

E-Commerce Application in Commercial Banks: Use Data Mining to improve Services

Ning Zhang

Department of Management, Minzu University of China, Beijing, China

Email: zhangningmuc@163.com

Abstract –In a fast changing market environment, it becomes more and more strongly to the enterprises that customer resources should be the most important element to achieve the victory. The enterprises have transferred from product-centered model to a customer-centered model. Then the customer relationship management which based on the customer-centered model has become the trend in the new generation of this field. Customer Segmentation is one of the core functions of the customer relationship management system. It can give an all-round support in customer obtaining, customer retention and customer value-added processes. Customer relationship management is the most useful tool to achieve the goal that to better the customer segmentation while the data mining is the best engine of the tool.

Keywords – Customer relationship management; Commercial banks; Data mining Clementine; Financial industry

1. Introduction

On the base of customer relationship management, customer segmentation and the theory of data mining, first the essay puts forward the principle of customer segmentation on the base of existing problems of customer segmentation in customer relationship management. Then from the logical model of customer segment, and the essay puts forward the model of data - function - methods of customer segmentation and two kinds of subdivision standard of the insurance customer segmentation after the customer segmentation is analyzed and studied. A segmentation criteria based on customer present value and potential value, another criteria based on client risk and contribution. At last, the essay attempts to use the decision-making tree and the visual function of the Clementine to do a data mining to the insurance customers. Then those results showed the main element which affected the compensation. And we have made main analysis on it, and then we have made an understanding and the forecast of the inner structure feature of the insurance data, so that we can make payment rate according to the payment amount of customer. We got a conclusion which supplies the information to solve the customer and the reference data

for the insurance companied to make their policy. The using of the data-mining tech would improve the work efficiency and the management of the insurance institutions.

2. Customer relationship management

Traditional marketing strategies focused on the four Ps as price, product, promotion and place to increase market share. The main concern was to increase the volume of transactions between seller and buyer. (Wyner, 1999) Volume of transactions is considered a good measure of the performance of Marketing strategies and tactics. CRM is a business strategy that goes beyond increasing transaction volume. Its objectives are to increase profitability, revenue, and customer satisfaction. To achieve CRM, a company wide set of tools, technologies, and procedures promote the relationship with the customer to increase sales. (Sweeney Group, 2000) Thus, CRM is primarily a strategic business and process issue rather than a technical issue. CRM consists of three components: customer, relationship, and management, as shown is Figure 1. CRM try to achieve a “single integrated view of customers” and a “customer centric approach”.

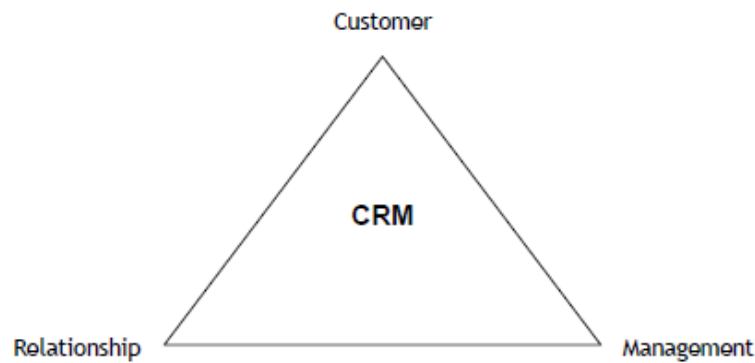


Figure 1. Components of CRM

2.1. Customer

The customer is the only source of the company's present profit and future growth. However, a good customer, who provides more profit with less resource, is always scarce because customers are knowledgeable and the competition is fierce. Sometimes it is difficult to distinguish who is the real customer because the buying decision is frequently a collaborative activity among participants of the decision-making process. Information technologies can provide the abilities to distinguish and manage customers. CRM can be thought of as a marketing approach that is based on customer information.

2.2. Relationship

The relationship between a company and its customers involves continuous bi-directional communication and interaction. The relationship can be short-term or long-term, continuous or discrete, and repeating or one-time. Relationship can be attitudinal or behavioral. Even though customers have a positive attitude towards the company and its products, their buying behavior is highly situational. For example, the buying pattern for airline tickets depends on whether a person buys the ticket for their family vacation or a business trip. CRM involves managing this relationship so it is profitable and mutually

beneficial. Customer lifetime value (CLV), discussed in Appendix C, is a tool for measuring this relationship.

2.3. Management

CRM is not an activity only within a marketing department. Rather it involves continuous corporate change in culture and processes. The customer information collected is transformed into corporate knowledge that leads to activities that take advantage of the information and of market opportunities. CRM required a comprehensive change in the organization and its people.

3. Data Mining Application in CRM

Traditional (mass) marketing doesn't need to use information technologies extensively because there is no need to distinguish, differentiate, interact with, and customize for individual customer needs. Although some argue that IT has a small role in CRM, each of the four key CRM tasks depends heavily on information technologies and systems. Table 5 shows this relationship for the marketing processes, for the goals, for traditional mass marketing, for CRM, and for the information technologies used in CRM. I will introduce operative CRM and cooperative CRM in this paper.

Table 1.IT Factors in CRM

Process	Identification	Differentiation	Interaction	Customization
Goal	<ul style="list-style-type: none"> Identify individual customer 	<ul style="list-style-type: none"> Evaluate customer value and needs 	<ul style="list-style-type: none"> Build a continuing relationship 	<ul style="list-style-type: none"> Fulfill customer needs Generate profit
Traditional Mass Marketing	<ul style="list-style-type: none"> Not done 	<ul style="list-style-type: none"> Clustering 	<ul style="list-style-type: none"> Call Center 	<ul style="list-style-type: none"> Sales Services
CRM	<ul style="list-style-type: none"> Customer profiling 	<ul style="list-style-type: none"> Individual level analysis 	<ul style="list-style-type: none"> Call center management Auto response system 	<ul style="list-style-type: none"> Sales automation Marketing process automation
Information technologies	<ul style="list-style-type: none"> Cookies Web site personalization 	<ul style="list-style-type: none"> Data mining Organizational learning 	<ul style="list-style-type: none"> Web application Wireless communication 	<ul style="list-style-type: none"> ERP E-Commerce

3.1. Operative CRM

A company has many departments that directly face to the customers like sales department, customer service department, marketing department and so on. Operative

CRM make these sector share customer resources and accelerate the customer information flow, so it change multiple departments into a " virtual sector " as shown in figure 2.

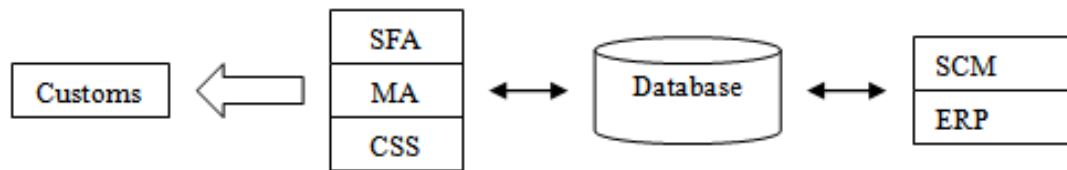


Figure 2. The framework of operative CRM system

Operative CRM is mainly composed three basic functions as SFA (Sales Force Automation), MA (Marketing Automation) and CSS(Customer Service & Support), then achieve automatic sales, automatic marketing, automatic customer service and automatic support services.

3.2. Cooperative CRM

Collaborative CRM aims to let the enterprise staffs complete an activity with the customers. Collaborative CRM requirements help customers to complete a task in the shortest time, Figure 3 shows out the collaborative CRM framework

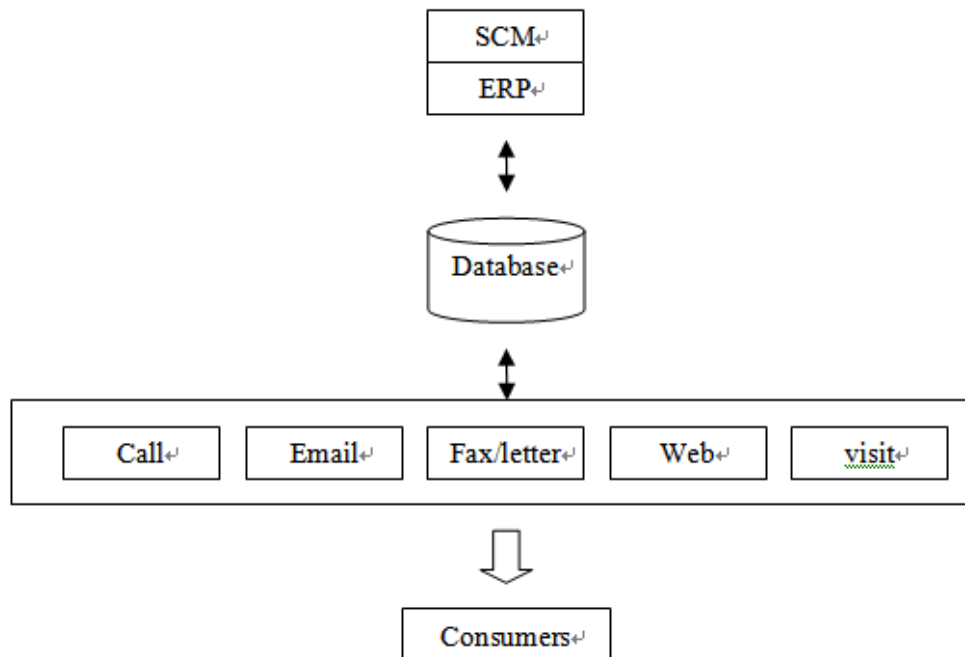


Figure 3. The framework of cooperative CRM system

Collaborative CRM's main function is to use various communication ways like telephone, fax, Web, Email, visit, sales agents and so on to realize information communication between enterprises and their customers.

4. Analyze the Consumers' Value

With the Application of information technology, banks can use database to manage the information about consumers. In addition, banks can analyze the consumers' value by using activity based costing method.

4.1. Customer's contribution rate to commercial banks' profit

We can analyze the overall relationship between banks and customers (such as deposits, loans, account settling and intermediate business, etc.) to establish the comprehensive income, and use it to confirm the Customer's contribution rate, the computation formula is as follows:

Operating profit= Daily average deposit balance
 $\square [(1 - \text{Excess reserves rate})$
 $\text{rates-deposit interest rate}] + \text{Loan balance}$
 $\text{interest rates} - \text{Weighted deposit rates} - \text{bad debt loss}$
 $\text{rate}) + \text{Intermediate business income} - \text{the number of}$
 transactions

\square Weighted
 \square (Loan

\square transaction costs

4.2. Segmentation of bank business activities according to the activity based costing method

We can calculate the precipitation ratio, and we can use the precipitation ratio to confirm the different contribution rate of all kinds of deposits.

$$Q = \sum w * y$$

Q is weighted deposit rates, w is proportion of all kinds deposits to total deposit, y is proportion of Interest to daily average deposit

4.3. Customer segmentation and build customer database

First, the bank should deal with the business process reorganization or reconstruction according to the activity based costing results. Second, the bank need classify customers by demand model and customers value, like MVC (Most Valuable Customer), MGC (Most Growable Customer) and BZC (Below Zero Customer), as shown in figure 4.

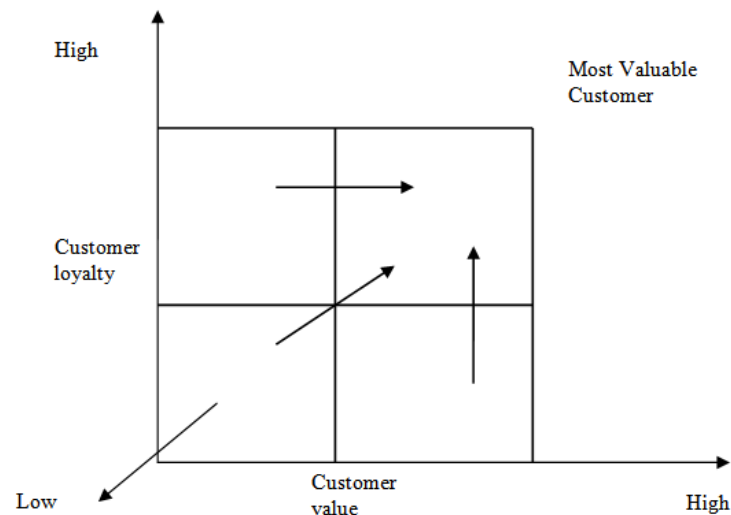


Figure 4. Customer segmentation Strategy

According to figure 4, we can get that: 1. Banks should provide personalized finance service for the most valuable customer, guide customers' investment and satisfied potential investment financing demand, so that establish good relations of cooperation; 2. Banks should forecast the most growable customers' investment demand and provide financial advices to them timely; 3. For the below zero customers, banks should try to reduce its value transfer, such as make these customers use more network services.

ECRM refers to the electronic customer relationship management, including: E means E-bank & business, C means Channel Management, R means Relationships and M means Management of the total enterprise. Electronic bank extends the commercial bank service directly to the customers; make its easy to experience financial services anytime and anywhere. Commercial banks could use ICARE method to give a better experience to customers, as shown in figure 5.

5. Commercial banks should establish the concept of ECRM

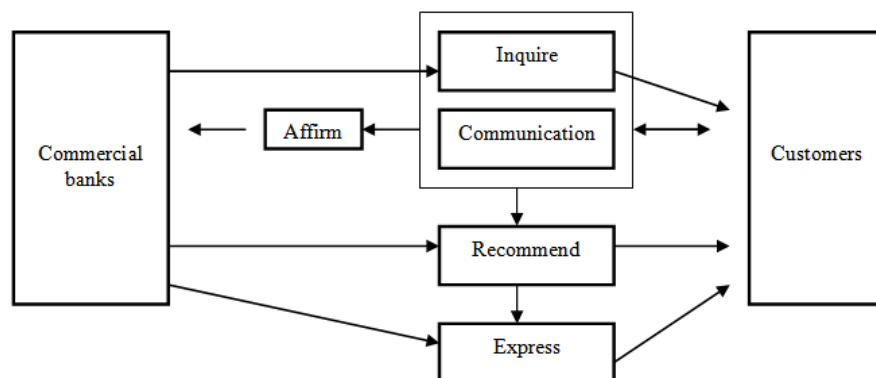


Figure 5. The relationship between customers and commercial banks

In this model, customers can communicate with bank staff more effectively. For example, when a customer browses a webpage and finds a "Call me" button on the bank's website, he clicks on it and it will contact with the automatic phone, then this customer can get many information about the bank's service. If he is interested in some products and service, he can choose to switch to artificial service or call for the customer service staff, also the customer's information can be seen by the service staff of the bank. So, this will ensure customer service personnel communicate with customer efficiently and establish a more stable customer relationship.

6. Conclusions

With the change of market environment, enterprises have realized the importance of customer resource. CRM is a new management mechanism that aims to improve the relationship between enterprises and customers, CRM provides comprehensive, personalized customer information to sales and service personnel, it also strengthens the tracking service, information analysis capabilities, enabling them to build and maintain the "one-to-one relationship" between customers and enterprise. With the extensive application of management information system, Commercial banks will face more customer data, using a reasonable CRM strategy and information technology will help banks establish a long-term customer relationship and improve the bank's income.

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Vitae

Ning Zhang was born in 1988. He got his master degree in department of management, Minzu University of China. His research interest includes monetary policy, bank liquidity risk, business cycle and macroeconomic.