was designed in English and Korean. This study also applied back translation. In addition, it was expected that the respondents might avoid answering the questions because of today's harsh economic climate. Hence, survey questions about incomes were not included. In addition, this study applied mainly online data collection but applied offline data collection.

5.2 Development of the Research Questionnaire

The research questionnaire was designed according to the research model. Mainly 8 independent variables were investigated through this survey: (1) overall satisfaction with the
carrier, (2) brand image, (3) customer loyalty, (4) relative attitude, (5) repeat patronage, (6) evaluation about switching costs, and (7) pre-factors of customer satisfaction and (8) switching costs. The survey questions were set up to make the survey simple and easy in order to increase the answering rate. It had to be considered that some of the respondents were seniors and some were not familiar with IT terms. Actually, it was found that some of the senior respondents tended to omit to answer long questions when the result of this survey was analyzed. Thus, the all survey questions used 5 Likert scale. In addition, as most respondents are not aware of some terms such as customer loyalty and switching costs, these difficult terms were substituted with other easy words in the survey. Questionnaire items are developed by applying the study of Kim et al. (2004), Fornell (1992), Kim & Yoon (2004), and Liu et al. (2011).

VI. Data Analysis

6.1 Response Rate

The survey questionnaires were delivered by e-mail or personally to 275 employees. 146 respondents replied the survey questionnaires. Among them, 6 respondents answered that they have not been subscribing to any carrier. As a result, 110 respondents actually finished filling out the questionnaire. Accordingly, the response rate is 40%.

6.2 Analysis Tool

For this research, IBM SPSS statistics version 24 was used to analyze the data that were gained through the survey, and graphs were made with the help of MS Excel.

6.3 Demographic Statistics

As figure 12 shows, the percentage of male respondents is 73%. Meanwhile, the percentage of male respondents is 27%. The number of male respondents is bigger than the
number of female respondents. In terms of age, 83% of respondents are in their 30s and 40s. They form a large majority. In addition, 14% of respondents are in their 20s and 4% of respondents are in their 50s. In addition, the educational level of respondents is high: 52% of the respondents have a bachelor degree or more. 7% of respondents have a high school graduate. When it comes to the occupations of respondents, 78% of them are employees: office workers (36%), engineers and technicians (36%), and public officers (6%). 7% of the respondents are housewives and 6% of them are owner operators.

Figure 12. Demographic Statistics: Gender, Age, Education, Occupation
6.4 Other Statistics

Regarding carriers that respondents have been subscribing to, the most popular carrier is SK Telecom: the percentage of the respondents who have been subscribing to SK Telecom is 43%. This is very similar to the percentage of SK Telecom market share, 45%, that is shown in figure 2 about market share in the Korean Mobile Telephony market. However, while the carrier with the second largest market share is KT in figure 2, in this survey, the carrier that the second largest number of respondents have been subscribing to is LG U+. In addition, the percentage of MVNO subscribers in the respondents is 5%. This percentage is smaller than the market share of MVNOs (9%) in Figure 2. In regard of subscription period, the largest percentage, 29%, of the respondents have subscribed to a carrier for more than 10 years, and the second largest percentage, 25%, of the respondents have stayed in a carrier for more than 2 years and less than 4 years.

Figure 13. Carriers of the Respondents

![Pie chart showing carrier usage percentages]

Figure 14. Subscription Period
6.5 Hypothesis Testing Results

6.5.1 Validity and Reliability Test

6.5.1.1 Satisfaction

In terms of measurement items and pre-factors of satisfaction, factor analysis and reliability test were conducted before regression analysis was conducted.

Figure 15. Satisfaction Part of the Research Model
Measurement Items of Satisfaction

A factor analysis was conducted on measurement items of satisfaction. Varimax rotation with Kaiser Normalization, Eigen values greater than 1.00, and factor loading values greater than 0.5 were accepted. As the result of the factor analysis, 4 measurement items were removed: quality of mobile handsets, variety of mobile handsets, variety of value-added service (other services except call), and quality of mobile data service. Thus, 2 factors, value-added service and mobile device, were eliminated. All communalities are over 0.5: 0.906 for complaint processing, 0.848 for quality of customer service staff, 0.804 for variety of customer support, 0.914 for reasonability of pricing, 0.909 for variety of pricing, 0.888 for voice quality while you are on the phone, and 0.885 for connectivity when you attempt to call. It indicates that the measurement items were well chosen to explain the factors. In addition, the result value of KMO and Bartlett's test is 0.714. Kaiser (1974) mentioned that values
should be over 0.5 and classified values between 0.7 and 0.8 as 'middling'. Therefore, the result value shows that measurement items were well selected for structure detection. Secondly, regarding reliability test, all Cronbach's Alphas are over 0.6: 0.904 for customer support, 0.895 for pricing structure, 0.869 for call quality, 0.789 for mobile device, and 0.673 for value-added service. These Cronbach's Alphas over 0.6 indicate that the result of the survey about measurement items of satisfaction is reliable.

Factors of Customer Satisfaction

Regarding pre-factors of customer satisfaction, reliability test was conducted. As some respondents did not answer the survey questions about pre-factors of customer satisfaction, the size of sample, N, is not 110 but 107. Cronbach's Alpha value is 0.820, which is over 0.6. It means that the result of the survey is reliable.

6.5.1.2 Switching Barrier
**Measurement Items**

A factor analysis was conducted on measurement items of switching barriers. Varimax rotation with Kaiser Normalization, Eigen values greater than 1.00, and factor loading values greater than 0.5 were applied. Through the factor analysis, 3 measurement items were eliminated: difficulty of searching for a new carrier to move in, difficulty of learning a new service when switching carrier, and likelihood of lower performance when switching. Therefore, 2 factors, adaptation cost and uncertainty cost, were removed. All communalities are over 0.5: 0.823 for familiarity with customer service process or personnel, 0.813 for intimacy with the carrier, 0.786 for trust toward the carrier, 0.562 for carrier’s care for customer, 0.712 for loss of additional benefits such as mileage program and charge discount, 0.664 for difficulty of changing number, 0.693 for loss of performance benefits, 0.875 for cancellation charge to be paid when switching during the minimum subscription period, and
0.874 for cost of re-purchasing a handset. It indicates that the measurement items were well chosen to explain the factors. In addition, the result value of KMO and Bartlett's test is 0.752. This value exists between 0.7 and 0.8 classified as 'middling' by Kaiser (1974). Therefore, the result value shows that measurement items were well selected for structure detection. Regarding the reliability test, all Cronbach's Alphas were over 0.6: 0.883 for interpersonal relationship, 0.733 for loss cost, 0.859 for move-in cost, and 0.740 for adaptation cost. These Cronbach's Alphas over 0.6 indicate that the result of the survey about measurement items of satisfaction is reliable.

Factors of Switching Barrier

Reliability test was conducted on pre-factors of switching barrier. The Cronbach's Alpha value was 0.722 which is over 0.6. The result indicates that the data gained through the survey is reliable.

6.5.2 Regression Analysis

6.3.2.1 Satisfaction

A regression Analysis was conducted on the model. Here, because other two independent variables were removed through factor analyses, independent variables are call quality, pricing structure, and customer support and the significant level is 0.05. Firstly, Durbin-Watson value was 1.657, which is approximately equal to 2. This indicates regression model can be applied for this model because there is no autocorrelation. Meanwhile, R was 0.592, demonstrating that the independent variables can predict well dependent variable and R-square was 0.350, meaning that 35.0% of the variance in dependent variable, satisfaction, is explained by these three independent variables: call quality, pricing structure, and customer support. ANOVA p-value is below 0.05 and F is 18.677. The result of the regression analyses show that two hypotheses, H1a and H1c are accepted.
6.3.2.2 Switching Barrier

A regression analysis was applied for a dependant variable, switching barrier, and three independent variables, loss cost, move-in cost, and interpersonal relationship. As the result of factor analyses, two independent variables, adaptation cost and uncertainty cost, were removed. In this regression analysis, the significant level was 0.05. Firstly, Durbin-Watson value was 2.057, which is approximately equal to 2. This shows that regression model can be applied for this model. F is 18.325 and p-value is below 0.05. Through the regression analysis, H2a and H2c were accepted.

Table 7. The Result of Regression Analysis with Switching Barriers

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Standard coefficient(β)</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2a: Loss costs influence positively the switching barrier.</td>
<td>0.367</td>
<td>4.032**</td>
</tr>
<tr>
<td>H2c: Move-in costs influence positively the switching barrier.</td>
<td>0.334</td>
<td>3.875**</td>
</tr>
</tbody>
</table>

** alpha = 0.05, *** alpha = 0.01

6.3.2.3 Customer Loyalty

Dick and Basu's (1994) classified loyalty that shows the willingness to recommend to others as "true loyalty". In this research, loyalty is measured by asking the intention to recommend the carrier to other people as Kim and Yoon (2004) suggested. To test whether or not regression model can be applied for this model, result values of the Durbin-Watson test need to be checked. Firstly, Durbin-Watson value was 2.125, which is approximately equal to 2. This indicates regression model can be applied for this model because there is no serial correlation among predictors. In addition, R was 0.747,
demonstrating that the independent variables can predict well dependent variable and R-square was 0.558, meaning that 55.8% of the variance in dependent variable, customer loyalty, is explained by these three independent variables: switching barrier, customer satisfaction, and brand image. F is 43.360 and ANOVA p-value is below 0.05. This indicates that the regression line is fit for the model. Satisfaction and brand image influence customer loyalty but switching barrier does not because the p-value was over 0.05. As the result of the regression analysis, H1 and H3 were accepted.

Table 8. The Result of Regression Analysis with Customer Loyalty

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Standard coefficient(β)</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Customer satisfaction influences positively customer loyalty.</td>
<td>0.381</td>
<td>3.269**</td>
</tr>
<tr>
<td>H3: Brand Image influences positively customer loyalty.</td>
<td>0.400</td>
<td>3.383**</td>
</tr>
</tbody>
</table>

** alpha = 0.05, *** alpha = 0.01

6.3.2.4 Relative Attitude

Values of the Durbin-Watson test need to be checked. Durbin-Watson value was 1.922, which is near 2. This means non-autocorrelation. R is 0.764, demonstrating that the independent variables can predict well dependent variable and R-square is 0.584, meaning that 58.4% of the variance in the dependent variable, relative attitude, is explained by these three independent variables: switching barrier, customer satisfaction, and brand image. ANOVA p-value was below 0.05 and t-values were over ±1.96. Thus, satisfaction and brand image affect relative attitude but switching barrier does not because the p-value is over 0.05 and t-value is below ±1.96.

Table 9. The Result of Regression Analysis with Relative Attitude

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Standard coefficient(β)</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5: Customer satisfaction influences positively relative attitude.</td>
<td>0.348</td>
<td>3.083**</td>
</tr>
</tbody>
</table>
H9: Brand image influences positively relative attitude.  

<table>
<thead>
<tr>
<th>Paths</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.455</td>
<td>3.963**</td>
</tr>
</tbody>
</table>

** alpha = 0.05, *** alpha = 0.01

6.3.2.5 Repeat Patronage

R and R square was very low: 0.175 and 0.031. In addition, ANOVA p-value was over 0.05. Therefore, the model of repeat patronage and three predictors, which are brand image, switching barrier, and satisfaction, cannot be set up as a regression linear model.

6.5.3 Repeat Patronage and Relative Attitude

Dick and Basu (1994) argued that relative attitude influences repeat patronage. To test their argument, a simple regression analysis was conducted. R-square, ANOVA p-value, and t-value indicate that there is no linear relationship between two variables unlike Dick and Basu's argument.

6.6 Findings

This research found that customer satisfaction and brand image influence positively customer loyalty and relative attitude but not repeat patronage. In addition, this research found that switching costs have no effect on customer loyalty, relative attitude, and even repeat patronage. When it comes to the determinants of the switching barrier, loss cost and move-in cost have a positive effect on the switching barrier, whereas adaptation cost, interpersonal relationship, and uncertainty cost do not influence the switching barrier. Regarding loyalty construct of Dick and Basu (1994), this study found that there is no relationship between repeat patronage and relative attitude. All findings that this research found are summarized in table 10 as below.

Table 10. The Summary
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Direction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Customer satisfaction $\rightarrow$ customer loyalty.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H2: Switching barrier $\rightarrow$ customer loyalty.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H3: Brand Image $\rightarrow$ customer loyalty.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H4: Customer satisfaction $\rightarrow$ repeat patronage.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H5: Customer satisfaction $\rightarrow$ relative attitude.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H6: Switching barrier $\rightarrow$ repeat patronage.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H7: Switching barrier $\rightarrow$ relative attitude.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H8: Brand image $\rightarrow$ repeat patronage.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H9: Brand image $\rightarrow$ relative attitude.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H1a: Call quality $\rightarrow$ customer satisfaction.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H1b: Value-add services $\rightarrow$ customer satisfaction.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H1c: Customer support $\rightarrow$ customer satisfaction.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H1d: Pricing structure $\rightarrow$ customer satisfaction.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H1e: Mobile devices $\rightarrow$ customer satisfaction.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H2a: Loss costs $\rightarrow$ the switching barrier.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H2b: Adaptation costs $\rightarrow$ the switching barrier.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H2c: Move-in costs $\rightarrow$ the switching barrier.</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H2d: Interpersonal relationship $\rightarrow$ the switching barrier.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H2e: Uncertainty costs $\rightarrow$ the switching barrier.</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H10: Relative attitude $\rightarrow$ repeat patronage</td>
<td></td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**VII. Conclusion**

This study firstly analyzes the determinants of customer satisfaction, switching barrier, and customer loyalty in the Korean mobile telecommunications market. Secondly, it investigates the effect of brand image, customer satisfaction, and switching barrier on
customer loyalty. Thirdly, it examines how customer satisfaction, switching barrier, and brand image affect repeat patronage and relative attitude. Lastly, it studies the relationship between repeat patronage and relative attitude that are elements of customer loyalty according to Dick and Basu (1994)'s definition.

This research provides some managerial implications. First, to service providers, this research implies that marketing strategies to enhance the switch barriers cannot positively influence true loyalty. In addition, this research shows that in order to positively affect true loyalty, developing marketing strategies to enhance brand image and customer satisfaction or making efforts to improve the quality of services could be efficient. This research adopts premium loyalty that is proposed by Griffin (1994). Premium loyalty is what Griffin renames true loyalty. Namely, premium loyalty is characterized by a high preference for the entity and a high repeat patronage like true loyalty (Dick & Basu, 1994). Based on the definition of premium loyalty, premium loyalty is measured by how much a customer intends to recommend her or his mobile carrier to others (Griffin, 1994; Kim & Yoon, 2004). This study shows that there is no relationship between the switching barrier and true loyalty. Secondly, it shows that mobile carriers have to take into account a fact that the influence of switching barriers has been lowered when they plan marketing strategies. This research examined the effect of switching barriers on customer loyalty, relative attitude, and repeat patronage. This research found that switching barriers have no effect on customer loyalty, relative attitude, and even repeat patronage. In recent years, the Korean Government has enforced regulations to lower switching costs such as mobile number portability or laws to prohibit carriers from charging new customers subscription fees (Lee et al., 2005; Kim, 2013). As a result, it has caused the switching barrier that customers feel to be diminished. Thirdly, this study implies that mobile carriers have to care about the quality of call to increase their customers' satisfaction. Regarding the determinants of customer satisfaction, this study found that call quality and customer support positively influence customer satisfaction, whilst pricing
Although call service is the most fundamental function of mobile phones, because nowadays, call service is not lucrative as various applications make call service free, mobile carriers pay less attention to the quality of call service. However, this study shows that call quality still is one of the most important elements that are related with customer satisfaction. In addition, this research gives a policy implication for the switching barrier. When considering the result of this research, it is evident that the efforts of the Korean Government to lower the switching barrier bore fruits; this research found that the influence of the switching barriers has been diminished. The fruit again has to lead to the improvement of mobile service quality as the original purpose of policies lowering the switching barriers. As mentioned above, this research proved that the quality of fundamental services such as call quality is still positively correlated with customer satisfaction. The Korean Government must encourage the carriers to ameliorate the service quality along with keeping the policies to lower the switching barriers.

This research also provides academic implications. First, this study verified the loyalty framework of Dick and Basu (1994): the relationship between repeat patronage and relative attitude. Here, repeat patronage and relative attitude are elements of loyalty construct that is proposed by Dick and Basu (1994). In their research, Dick and Basu (1994) mentioned that relative attitude has a positive effect on repeat patronage. However, this research did not find that relative attitude is positively correlated with repeat patronage. Secondly, this study reconfirms that the switching barrier hardly influences true loyalty. Theoretically, the effect of the switching barrier is concentrated on spurious loyalty; spurious loyal customers have a tendency not to switch the carriers because of the switching costs (Kim & Yoon, 2004). Kim and Yoon (2004) investigated what factors affect true loyalty and found that call quality, handset type, and brand image are positively correlated with true loyalty. However they did not examine the effect of the switching barrier on true loyalty. Meanwhile, this research investigated the effect of customer satisfaction, brand image, and the switching barriers on
true loyalty and found that the customer satisfaction and brand image positively affect true loyalty.

This research has some limitations. The first limitation is that the reliability of this study depends on the loyalty framework of Dick and Basu (1994). Based on the loyalty framework of Dick and Basu (1994), this study investigated the effect of customer satisfaction, the switching barriers, and brand image on relative attitude and repeat patronage. Although it was not mentioned the reliability of the loyalty framework of Dick and Basu (1994), this research is founded on the reliability of the loyalty framework of Dick and Basu (1994). If the theory of Dick and Basu (1994) is not certified, this research could be meaningless. Moreover, unfortunately, this study did not find that relative attitude affect positively repeat patronage as Dick and Basu (1994) argued. Secondly, this research could not find the determinants of repeat patronage. This research investigated what factors affect repeat patronage. What influences repeat patronage is a significant issue to all stakeholders of the telecommunications market. Previous studies such as Kim and Yoon (2004), and Ahn, Han, and Lee (2006) analyzed the determinants of churn. Kim and Yoon (2004), and Ahn, Han, and Lee (2006) found that some factors such as call-quality related factors are correlated with churn. However, this study shows that none of these factors affect repeat patronage; this research found that call quality influences customer satisfaction, whereas that customer satisfaction does not affect repeat patronage. On the other hand, I suggest that a research on the relationship between the switching barrier and customer loyalty has to be conducted over all kinds of loyalty groups in the future. Theoretically, the switching barrier hardly affects true loyalty. However, there is possible that the switching barrier is too diminished to affect true loyalty. To investigate precisely how the changing the effect of the switching barrier influences the relationship between the switching barrier and customer loyalty, a research should be conducted over all types of loyalty groups.
Questionnaire

1. Have you been subscribing to a carrier?
   ① Yes   ② No
   ※ If you choose ②, please finish this survey. Thank you.

2. Which carrier have you been subscribing to?
   ① SK Telecom ② KT ③ LG U+ ④ MVNO (Thrifty phone)

3. Have you ever subscribed to other carriers except the current carrier?
   ① Yes   ② No

4. How many times have you subscribed to the current carrier again?
   ① Once ② Twice ③ Three times ④ Four times ⑤ Five times or more

5. Please check the approximate total duration of your subscription to the current carrier. If you changed your carrier several times, please add up all periods of your previous subscription to the current carrier.
   ① Less than 6 months
   ② More than 6 months - less than 2 years
   ③ More than 2 years - less than 4 years
   ④ More than 4 years - less than 6 years
   ⑤ More than 6 years - less than 8 years
   ⑥ More than 8 years - less than 10 years
   ⑦ More than 10 years

6. What is the monthly charge for your mobile phone? (unit: won)
   ① Less than 10,000
   ② 10,000 - 19,999
   ③ 20,000 - 29,999
   ④ 30,000 - 39,999
   ⑤ 40,000 - 49,999
   ⑥ 50,000 - 59,999
   ⑦ 60,000 - 69,999
   ⑧ More than 70,000

7. Are you satisfied with the carrier?
   Strongly dissatisfied < 1 2 3 4 5 ▷ Strongly satisfied

8. Please evaluate the carrier's brand image.
Very bad ◁ 1  2  3  4  5 ▷ Very good

9. Would you like to recommend the carrier to other people?
   Highly unlikely ◁ 1  2  3  4  5 ▷ Highly likely

10. Please rate your favorability toward the carrier compared to other carriers.
   Very low ◁ 1  2  3  4  5 ▷ Very high

11. Would you like to stay with the current carrier if you have to decide whether or not to stay with the current carrier because of situations such as other carriers' promotion?
   Highly unlikely ◁ 1  2  3  4  5 ▷ Highly likely

12. Please rate the carrier that you're subscribing to in terms of each factor.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very bad</th>
<th>Bad</th>
<th>Neither Good nor Bad</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Connectivity when you attempt to call</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Voice quality while you are on the phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Value-added service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Variety of value-added service (other services except call)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Quality of mobile data service</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pricing structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Reasonability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Variety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Mobile device</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Quality of mobile handsets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Variety of mobile handsets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Customer support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Variety of customer support</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Complaint processing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>③ Quality of service center staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

13. Please evaluate the carrier that you're subscribing to in terms of each factor.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strongly Dissatisfied</th>
<th>Dissatisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Satisfied</th>
<th>Strongly Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Value-added service including mobile</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Strongly Dissatisfied</td>
<td>Dissatisfied</td>
<td>Neither Satisfied nor Dissatisfied</td>
<td>Satisfied</td>
<td>Strongly Satisfied</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>--------------</td>
<td>-----------------------------------</td>
<td>-----------</td>
<td>-------------------</td>
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<tr>
<td>service</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pricing structure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Mobile device</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Customer support</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

14. Please rate the following costs or inconvenience can be incurred when you switch the carrier.

<table>
<thead>
<tr>
<th></th>
<th>Very unimportant</th>
<th>Unimportant</th>
<th>Neither important nor unimportant</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Loss of additional benefits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>such as mileage program and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>charge discount</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>② Loss of performance benefits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>③ Difficulty of changing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>number</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Adaptation Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Difficulty of searching</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>for a new carrier to move in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>② Difficulty of learning a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>new service when switching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>carrier</td>
<td></td>
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<tr>
<td>Move-in Cost</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>① Cost of re-purchasing a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>handset</td>
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<td></td>
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<tr>
<td>② Cancellation charge to be</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>paid when switching during</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the minimum subscription</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>period</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Interpersonal Relationship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>① Carrier’s care for customer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>② Intimacy with the carrier</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>③ Familiarity with</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>customer service process or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>④ Trust toward the carrier</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Uncertainty cost</td>
<td></td>
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<td></td>
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<tr>
<td>① Likelihood of lower</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>performance when switching</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

15. How important do you think the following factors are when you decide whether or not to switch to other carriers?

<table>
<thead>
<tr>
<th></th>
<th>Very insignificant</th>
<th>Insignificant</th>
<th>Neither significant nor insignificant</th>
<th>Significant</th>
<th>Very significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss Cost</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
16. As the above survey questions show, when you switch to other carriers, costs and inconvenience may be incurred. Please check how influential all the costs and inconvenience that may be incurred by your switching are in your decision to switch the carrier.

Very uninfluential ◀ 1  2  3  4  5  ▷ Very influential

17. What is your gender? ① Male ② Female

18. What is your current age?
   ① Under 20 ② 20 ~ 29 ③ 30 ~ 39 ④ 40 ~ 49 ⑤ 50 ~ 59 ⑥ 60 or more

19. What is your final education background?
   ① High school ② Bachelor degree ③ Master degree ④ PhD ⑤ Other (specify :  )

20. What is your occupation?
   ① Student ② Office worker
   ③ Engineer or Technician ④ Public Officer ⑤ Housewife
   ⑥ Owner Operator ⑦ Other (specify :  )

21. What is your marital status? ① Single ② Married
Reference


- Churchill, Gilbert A Jr and Surprenant, Carol, "An investigation into the determinants of customer satisfaction", Journal of Marketing Research (pre-1986); Nov 1982: 19, pg. 491


Yi, Youjae (1990), “A critical review of consumer satisfaction”.


Porter M. (1980), *Competitive Strategy: Techniques for Analyzing Industries and


