The application of enterprise financial management information system in the big data environment

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Abstract. In the rapid development of information technology in our country, the financial management informationization of enterprises has become the main direction of modern enterprise reform and development, the purpose is to provide scientific basis for investment management, product research and development, market delivery and so on. Financial management is the core content of enterprise operation and management. In the big data environment, the traditional enterprise financial management information system has been unable to meet the business needs. Therefore, some scholars proposed to use information technology to provide reference basis for scientific decision-making of enterprise financial management. Based on the understanding of enterprise financial management under the era of big data, on the basis of information system application research status quo, mainly discusses the association rule mining algorithm as the core of financial management information system structure, and combining the practice case to verify the effectiveness of the new enterprise financial management information system application value, consistent with the time development of the management measures are put forward, In order to adapt to the continuously changing market environment faster.

Keywords: Big data; Enterprises; Financial management; Information system; Association rule.

1. Introducion

In the construction and development of modern society, the financial department manages the capital flow of the enterprise, and will reasonably apply the capital to all operating departments. Therefore, the management of financial information is the core of modern enterprise management. At present, the financial management system cannot timely improve the financial information, and the overall operation is faced with many problems. The timeliness of information is too low to meet the needs of modern enterprise construction and development. Therefore, some scholars put forward the establishment of enterprise financial management information system based on big data technology in their research.[1-3]

Since our economic construction and urban development have entered the era of big data, all kinds of mobile data, hardware equipment, intelligent terminal, etc., begin to innovate and improve gradually, and are actively applied to people's life, production, study and other fields. Since a large amount of data is generated in all fields of society all the time, it is important to promote innovation in data storage and computing application models. The data information in the big data environment is growing faster and faster, with the characteristics of large quantity, diversity, high speed and value. While carrying out the development of informatization and data, all fields have built the information management system and introduced the big data information mining technology, so as to provide solid and stable data information for the internal management and strategic management of enterprises. It is convenient for them to obtain more targeted and contemporary strategic decisions. From the perspective of enterprise long-term development, big data environment has the following impacts on the construction and application of enterprise financial management information system: First, improve the comprehensive efficiency of financial management. Traditional enterprise financial management needs to consume a lot of manpower and material resources, time and energy, need to deal with a large amount of work, and the redundant management content is relatively complex, in the big data environment if continue to rely on the traditional technology model, it is easy to lead to financial management problems, such as reduced work efficiency, post rights and responsibilities cross, etc. Applying big data information

technology to enterprise financial management information system can not only show the application advantages of big data and cloud computing, but also use information program to replace manual management, so as to truly achieve the goal of financial management. Secondly, optimize the level of financial management information. At present, information technology has been penetrated into various fields, because the amount of financial management work is relatively large, need to calculate more data information, if only rely on more manpower calculation and analysis, then there will be data delay, calculation error and other problems, and use big data information technology to build enterprise financial management information system. It can lay a solid foundation in information interaction and data sharing, and provide an effective basis for the following enterprise financial decision-making and comprehensive management; Finally, strengthen the enterprise financial risk management ability. In the process of enterprise production and operation, the most important is financial risk management. If the risk management level is insufficient, it will easily lead to the enterprise's economic decision-making deviate from the correct direction of development, and the serious circumstances will prevent the normal operation of the enterprise. Therefore, some scholars proposed to apply the big data information technology into the enterprise financial management information system to integrate and analyze the objective risks of the enterprise's finance, environmental risks, technical risks and other contents. To ensure the healthy and stable operation of the enterprise.

The association rule algorithm proposed in this paper is to find the interdependence between one thing and several other things, and has achieved excellent results in database, machine learning, statistics and other aspects. The association rule mining algorithm is applied to the financial information management system, can in a variety of financial data mining data relationship, and truly present the specific state of enterprise management.[4-6]

2. Methods

2.1 Enterprise financial management information system

Financial management information system (FMIS) as the foundation of the enterprise construction in the new period the application content, can satisfy the need of centralized financial management, and achieve the high concentration of enterprise financial management. As the basic component of enterprise resource planning system (ERP), FMIS is directly connected to other modules in the system, and can directly obtain or store data information from other modules, which is used to ensure the consistency of management system operation. The specific function is shown in Figure 1 below. It gathers various information required for enterprise management decision, and can provide decision support for enterprise management.
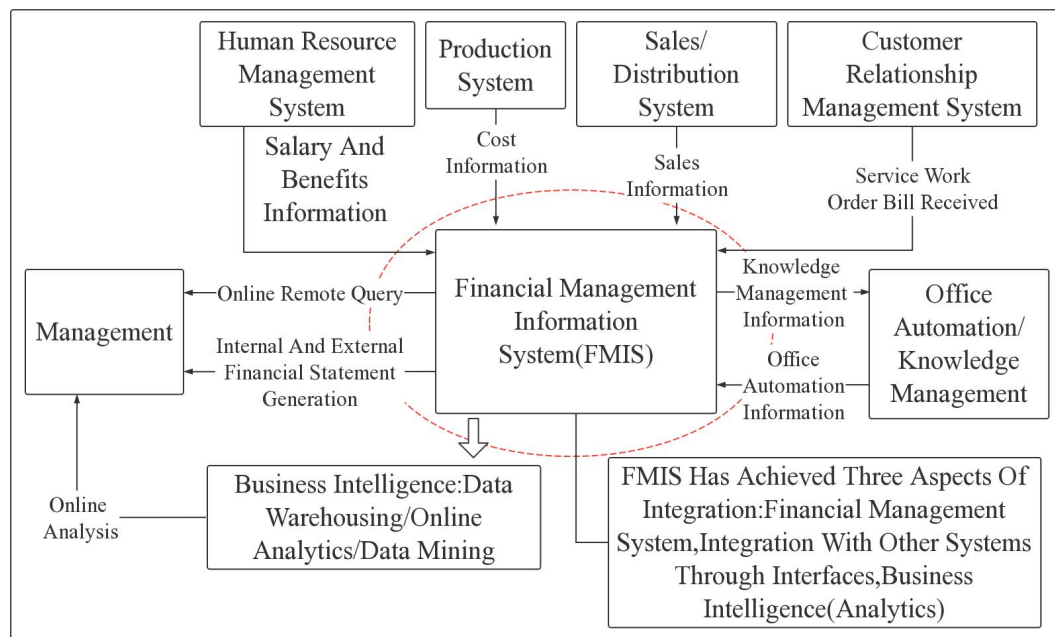
Figure 1 Relationships between FMIS systems and other systems

The working idea of FMIS is to apply advanced computer hardware and software technology, regard the optimal allocation of the enterprise's overall resources as the development goal, complete the optimal design of management mode and business process on the basis of comprehensive budget management, fully integrate the financial system and business system together, and apply a variety of mathematical methods and models under the guidance of advanced management ideas. Integrate analysis of financial and management conditions to provide strong support for corporate decision-making. As the latest development stage of accounting computerization, in addition to the original system of financial processing, system management and other basic functions, but also increased, budget management, investment management, tax management, financial analysis, document information, comprehensive inquiry and other functions. In the overall system operation state, budget management is the core content, will use historical data, basic data, probability, direct budget and other ways to complete the budget preparation, and do a good job of budget release, budget allocation, budget summary and other basic tasks, while the report system is a common report subsystem of the system, can form a variety of reports required for budget, accounting, control and other work. With summary, merge, assembly and other basic functions.[7-9]

2.2 System Running phase

After the completion of the enterprise foundation preparation work, FMIS system can enter the operation stage, which is mainly used to test the various functions and management processes contained in the system, improve and apply in the enterprise financial management. Take system testing as an example. After business process adjustment and software function matching, all departments of the enterprise will have a deep understanding of the system software and master the business process of the system operation. Now the system testing must be carried out before the formal application. Look for easily confused ideas, the specific operation includes system initialization, standardized data, input data, user, secondary development and so on.

Using the process shown in Figure 2 below to complete the customization and secondary development design, FMIS software will become a product provided by the enterprise's external software provider, and an important link to transform the enterprise's internal financial management information.
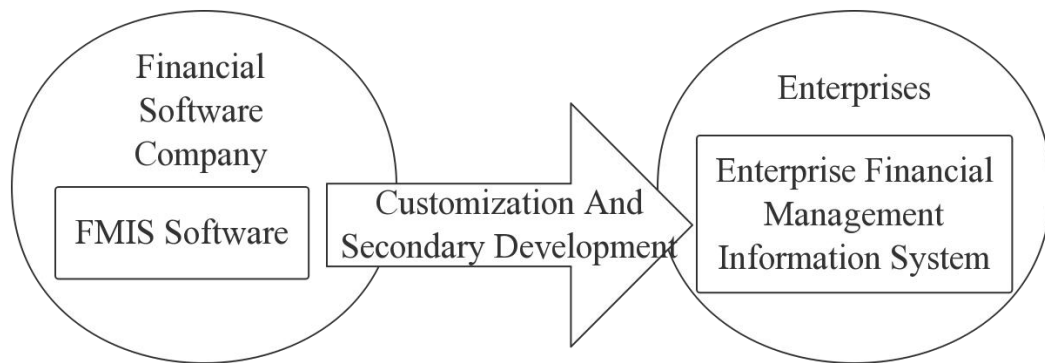
Figure 2 System customization and secondary development processing

After the system test and analysis, it can be clearly found that the whole system is composed of three parts: server, client and database. The server is suitable for the logical operation of experimental applications, the client provides users with basic functions such as interaction and display, while the database provides the system with basic functions such as data mining, data storage and data analysis. The specific structure is shown in Figure 3 below:
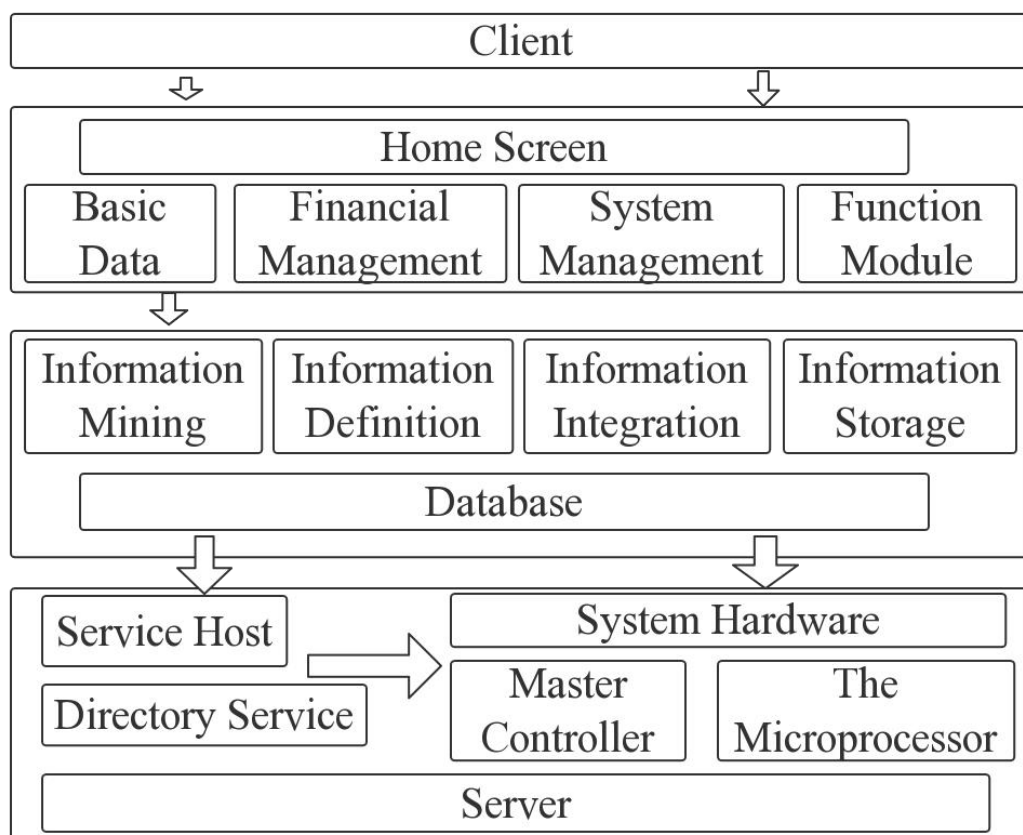

Figure 3 System architecture diagram

2.3 Association rule analysis

Suppose I = {il, i2,... , im} is a collection of. A collection of r D for transaction (transaction database), transaction T is a collection of and T ⊆ I.

Assume that A is A set of items in the I, if A ⊆ T, so called transaction T contains A.

Definition 1: An association rule is an implication of the form A→B, where A⊂T, B⊂I, and A∩B=Φ.

Definition 2: Rule support. Rule A→B has support S in database D, indicating that S is the percentage of transactions in D that also contain AB, and it is the probability P(AB), namely:

$$S(A \rightarrow B) = P(AB) = \frac{|AB|}{|D|}$$

In the above formula, | D | represents the number of transaction database D, refers to A, B two itemsets simultaneous transaction number.

Definition 3: Rule credibility.

Rule A→B has confidence C, which means that C contains both item set A and item set B. Relative to the percentage containing item set A, this is the conditional probability P(BIA), i.e. :

$$C(A \rightarrow B) = P(B|A) = \frac{|AB|}{|A|}$$

Among them, | | says the database contains A set of A transaction number.

Definition 4: Threshold.

To find useful association rules in a transaction database, the user needs to determine two thresholds: minimum support (min_sup) and minimum confidence (min_conf).

Definition 5: A set of items is called an item set, and an item set containing k items is called a k-item set. If the item set meets minimum support, it is called a frequent item set.

Definition 6: Association rules.

Rules that satisfy both min_sup and min_conf are called association rules. That is:

$$S(A \rightarrow B) > \min \sup \ or C(A \rightarrow B) > \min conf$$

When true, a rule is called an association rule, or a strong association rule.

Definition 7: Interest.

$$I(A \rightarrow B) = \frac{P(AB)}{P(A)P(B)}$$

The formula reflects the degree of correlation between item set A and item set B.

3. Result analysis

In order to verify the effectiveness of the financial information system management application with association rule algorithm as the core, this paper combined with the traditional financial management information system for comparative analysis, the experimental environment of Windows 7 was selected, in which the memory was 8GB, the main frequency was 3.2Hz, and the operation was processed according to the process as shown in Figure 4 below:[11-13]
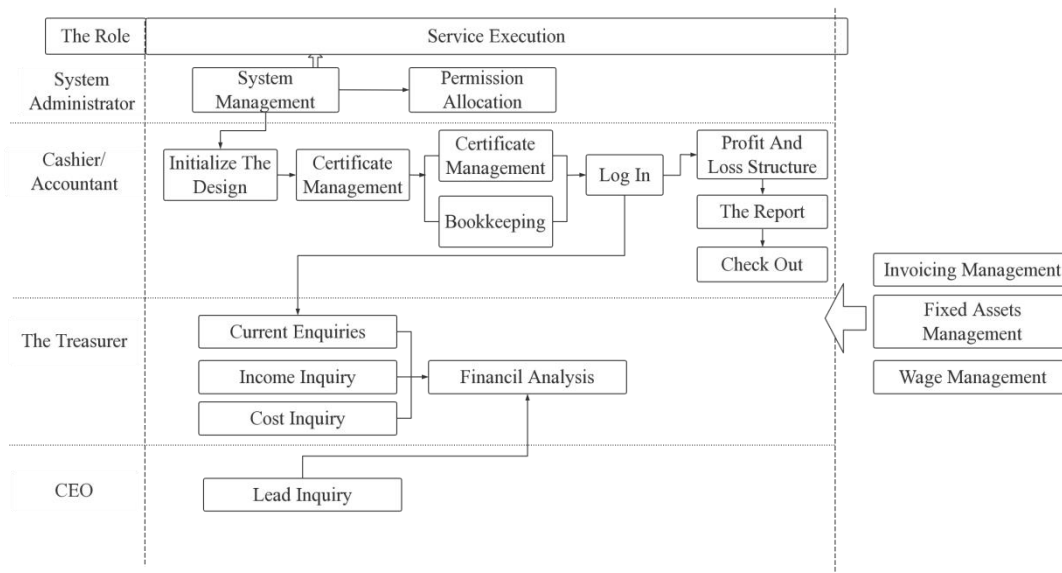
Figure 4 Operation flow chart of financial information system

In this experimental analysis, select the financial management information stored by an enterprise, which contains 10,000 files, and randomly divide these data into five groups. The first group contains 500 files, the second group contains 1000 files, the third group contains 1500 files, the fourth group contains 2500 files, and the fifth group contains 4500 files. The final comparison data how many cases of the two systems of information mining time. Among them, the operation steps of association rule mining algorithm are shown in Figure 5 below:
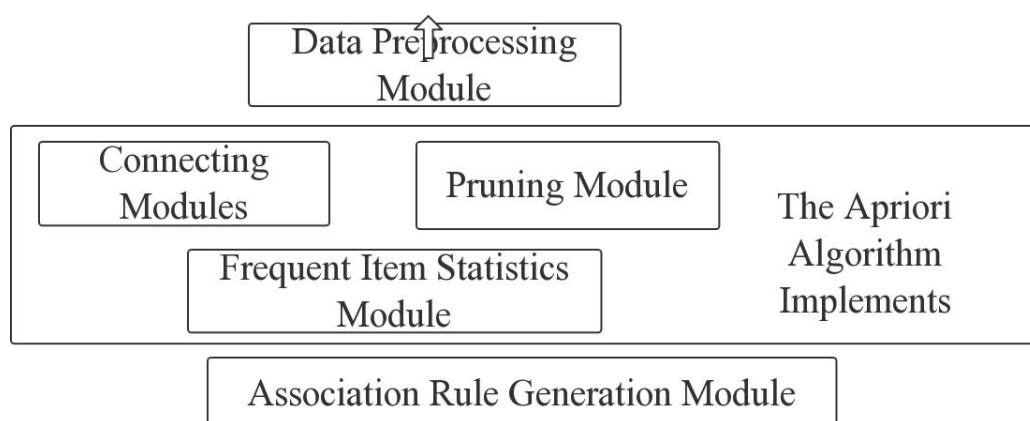

Figure 5 Financial information processing structure based on association rule mining algorithm

The final results show that in the first group of experiments, there is a small difference between the mining time of the traditional system and that of the system studied in this paper. However, with the continuous growth of data information, the mining time of financial information of the traditional system is getting longer and longer. In the fifth group of experiments, there is a large difference between the two. However, the financial information management system based on association rules mining algorithm proposed in this paper has little overall information mining time, which proves that the enterprise financial management information system under the environment of big data has unique advantages, which can effectively control the operation time of information mining and processing.[14-15]

4. Conclusion

To sum up, in the face of the increasing financial management information of enterprises, this paper puts forward the financial information management system with association rules and mining algorithm as the core, whether it is software design or hardware design can be better, to meet the fundamental needs of financial information management. The final experimental comparison results show that the financial information management system based on association rule mining algorithm has less time than the traditional system of information mining, requires less human resources and work pressure, can effectively solve the problems existing in the application of traditional information mining management, and meets the basic requirements of enterprise financial management innovation in the new era. Therefore, on the basis of discussing the content of enterprise financial management information system in the big data environment, we should increase the training of professional and technical personnel, and encourage and support various industries to apply the enterprise financial management information system. Only in this way can we effectively deal with the problems of financial data information.

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