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Customer churn analysis: Churn determinants and mediation effects of partial defection in the Korean mobile telecommunications service industry

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Abstract

Retaining customers is one of the most critical challenges in the maturing mobile telecommunications service industry. Using customer transaction and billing data, this study investigates determinants of customer churn in the Korean mobile telecommunications service market. Results indicate that call quality-related factors influence customer churn; however, customers participating in membership card programs are also more likely to churn, which raises questions about program effectiveness. Furthermore, heavy users also tend to churn. In order to analyze partial and total defection, this study defines changes in a customer's status from active use (using the service on a regular basis) to non-use (deciding not to use it temporarily without having churned yet) or suspended (being suspended by the service provider) as partial defection and from active use to churn as total defection. Thus, mediating effects of a customer's partial defection on the relationship between the churn determinants and total defection are analyzed and their implications are discussed. Results indicate that some churn determinants influence customer churn, either directly or indirectly through a customer's status change, or both; therefore, a customer's status change explains the relationship between churn determinants and the probability of churn.

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1. Introduction

Managing customer churn is of great concern to global telecommunications service companies and it is becoming a more serious problem as the market matures. The annual churn rate ranges from 20% to 40% in most of the global mobile telecommunications service companies (Berson, Smith, & Therling, 1999; Madden, Savage, & Coble-Neal, 1999; Parks Associates, 2003; Kim, Park, & Jeong, 2004). Customer churn adversely affects these companies because they stand to lose a great deal of price premium, decreasing profit levels and a

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possible loss of referrals from continuing service customers (Reichheld & Sasser, 1990). Furthermore, the cost of acquiring a new customer can substantially exceed the cost of retaining an existing customer (Siber, 1997).

In a highly competitive and maturing mobile telecommunications service market, a defensive marketing strategy is becoming more important. Instead of attempting to entice new customers or lure subscribers away from competitors, defensive marketing is concerned with reducing customer exit and brand switching (Fornell & Wernerfelt, 1987). Reichheld (1996) estimated that, with an increase in customer retention rates of just 5%, the average net present value of a customer increases by 35% for software companies and 95% for advertising agencies. Therefore, in order to be successful in the maturing market, the strategic focus of a company ought to shift from acquiring customers to retaining customers by reducing customer churn.

In order to better manage customer churn, companies need to fully understand a customer's behavioral churn path and the factors pertaining to the customer churn; however, these problems have not been fully addressed in the literature.

First, previous studies mainly focused on finding a few specific factors (e.g., customer dissatisfaction, customer loyalty, etc.) pertaining to customer churn rather than investigating and empirically testing a comprehensive model encompassing relationships among various constructs, such as customer dissatisfaction, switching costs, service usage and other customer-related variables. For example, Keaveney (1995) only examined why customers switch their services and classified the reasons into eight general categories. Bolton (1998) investigated the role of customer satisfaction in a dynamic model estimating the customer's duration with the service carrier. Bolton, Kannan, and Bramlett (2000) found that members in loyalty reward programs overlook a negative evaluation of the company vis-à-vis its competitors in their repatronage decisions. Gerpott, Rams, and Schindler (2001) analyzed a two-stage model where overall customer satisfaction has a significant impact on customer loyalty, which in turn influences customers' intentions to terminate their contractual relationship. Lee, Shin, and Park (2003) found some determinants of customer churn in the Korean broadband Internet access service market. Kim et al. (2004) investigated the adjustment effect of switching barriers on customer satisfaction and customer loyalty.

Secondly, due to the proprietary nature of actual customer data, much of the research has dealt with consumer survey data asking consumers' perceptions of service experiences and intention to remain. However, the survey data rather than the actual customer transaction or billing data may not fully represent the customer's actual future repatronage decision. Furthermore, due to cost concerns, most survey-based studies use a small sample of less than a thousand customer records (Keaveney, 1995; Bolton et al., 2000; Gerpott et al., 2001; Lee et al., 2003; Kim et al., 2004), which may undermine the reliability and validity of analysis results.

In fact, there are several studies that are based on large-scale actual customer transaction and billing data. However, their objectives mainly focus on predictive accuracy rather than descriptive explanation. For example, detailed call data is used to predict the probability of customer churn (Mozer, Wolniewicz, Grimes, Johnson, & Kaushansky, 2000; Ng and Liu, 2000; Wei and Chiu, 2002); a subscriber's remaining tenure with the company is estimated using internal company databases (Drew, Mani, Betz, & Datta, 2001) and brand switching and adoption probabilities are forecasted using commercial databases (Weerahandi & Moitra, 1995). However, there are at least two exceptions, both of which use survival analysis to test hypotheses about churn predictors. One is a study by Bolton (1998) where actual customer transaction and survey data is used to analyze customer churn behavior in the cellular service market. Another is a customer attribution study where Poel and Lariviere (2004) analyzed an in-house data warehouse in the European financial service market.

Compared with the previous studies, this paper has two distinct research objectives. The first objective is to develop a comprehensive churn model and empirically test it using a large sample of actual customer transaction and billing data, which is directly related to actual customer churn decisions. Identifying customer churn determinants, such as core service failures, customer complaints, loyalty programs, service usage, etc., may help managers improve company operations in terms of their marketing strategy, specifically customer churn prevention programs.

The second objective is to identify both partial and total defection in a subscription-based telecommunications service industry. The majority of previous studies have focused on discovering the direct effect of independent variables on customer churn; however, this study is motivated by the idea that customer status may act as a *mediator* between churn determinants and customer churn, indicating that a customer's status

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