Explore the Application of Block Chain Technology in Financial Shared Service Center

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Abstract: With the gradual progress of economy, the level of financial content is increasing, and the complexity is also greatly improved. Traditional financial methods can no longer deal with a lot of financial information, we must find new ways to deal with complex financial data. The progress of science and technology promotes the emergence of block chain technology, which makes traditional financial transactions change. Under the influence of block chain technology, a system different from traditional online payment transactions and value transfer emerges, and the scope of financial shared service center is gradually expanded. Financial shared service center can reduce costs and maximize the benefits of enterprises. By combining block chain technology with the application of financial shared service center, the working efficiency of financial shared service center can be improved and the optimization of financial shared service center can be realized. Based on block chain technology, this paper explains relevant concepts of block chain technology and financial shared service center, and discusses the application of block chain technology in financial shared service center by using relevant construction algorithms. These are of great importance to the scientific construction of financial shared service center.

1. Introduction

With the development and upgrading of social economy, the financial scope is continuously expanded and the hierarchical content is more complex. Traditional financial calculation can no longer meet the requirements of current financial calculation, and the financial shared service center is gradually established, which greatly improves the financial processing efficiency and gradually maximizes the benefits of enterprises [1]. However, we cannot ignore the problems in the construction of financial shared service center, such as the lack of regulatory measures and the imperfect credit system, which seriously restrict the further optimization and upgrading of financial shared service center and affect the scientificity and standardization of financial processing [2-3]. Block chain technology is closely related to tecoins, which is different from the traditional distributed infrastructure and computing mode, and has the characteristics of decentralization, storage of information that cannot be changed and tracking of information [4]. The progress of technology will surely promote the development of the society. The combination of block chain

technology and financial shared service center will surely make great changes in the financial industry and promote the optimization and upgrading of the financial system. The current financial shared service center is still based on the traditional foundation, which is difficult to adapt to the rapid expansion of financial data, so there are many problems, which are not conducive to the guarantee of financial security, and to some extent, not conducive to the improvement of corporate profits. In order to solve this problem, it is necessary to timely adjust the construction of financial shared service center and discuss the application of block chain in the construction of financial shared service center to ensure the optimization and upgrading of financial sharing center [5].

At present, scholars in domestic and abroad have done some research on block chain technology and financial shared service center. In 2008, Ben cong elaborated on block chain technology in "bitcoin: a peer-to-peer electronic cash system" [6-7]. With the development of economy, it has become a common practice for modern enterprises to construct financial shared service center based on the integration of industry and finance. Therefore, scholars in domestic and abroad pay more and more attention to and discuss it in recent years. In order to build better, people have gradually applied block chain technology to the construction of financial shared service center [8]. However, at present, domestic scholars seldom discuss the application of block chain technology in financial shared service center, and there is a certain theoretical gap [9-10].

In order to make up blank of this theory, based on the technology of block chain and financial shared service center after the simple explanation, the concept of the use of financial shared service center building algorithm related operations, and the computing results were analyzed, and the application of block chain technology in financial shared service center was discussed, and the related conclusion was obtained [11-12]. To some extent, it is not only beneficial to the construction, optimization and upgrading of financial shared service center, but also provides some theoretical guidance for the subsequent research on relevant aspects.

2. Method

2.1 Block Chain Technology

Block chain is a database with decentralized characteristics. Block chain technology is to record relevant data based on the distributed node consensus algorithm, and store the data with the help of block chain data structure, ensuring the security of data transmission process. It is a new distributed architecture and computing method. Block chain technology is the result of the development of economy and internet technology, which is closely related to bitcoin. However, we cannot simply think that block chain only includes bitcoin. Block chain technology is the result of multiple forms and technologies as well as the combination of multiple data spaces, and its construction is very complex. Therefore, decentralized data recording and storage is a typical feature of block chain technology. In other words, block chain technology is a new distributed ledger with unchangeable, decentralized, tracking characteristics and transparent data formed under the complex technology combination, and all functional positions can be aligned with close the data to record, do not need to carry on special person to supervise, also do not need the third party to carry on the participation. So block chain fits the profile of a typical financial need.

2.2 Financial Shared Service Center

With the rapid development of science and technology and sharing economy in recent years, many enterprises in domestic and abroad have started to establish financial sharing service centers. The financial shared service center is mainly composed of three parts, including three systems of financial accounting, financial statements and financial analysis. The specific operation is that a

company centralizes the related financial information of each department of its subsidiary company into the financial shared service center, and then the staff of the financial shared service center carries out standard processing for the unified information. In essence, financial shared service center is to take account of accounting basis, increase the supervision of financial internal, and strengthen the diversification of financial external development, in order to improve the efficiency of financial operation, increase financial profit as the fundamental purpose.

2.3 Financial Shared service Center Construction Algorithm

The construction algorithm of financial shared service center refers to the detailed classification results of financial information after the calculation of correlation, classification and processing of centralized financial data. Firstly, relevant financial data should be correlated. The target data should be the one with the smallest financial gap, and the target data should be the smallest. The specific algorithm is as follows:

$$\mathrm{d}^2(k) = \left[z - \hat{z}(k+1/k) \right] S^{-1}(k+1) \left[z - \hat{z}(k+1/k) \right] \tag{1}$$

Where, k represents the entire data set; K +1 represents the terminal information feedback of the data set; Z represents the measurement set of financial data; It is necessary to record and process the data set accurately when using the formula. Kalman filter is applied as a specific algorithm for terminal information feedback, and the standard financial information value is compared with the feedback information value, so as to update the estimated state variable and get the current read estimated value. When measuring the dynamic target data, the kalman filter algorithm is used to estimate the state variables from some complex financial data, which can accurately and quickly find the relevant information of the target data. The following is the kalman filter model of target data acquisition:

$$\{ X_k = F_{k/k-1} X_{k-1} + T_{k-1} U_{k-1} \tag{2}$$

Where, X_{k-1} represent the state vector and detection vector under the k data set; $F_{k/k-1}$ is the state transition matrix. U_k is the interference data at the moment k; T_k is the control moment of the system. In the calculation of actual financial data, there may be deviation in the estimated value of the filtering state, and the variance of the estimated error may be very large, which is far beyond the range determined by the variance calculated by the calculation formula. Under ideal condition, kalman filter is linear unbiased minimum variance estimation.

3. Experiment

In order to test the validity of the construction algorithm based on financial sharing center, several groups of different financial data were selected for the relevant simulation experiments. And using of MATLAB software to obtain the target data, so as to achieve the target financial data analysis.

Step1: data association and concentration. Accurate data centralization and correlation is the first step to build a financial shared service center, which provides effective centralization and feedback on the data of the financial shared service center. Then the data information with the smallest difference in financial information is the target information, namely d2(k) is the minimum, and its function is to update the target information in real time.

Step2: filter and classify the financial data information. With the help of kalman filter algorithm, the terminal financial feedback information is screened and classified, the standard financial

information value and the feedback financial information value are compared together, the state variable is calculated synchronously, and the estimated value of the current reading is calculated.

Step3: track financial target data. By sharing financial center of the target data information as the main test indicators, feedback can be through the terminal financial shared service center financial database information matching, in the case of known financial regional data, through the search information in the center of the financial shared service center feature matching, the needed information extraction and audit.

4. Discuss

4.1 Experimental Results and Analysis

Through the experiment we can know that the financial shared service center also has some disadvantages, such as greatly reduced to enterprise's service level, the effect of the remote service cannot be guaranteed, the business process sometimes also can appear such problems as information asymmetry, these can affect the efficiency of the financial shared service center, so must pay attention to these problems in the application. The specific experimental data and hierarchical structure are shown in table 1 and figure 1. The data are obtained from the author's experimental arrangement.

Table 1 Basic information of financial shared service center

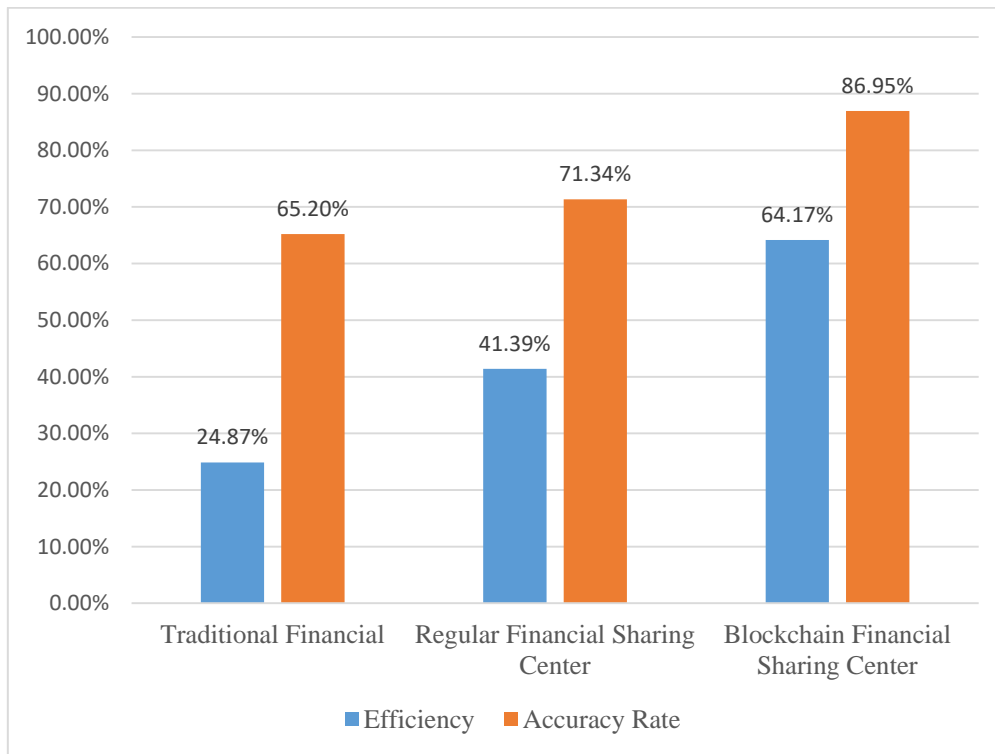| Field Names	Date Type	Can It Empty	Number
Data Set	Char	Primary Key	20
Data Processing	Var Char	Not Null	40
Data Screening	Date Time	Not Null	20
Data Classification	Char	Not Null	30
Target Data	Var Char	Not Null	256
*Data came from the experimental collation			

Figure. 1 Comparison chart of financial shared service center

4.2 Discussion on the Application of Block Chain Technology in Financial Shared service center

(1) Due to the decentralized nature of block chain technology, there is no need to centralize the storage of all accounts of different types, and when the information about accounts is transferred freely in block chain nodes without spatial influence, it is also able to simultaneously conduct different accounts of two parties' traders. Thus, some steps in the previous financial transaction can be saved. Block chain has greatly reduced the number of general ledger, and started to gradually promote the form of ledger and ledger for financial records. Based on this, the emergence of illegal and inaccurate financial data shared is greatly avoided, and the influence of financial personnel on the financial itself is minimized, which greatly reduces the phenomenon of financial corruption. From the data in figure 1, it can be clearly seen that the data of traditional financial shared service center is far lower than the data of financial shared service center established on the regional chain technology in terms of work efficiency and accuracy of financial information. The work efficiency of the financial shared service center based on the block chain technology increased nearly 40%, and the accuracy of data information increased 21.75%.

(2) From table 1, we can know that the financial shared service center involves records of various data and sectors, including target data, data monitoring, data process, financial data type, and data classification. So the processing of financial information is very complicated. In addition, it can be seen from the comparison of the final data of the three experimental groups in figure 1 that various data of the financial shared service center based on block chain technology far exceed those of the traditional group and the conventional group, with accuracy as high as 86.95%. This improvement is closely related to the advantages of area chain technology. Because the chain of blocks technology is distributed in the form of books, this form is in the same operation through the

setting of various nodes in the books record in detail, and can be realized in record speed of data exchange and sharing, we are able to set any node into a completely different access rights to the books of different access. Transactions made on any one or more nodes of the block chain can be recorded and displayed over the network. At this time, the accounting node will record the accounts of these transactions, and the data cannot be changed by anyone once recorded. If blocks must be modified, according to the principle of the minority is subordinate to the majority support node must reach more than half can modify record data and in this way make the accounts, to guarantee the authenticity and effectiveness of the also get rid of the drawbacks of traditional financial data sealing ability, realize the transparency of financial information.

(3) According to table 1 and relevant experiments, it can be seen that the financial shared service center based on block chain technology controls the data process in real time, which is conducive to the strict monitoring of financial information. Even if the financial information is transparent, there will be no leakage. This ensures the security of financial information to a certain extent. Under the financial shared service center applied of block chain, financial data is released from closure and becomes open and transparent, so the disclosure of financial statement data is completely based on the specific needs of customers, so it will not be subject to artificial interference like traditional finance. Moreover, the block chain system can achieve equal access to the public data in the distributed ledger through hierarchical processing of customer rights, and will not cause unnecessary capital losses to investors due to information incoordination. At the same time, some key financial data can be well protected and the confidentiality of data is guaranteed because of the hierarchical access rights of data.

5. Conclusion

The traditional financial shared service center mode has many problems, such as complicated financial processing process, large amount of processing content and large time consumption, which is not conducive to the improvement of financial work efficiency. However, block chain technology has played a good role in the establishment and improvement of the financial shared service center due to its own expertise, which not only greatly reduces financial risks, but also improves the work efficiency of financial personnel. In addition, the accounting, recording and storage of relevant financial information under block chain technology are developed directly on the basis of business transactions, which greatly reduces the participation and interference of financial personnel and ensures the objectivity and accuracy of financial information. Based on the above advantages, block chain technology will surely be more widely used in financial shared service center, but we must pay attention to various problems in the application process.

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