

Application of CRM to Mobile Communication Industry*

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Abstract: *Established CRM system provides a powerful help for maintaining existing client, attracting new client, making profit from client for mobile communication industry. In the system structure of CRM eye, the mobile communication industry of CRM can be divided into three levels. : channel layer; operation layer; analysis layer. The data mining of CRM in mobile communication industry fall into six stages. Finally article gives some CRM's examples to illustrate how to gain client, enhance client's value, and how to maintain existing client.*

Keywords: *data mining; the system structure of CRM in mobile communication industry*

0. Introduction

The china's mobile communication industry has been developed from a high speed increasing period in the 20th century into a relatively low speed steadily increasing period after its entering into the 21st century, and the competition in this industry is fiercer day by day: on the one hand, with the continual infiltration or joining into the mobile communication industry of the powerful domestic and overseas supplier by all kinds of ways; on the other hand, the consumers' demands for the service provided by the mobile communication industry is higher and higher. Facing so austere conditions, if the mobile communication suppliers still adopt the traditional price competition which can just increase the quantity of clients in short term, it will not increase the income from a long development, as well as it will leads to the running off of clients in fact.

How to maintain existing client, attract new client and make profit from client become the focuses concerned by the mobile communication suppliers. But the emerging of CRM (Customer Relationship Management) happens to provide a powerful competition tool for the mobile communication supplier.

1. The System Structure of CRM in Mobile Communication Industry

1.1 The concept of CRM

CRM is a kind of business strategy for enterprise, in order to develop a system research to clients, it establishes an information system to collect, manage, analyze and utilize the client resources for enterprise according to the dividing conditions of

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the clients. Cultivate the operation behavior putting the client as the guide and actualize the operation flow putting the client as the core, constantly enhance the clients' satisfaction level and fidelity, then increase the operation efficiency and yield returns of the enterprise.

The final purpose to put the CRM into effect is to transit the operation mode favorably from the past putting the product as the core into putting the client as the core, and eventually strike into an intensive type of operation. But for the consumer, if the enterprise puts the CRM into effect, its clients will enjoy the individual service authentically provided by the enterprise.

1.2 The system structure of CRM in mobile communication industry

In system structure terms, the mobile communication CRM can be divided into three levels:

1.2.1 The channel level's CRM

The contacting channels between current suppliers and clients present diversification, besides the traditional operating window, the marketing department, customer service, calling center, internet and other channels have equally become the important approaches. In the channel level, CRM can effectively help the supplier integrate the former dispersive interactive channels with the clients, finally achieve the high-activity collection and the maximum extent share of the customer information, establish a uniform communicating interface, consequently intensify the communication with the customer, raise the customers' satisfaction level.

1.2.2 The operation level's CRM

Making use of the channel level's full mastery and management of the customers' data, implementing the operation level's CRM, the suppliers finally will utilize IT technology to establish a set of flow automation and management system for operation section of marketing, distribution and service and so on. Reducing the operation cost, at the same time it is helpful for the employees to foster the servicing consciousness, the performance of distribution, service and marketing will be raised markedly.

1.2.3 The analysis level's CRM

By setting up data warehouse, utilizing data mining, and business intelligence and means, analyzing a mass of customers information, all of these will let the mobile communication suppliers know the customers' consumption model better and classify the customers, so as to work out the corresponding marketing strategy according to the practical demands of customers, and provide the customers with satisfactory products and service, namely the suppliers change the precious client information management to the client knowledge management. Figure 1 simply describes the system structure of CRM in mobile communication industry.

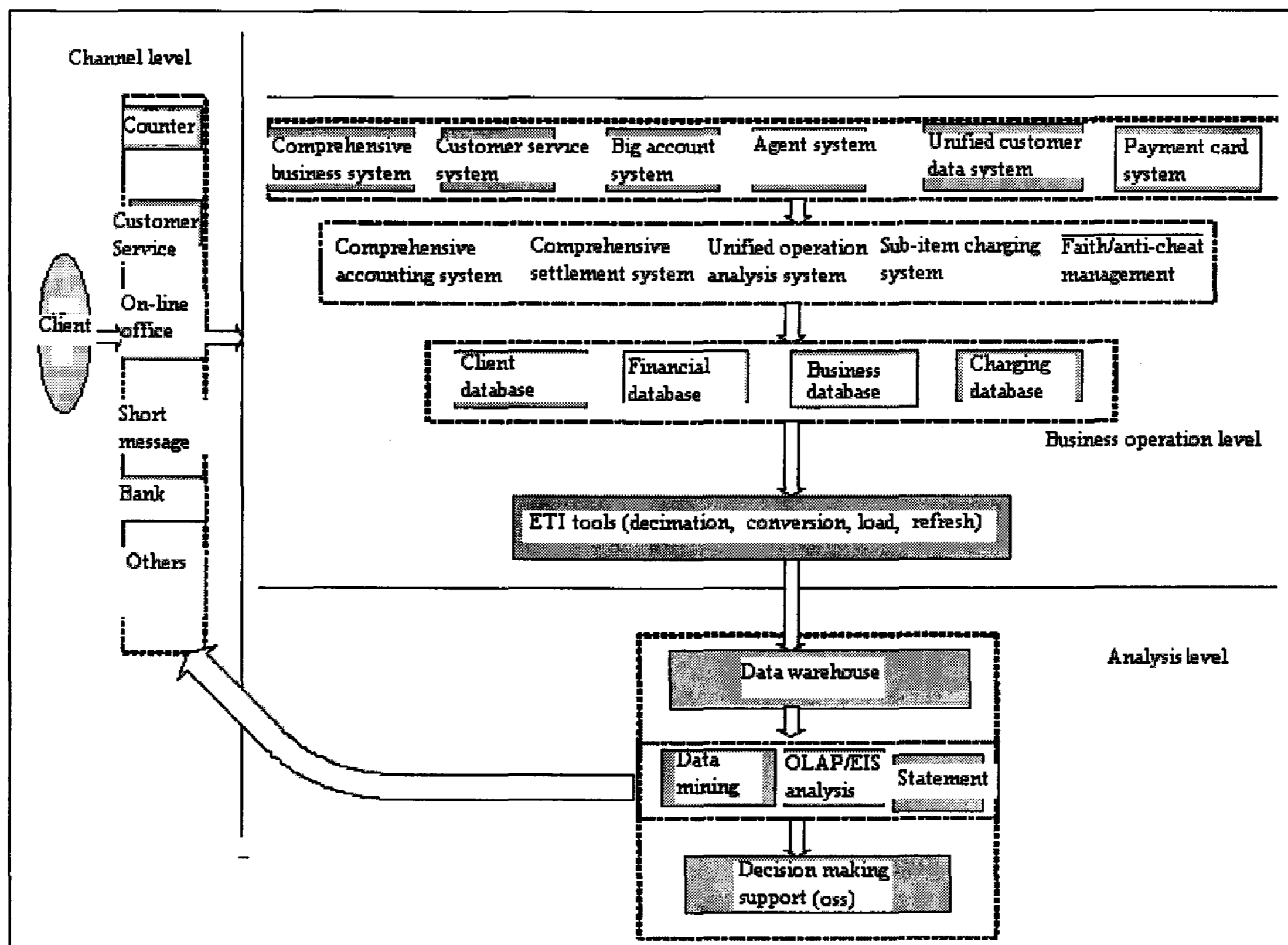


Figure 1. The System Structure of CRM in Mobile Communication Industry

In terms of the three levels of CRM, the hard core is the third level, the establishment of the analysis level's CRM is how to pick-up the useful information in the voluminous client operation data, and make full use of the useful information to provide the business decision with truly valuable information.

The operation supporting system in mobile communication enterprise includes a mass of data about the customers and products, in the past, people often just use the SQL query facility to find out the information hidden in it. But SQL is just a query facility, it can only help us verify our guess according to the known data, and it has lots of unpredictability, often depending on the familiarity degree on the operation knowledge of the query personnel, so it cannot make predicted analysis. Simultaneous for the calculation of vast data, it is unpractical to use only SQL query. How to find out the useful decision information hidden in the voluminous data, data mining technology undoubtedly provides the demand with tech support.

Data mining can also be called the knowledge discovery in database (Knowledge Discovery in Database, KDD), it is the high-level process for picking up the hidden information from the vast, incomplete, noisy, blurry and stochastic data, the information is not known by people in advance, but it is credible, novel, useful and can be understood by people. The data mining includes the choice, exploration and simulation of the mass database, thereby to find out the undiscovered mode to help people form the understandable information. Data mining is not the simple organization or presentation of data, and is also not only the data analysis and statistical modeling, but is a complete process from understanding operation demand and seeking settling program to receiving the practice test.

The data mining of CRM in mobile communication industry can be divided into six stages:

Business Understanding: business understanding is to carry out the understanding and analysis for the concrete operation, and to understand the operating of enterprise, operation flow and background of industry;

Data Understanding: data understanding is the understanding of the current utility system of enterprise;

Data preparation: data preparation is to pick up a template data subset relative with the question to be explored from the vast data of enterprise.

Modeling: modeling is to select a kind of more practical mining model and form the conclusion of mining on the base of data preparation according to the understanding to the operation question.

Evaluation: evaluation is to check out the conclusion of mining in practice.

Deployment: if the prospective effectiveness has been achieved, then the conclusion can be issued.

In practical program, data understanding, data preparation, modeling and evaluation are not operated by one-way, but is a process of repeat and adjustment time after time and constantly be corrected and perfected.

The correlation of the six stages of data mining of CRM in mobile communication industry is showed in Figure 2:

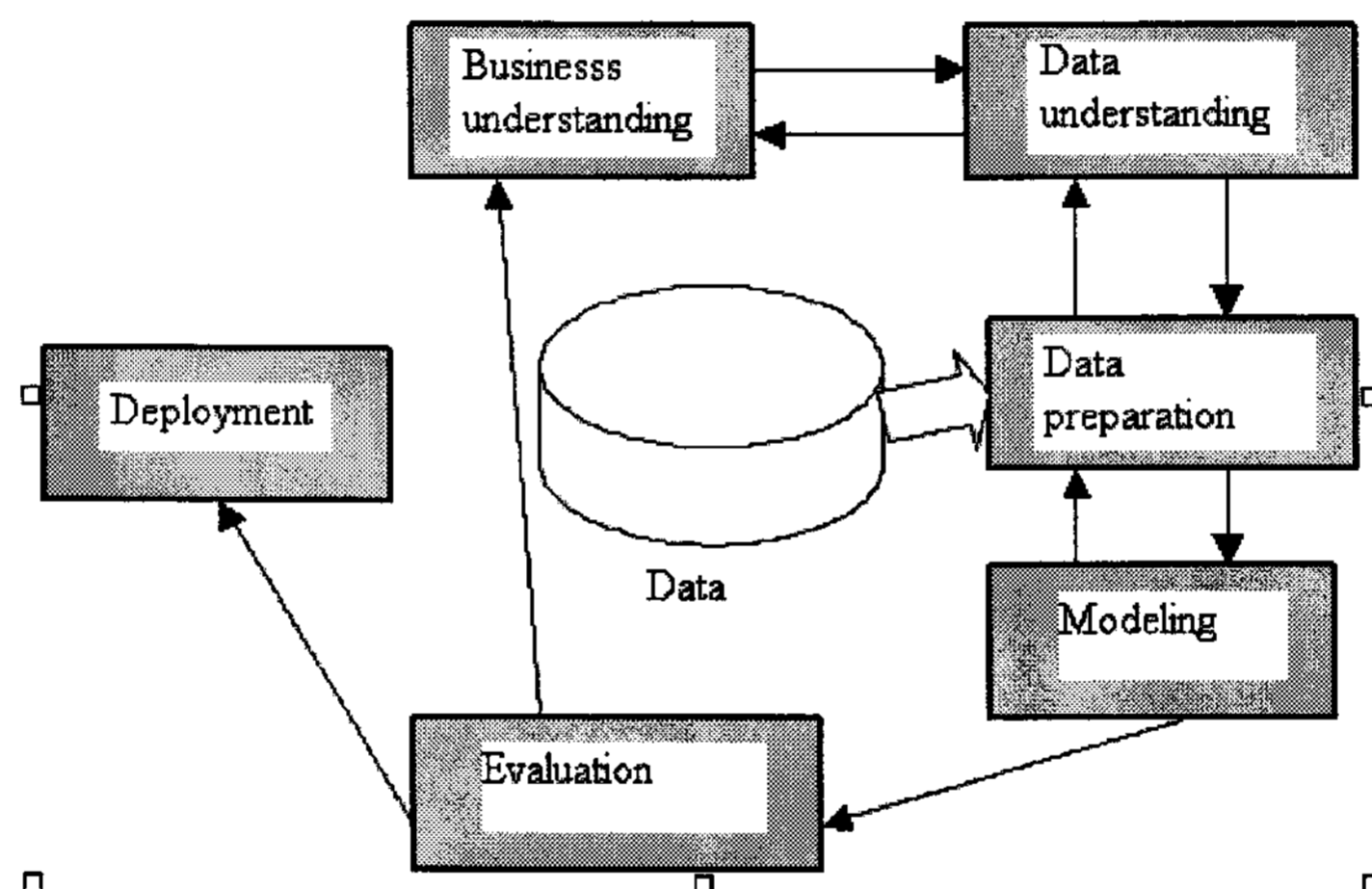


Figure 2. The Six Stages of CRM's Data Mining

2. The Application of CRM in Mobile Communication Industry

Three kinds of client relationship can be generalized. Gaining client, increasing the value of client and maintain the profitable client.

2.1 Gaining new client

The first step in CRM is to distinguish the potential client, then change them into the true client, data mining can assist to classify the client in detail, lock the development target of new operation and provide individual service. For example: Table1.

Table 1. Analyses of potential client

Telephone number	Type of network service	Number of calls (time)	Call duration (second)	Charging duration (minute)	Date of Last call
1357837XXXX	China Mobile	1072	40557	1293	20030430

1388822XXXX	China Mobile	1056	44905	1342	20030430
1370848XXXX	China Mobile	1050	61311	1653	20030430
1357781XXXX	China Mobile	1046	51311	1484	20030425
1398766XXXX	China Mobile	1041	56299	1533	20030430
1388871XXXX	China Mobile	1026	36771	1178	20030430
1350873XXXX	China Mobile	1002	65449	1668	20030430
1388708XXXX	China Mobile	992	47788	1343	20030430
1388853XXXX	China Mobile	988	28592	1083	20030430
1388824XXXX	China Mobile	986	32832	1147	20030430
1390888XXXX	China Mobile	976	80162	1857	20030430
1390882XXXX	China Mobile	974	75253	1831	20030430

From Table 1 we can see that the China Mobile local user who communicates with the Unicom user can absolutely be seen as our potential client, the client service department can fully make use of our searching results to communicate positively with the user by means of telephone or short message, introduce the set policy for the user to telephone with the most closely Unicom user, provides him or her with personal service.

2.2 Increase the value of client

Data mining supports the analyses of profit capacity of client, forecasts the variation of profit capacity of clients and reinforces the profit capacity; supports the analyses of purchase behavior of client, classifies the client in details, so as to provide individual service with more pertinence; carries out the crossed marketing effectively, provides the existing client with new product and service, to achieve the purchasing recommendation.

2.3 Clients maintaining

It includes the analyses of fidelity of client and the analyses of running off of client. Analyses the historical connection by data mining, analyses the warning of the abnormal communicating behavior, such as the abnormal reduction of message registration and the occurrence frequent call transfer, so as to propose the corresponding counter measure and suggestion. Increase the direct cash earnings by early warning the off-line of the high-side client. For example: Table 2.

Table 2. Early warning for high-level client who have liable to off-line

Telephone number	Number of calling and transferring	Times of calling and transferring	Bill of calling and transferring	Date of calling and transferring	Average bill of calling and transferring within the first three months	Date of opening an account	Current state	Current bill of July
1301134XX XX	1380308XXXX	173	54.6	April, 2003	572.5	2000-10-17	On	107.4
1303224XX XX	1370201XXXX	109	140.2	May, 2003	474	2001-8-8	On	100.1
1307226XX XX	1382117XXXX	189	160.2	June, 2003	249	2001-9-10	On	90.7
1319461XX XX	1380022XXXX	91	9.4	June, 2003	237	2002-7-30	Restrict calling out	185.8
1300134XX XX	1382150XXXX	221	25.8	June, 2003	186.9	1999-7-9	On	122.9
1319464XX XX	1392041XXXX	167	30.4	October, 2002	150	2001-2-23	On	701.8
1307226XX	1392006XXXX	112	57.2	May, 2003	149.8	2001-9-6	On	26.8

XX								
1319466XX XX	1380022XXXX	362	30.4	February, 2003	130	2002-8-9	On	220.3
1313201XX XX	1382088XXXX	113	97.4	April, 2003	61.6	2002-4-8	Restrict calling out	38.3
1317488XX XX	1382060XXXX	127	34.2	June, 2003	135.4	2002-7-31	Stop service	0

The telephone numbers and relative data of ten high liable to off-line clients have been listed in Table 2. These clients are mostly the old clients, whose bill before calling and transferring is relative high, so they are the typical high-level client, and their many numbers have been prevented calling out or have been stopped service after being discovered. The running off of these clients will absolutely lead to the loss of high level clients of company, and influence the income directly. Client service department can fully utilize the searching results to carry out detainment measures of clients with pertinence.

2.4 Early warning of fraudulent client

The current bad bill of mobile communication company is mainly the defaulting, in terms of reasons the defaulting can be divided into mass petty defaulting off-line by changing card, high bill short message defaulting of special clients, leak of communication network and defaulting produced by unreasonable setting, the above defaulting made by the clients can be distinguished and discovered by CRM in the mobile communication suppliers themselves.

2.4.1 Early warning of clients of petty defaulting off-line by changing card

For the clients of petty defaulting off-line by changing card, the defaulting each time is not big, but they will frequently jump on line and get onto the line by buying a new card after throw away the old card, for this kind of clients, when finding they get onto the line again, the operating personnel of the CRM system at the early warning downstage can effectively avoid the occurrence of the risk again by reducing the creditable degree of these clients or increasing the amounts of the early paying bill, at the same time capture the off-line defaulting of last time furthermore according to the client information of CRM.

2.4.2 Early warning of clients of short message high bill defaulting

The clients of short message high bill defaulting are main the clients who make mass rubbish messages by the short message platform in short time to create defaulting and then get off the line. This kind of client sends short messages at the fixed rule and for a long time, which will not only create the bad bill to the mobile communication suppliers, but also will produce the unfavorable influences on network load. By the data mining of early warning of the fraudulent client analyses system of CRM in mobile communication industry, it can discover this kind of clients in time, and by pausing the short message function it can effectively reduce the loss of bad bill, and reduce the signaling load and signaling dilation, at the same time it can reduce the cost in optimization and maintains.

3. Conclusion

All in all, the data mining technology has a wide application outlook in the CRM in mobile communication industry during the electric business affairs era; it is true that the one who has keep ahead for just one step in this application field will win the preemptive opportunities. Simultaneously, with the further development and deepen of the data mining technology, it cannot but bring wide application foreground and

market value for the domestic mobile communication enterprises and CRM. At the same time, it can effectively lift the central competition of the domestic mobile communication enterprises to make them develop from strength to strength during the competition with overseas magnates of mobile communication industry.

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