Predicting Customers’ Churn Using Data Mining Technique and its Effect on the Development of Marketing Applications in Value-Added Services in Telecom Industry

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ABSTRACT

This article aims to predict reasons behind customers’ churn in the mobile communication market. In this study, different data mining techniques such as logistic regression, decision trees, artificial neural networks, and K-nearest neighbor were examined. In addition, the general trend of the use of the techniques is presented, in order to identify and analyze customers’ behavior and discover hidden patterns in the database of an active Coin the field of VAS1 for mobile phones. Based on the results of this article, organizations and companies active in this area can identify customers’ behavior and develop the required marketing strategies for each group of customers.

KEYWORDS
Churn of Customers, Customer Classification, Data Mining, KNN Algorithm, Mobile Telecom Market

INTRODUCTION

In recent decades, the human ability to generate and collect data quickly has increased. So analyzing, interpreting and making maximum use of data is difficult and resource demanding due to the exponential growth of many business, governmental and scientific databases. According to (Olutayo & Eludire, 2014) the data mining technique enables organizations to properly utilize their capital of data and promote decision-making.

With the rapid growth of mobile communications’ market in recent years, the market has been saturated. Voice and old communications’ service has been widespread; hence it is difficult to attract customers by operators. In order to overcome the market today, operators should move toward providing value-added service with higher average revenues, and markets such as communications, entertainment, transfers, information services, rather than the old service. Therefore, in young mobile market in Iran,

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packages containing valuable service for users can have a potential to earn and attract new customers. In this market, you should always have competitive strategies to exploit future opportunities and face threats of competitors. Customer-focused marketing strategies are important for service providers who want to keep their customers (Chae et al., 2002). Value-added service providers of operators are trying to improve the quality of services, in addition to retaining existing customers, and also attract new customers, including price competition and non-price strategies (Davis, Bagozzi, & Warshaw, 1989; Shokouhyar et al 2018).

According to conducted estimates (Zhao, Wang, & Cha, 2009), reducing customers’ churn rate leads to a 6% increase in company profits, and this is significantly important in companies’ profitability and growth. In order to prevent customers’ churn, customers’ behavior is identified with regard to total information and data collected and analysis of potential customers’ leaving (churn) and finally targeting those consumers, appropriate and effective strategies are planned and implemented to protect them. In this regard, making an accurate and efficient model is crucial to manage customers’ churn (Cossement &Vanden, 2008).

Data mining techniques have caused a major revolution in realizing the concepts of managing customer relationships in great businesses. Data mining capability in operating management concepts, considers customer relationship as a major component of management and its strategies, such as customers’ churn management (Nagi, Xiu, & Chau, 2009). Data mining involves searching through databases for potentially useful information, such as knowledge rules, patterns, regularities, and other trends hidden in the data. Today, data mining is more widely used than ever before, not only by businesses who seek profits but also by nonprofit organizations, government agencies, private groups and other institutions in the public sector (Wang, Yan, Chen, & Xing, 2012).

Hence rating and classifying techniques of customers allow managers deal with each customer according to his interests and use each category characteristics to develop appropriate (Baragoin et al., 2001; Shokouhyar et al. 2018). Regarding the principle that for every successful business, understanding customers and their needs is essential, and since customers have different needs we can say utilizing strategies such as direct marketing will not be efficient to provide and introduce new service and products to customers (Zare Ravasan et al., 2015).

Recently, most mobile telecom operators utilize CRM (customer relationship management) systems in order to cumulate various types of data from their subscribers, such as demographic information and the patterns for using voice communication, in their DB(database) or DW (data warehouse). These data can be useful to find the appropriate prospects for using mobile VAS since they may be used as the cues for understanding customers’ life styles and value system. As a result, the effective application of the cumulated data on the existing customers and their usage pattern for old products or services may serve as a core competence of companies including mobile telecom operators. Hence to become familiar with customers’ behavior model, their needs as well as customers’ behavior difference and acceptance of different mobile numbers in the country of provided service can play an important role in providing better service and more acceptances of customers. In the proposed model, which analyzed data of one of the services of a company providing VAS service using data mining techniques, first classification techniques including logistic regression, artificial neural networks and decision tree were utilized independently to predict acceptance of products and service. Output of each method predicts customers’ acceptance of given service. In the first step, output is used as KNN2 algorithm input, and in the second part, KNN algorithm is utilized to combine the results of 3 mentioned algorithms, and also determines final result for those customers who will buy new products. In the second part, studies carried out on data mining and VAS industries were discussed. In the third part, effective elements on customers’ churn and classification were addressed. In the fourth part, data collection and analysis are discussed. In the fifth part, the results are discussed and in the sixth part the study contribution and limitations are presented.
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