Research and Application of CRM Model in enterprise Management System

Zhe Yang, Xuebin Huang*

Hainan Tropical Ocean University Sanya, Hainan, 572022, China

Keywords: Customer Relationship Management; Data Mining

Abstract: Customer relationship management (CRM) is a new management system that improves customer loyalty and satisfaction, thus changing the relationship between companies and users. A management software and skill is thus named. The ability to discover a lot of data and information, discover hidden, valuable relationships, and use this mode and skill to observe user requirements, helps companies make decisions, and the decisive driver of a user relationship management system is to discover great data.

1. Introduction

With the deterioration of the market economy, product transformation has become more flexible and user purchasing activities have become more rational. User relationship management plays a crucial role in the company. For an enterprise, whether it has achieved reasonable and efficient use of user data becomes the cornerstone and decisive factor for it to gain an advantage in the struggle. In China, the CRM mode has been basically known since last year. In recent years, the discussion of CRM mode has begun, and the preliminary research and work of CRM mode in enterprise management system.

2. Overview of CRM Theory and Data Mining Technology

Control, the relationship between CRM (CustomerRelationshipManagement) that the user is called interaction between enterprises and users complete management process, for the user to the relationship between the large control law[1]. CRM is a new kind of regulation law that wants to change the relationship between enterprises and users[2]. It plays a role in the areas related to users such as marketing and skill support. With CRM systems, companies can search, collect, track, and explore information about each user to learn who they are and what their requirements are. CRM can also observe and explore the impact of user behavior on enterprise revenue and optimize the relationship between enterprises and users and enterprise revenue[3]. DataMining (data mining), also known as found in the database (KnowledgeDiscoveryinDatabase, KDD), knowledge of many, part of, and noisy, not clear, the reality of random use of data to be named, dip in the hidden, people did not know before, but it is in the process of potential earnings can be used for the process of information and knowledge[4]. CRM modality is not only present in object-facing systems, so the CRM modality itself is not limited in the domain of object-facing design, but also in certain programming languages. However, considering the maturity and extensive use of object-facing skills and the current situation of the project team in which this paper is based, the CRM modality in this paper has some limitations in the object-facing CRM modality[5]. Century s have so-called "software crisis", using the classic way of software development can make the software performance variation, stability cannot be guaranteed, the software the amount of consumption in the trend of more and more high, difficult to control software development process, software development for a long time, difficult to maintain its normal work, the amount of maintenance has been on the rise[6]. Such shortcomings are gradually discovered, and people begin to initially seek for a completely new way of software research[7]. Object-facing software development was first proposed in the late 1990s, and after many years, object technology began to be widely used. In the century, the object software task has become the primary choice of many software products and information systems. Object technology will further deepen the reuse, but the reuse of program components will lead to more

  DOI: 10.25236/mmmce.2019.074

software development and high-level programs. Reuse provides a powerful way to eliminate "software crisis".

3. Data Mining Process in CRM

Before the implementation of data mining, in order to establish a good CRM system model, first decide what steps to use, each step must be refined, in order to ensure that data methodically complete the work and achieve success must have a good plan[8]. Although each step is ordered according to the requirements, it is important to note that it is not a linear data mining process. To achieve good results, you need to repeat these steps over and over again[9].

3.1. Definition problem

Different CRM applications have one or more business goals. To maximize the value of data mining, you must have a clear definition of what you want to do.

3.2. Establishment of data mining database

Collect all the data you want to mine into a database. Note that this does not necessarily require the use of a database control system. Depending on how much data is collected, how hard it is to access, and how it is used, sometimes a simple flat file may be a spreadsheet. Another reason to create separate databases is that data warehouses don't necessarily support the data structures you need to perform the different complex analyses of the data. This includes consulting on statistical lookups of data, analyzing multiple dimensions, and varying levels of complexity and visibility.

3.3. Prepare data for modeling

This is the last step of data preparation before creating the model, which can be programmed into four parts :(1) select variables. Ideally, all the variables you have can be selected and fed into the data mining appliance to discover which are the best pre-selected variables. There is no real benefit to doing this. One of the reasons is that the time to create the model increases as the accompanying variables increase; Another reason is uncertainty. Columns containing unimportant data are added, but not enough or even enough to improve predictive power.(2) create new prediction basis. For example, when predicting a credit crisis, using debt-to-income ratios, rather than using debt or income alone as a predictor, produces more accurate results and makes people understand them better. (3) select a single subset or sample to create the model. When creating data and mining models, select a single subset of boilerplate data from many data sets that are relevant to the problem to be sought, rather than applying all the data. The use of appropriate randomly selected subsets does not result in insufficient information, but reduces the amount of data to be processed and saves system resources, and the regularity will show up more in accordance with the trend you want after the selection of data. (4) change variables. Make it the same as the algorithm that created the model.

3.4. Model establishment

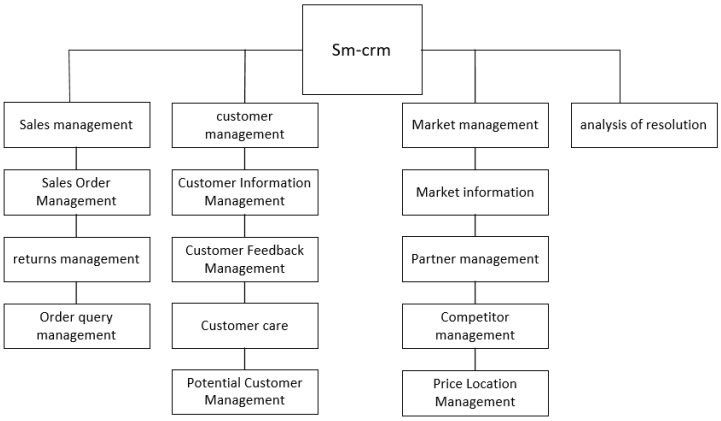

Fig.1. Basic functions of sm-crm

Creating a model is an iterative process. It requires careful observation of the different models to determine which ones are most valuable to the business problem. What is understood in the process of finding a good model will inspire the transformation of the data and change the definition of the problem in the first place. To ensure that the resulting model has good accuracy and stability, an exercise needs to be fully defined -- a test protocol, as indicative learning is called. A model is built with some data first, and the resulting model is validated by the rest of the data. As shown in figure 1:

3.5. Evaluation model

The issues to be determined determine the life and death power of the model evaluation, and the accuracy and efficiency of the model are evaluated by regional experts.Video capture and synchronous statistical analysis.

3.6 implementation

The knowledge applied in real tasks is reflected by data mining model, which provides certain support for decision-making. Some triggers are set based on the knowledge gained, and special executions occur when conditions are met. In creating CRM applications, data mining is generally a small but important part of the overall product portfolio.

4. Design and Implementation of CRM

In order to complete the verification of the user relationship management optimization strategy based on data mining skills, I took some large supermarket management systems as the background and designed the prototype verification system sm-crm (SUPERMARKETCRM). The thinking mode of user relationship management permeates the whole completion process of the system. The system improves the customer relations management in the classic difference, easy to lost, there are some data can only complete the discrete problem such as simple data consultation and review, test is put forward in the feasibility of using modal in enterprise management system, some beneficial attempt in the field of commercial data mining techniques in the process of realistic was efforts, in order to promote the efficiency of user relationship management supply a feasible technical way. The SUPERMARKET management system sm-crm (SUPERMARKET CRM) is developed under the environment of Windows2000, SQLServer2000 and C#. It USES the C/S structure under the current trend. The front-end user system USES C# research and development, and the back-end database USES SQLServer2000 system. The following is a brief description of the main functions of the sm-crm system: the main functions of the sm-crm system of the supermarket user relationship management system include four functional modules, including sales management, user management, market management and decision analysis.

4.1. Sales management

With users or cooperative friends to complete the order signing, the implementation of sales affected by the work management. The main data carrier of enterprise sales business is order, and the main data analysis of user relationship management comes from order, so order management is the main construction component of user relationship management system. Return management mainly realizes the function of defining, maintaining and questioning the return form put forward by the user. In the sales process, sm-crm can provide relevant information to users on time and improve their understanding of users.

4.2. Customer management

User information contains a lot of value, through the analysis of user information, discovery can be further understanding of customer needs; Discover the rules of users completing transactions; Discover the building criteria of value customers, etc., such information will be of vital significance for making accurate decisions and improving the business. The user information management unit can realize the functions of input, change and query of user information. Through the feedback processing, it mainly realizes the input, support, closing and query functions of the user's service

feedback form. It can also break down a user's feedback into many tasks to perform at the same time. User care can explore the functions of users, complete the analysis of the previous transaction information of users and partners, and explore the users and cooperative friends who are crucial to the creation of business turnover and benefits -- value customers; Users and cooperative friends who can discover the rise or fall of business transactions -- users whose value changes; It can discover users and partners with high aversion to the enterprise's goods or services -- problem customers. At this time, the system makes timely customer care opinions through analysis, which makes the relationship between enterprises and old users stable and improves the satisfaction and loyalty of old customers.

4.3. Market management

Market management is to open up a way for sales, create a sales and after-sales environment behavior management. According to the market condition analysis, generate the market activity project, edit the project feedback information, evaluate the project execution status. Market information mainly realizes the information collection, maintenance and inquiry function of enterprise market activities through new market activities. Competition management is to complete the unified management of enterprise competitors' information, mainly to complete the definition of enterprise information, maintenance and search function, in order to form the relationship between enterprises and commercial competition. Competitors' basic information, competitors' products and product comparison. Price positioning mainly refers to the pricing of products for orders. This system mainly provides five ways, namely, partner price, member price, cash price, discount price and employee price.

4.4. Analysis and decision making

Data mining, statistics and analysis of all kinds of information of customers, partners, competitors, markets, sales and service products, providing decision-making basis for enterprise development. Decision making is something that business managers must do on a regular basis. The decisions for the business are significant. The high standard determines the competitiveness of enterprises. Sm-crm USES OLAP and data development methods to provide users with a variety of analysis and prediction tools, categorize customer, product, process, task, budget, plan, expense and other information, and analyze sales, marketing and service business to make scientific and correct decisions.

References

[1] Fan yushun, wang gang. Introduction to enterprise modeling theory and methodology . Beijing: tsinghua university press, 2001.

[2] Kuang kongwu. Information system analysis and design. Beijing: tsinghua university press, 1999.

[3] Song, Guijuan. [IEEE 2018 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS) - Xiamen, China (2018.1.25-2018.1.26)] 2018 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS) - Application of Data Mining Technology in the CRM of Pharmaceutical Industry. 2018:61-64.

[4] Nader A , Saleh A Z . The Role of Enterprise Resource Planning Systems ERP in Improving Customer Relationship Management CRM: An Empirical Study of Safeway Company of Jordan. International Journal of Business and Management, 2018, 13(8):86-.

[5] Song S , Ya-Lin J I , Cai N A , et al. Application of Data Architecture Model in Enterprise Management. Value Engineering, 2017.

[6] Wang H . Enterprise System and Its Application in Aerospace Industry. Journal of Industrial Integration and Management, 2017.

[7] Qiuhui Z . Design and Application of Inventory Management System for Power Supply

Enterprise. Electric Power Information & Communication Technology, 2017.

[8] Azadeh A , Foroozan H , Ashjari B , et al. Performance assessment and optimisation of a large information system by combined customer relationship management and resilience engineering: a mathematical programming approach. Enterprise Information Systems, 2016:1-15.

[9] Charoensukmongkol P , Sasatanun P . Social media use for CRM and business performance satisfaction: The moderating roles of social skills and social media sales intensity. Asia Pacific Management Review, 2017, 22(1):25-34.