Research on Channel Optimization Strategy Based on Data Mining Technology

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Abstract. In recent years, the rapid application and popularization of e-commerce generated by the development of information technology and network technology. After the combination of e-commerce and traditional banking, emerging self-service channels such as self-service bank, online bank, telephone bank, mobile bank and TV bank have emerged. Compared with traditional banking service channels, these emerging banking service channels have more advantages, lower cost, no time and space constraints, service differences, innovation advantages, scale and scope economy advantages, etc. Therefore, how to use data mining technology to reduce the excessive use of counter and other channels, alleviate the phenomenon of network queuing, give full play to the maximum efficiency of various service channels, improve the bank service quality, so as to improve customers' satisfaction and loyalty to bank services has become one of the key concerns of commercial banks.

Keywords: Data mining technology · Channels · Optimization strategy

1 Introduction

With the rapid development of China's financial industry, the competition among commercial banks is becoming more and more fierce, and all kinds of businesses and products are becoming more and more homogeneous. For ordinary customers, it is difficult for them to see how excellent the internal background system of a bank is, and the perceptual understanding of the channel as the "medium" basically determines the customer's satisfaction and loyalty, so the construction and optimization of the channel is directly related to the customer's feeling of the bank's service; At the same time, the complexity of banking operations has also become an important factor for customers to choose banks and service channels, which is also the key for banks to occupy the market and win customers. Through the optimization of service channels, commercial banks can achieve good results in business operation, service optimization and the expansion of new channels and new businesses [1]. Therefore, the optimization of service channels has become an urgent work for commercial banks in the current market competition.

By optimizing service channels, developing multi-channel operation and realizing the diversion of counter business has become an important means for commercial banks

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to improve service competitiveness and product competitiveness, which is related to the business development and operation development of grass-roots outlets. In order to give better play to the main channel role of outlets, it has become an urgent task for the banking industry to improve the competitiveness of outlets to divert counter business, alleviate counter pressure and improve the proportion of channel transactions. At the same time, the diversion of counter business is of far-reaching significance for banks to release the pressure of counter personnel, effectively save operating costs and cultivate customers' habit of consciously using self-service equipment and electronic channels. Its advantages are reflected in:

First, optimize the structure of customer transaction channels, and further tilt the counter channels to target customers by reducing the volume and proportion of individual customers' counter business; Low star customers are more diverted to electronic channels, which can improve the activity level of electronic channel customers. Second, promote the improvement of bank service level, reduce the proportion of customers waiting overtime and the average queuing time of customers, and improve customer satisfaction. Third, optimize the personnel structure. The diversion of counter business can release the labor force of grass-roots temporary counter personnel and improve the proportion of sales personnel. Fourth, promote the improvement of operational risk management level. With the decrease of diversion rate, the work pressure of front-line tellers is reduced, which can greatly reduce the occurrence of operational risk events.

2 Data Mining Technology

Data mining (DM) is a process of extracting hidden, unknown but potentially useful information and knowledge from a large number of incomplete, noisy, fuzzy and random data. At the beginning, data mining technology was mainly application-oriented. It can process structured or semi-structured data, from simple retrieval and call of data to micro or macro analysis, statistics and reasoning of these data, so as to seek the basis for solving practical problems and find the internal relationship between events, Finally, the existing data can be used to make decisions on future activities.

2.1 Analysis Method of Data Mining

The more tools and methods the data mining system uses, the higher the accuracy of the results, because one way can't be used for the same problem, and another way can be used. It all depends on the type of problem and the type and scale of data. There are many classification methods of data mining technology. According to the mining tasks, it can be divided into classification, clustering, association, pattern recognition, visualization, decision tree, genetic algorithm and so on.

(1) Classification analysis

The prediction of the model often aims to obtain other data through some data in the database. If the predicted data volume is discrete, it is called classification; If the amount of data is continuous, it is called regression [2]. The model constructed by this description is generally represented by rules, decision trees and neural network patterns.

If you want to analyze the credit risk of a user's credit, you must make a comprehensive analysis of its debt, income and stability of work. For the classification algorithm, the result is given through the relationship between the above attributes and the risk degree in the data. This approach can be implemented using a decision tree. Analyzing the data and taking the most important attribute in risk prediction as the first branch point is a sufficient condition for large credit risk. For those with high credit risk, it can be used as the second judgment condition, and so on. In fact, each user applicant has many other different attributes, and the number of applicants is very large. It will be very difficult to seek judgment manually, and the classification algorithm can complete the decision tree of the rule.

(2) Cluster analysis

Clustering is to classify data into several groups according to similarity. It is different from the prediction model, and the data attributes of target variables in clustering are not obvious. The algorithm judges its "hidden attributes" through the detection of data, and divides the customer database into multiple similar groups by grouping. Each group contains multiple similar customers, and corresponding strategies can be formulated for different groups. There are a variety of data classification methods. The commonly used methods are k-means algorithm, hierarchical aggregation method and estimation maximum method. In practical application, the dimension should be defined. When the dimension is 2, the division of groups is relatively simple and can be realized manually; However, if the dimension becomes larger, it will be quite difficult to classify manually, because simple data division is meaningless. With the increase of divided data points, the situation becomes quite complex. In this case, the clustering algorithm can handle it well. It will classify the data and produce the corresponding aggregate values.

(3) Correlation analysis

The purpose of association analysis is to generate a summary of some data information and obtain the correlation between data sets or the derived relationship between data. The technology used is usually association rules. The calculation of association rules mainly depends on the data set in the relevant data, which is composed of the data in the transaction. The measurement of its relevance can usually be realized by two thresholds: support and credibility. At the same time, the parameters such as interest and relevance are further introduced to make the mined rules more in line with the actual needs.

2.2 Data Mining Process

The process of data mining is not a linear process, but an iterative process, in which there are many feedback loops. As shown in Fig. 1, it can be roughly divided into problem determination, data preparation, data mining implementation and result expression and evaluation.

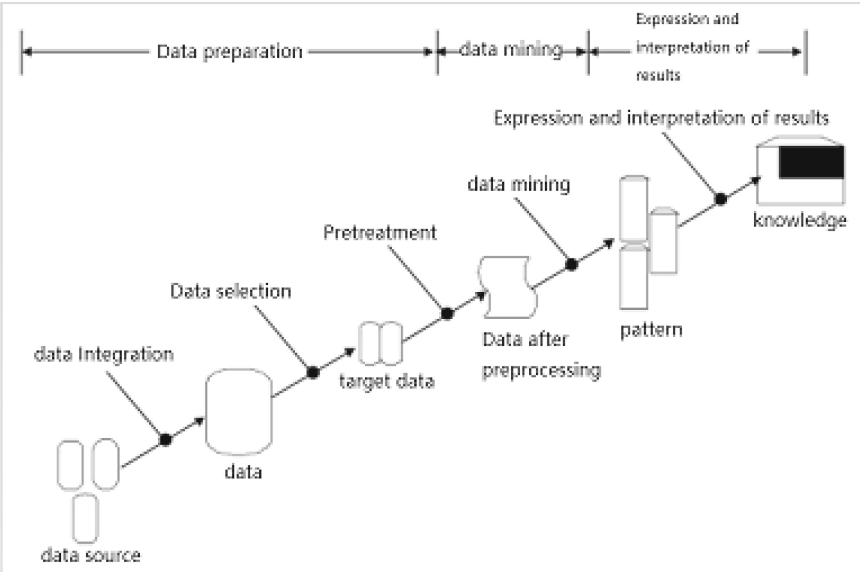

Fig. 1. Data mining process

3 Channel Selection

3.1 Channel Selection Behavior

The so-called channel is the channel or way for consumers to obtain products (or services) from manufacturers or retailers. It is the organization on which products or services are transmitted from production or retail to consumption. Some scholars also define the channel as the specific way or channel formed by connecting all links in the process of transferring products (or services) from the production field to the consumption field. Channel is not only the contact point between consumers and enterprises, but also the medium for interaction between enterprises and consumers.

With the development of network technology, more and more enterprises integrate the network into multi-channel marketing strategy by using existing resources, and carry out marketing activities through a variety of sales channels such as traditional physical stores, mail orders, TV shopping channels and e-commerce websites. Moreover, consumers make complex shopping choices in a variety of channel environments, obtain products and experience a high level of customer service. From the perspective of bank service channels, with the development of information technology, the service channels provided by banks have also developed from the traditional counter to multi-channel such as self-service bank, online bank and telephone bank [3].

3.2 Influencing Factors of Channel Selection

(1) Channel factors. Channel selection mainly comes from the costs and benefits brought by the channel to its users. In other words, channel selection depends

on consumers' perception of channel attributes. Through the review of existing literature, it is found that four channel attributes mainly affect channel selection, including channel service quality, channel convenience, channel risk and transaction cost through channels. However, these channel attributes do not play the same role in different scenarios. Consumers may consider different factors in the information search stage and the purchase stage. In fact, consumers' choice of different channels at different stages of shopping is the result of their comprehensive comparison of the benefits and costs brought to consumers by the channel attribute. The problem is that the existing relevant scales of benefits and costs are obviously not very applicable in the multi-channel environment, It is necessary to develop a new cost and benefit measurement scale for consumers in different shopping stages in a multi-channel environment.

(2) Situational factors. The research on store selection believes that the perceived store value of consumers depends not only on the attributes of stores, but also on situational factors. Therefore, the importance of store attributes will change with the change of consumers' purchase situation. Similarly, the situational factors of store selection also have an impact on channel selection. There are mainly two types of situational factors that have an impact on channel selection: the products to be purchased and different stages of the purchase process. Products are the first factor that consumers consider when choosing channels [3]. Chiang et al. (2006) found through experiments that the factors affecting consumers' choice of traditional and virtual channels will show differences due to different product categories. Generally speaking, the Internet is more suitable for the sales of search products, while complex and high involvement products are suitable for traditional channels. Balasubramanian et al. (200) and Baal and Dach (2005) believe that channel selection also depends on different stages of the shopping process. For example, a consumer uses the Internet to search for product information, then buys in a physical store, and finally uses a call center to obtain services. In other words, the importance of channel attributes in the channel selection decision-making process will change with different stages of the shopping process [4].

(3) Consumer factors. Consumers' demographic characteristics (gender, age, income and education), psychological characteristics (lifestyle, innovation characteristics) and behavioral characteristics (previous shopping experience) will affect consumers' choice and preference for channels. The early literature mainly focused on demographic characteristics. Later, with the increasing popularity of Internet applications, many scholars also began to explore the impact of psychological and behavioral characteristics such as lifestyle, innovation characteristics, channel tendency and shopping experience on online channel selection.

4 Conclusion

Therefore, based on data mining technology and with the help of the characteristics and advantages of various channels, some innovative businesses are launched. For example, the business that meets the installment payment of credit card can be marketed to customers in the form of external dialing by telephone bank. With the consent of customers, it can be handled directly for customers through relevant background transactions; Through the outbound call of telephone banking, you can also market some specific financial products to customers, and subscribe to customers first with the consent of customers. Then, customers complete this transaction through the verification and confirmation of U shield of online banking, so as to expand innovative business by combining the respective channels of telephone banking and online banking.

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