



Enhancement of Enterprise Competitive Predominance

Based on Data Mining

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Abstract

Starting from the view of customer relationship management (CRM), this article expatiates on the important and indispensable function and application of data mining in the marketing, and analyzes the principle and flow of data mining in the application of the enterprise.

Keywords: Customer relationship management (CRM), Data base, Data mining, Marketing

1. Meaning of data mining

With the coming of information age and the development of economic integration, challenges that enterprises face increasingly go up. The excessive competition in the market makes the difference among products increasingly reduce, and the high surplus and the diversification of customers' demands make the production management of the enterprise from the product orientation to the customer orientation, and the traditional management method that emphasizes product quality and brand has not ensured that enterprises can win in the competition of modern economy. Just as American Airlines CEO, Donald J. Carty said, free competitive customers had become into the important assets of the enterprise. Through meaningful communications, enterprises can understand and influence customers' behaviors, and realize the intention that enhance customer obtainment, customer retention, customer loyalty and customer profit, which is the customer relationship management (CRM). In fact, the CRM is a sort of management, and it is not the result of technical enhancement, but the technical enhancement offers indispensable technical support of its development. In the past, because of the limitation of technology, the information system of the enterprise is disperse and lacks opening, which induces the integration among trans-systems is difficult to be actualized, and to comprehensively understand customer and grasp customers' character and demand was just a sort of ideal in the past. Under the condition of quick development of network, through the integration of platforms and increasingly mature technologies of data base and data mining, enterprises can effectively grasp customers' behaviors and demands. One research of International Data Corporation showed that the average investment return rate is about 401% after 2~3 years when 62 data bases were installed in North American. In another research by NCR, about 20 data bases realized 300~1000% return rate in less than two years in the retailing. CRM is the most useful tool to obtain maximum possible profit for enterprises, and the data mining is the stable base and wings for this tool.

2. Data mining and its application in the corporate marketing

The so-called data mining is the process picking up concealed, unknown, but potentially useful information and knowledge from large, incomplete, fuzzy and random data. It is the margin science which involves machine learning, mode identification, system theory, artificial intelligence, database management and data visualization. The owner of the Nobel Prize, doctor Penzias thought that "the data mining will be more important, because it is so valuable that enterprises will not lose any things about customers any longer. If you don't do something in this domain, you will lose you business" in the review of "computer world". Enterprises have obvious reasons to invest data mining. Through data mining, from large collected and accumulated data, enterprises can respectively aim at problems about management strategy, object orientation, operation efficiency and measurement evaluation, and effectively mine the most important answers concerned by customers, and can direct operators' activities by means of abundant information mined from large of customer data, and make them offer right product and price through the improvement of communication with customers and the right channel at the right time, and accordingly increase business opportunity.

The common application domains of data mining mainly include following aspect.

(1) Direct marketing

Data mining is abroad applied in the direct letter. Through the prediction that which customers are likely to purchase the products of the company, and which sort of product will be purchased will fully reduce the development charge and time of the market.

(2) Objective marketing

As viewed from the objective marketing, when a sort of “new” product or service comes into the market, customers may be attracted to buy, because the “new” product or service is not only associated with the former but ameliorated to fulfill customers’ demands of practice and mentality. For example, the bank plans pushing a sort of improved financial product such as new credit card to existing customer group, and the data mining can settle customer data, establish the predictable model and validate it from recent similar business activity or market investigation, and accordingly grasp the total character of the customer group with good reactions to pertinently implement works. When the data mining is applied in the objective marketing, the customer reaction rate can achieve 20-25%, but this number is less than 8% in the past.

(3) Customer retention

Customer retention is a main problem that enterprises face. One research from Harvard University showed that “when the customer consumption reduces 5%, people’s confidence to the profitable ability of the enterprise will be fluctuated”. Because to looking for new customer demand needs high costs, so the retention of existing customers is the key problem for many enterprises. The customer loss always becomes into the problem that enterprises can not control because it has not any premonition in advance. The customer retention is the similar operation problem with objective marketing, and both can establish the tendency model. Through historical data, this model can validate and find customers with the tendency turning to competitors. Then the business activity will be performed aiming at these customers, and more active marketing strategy will be used to retain customers.

(4) Cross distribution

To add customer value is another key function of marketing. The concept that adds customer occupation rate is important to most enterprises. Two current methods to add customer occupation rate are respectively the product promotion activity based on the customer and the cross distribution. Data mining can help sales personnel know not only which customers are likely to purchase products and which products are likely to be purchased by customers, but also which customers usually purchase what products and which products are usually purchased together, and accordingly make the cross distribution more effective.

(5) Cheating inspection

The data mining can establish the model for the industries which the cheating easily occurs such as insurance counterclaim, mobile telephone call, credit card shopping. Generally, there are several modeling methods. The first one is the method of prediction, which is similar with objective marketing and customer retention. The prediction model can indicate the customer’s cheating tendency and compute the customer’s cheating probability. For example, the method is applied in the application of credit card, which can predict the probability of cheating. The second one is the method of integration. Here, customers are divided into different groups by the integration arithmetic, and those customers who are unsuitable to any group may be the anti-cheating object because of the deceitful probability, and the Visa Company is benefited from this data mining technology. Many international telecom companies are trying to establish the mobile telephone cheating model, and expect reining the situation through this sort of model.

3. Steps to develop data mining and enhance corporate competitiveness

The data mining model cannot create any values for the enterprise. Only when the enterprise adopts corresponding activities according to the model, it can benefit from the data mining. Therefore, the data mining should be put into a bigger process, and the enterprise should take data mining as the tool of competition, transform the information obtained through data mining to the effective commercial activity, and enhance the competitive predominance of the enterprise to the maximum extent.

The data mining mainly includes following steps.

(1) Confirmation of the topic

The topic must be confirmed by the present market situation and developmental direction, or else, it is useless. For example, for the telecom enterprise, the topic should be how to identify the customer group with values from basic customers of the enterprise, and predict how to retain these customers and implement cross distribution aiming at them. It is the most basic and important topic that data mining faces.

(2) Data collection and database integration

Data collection and database integration are the necessary condition of data mining. At present, the technology and channel of data collection are increasingly broad, for example, the chain supermarket records consumption through code reader and the bank records consumption through credit card. Different market research departments design market investigation or directly purchase data according to different topics to collect large of customer information. In the past, various enterprises and various departments of these enterprises have their own databases which have different setups

and standards, so the integration of these databases is very difficult. The customer oriented data mining can integrate different databases in one enterprise to the uniform customer database, which can well and truly grasp customers' information.

(3) Customer classification and prediction modeling

Through various data analysis methods based on data mining, we can exploringly analyze data, which main intention is to classify different types of customer, understand various types of customer's character, especial those high valuable customers' behavior modes which can bring main profits for the enterprise, and offer effective method to further predict their wills. These models can help enterprises timely find customers' possible premonition to leave, and adopt more attractive products to retain these customers, and they also can find which customers will possess or have possessed the possibility to further develop, and which customers' values will reduce or have reduced. So it can not only exactly grasp intrinsic customer resource, but can incisively find potential customer resource, and pertinently establish marketing strategy and always keep initiative in the market competition.

(4) Scheme establishment

Once those high valuable customers are identified, the enterprise must establish a series of marketing activities and offer products and services with competitiveness for these customers because the objective of the enterprise is to increase these customers' values. Because the products offered to the customers may be multiiform, so we can use the method of data mining to confirm which sort of product most suit to these high valuable customers and establish the market scheme pertinently. To establish a pertinent market scheme is a difficult task, and the content of the scheme must base effective information, which can ensure that the scheme can timely follow people's consumption demand and market change. In addition, the special product only is most suitable for the special customer at the special time. For example, high valuable telephone customers are easy to be influenced by higher call charge in the month exceeding planned call charge. And in the special term, other competitors also will adopt effective object promotions aiming at special products of this enterprise. In different terms, single customer's value, loyalty and market orientation also will change with the change of the exterior environment.

(5) Scheme implementation

On the surface, the result of the prediction model is easy to be practiced, but it is a complex thing in fact. The channels between customer and enterprise include the customer service center and interactive WEB site. Enterprises actively communicate with customers, which can make enterprises have chances to obtain the opportunity to strengthen the association with them, and better know their demands. Therefore, first the data mining and the customer communication channel should be integrated. Enterprises can issue new promotion information through the customer service center, and when the high valuable customer calls the center, the promotion object analysis program of the data mining model begins to operate behind the scenes. When the analysis is completed, one or several relative product information fit for this customer will be displayed. At the same time, the customer service center also can collect customer's basic data, understand the feedback information of the promotion and product service, timely adjust the marketing activity to get best effects.

(6) Effect inspection

The obtainment of the data model is not the final objective of the data mining, and the most important objective lies on whether the data model can bring high data assets return rate and whether it can offer actual helps and constructive advices for the market management decision. Which promotion advice should be adopted, which promotion advices should be rejected, why customer will agree to purchase one sort of product but reject to buy another sort of product, all these information should be recorded and used to improve the promotion. Through various recorded indexes, enterprise can exactly measure whether the response of customers to the marketing activity after adopting data mining is enhanced. Much amelioration which is needed in this process can enhance the customer response rate.

4. Principles followed in the data mining process

Data mining is a data analysis process with abundant connotations, and to ensure it is better implemented in the competition among enterprises, following principles should be followed.

First, the process of data mining takes the data as the core. This directional idea should be carried through the CRM all the while. The enterprise CRM system should surround the core content which continually establish and enrich the customer database. Only the enterprise CRM system applying in the customer data analysis and working in advanced software equipments can gradually promote the development of the CRM taking customer data as the core. At present, the customer database establishment work of domestic enterprises is in the beginning stage, the matching research of the CRM software still has some problems, which restricts the space that enterprise applies the data mining technology to some extent, and becomes into the main problem puzzling the study of the data mining theory.

Second, the process of data mining is a dynamic circulation process. As a whole, data mining is a continually embedded

data base process in proper sequence, and only good beginning and precise middle stage can finally gestate scientific data analysis model and decision scheme. Without exact understanding to the problems of the enterprise, there are not specific objective of data collection and the probability of exact understanding for the data meaning. Without customer data and preparative data which can exactly reflect the actuality of the enterprise, the model establishment, scheme establishment, scheme implementation and effect evaluation are useless. Without high quality data, the model will become into the unilateral understanding to the problems of the enterprise. Without the model which can reflect the actuality of the enterprise, the implementation of the scheme based on that only bring unrealistic false decision for the enterprise.

As viewed from the detail, data mining is a repeatable circulatory and spiral ascending data analysis process. Only though continual repetitions and mutual validations among various stages, the feasible data analysis model and decision scheme can be established finally. The obstacle to understand data may come from the fuzzy understanding the problems of the enterprise, and here the repetition of former stage is necessary. The exploring data analysis adopting various analysis methods may require the proper transformation of data format or data type, and here the repetition of former stage is necessary. When reevaluating former works through the model, existing oversights and errors are found, and here the repetition of former stage is necessary.

Third, the data mining process is an experience learning process. Though the effect inspection is the final stage of data mining, but its end doesn't mean the terminal of data mining. Every data mining will offer precious practical experience for the next data mining, and every data mining will benefit from last mining process. Therefore, the data mining is a big circulatory process with experiences which are continually accumulated and learned.

Fourth, the successful data mining process is a process continually blending with practice. In the CRM taking data analysis as the core, the mining analysis process of the customer data is closely conjoint with the practical marketing activity. Only the data mining process is blended into the process of the whole management of the enterprise, the data mining can possess wide using space, exert its own potentials and really support the scientific decision for the enterprise.

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