

A naive KDD approach in a Key Account Management Framework: a case study

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Abstract

Key Account Management is the strategic marketing approach which provides an effective, practical and rather simple method for companies interested in increasing their profits by correct customer and relationship management. In companies in which data is decentralized in business units, the implementation of a Key Account program passes through the accounts selection problem, and through the implementation process, that can be understood like a Knowledge Discovery in Database process where the goal is to search for accounts under given restrictions in the marketing utility function. This paper presents a case study based on the implementation of a KAM program in a Brazilian Insurance Company, where a naive KDD approach supported information system construction.

Keywords: Key Account Management, Knowledge Discovery in Database, Strategic Marketing.

1 Introduction

Since the globalization and the maturity of business markets have been increased the buying power of customers, one of the Strategic Marketing goals is to identify appropriate marketing tools to analyze customer management and marketing operations.

The concept of Key Account Management (KAM) emerged from the Strategic Marketing with the purpose of providing an effective, practical and rather simple method for companies interested in increasing their profits by right customer and relationship management [2]. Despite this approach has become usual in business-to-business marketing relationship, most retailers and service companies have been greatly benefited from it, building a portfolio of Key Accounts by



offering them a product/service package tailored to their individual needs [3]. This concept demands that Multinational companies are coordinated so that they can be plugged into a global network of buyer/seller relationships, adding complexity to strategic marketing plans and to their operations. Conversely, the complexities are compensated by new business opportunities and great benefits that could increase the profit based only on the cost of reorganizing operations.

It is usual that multinational companies possess a decentralized structure for data storage. Each business unity is provided with its database, in accordance with its strategy. In these situations, the implementation of a Key Account program in the Holding, requires dealing with two main problems: to select the accounts and to build an information system to support the operation. For the selection problem, different methodology and approaches had been developed in recent works [2][3], however, without dealing with the problem of computational implementation. This paper presents a case study based on the implementation of a KAM program in a Brazilian insurance company, where a naive KDD approach was successfully used to solve both of the problems, selection and implementation.

2 The approach for accounts selection problem

Sales volume, customer profitability and reference value (now and in the future) are typical criteria for key accounts in any selling company. Most of these companies interpret a KA in the Pareto sense [3], using this approach to define the portfolio of the strategic accounts. The Pareto approach, besides being the most useful, is the simplest when we think in a computational implementation. On the other hand, our methodology is based in a set of simple approaches for the selection problem, which helped us modelling in a efficient way, with a low computational cost

Definition An Information System is a pair $T = (U; A)$, where U is a non-empty finite set of *objects* (also called *cases*) named as the universe and A is a non-empty finite set of *attributes*.

In many situations we use some distinguished attributes to classify the database cases. This kind of attribute could be called *decision attributes*. Intentionally we can restrict some attributes looking for creating an Information System (T) from a set of Information Systems $U = \{B_1, B_2, \dots B_n, \}$, which represents the construction of a database with the basis on the collection of all business units data.

Definition A Key Account is a non-restricted account that is responsible for high profitability and possesses a high cross-selling index between Business Units (BU's) databases.

With these definitions, the selection problem is understood as a set of restrictive statements over the data attributes. Firstly, the attributes had been restricted with respect to a differentiated treatment when compared with the others accounts. Different kind of accounts such as Governmental Accounts, a priori defined non-strategical accounts, and even Global Accounts can be understood like accounts



that must have a special treatment. Secondly, it is strictly necessary for a key account to maximize profitability and the cross-selling index. The profitability is the driver to estimate the financial performance while the cross-selling index evaluate the efficacy of the relationship between the accounting managers strategy and the costumers. If we think that k is a case in the system, the cross-selling index attribute is the number of times that $k \in B_i, i = 1 \dots n$ in a relational database.

The Key account definition adopted induces the use of a naive set theory as one possible solution for the selection problem. There are three main sets: $L = \{L_1, L_2, \dots, L_n\}$ is the set of cases that maximizes profitability; $C = \{C_1, C_2, \dots, C_n\}$ is the set of cases that maximizes the cross-selling index and $R = \{R_1, R_2, \dots, R_n\}$ is the set of the restricted accounts, by this simple approach, the *Key Account System (KAS)* can be thought as a Information System $T = (K; A)$ where $K \subset U$ is the collection of cases that satisfies the definition of Key Accounts. Using this proposition, the problem can be viewed as finding and selecting the set

$$K = \max_n \{(L \cap C) - (L \cap C \cap R)\} \quad (1)$$

where n is the specified number of cases that will be part of the Information System. By these definitions, the accounts selection process can be thought as a simple database query in U . In order to simplify the computational cost, a small simplification was adopted. Using a scoring process based on percentile function (*t-percentile scoring*), the dimension of the profitability attribute was changed. This process allowed us to merge the attributes profitability and cross-selling, changing the search for

$$K = \max_n \{P - R\} \quad (2)$$

where

$$P = \{l \in L, c \in C \mid p_i = l_i + c_i, \forall i = 1 \dots z\} \quad (3)$$

3 The approach for implementation – KDD process

After the account selection problem, the great challenge was trying to develop a structure that allows the system provide knowledge to support strategic decisions, using the most variable structures of data.

3.1 Data cleansing and preparation

Understanding the data is one of the most important steps in any KDD process. In this sort of situation, where data proceeds from different BU's with different products, this step becomes more relevant. All the attributes had to be analyzed in order to allow the use of the right decision attribute for the account selection. After the analysis, the data was grouped into a unique database, an archetype of a future datawarehouse. Given the difficulty in the cleansing step, even counting on the aid of experts on data, cases with detected problems or outliers were eliminated from the database, not being corrected.



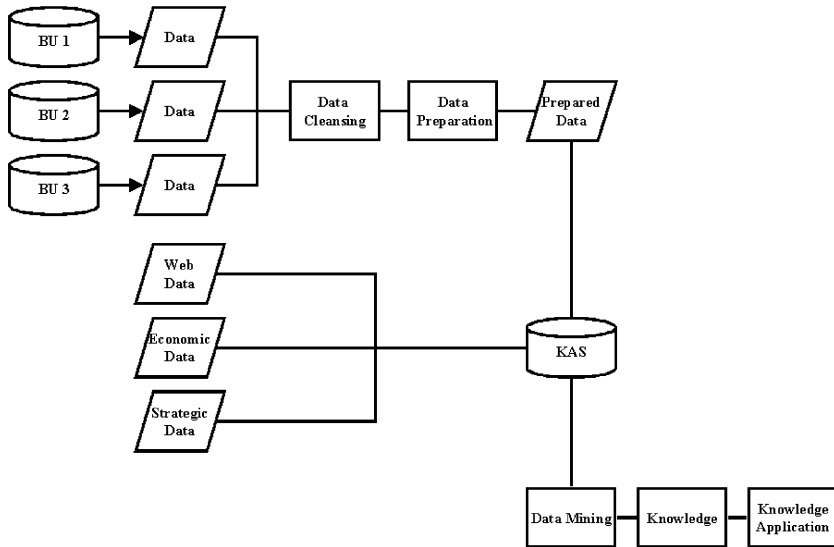


Figure 1: The KDD model for the KAS project.

3.2 Data mining

For the decision makers, the report is a practical visualization of the knowledge available in the system. Starting from this proposition, the basis of Data Mining task is to find a lower cost computational method that attends the necessity of decision makers knowledge. In addition, the system should have all the strategic information needed to attend these necessities, avoiding the search in different data sources.

In order to bring a solution to this problem, the attributes of the system reflected the diversity of sources with their diversity of formats, including texts proceeding from periodicals, articles and magazines and economical time series data. Again, our task was simplified by the adoption of different strategies guiding us to use *Query tools* as support for Data Mining.

The Query Tool approach consisted of a nested SQL statements to enable the analysis of the database contents, although such queries result in drastic effects on the performance of the system and are commonly less precise than other algorithms.

3.3 Knowledge application

After the implementation of the Information System, a new area was tailored to support the special clients. Monthly the *Corporate Department* carries out meetings with the Marketing and TI Department to adjust the process of Knowledge Application. During these meetings, strategies are developed in order to reach



goals like the profits and the cross-selling maximization.

The new system helps dealing with the challenge of implementing a new technology and the necessity for One-to-One marketing for partners and best clients. In addition, it is an effective tool to build up the necessary framework for real customer information related to product development.

The Key Account System has been an influence not only in enhancing the ability of development customized products and services, but it also has had an influence on the allocation of resources and on the production better services for the clients and individual users which is a great deal since customer loyalty will be based on the value the key account customer places on the suppliers capability to provide future solutions.

4 Conclusions and discussion

There are different factors that influence customer supplier partnerships and the Key Account Management plays an important role in this relationship. To develop a new culture is needed to implement this approach for the customer-supplier partnership. Therefore the key account customer culture must be stimulated.

Since the beginning of the project, strong changes has occurred, with impacts in the organization chart of the company and in its Strategic Planning. Despite the naive approach to the problem, the project has been used as an agent of cultural changes. The Corporate Department is the first area of the company exclusively focused on the customer, which means that this is the first group of managers with this kind of mission.

Expressions like *Key Accounts* and *Global Accounts*, are now used in almost all environments, from Strategical Committees to groups of technicians. This factor by itself is a great change in the internal environment. Furthermore, the project was a small scale model for the implementation of a Global CRM project.

There were two potential limitations of this naive approach. First, KAM is a new concept and many other restrictions or even definitions can be used to solve the selection problem. Our goal in this paper was to start giving a more formal treatment to the subject. Second, the company could start from the point of a CRM project, instead of this preliminary step. In this case study, this approach, besides generating a great cultural change, was also responsible for justifying the needed more robust model.

Suggestions for future research are as it follows. A more formal treatment focusing the key account selection problem is required. In addition, a comparative study of KAM implementation process in the US and Europe and other countries can improve the definition of a methodology for the implementation process.

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