Chapter 2.16
Data Warehouse Design to Support Customer Relationship Management Analyses

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ABSTRACT

CRM is a strategy that integrates concepts of knowledge management, data mining, and data warehousing in order to support an organization's decision-making process to retain long-term and profitable relationships with its customers. This research is part of a long-term study to examine systematically CRM factors that affect design decisions for CRM data warehouses in order to build a taxonomy of CRM analyses and to determine the impact of those analyses on CRM data warehousing design decisions. This article presents the design implications that CRM poses to data warehousing and then proposes a robust multidimensional starter model that supports CRM analyses. Additional research contributions include the introduction of two new measures, percent success ratio and CRM suitability ratio by which CRM models can be evaluated, the identification of and classification of CRM queries, and a preliminary heuristic for designing data warehouses to support CRM analyses.

INTRODUCTION

It is far more expensive for companies to acquire new customers than it is to retain existing customers. In fact, acquiring new customers can cost five times more than it costs to retain current customers (Massey, Montoya-Weiss & Holcom,

2001). Furthermore, according to Winer (2001), repeat customers can generate more than twice as much gross income as new customers. Companies have realized that instead of treating all customers equally, it is more effective to invest in customers that are valuable or potentially valuable, while limiting their investments in non-valuable customers (i.e., not all relationships are profitable or desirable). As a result of these types of findings as well as the fact that customers want to be served according to their individual and unique needs, companies need to develop and manage their relationships with their customers such that the relationships are long-term and profitable. Therefore, companies are turning to Customer Relationship Management (CRM) techniques and CRM-supported technologies.

In our earlier work (Cunningham, Song, Jung, & Chen, 2003), we defined CRM as a strategy that utilizes organizational knowledge and technology in order to enable proactive and profitable long-term relationships with customers. It integrates the use of knowledge management, or organizational knowledge, and technologies to enable organizations to make decisions about, among other things, product offerings, marketing strategies, and customer interactions. By utilizing a data warehouse, companies can make decisions about customer-specific strategies such as customer profiling, customer segmentation, and cross-selling analysis. For example, a company can use a data warehouse to determine its customers' historic and future values and to segment its customer base. shows four quadrants of customer segmentation: (1) customers that should be eliminated (i.e., they cost more than what they generate in revenues); (2) customers with whom the relationship should be re-engineered (i.e., those that have the potential to be valuable, but may require the company's encouragement, cooperation, and/or management); (3) customers that the company should engage; and (4) customers in which the company should invest (Buttle, 1999; Verhoef & Donkers, 2001). The company then could use the corresponding strategies, as depicted in Table 2, to manage the customer relationships. Table 1 and Table 2 are only examples of the types of segmentation that can be performed with a data warehouse. However, if used, a word of caution should be taken before categorizing a customer into Segment I, because that segment can be further segmented into (a) those customers that serve as benchmarks for more valuable customers, (b) those customers that provide the company with ideas for product improvements or efficiency improvements, and (c) those customers that do not have any value to the company.

It is important to point out that customer segmentation can be further complicated by the concept of extended households. The term *extended household* refers to the relationship that exists between companies (e.g., parent company and subsidiary). The analysis of the relationships that exist between customers (i.e., lines of potential customer influence) is known as household analysis. It is important to understand and manage extended households, because a company's decision to treat a member of one segment potentially could have a negative impact on a related customer. For example, if a customer is in a non-profitable segment, then the company may decide to increase the customer's price. However, if the company is aware that the same non-profitable customer has influence over another customer (e.g., a parent or small business) that is in a more profitable segment, then the company may decide to not increase the customer's price rather than to risk losing both of the customers. Clearly, these social networks of influence are important for companies to identify and manage because of the impact that they can have on the company's ability to retain customers.

Currently, however, there are no agreed upon standardized rules for how to design a data warehouse to support CRM. Yet, the design of the CRM data warehouse model directly impacts an organization's ability to readily perform analyses that are specific to CRM. Subsequently, the design