

DATA MINING: A WORTH FOR CUSTOMER RELATIONSHIP MANAGEMENT

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ABSTRACT:

Data mining has gained popularity in various CRM applications in recent years and classification model is an important data mining technique useful in the field. The model is used to predict the behaviour of customers to enhance the decision-making processes for retaining valued customers. This paper presents the frameworks of data mining in relations with the customer relationship management, the computer-assisted application process of digging through and analyzing enormous sets of data that have either been compiled by the computer or have been inputted into the computer gain attentions of the industrial houses. In data mining, the computer will analyze the data and extract the meaning from it. It will also look for hidden patterns within the data and try to predict future behavior. In this paper we will be discussing the relationship of data mining and CRM and Data mining framework and CRM and how it reveals benefit for better CRM practices.

Keywords: Data Mining, Model, Customer Relationship Management

INTRODUCTION:

Data Mining is actually the analysis of data. It is the computer-assisted process of digging through and analyzing enormous sets of data that have either been compiled by the computer or have been inputted into the computer. Data warehousing is the process of compiling information or data into a data warehouse. A data warehouse is a database used to store data

The purpose of a data warehouse is to provide flexible access to the data to the user. Data warehousing generally refers to the combination of many different databases across an entire enterprise. Data warehousing is the process of compiling information or data into a data warehouse.

Data Mining is actually the analysis of data. It is the computer-assisted process of digging through and analyzing enormous sets of data that have either been compiled by the computer or have been inputted into the computer. In data mining, the computer will analyze the data and extract the meaning from it. It will also look for hidden patterns within the data and try to predict future behavior. Data Mining is mainly used to find and show relationships among the data.

The purpose of data mining, also known as knowledge discovery, is to allow businesses to view these behaviors, trends and/or relationships and to be able to factor them within their decisions. This allows the businesses to make proactive, knowledge-driven decisions.

The term 'data mining' comes from the fact that the process of data mining, i.e. searching for relationships between data, is similar to mining and searching for precious materials. Data mining tools use artificial intelligence, machine learning, statistics, and database systems to find correlations between the data. These tools can help answer business questions that traditionally were too time consuming to resolve.

Data Mining includes various steps, as shown in fig.1 the raw analysis step, database and data management aspects, data preprocessing, model and inference considerations, interestingness metrics, complexity considerations, post-processing of discovered structures, visualization, and online updating.

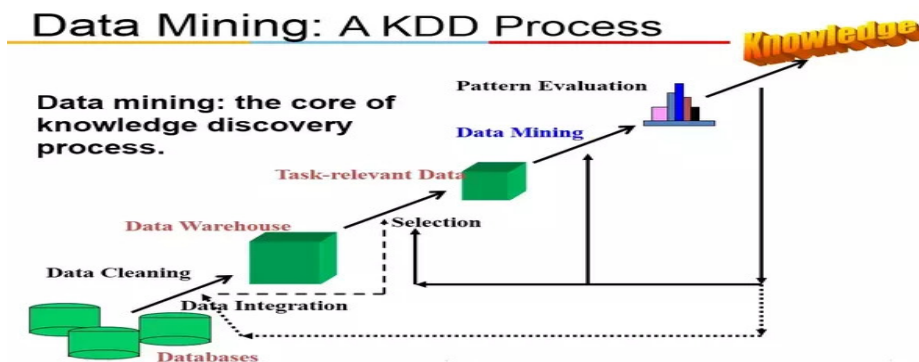


Fig.1

A Framework of Data Mining Process

REVIEW OF LITERATURE

Injazz(2003) opined that Customer relationship management (CRM) is a combination of people, processes and technology that seeks to understand a company's customers. It is an integrated approach to managing relationships by focusing on customer retention and relationship development. CRM has evolved from advances in information technology and organizational changes in customer-centric processes. Companies that successfully implement CRM will reap the rewards in customer loyalty and long run profitability. However, successful implementation is elusive to many companies, mostly because they do not understand that CRM requires company-wide, cross-functional, customer-focused business process re-engineering. Although a large portion of CRM is technology, viewing CRM as a technology-only solution is likely to fail. Managing a successful CRM implementation requires an integrated and balanced approach to technology, process, and people.

Chen-Fu Chien(2006) studied The quality of human capital is crucial for high-tech companies to maintain competitive advantages in knowledge economy era. However, high-technology companies suffering from high turnover rates often find it hard to recruit the right talents. In addition to conventional human resource management approaches, there is an urgent need to develop effective personnel selection mechanism to find the talents who are the most suitable to their own organizations. This study aims to fill the gap by developing a data mining framework based on decision tree and association rules to generate useful rules for personnel selection. The results can provide decision rules relating personnel information with work performance and retention. An empirical study was conducted in a semiconductor company to support their hiring decision for indirect labors including engineers and managers with different job functions. The results demonstrated the practical viability of this approach. Moreover, based on discussions among domain experts and data miner, specific recruitment and human resource management strategies were created from the results.

A.K.Chaudhary(2008) reveals that In modern manufacturing environments, vast amounts of data are collected in database management systems and data warehouses from all involved areas, including product and process design, assembly, materials planning, quality control, scheduling, maintenance, fault detection etc. Data mining has emerged as an important tool for knowledge acquisition from the manufacturing databases. This paper reviews the literature dealing with knowledge discovery and data mining applications in the broad domain of manufacturing with a special emphasis on the type of functions to be performed on the data. The major data mining functions to be performed include characterization and description, association, classification, prediction, clustering and evolution analysis. The papers reviewed have therefore been categorized

in these five categories. It has been shown that there is a rapid growth in the application of data mining in the context of manufacturing processes and enterprises in the last 3 years. This review reveals the progressive applications and existing gaps identified in the context of data mining in manufacturing.

EWT. Nagi et.al.(2010) represents the first systematic, identifiable and comprehensive academic literature review of the data mining techniques that have been applied to FFD. 49 journal articles on the subject published between 1997 and 2008 were analyzed and classified into four categories of financial fraud (bank fraud, insurance fraud, securities and commodities fraud, and other related financial fraud) and six classes of data mining techniques (classification, regression, clustering, prediction, outlier detection, and visualization). The findings of this review clearly show that data mining techniques have been applied most extensively to the detection of insurance fraud, although corporate fraud and credit card fraud have also attracted a great deal of attention in recent years. In contrast, we find a distinct lack of research on mortgage fraud, money laundering, and securities and commodities fraud. The main data mining techniques used for FFD are logistic models, neural networks, the Bayesian belief network, and decision trees, all of which provide primary solutions to the problems inherent in the detection and classification of fraudulent data. This paper also addresses the gaps between FFD and the needs of the industry to encourage additional research on neglected topics, and concludes with several suggestions for further FFD research.

Shu-Hsien Liao et.al.(2012) with the direction of any future developments in DMT methodologies and applications: (1) DMT is finding increasing applications in expertise orientation and the development of applications for DMT is a problem-oriented domain. (2) It is suggested that different social science methodologies, such as psychology, cognitive science and human behavior might implement DMT, as an alternative to the methodologies already on offer. (3) The ability to continually change and acquire new understanding is a driving force for the application of DMT and this will allow many new future applications.

DATA MINING FOR CUSTOMER RELATIONSHIP MANAGEMENT

Data mining for customer relationship management is important. In every industry, forward looking companies are moving toward the goal of understanding each customer individually and using that understanding to make it easier (and more profitable) for the customer to do business with them rather than with competitors. These same firms are learning to look at the value of each customer so that they know which ones are worth investing money and effort to hold on to and which ones should be allowed to depart.

Building a Business around the customer relationship is a revolutionary change for most companies. i.e

Banks: Traditionally focused on maintaining the spread between the rate they pay to bring money in and the rate they charge to lend money out.

Telecom Companies: Concentrated on connecting calls through the network

Insurance Companies: Focused on processing claims, managing investments, and maintaining their loss ratio

❖ The Key:

- Data mining is a **collection of tools** and techniques. It is one of several technologies required to support a customer-centric enterprise.
- Data mining is an **attitude** that business actions should be based on learning, that informed decisions are better than uninformed decisions, and that measuring results is beneficial to the business
- Data mining is also a **process** and a methodology for applying analytic tools and techniques

❖ **The Fundamentals:**

- **Notice** what the customers are doing
- **Remember** what it and the customers have done over time
- **Learn** from what it has remembered
- **Act** on what it has learned to make customers more profitable

DATA MINING FRAMEWORK FOR CUSTOMER RELATIONSHIP MANAGEMENT

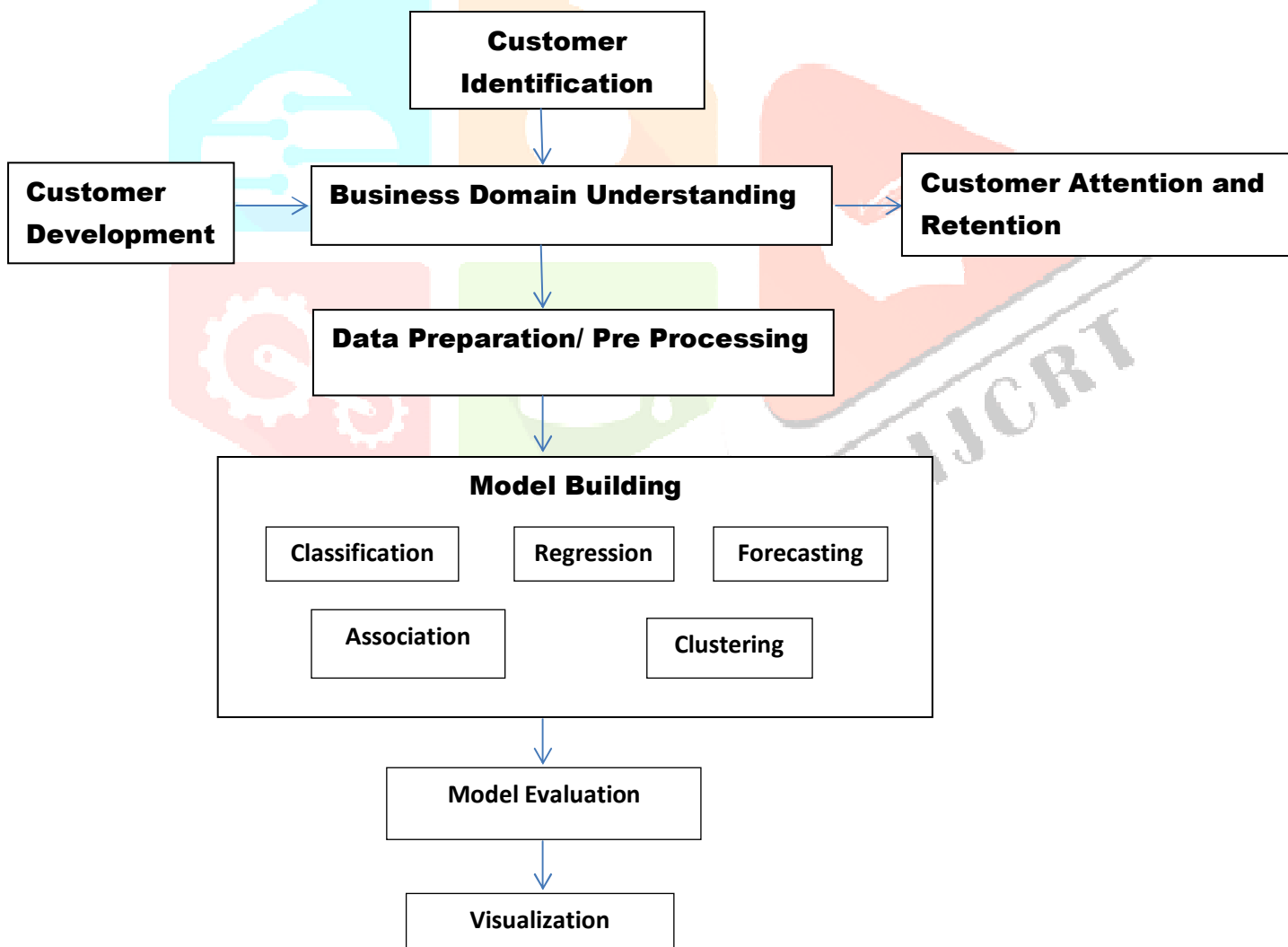


Fig.2
Data Mining framework for Customer Relationship Management

The proposed CRM-data mining framework is shown in Fig. 2 reveals the business goals and requirements of the problem domain forms the initial phase of any problem in data mining. An interrelations study and management of customer relationships and their interactions will help to identify attract and retain effective customers in the domain. The next phase of data preparation or preprocessing helps in preparing the data by the processes of cleaning, attribute selection, data transformation etc for further building up of models and their evaluation. Model construction in the CRM framework is a major step in which effective model to satisfy the business requirements is constructed. These models help in predicting the behaviour of the customers. Model evaluation and visualization measure the effectiveness of the model for enhancing their performance.

CONCLUSION

Data mining provides us the relevant directions to manage the customer diverse behavior with the collection of tools and techniques applied to secure maximum attention and retention of the customers in this competitive world. Customer satisfaction is the key for every industry and firm. Data mining gives the results that informed and systematic decisions are relevant than the uninformed decisions, hence data mining raw analysis step, database and data management aspects, data preprocessing, model and inference considerations, interestingness metrics, complexity considerations, post-processing of discovered structures, visualization, and online updating.

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