Application of Blockchain Technology in Colleges and Universities Financial Sharing Service Platform

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Abstract

The financial work in colleges and universities involves many aspects, With the development of the information age, Many schools have built their own financial sharing service platforms, But the platform still faces many problems in the specific operation process, Failure to form a strong technical support, This may expose the school financial information to some risk, And blockchain technology can effectively ensure the reliability and security of school financial information, To improve the efficiency of the school's daily management work, To Prevent the occurrence of financial risks in colleges and universities, Let the financial sharing service platform in the school to better provide services for teachers and students, this paper analyzes the specific application of blockchain technology from the application of efficient sharing service platform, Aaims to transform the current financial difficulties of universities, Improve the service level of financial work in colleges and universities.

Keywords: *colleges and universities; financial sharing service platform; blockchain technology; application research*

1 INTRODUCTION

Block chain technology is a new type of technology, can effectively make up for the defects of university financial sharing platform, timely find financial risks and various security risks, to ensure the security and transparency of school financial data, improve the level of financial work, strengthen the school financial work for information integration ability, strengthen the block chain technology with university financial sharing service platform helps schools to promote the modernization of their own work.

2 THE FINANCIAL THE SIGNIFICANCE OF CONSTRUCTION AND APPLICATION OF UNIVERSITY FINANCIAL SHARING SERVICE PLATFORM

Shared service model has its own advantages. It is not only convenient and transparent, but also safe and efficient. Many companies have introduced this service model into their daily management work, but the financial work of colleges and universities has not yet realized the importance of this model. It did not attract the attention of the relevant personnel.

The financial work of colleges and universities plays an important role in the management and development. Financial information is not only related to the interests of every faculty member, but also directly related to the interests of every student. In recent years, the scale of education has continued to expand with the improvement of education levels. Many colleges and universities have expanded multiple campuses on the basis of the original campuses, which has increased the difficulty of school financial management. If there is no perfect and powerful system, then the management and control of the financial information of each subordinate district by the central department will be weakened, which may increase the risk of financial information. [1]

Therefore, many colleges and universities are aware of this problem and introducing the financial shared service model into the financial management work. This can not only effectively ensure the safety and reliability of the financial information, but also help improve the efficiency of the daily management work, and strengthen the central department’s supervision and management of the subordinate districts and departments, financial content and workflow. It can find financial risks and financial loopholes in a timely manner, and carry out targeted solutions to further promote the long-term and

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healthy development of financial work in colleges and universities.

Under the background of the current development of technology and informatization, the financial work of colleges and universities should also conform to the development of this trend. The introduction of the financial shared service platform is a good and powerful assistant to promote its modernization. However, the accuracy and security of the financial sharing platform in actual application still need to be further improved. The emerging blockchain technology can make up for the shortcomings of financial sharing platforms. [2] Therefore, relevant departments of colleges and universities should promote the organic integration of these two technologies, and use blockchain technology to support the financial sharing service platform of colleges and universities to better meet the needs of college financial management.

3 APPLICATION AND ANALYSIS OF BLOCKCHAIN TECHNOLOGY IN THE UNIVERSITY FINANCIAL SHARING SERVICE PLATFORM

3.1 *Front-end Client Login*

Private chain, public chain and alliance chain are the three main modes of blockchain. The first is the public chain, which is characterized by a certain degree of openness. Any node in the public chain is open to the outside world, and everyone can enter the node. It needs to log in to participate in accounting and other related activities, or obtain valid information. The second is the alliance chain, which is less open than the public chain. It is only open to designated members in the designated system, and it is composed of different institutions. The role of nodes in the system is to be able to record transactions through registration, or to read information. The third is the private chain, whose node authority is partial and partial, and can log in to realize transaction records, but in fact any node can log in to read information. [3]

The application of blockchain technology in the financial sharing service platform of colleges and universities is mainly the third type, private chain. Only colleges and universities can control the write permissions of the blockchain. Colleges and universities have certain write permissions from faculty and staff to on-campus business departments to students. In this way, a semi-decentralized sharing system is formed in the service sharing platform. This is mainly because its reading authority is not closed. Not only the public and financial supervision units can enter and read relevant data information, but other stakeholders can enter the system to realize the reading of relevant data. This can effectively supervise and manage the use of university funds.

3.2 *Core Module Operation*

Blockchain currently adopts a decentralized accounting method, which can also be called distributed accounting. It can complete the transaction through various terminals and upload the relevant data information, other nodes need to confirm and recognize it to achieve the purpose of uploading. This mode has its advantages. It can ensure the transparency and openness of the information in the transmission process, also ensure the security and authenticity of the data information, and comprehensively improve the reliability of the data information.

Blockchain plays an important role in ensuring the authenticity of financial information, while providing necessary technical support. Applying it in the financial sharing service platform of colleges and universities can further improve the security of financial information and minimize the possible financial risks and financial frauds. One of the most important aspects of blockchain technology is asymmetric encryption technology. Specifically, the is a public key and a secret key. The two are paired. If the pairing is successful, they can be decrypted. This technology further ensures the security and reliability of the relevant information.

3.3 *Financial Information Sharing*

Public disclosure of financial information is the responsibility of colleges and universities. The financial information disclosed should not only include asset management and fees, but also financial final accounts, budgets, and bidding. In addition, public information and public supervision methods should also be disclosed. However, at present, the degree of disclosure of financial information in most universities needs to be improved, and there is still the problem of untimely disclosure.

The use of distributed accounting technology can effectively solve the problems existing in the public disclosure of financial information in colleges and universities, because its biggest advantage is openness and transparency. The mode of operation of this technology is that if you want to form a business, not only the direct person in charge of the business needs to approve it, but also other users on the terminal also approve, reach a consensus, and finally form the expenditure of the business. In addition, regulators and stakeholders also have certain authority to read relevant data information. In this mode, the degree of information sharing is very high. [4]

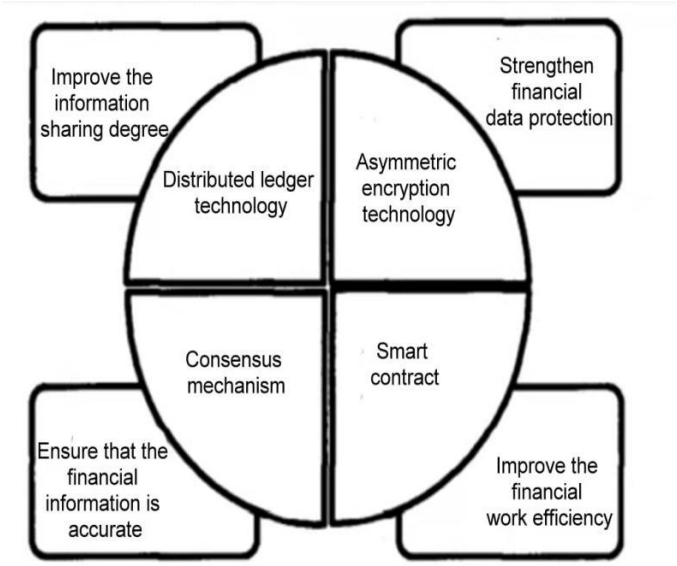

Figure 1. Application of blockchain core technologies

4 CONSTRUCTION OF FINANCIAL SHARING PLATFORM FRAMEWORK BASED ON BLOCKCHAIN TECHNOLOGY

4.1 *Cloud Computing Application Layer*

Both students and faculty members can log in with their student ID or job ID, and there is no limit to the device of the terminal. They can choose the PC terminal, and their own devices or smart terminals. In the blockchain distributed accounting mode, after logging in, each account can query the front-end client according to its own needs, then select the business that it needs to handle, and then complete the specified operation to upload the transaction. After uploading, each subject needs to reach a certain consensus on the uploaded transaction, and finally transmit it to the core module of the school financial sharing platform, and analyze and classify the transaction.

4.2 *Blockchain Application Layer*

The University Financial Shared Service Center is composed of multiple modules, not only the personnel information module, the bill image module, but also the marketing interconnection module and the business card settlement module. In addition to this, there is a budget control module and a financial reporting module. [5] Each module has its own application field, which can effectively improve the efficiency and level of various work, and realize the integration, analysis and application of financial information in colleges and universities. These modules generally belong to the blockchain application layer.

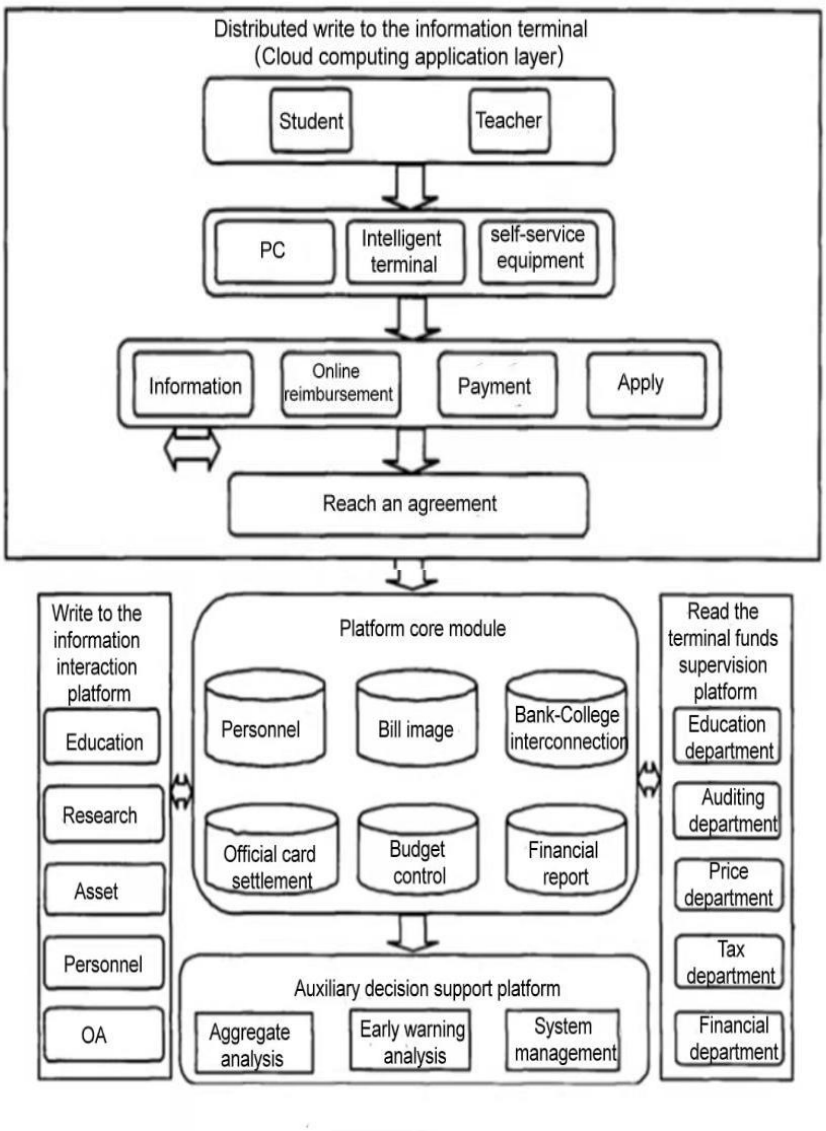

Figure 2. Construction model of university financial sharing platform based on blockchain technology

4.3 *Data Interaction Layer*

The information exchange platform has a certain node, and the function of this node is to write information permissions. The information exchange platform is a supplement to the financial information sharing service platform. The organic combination and docking of the two can further improve the level of financial information management in colleges and universities, and promote the integration of financial information and business information in colleges and universities. In addition, the university funding supervision platform can also play its role, further realize the organic connection with the shared service platform, strengthen the whole-process supervision of the work process, supervise every expenditure of the university, and ensure the standardization and legalization of expenses. The connection and connection between different platforms and systems can improve the efficiency of information use, break down the information barriers between different departments and different positions, achieve high-level information sharing within universities, and effectively avoid the emergence and occurrence of information islands.

4.4 *Big Data Analysis Layer*

The overall analysis department, the early warning analysis department and the system management department jointly form the big data analysis layer, which can also be called the auxiliary decision support platform. Blockchain technology can realize the centralized integration and analysis of relevant financial data information, and the use of big data to assist it can provide a more comprehensive, scientific and in-depth understanding and analysis of school financial information, and realize real-time dynamic supervision and management, so that relevant information becomes an effective basis and reliable guarantee for administrators to make decisions.

In the past work, the main job of financial personnel in colleges and universities was to perform simple accounting processing on data. However, in the current background of the development of informatization, the construction and application of the financial sharing service platform in colleges and universities has put forward higher requirements for financial workers in colleges and universities. The main content of its work has also changed, that is, the information and technical processing and distribution of financial information in colleges and universities. Therefore, financial personnel should first establish big data thinking, at the same time improve their professional skills, strengthen their understanding of big data technology, and apply it in specific accounting practices to promote the healthy development of college financial shared service platforms. [6]

5 APPLICATION EXAMPLE DESIGN OF BLOCKCHAIN TECHNOLOGY IN UNIVERSITY FINANCIAL SHARING PLATFORM

5.1 *Current Situation of University Reimbursement Process*

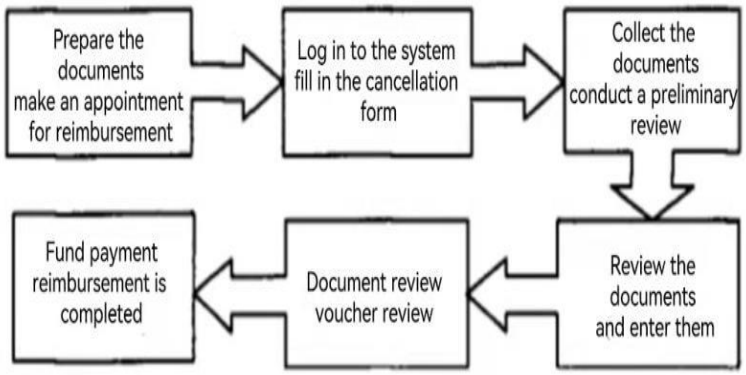

Figure 3. Traditional colleges and universities reimbursement process

The current college reimbursement process has achieved its own optimization on the basis of the traditional reimbursement process, effectively solving the problems related to the difficulty of reimbursement, but the reimbursement process is still too complicated. Generally, the financial staff is limited, but under this accounting process, the workload of the financial staff is greatly increased.

5.2 *Optimization of the University Guarantee Process*

The first is to effectively use the consensus mechanism to achieve a balance between the improvement of work efficiency and safety, and it can also divide the work to a certain extent to achieve the construction goals corresponding to people and posts. The second is to make effective use of distributed ledgers to improve the informatization level of control and supervision. The third is to do a good job in preventing technical risks, effectively deal with various potential risks, and formulate relevant countermeasures.

At the same time, various departments should strengthen communication and collaboration, establish organic connections, and avoid the occurrence of information islands. In addition, a sound technology development management system should also be established to provide a strong guarantee for the application of blockchain technology to the financial sharing service platform of colleges and universities.

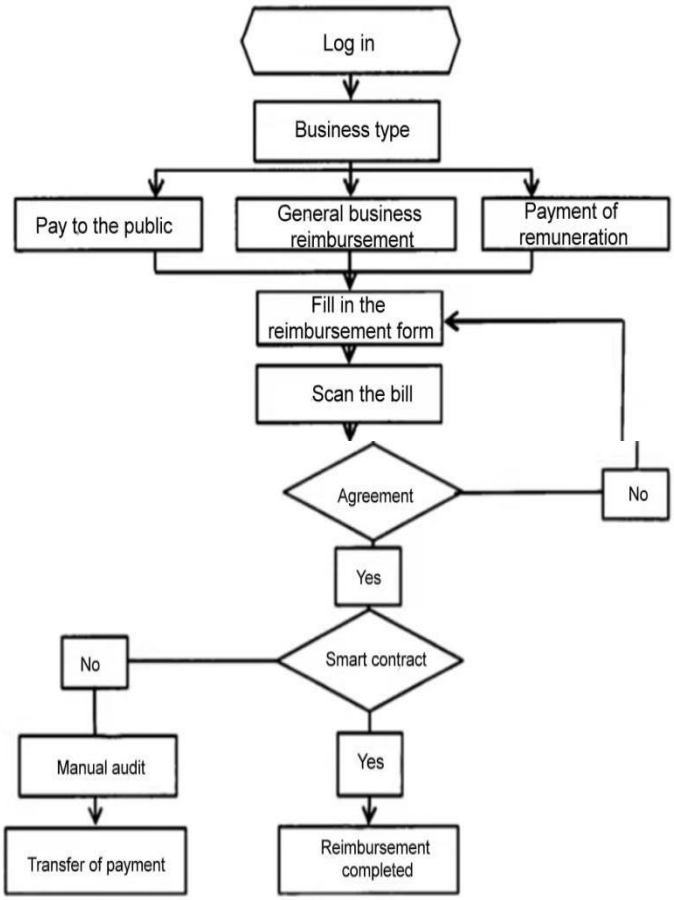

Figure 4. Optimization of university reimbursement process based on blockchain technology

6 CONCLUSION

Financial sharing service platform can not only improve the efficiency of efficient financial work, but also can, Enough to guarantee the security of university financial information and data, However, the operation of the platform still needs to be constantly adjusted according to the development needs of The Times, Introduce new technologies, To achieve a better service, Blockchain technology is an important core technology of the current auxiliary financial sharing platform, The technology operates as a consensus mechanism, Analyze the job content and responsibilities, Then, to optimize the allocation of existing resources, At the same time, it can also improve the supervision of the financial work in colleges and universities, Promote the modernization and information construction of financial work, Timely detection of financial risks, Strengthening the links between the different work departments, Give Play to the maximum value of data and information. The financial management workers in colleges and universities should realize the importance of the blockchain technology, and apply it in the practice of the specific financial management work in colleges and universities, so as to play its role and provide better services for teachers and students.

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REFERENCES

[1] Zheng Xiaoyi. Research on the application of blockchain technology in the financial sharing platform of colleges and universities under the background of the epidemic [J]. Modern Commerce and Industry, 2021, 42(33): 81-82.

[2] Zhang Yindi, Yin Xiang. Application and challenges of blockchain technology in the field of financial sharing [J]. Market Weekly, 2021, 34(10): 106-108.

[3] Yao Yi. Re-optimization of Financial Shared Service Center Using Blockchain Technology—— Based on the Perspective of Industry-Financial Integration [J]. Finance and Accounting Communications, 2020(07):134-137.

[4] Yao Yi. A new path for the development of financial shared service centers under the trend of financial transformation—financial ecosystem based on blockchain and big data technology [J]. Journal of Fujian Normal University Fuqing Branch, 2020(01):36-40.

[5] Zhou Zhangqi, Zhang Liucheng. The application of blockchain technology in the financial sharing service platform of colleges and universities in the era of big data [J]. China Agricultural Accounting, 2020(02):55-60.

[6] Liu Shangqi, Cai Junji. Research on Enterprise Financial Shared Service Center Based on Blockchain Technology—Taking XK Group as an Example [J]. Guangxi Quality Supervision Herald, 2021(05):77-78.