Data Mining Analysis Based on Business Administration Data

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Abstract. With the advent of the era of big data, the utilization value of data has been paid more and more attention by various industries. Data mining shows its superiority in the secondary utilization of existing data, which can produce great economic benefits to our life. In order to improve management efficiency and adapt to modern management, the industrial and commercial administration department has gradually established its own business management system and realized the digitization of economic household registration. However, its current business system can only provide daily transaction management. It is becoming more and more difficult to obtain useful information from the business system, which seriously affects the full utilization of data. Therefore, based on the data mining of business administration data, this paper makes an in-depth understanding and analysis of business administration data.

Keywords: Business administration · Data mining · Data analysis

1 Introduction

The great changes in information technology in recent years have greatly improved people's ability to collect data. All industries will involve the use and storage of data, and the use of database is inevitable. As a government agency, the Administration for Industry and Commerce in all parts of China is of course essential to use the database system to improve the normal office efficiency. So what benefits can mining and analyzing business administration data bring us?

The industrial and commercial administration department is in charge of all the information of the market subject, and a large amount of such information is the basis for the state to judge the macroeconomic trend. The development of market subjects is a very important part of economic development. The change of market subjects will not only directly affect the operation state of the national economy, but also reflect the characteristics of national economic development. Therefore, it is very important to fully control and effectively use the information of market subjects for the study of Macro-economy.

From a macro perspective, if business big data can effectively predict the macroeconomic trend under the current severe fluctuations in the global economy and China is

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facing deepening economic reform, it can not only enhance the influence of the business management system in economic development, but also effectively affect the country's economic decision-making, so that the country can avoid detours in the process of economic development, Give full play to the effectiveness of industrial and commercial administration [1]. From a micro perspective, the functions and responsibilities of the industrial and commercial administration department determine that a large number of economic data such as market subject change, annual inspection information, investment situation and reporting information have been accumulated in the database of the current industrial and commercial administration department. If big data technology can be fully used in the industrial and commercial system, It can not only support government departments at all levels to formulate effective economic policies and improve the administrative effect of industrial and commercial administration departments from data and theory, but also make a qualitative leap in the work efficiency of industrial and commercial administration departments themselves.

2 Overview of Data Mining

2.1 Basic Concepts

Knowledge discovery in databases (KDD) is a complex process of extracting potentially useful, effective, novel and ultimately understandable patterns from databases. Data mining is the most important component of KDD. Nowadays researchers usually don't make a specific distinction between data mining and KDD. In Data Mining: (1) data is a combination of a group of facts, which can come from different data sources, either regular data or irregular data; (2) pattern is an expression described in a language about a data subset or an applicable model, also known as knowledge; (3) evaluate the effectiveness and innovation of the reliability evaluation model respectively The usability of the usability evaluation model and the comprehensibility of the simplicity evaluation model.

There are many kinds of knowledge or patterns produced by data mining, but they can be divided into five categories: (1) generalized knowledge that can reflect the common properties of similar things; (2) Correlation knowledge reflecting the interdependence between things: (3) classification knowledge reflecting the differences of different things; (4) predictive knowledge that can predict the future trend; (5) Biased knowledge that reflects deviations from conventional phenomena.

2.2 Data Mining Steps

The flow of data mining is shown in Fig. 1, which mainly includes the following contents:

(1) Research problem domain: defining a problem domain is actually to clarify the mining requirements. Only with goals can there be directions. Therefore, this is the most important first step in mining operations.
(2) Select target dataset: select the mining target and select some data from the data source according to the demand.

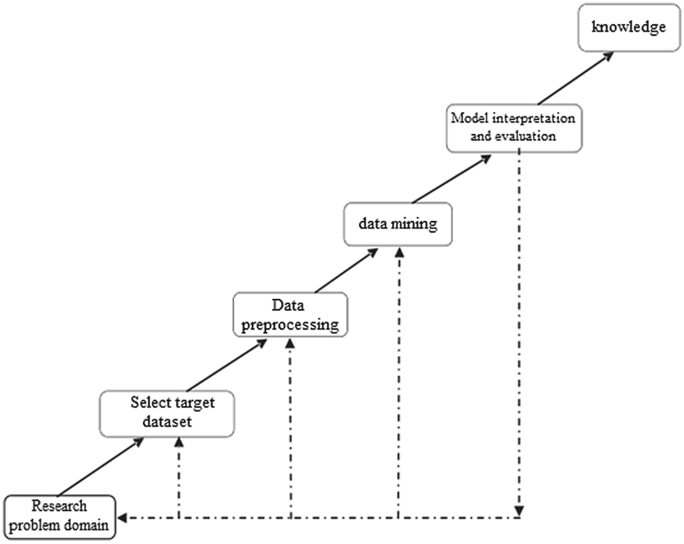

Fig. 1. General process of data mining

(3) Data preprocessing: purposefully process the target data set to turn it into high-quality data that can be mined directly.
(4) Data mining: this stage is simply a pattern generated by actual operation according to mining requirements. A more realistic problem is algorithm matching. This problem usually considers two points: one is the characteristics of data, and the other is the requirements of running system.
(5) Pattern interpretation and evaluation: This is the work that needs to be done before submitting the final results to the user. It is necessary to filter a large number of patterns formed in the previous mining stage and eliminate some useless patterns or patterns that the user is not interested in. If no patterns available to the user are found in these patterns, it is necessary to return to the initial problem domain description stage, Repeat the excavation operation [2].
(6) Knowledge: the final model obtained by using the above steps is to apply useful knowledge to practical problems and guide people's behavior.

3 Application and Prospect of Data Mining in Business Management System

In recent years, the data of business administration system has increased rapidly. In this large amount of data, there is huge information value such as industrial and commercial supervision and market development trend. If we can quickly and effectively analyze and process these data and mine useful knowledge that can guide us to make decisions, it will more effectively help the industrial and commercial system to carry out supervision and decision-making. The application model of data mining in industrial and commercial system is shown in Fig. 2.

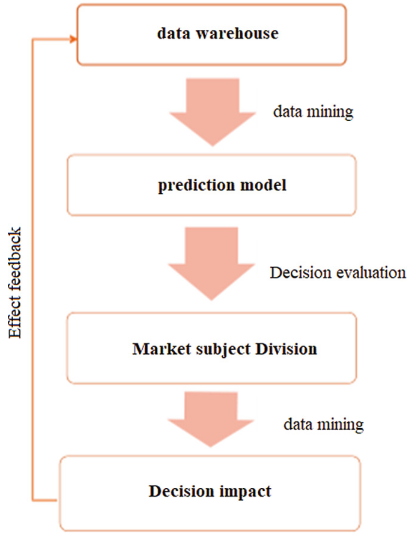

Fig. 2. Application model of data mining in business management system

From the perspective of business administration system, the main goal of business administration is to improve the modernization level of market supervision and understand the economic trend of the development of market subjects. Business administration data mining should mainly solve the above problems. Data mining can help industrial and commercial administrations clearly understand the current market supervision, and also help industrial and commercial administrations determine the development trend of market subjects, so as to master the mode and law of economic development, help the government correctly understand and understand the future direction of economic development, and provide strong data support for the formulation of economic policies.

4 Architecture and Data Preprocessing of Business Administration Data Mining System

4.1 Architecture of Business Administration Data Mining System

The architecture of business administration data mining system is based on the general process of data mining, and refers to the construction method of conventional application platform.

The architecture mainly includes the following three levels:

(1) Basic database layer.
This layer should include source database, mining requirement dictionary, model algorithm base and knowledge base. The source database comes from the business system of the industrial and commercial administration department. It is the accumulated data for the daily management and use of the industrial and commercial administration department [3].

(2) Functional layer.
The system needs to be able to manage the process, requirements, model algorithms and results of data mining. The process management includes requirements description, data selection and processing, selection of model algorithms and management of mining results. These are the functions that must be involved in the design of function layer.

(3) User layer.
The users of the system can be professionals or non professionals. There is no need to know in detail how to mine at the bottom. This layer is responsible for system permission setting and entering necessary data parameters.

4.2 Data Preparation and Selection

At present, it has entered the era of big data, and the data in the database of the Administration for Industry and Commerce has expanded sharply with the advent of the era of big data. In the process of mining business administration data, it is a very important step to establish a usable target data set. The target set comes from the original data, that is, the data in the business system of the industrial and commercial administration department. These data are huge and messy, and there must be problems such as attribute value vacancy, data noise and so on. Moreover, these data may come from different levels of industrial and commercial management systems, that is, different data sources. The data of each data source is large, including redundancy and scattered data [4]. It is often stored in a heterogeneous environment lacking unified design and management. It is difficult to access comprehensive query. In addition, many historical data cannot be stored and queried online. These factors will affect the efficiency of data mining. Therefore, it is very difficult to mine high-quality knowledge or patterns from these low-quality and non-uniform data sources. Thus, data preparation and selection is the most important part in the whole mining process.

5 Conclusion

With the realization of the digitization of economic household registration, the current database business system shows some deficiencies in the in-depth statistical analysis, and it becomes very difficult to obtain useful decision-making information. It is urgent to develop a new data analysis system by using emerging technologies. As a fresh blood in the field of data analysis, data mining gradually shows its superior practicability. At present, it has been applied to many industries, showing its wide application range and huge potential economic value. Although the application technology and concept of data mining in China are far from foreign advanced technology, great progress has been made. Although the domestic research on data mining of industrial and commercial big data is still in its infancy, it is believed that it will be more and more perfect and in-depth in the future, which is also the development direction of data analysis of industrial and commercial management system in the future.

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