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Research Article

Optimizing the CRM Process in Product Marketplace by Using Associations Rules Mining Techniques

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Abstract: The expeditious progress of computers technology and consummation of database systems enable companies to store data about customers and transactions for future use. Data mining, by its simplest definition, is the process of discovering new relevant patterns form large data sets. Product marketing deals with marketing mix, called seven P's: Product, Pricing, Place, and Promotion, Packaging, Positioning and People. In order to find out how best to release the product, data mining is regarded as an effective tool to solving problems within product marketing. Data mining helps marketing users to target marketing campaigns more accurately; and to align campaigns more closely with the needs, wants, and attitudes of customers and prospects. Customer relationship management (CRM) is a process for managing a company's interactions with customers, clients, and sales prospects.

Keywords: Opinion and feedbacks, Online Reviews, Summarization.

INTRODUCTION

In the modern world, all successful industries, in which provide production and services must concentrate on their promotion in order to maximize their profits. Thus, market department of each industry will consider the following problem¹⁻³:

How does the marketing department in a supermarket perceive demand of their customers?

With the help of using method of Data Mining, we may solve such problems in a scientific aspect. Moreover, not all customers are equal: some may behave profitable, some are unprofitable, and some will never be profitable throughout their entire customer lifecycle. Optimization is the science of “optimally” determining what can be done to make a customer as profitable as possible for as long as possible. Typically, optimization applied to problems where there is a well-defined measure of success. For instance, optimization applied to airline scheduling⁴. Constraints such as having the right plane ready at the right time in the right airport to accommodate a given scheduled flight can be difficult because the cost of leaving an airplane idle for several hours when it could be in flight could mean critical dollars saved or lost⁵.

Although optimization is used in marketing today, it is used only within well-defined problems such as optimally conserving mailing costs for a direct-mail package while optimally mailing to only those people who are most likely to be interested in the offer CRM is a strategy for companies to build and manage long-term relationships with their customers⁶⁻⁸. According to the researchers^{9,13}, by implementing CRM, better customer service, as well as improvement and management of customer expectations and loyalty can be provided. About ten percent of the customers influenced by new types of information sources, such as the Internet, e-mail, mobile phones etc, when making buying decisions. Web 2.0 and popular online communities such as Face book and My Space are also of bigger importance than before. Furthermore, there is also a trend going towards on-demand services such as over the mobile or digital television. Companies are leveraging technology to make their touch points interactive and attractive.

The customer touch points play instrumental role in making a customer happy and satisfied. The importance of customer touch points has been largely discussed in CRR related literature. The term touch-point has been used within CRM literature in the context of maximizing profitability and shareholder value. Recent developments in CRM practice show a new attention towards touch-points as part of the customer experience.

A previous report stressed that a firm's successful complaint management requires that a Quality Assurance (QA) department provide rapid feedback in order to improve a customer's overall perception of product and service quality. Another study also described how online service quality is generated from feedback mechanisms that serve as intermediaries for Web-based information markets - in other words, how online product or service quality is used to evaluate online businesses. For example, customers can use online feedback systems to share their evaluations of product/service quality, including online transactions. In its most simple form, these systems result in increased sales when product or service quality is reported as satisfactory or better, and decreased sales when customer complaints persist. The customer touch points were clubbed into various factors based on factor loading value.

DATABASE CONSTRUCTION

Database construction is really at the heart of CRM. Most of your source data will come from internal operational systems and files, including customer files, transaction history, billing and accounting,

fulfillment and shipping, promotions and responses, customer service, Web page visits, and leads. Sometimes called operational data silos, these source systems and files were initially built for specific applications, and the data in them is typically fragmented, inconsistent, and unsuited for your marketing purposes. Not only that, but you are constantly bombarded with significant changes to customer contact information, accounts, titles, and activities.

Data analysis and mining: Look at the questions that marketers need to answer. Quickly counting customers or prospects that meet a specific profile, and iteratively refining the segment criteria based on these counts, requires high-speed access to the marketing database. Marketers need a data analysis tool that bypasses the arcane complexity of SQL and gives quick answers without waiting. "What is the best product to cross-sell my profitable households with a high risk of attrition?" statistical analysis and other modeling tools help marketers build models of customer and prospect behavior. These models predict responses to promotions and lift from campaigns and marketing measures such as lifetime customer value. Depending on the experience of the user, some tools can automate part or all of the optimization process.

Campaign Management: A campaign management tool should connect to the same marketing database as your analysis tools. This lets marketers use any criteria to define cells, which are groups of customers to be targeted for particular promotions. It also means that model scores are immediately available in the shared database. For rapid campaign development, fast counts are important, as is the ability to easily refine cell selection queries.

Relationship Management: the fourth major CRM process allows you to coordinate sales and service messages across customer touch points, based on customer interactions. For example, a bank might register an unusually large deposit in a customer's checking account. This represents a marketing opportunity for the bank's investment division, prompting a phone call to the customer. Alternatively, a customer of a recreational equipment company might be browsing camping product information at the corporate web site. In addition to showing pictures of tents online, the company can follow up with a personalized email — based on both the customer's history and the recent inquiry offering a "good-customer" discount on a new line of family-sized tents.

RELATED WORK

Preparation: After we finishing retrieve all the related information from the dataset, we transfer them as an organized data form into our database. Create tables for different attributes and set identification number for each category.

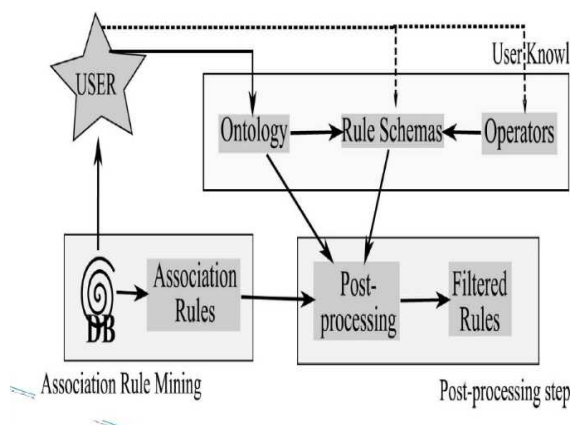
Optimization Process: Optimization the CRM process requires a business best practice that consists of three main steps and architecture for implementing and supporting those steps. These steps are: "measure", "predict" and "act". They represent the steps in a cycle of customer relationship management that is continuously improving. For a completing marketing optimization system, whatever is predicted customer attrition if you do not know what the value of a saved customer is. Moreover, it is important that the step of action be within the infrastructure of running the complete marketing optimization system.

Function Implementation

Measure process:

- The price range among each user's purchasing history
- The totally percentage of occupancy for each category HH buying
- Perishability of the product

- Stockpilability of the product



CONCLUSIONS

The large volume of information that decision makers are facing, requires advanced processing technologies, but also new types of systems to assist decision. Business Intelligence is currently offering solution for the problems in decision making at all managerial levels. Data Mining, as part of BI systems, has enjoyed great popularity in recent years, with advances in both research and commercialization. Data mining is focused on assessing the predictive power of models and performs analysis that would be too hardworking and time-consuming by using traditional statistical methods. It offers important information which is used to improve customer retention, response rates, attraction, and cross selling. As shown in the paper, through the full implementation of a CRM program, the companies increase the value of their customers, keeping and attracting the right ones. Although many books and articles have been written on Business Intelligence topic, it still represents a promising research field. Interest in data mining continues to increase and the potential of using optimization methods needs more study. Also, investigating how to combine optimization and data mining techniques, especially in the CRM area, should be encouraged for many reasons. Data mining and optimization can be integrated to build customer profiles, which is absolutely necessary in many CRM applications.

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