A study on Data Mining as a Tool in Making Customer Relationship Management (CRM) for Mobile Telecommunication Company

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ABSTRACT

In this paper we are presenting   Data Mining as a Tool in Making Customer Relationship Management (CRM) for Mobile Telecommunication Company: A Case study in Reliance Jio Telecom Company via J&K (India). CRM helps you connect with leads and customers, get information about your business, build a salable process, and grow your business faster. Data mining technology provides CRM with good technical support for analyzing large amounts of complex customer data and finding value for customers. Data mining can extract potentially valuable knowledge, models, and rules from the mass of data. It is an effective tool to exploit potential associations and patterns. The main focus of this research is on the mobile telecommunications industry, and the reality of implementing DM applications in marketing and CRM in relation to customer identification (specifying target segment), customer attraction (attracting customers with marketing campaigns), customer retention. Have to study. (Keep customers who intend to attract and keep profitable customers) and customer development (to increase the value and profitability of customers). The actual marketing applications being created using DM can be focused on such as more customer segmentation, cross / up-selling, brainstorming treatment, direct marketing and so on, focusing on technical details.

Keyword : - *Data Mining, Tool, Jio, J & K, CRM, DM etc.*

1. INTRODUCTION

The use of technology is increasing with each passing day according to its need and usage. It was the telecommunications industry that first adopted data mining technology. The telecom network industry is gaining worldwide popularity day by day. India is the second largest market in the world in terms of mobile telecommunications. It has a huge brand of mobile network service providers. Therefore, the focus of each telecom company is on retention, satisfaction, attractiveness, etc. of its customers (old and new) to remain active in the field of network service providers. The use of smart phones with advanced features has changed the whole world at both rural and urban levels. Internet services are provided to customers after purchasing different tariffs.

Among India's mobile service providers (Airtel, Idea, Vodafone, etc.), Reliance Jio has moved up to second place in no time. To gain a customer base, it was launched on 5 September 2016 as a free service provider for a year. Competitors of the company are pricing their products and services for customer retention. A wide variety of data mining techniques are employed to build healthy customer relationships through customer relationship management.

Mobile telecommunications network is currently the largest communication, so it is clear that the industry has to store and generate large amounts of data. It is like data; Call detail data, which shows the incoming calls through the telecommunications network, network data, which describes the status of the hardware and software components in the network, and customer data, which give information about the telecommunications customers. These companies are using data mining to develop their mining efforts, identify fraud and manage their telecommunications networks. Therefore every company is using data mining technology for different purposes according to its needs. Data mining techniques are employed to extract valuable and desirable information.

2. DATA MINING

The art of detecting and extracting meaningful information from vast data sources or data bases is called data mining. It is a method of searching for desired patterns and knowledge from large amounts of data stored in databases, data warehouses or other information resources. In other words, it is a data search that uses statistical algorithms to search for correlations and patterns in data. Data mining has gone by many different names, such as knowledge discovery, business intelligence, predictive modeling, and predictive analytics. It is a process in which intelligent methods are

applied to extract data patterns (Berry and Linoff, 2011). Simply stated, data mining refers to extracting or mining knowledge from large amounts of data (Han and Kamber, 2006). Software supporting DM are IBM, Clementine, SAP, SPSS, SAS, Vika, etc.

3. CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Data mining can be useful for any business, but this paper will describe why it is valuable to the telecommunications industry. As telecom companies are keen to implement the philosophy of customer-centric enterprise, they are equipped with various CRM tools. CRM applications that use online analytical processing (OLAP) and data mining are called analytic CRM. This paper will describe the most valuable CRM data mining applications in telecommunications. A data mining project for effective CRM consists of several steps:

1. Defining how to solve the problem. Each CRM application will have its own business objectives and requirements. The data mining model is to be defined according to these objectives. Talking to business people is the best way to solve the problem. It is advisable to make a list of interesting questions.

2. Assembling and preparing data. This step can sometimes be skipped if the data warehouse is used as a single source Data required for analysis purposes. This is because the data has to be cleaned, integrated and changed before entering the data warehouse. Even if this is the case, the analyst must define a subset of the data for processing.

Today companies are concerned about increasing customer value through customer life cycle analysis. The techniques and tools of data mining, data warehousing and other customer relationship management (CRM) afforded new opportunities for businesses to work on the concepts of marketing relationships. To be successful with CRM and to address the above objectives, companies must acquire information about customers, their needs and needs through data analysis. Analytical CRM is about analyzing the customer to better address CRM objectives and deliver the right message to the right customer. Includes the use of data mining models to evaluate customer value, understand and predict their behavior.

Table 1: Data mining modeling techniques and their applications in CRM (Source: Tsiptsis & Chorianopoulos, 2009)

Category of DM Modeling Techniques	Modeling Techniques	Applications
Clustering models	K-means, Kohonen network, Two-step etc.	Segmentation
Classification Models	Neural networks, logistic regression, decision trees, etc.	Voluntary churn prediction Cross/up/deep selling
Association and sequence Models	Generalized Rule Induction, Apriori sequence	Market basket analysis Web path analysis

4. RESULTS

This paper describes in-depth analysis of data. The results of the questionnaire showed how data mining is used in telecommunications companies to get customer satisfaction. When compared with previous studies, the results obtained by my research describe the role played by data mining in creating CRM and marketing in the field of telecommunications companies. My results are based on interviews taken from various departments of companies.
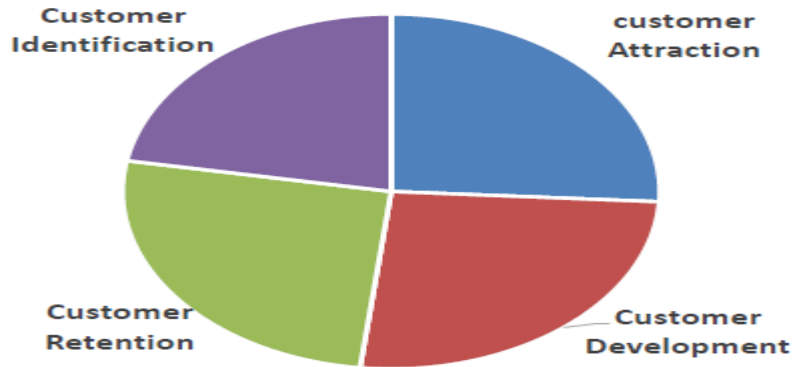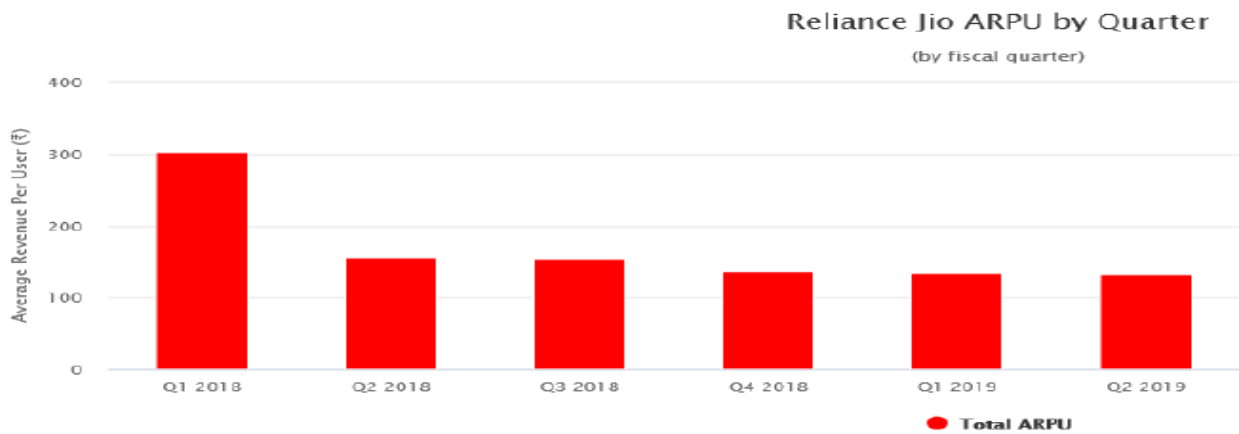
Figure 1: Applications of DM CRM and Marketing (source: Nagi,Chau and Xiu, 2009)

Data Mining Application Areas	Data Mining Techniques	Data Mining methods
Marketing, sales and CRM	• Association • Classification • Clustering • Regression	• Associatiion rule • Decision tree • Genetic algorithms • Neural networks • K-Nearest Neighbor
Fraud Detection	• Outliers detection • Statistical modeling • Classification • Dynamic clustering	• Anomaly detection technique • Rule discovery • Clustering algorithms • Neural networks
Network Management	• Classification • Prediction • Sequence analysis • Time-series data analysis	• Genetic algorithms • Bayesian brief networks • Classification trees • Rough sets

Data mining methods are also used for optimizing network deployment and international roaming agreements. In short, data mining can help the telecoms handle four key challenges that they face today as summarized by Pareek (2007) as the 4C's: consolidation, competition, commoditization and customer service. It is from since the 1990s, customer relationship management (CRM) has grown rapidly (Buttle, 2004). Customer relationship management is built on relationship marketing philosophy and redefines the relationship between companies and their customers. Some researchers have defined CRM as a competitive strategy companies adopt to focus on their customer's needs, but others regard it as a discipline to concentrate on development and automation of business process in companies. However, despite the variety of definitions of CRM, they all intend to build customer relationship to create superior value for both the customers and firms (Chatterjee, 2000 cited in Shahin&Nikneshan, 2008).

5. CONCLUSION

The reality of applying DM technology to CRM and marketing in the telecommunications industry and the use of data mining in the telecom sector has been shown. The primary tools relate to marketing, haze detection and surveillance networks. Many challenges are faced by data mining due to the requirements of multiple indices in real time of data index and temporal nature. In the competitive and challenging nature of the industry, combined with the fact that the industry generates huge amounts of data, it ensures that data mining is playing an important role for the telecommunications industry as well as in the future . In the last decades, the ability to collect data is growing rapidly in all industries, especially in the telecommunications industry. Data volume is expected to continue to increase in the future and many companies are not able to capitalize on its value. This is why they require automated devices that can transform these vast amounts of data into useful information and knowledge. A growing number of telecommunications companies use data mining models to improve their business.

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