

# Research on Optimization of Performance Evaluation Path of Blockchain Embedded Financial Shared Service Center

Xiaojun Chen, Ying Gao and Hong Shao

School of Accounting, Anhui University of Finance and Economics, Bengbu, China

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**Abstract:** With the progress of information technology and the promotion of the global economy, many large enterprises have set up financial sharing centers to unify accounting and financial management through this financial model. However, in the process of its development, there are still problems such as poor security of financial data, inadequate integration of information systems, and high repetitiveness of audit work. Based on this, this paper makes full use of the decentralization and open transparent characteristics of blockchain, combines it with financial sharing, researches and analyzes the feasibility and advantages of blockchain technology in financial management, and at the same time puts forward the optimization countermeasures of the performance evaluation path of financial shared service centers, to promote the transformation and upgrading of traditional financial shared service centers.

**Keywords:** Blockchain, Financial shared service center, Performance evaluation, Path.

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## 1. Introduction

Financial sharing has become the main direction of financial change for large enterprises in China, and many large and medium-sized enterprises are implementing this financial strategy. However, due to China's relatively short development history in the concept of financial shared services, some enterprises have chosen to learn from successful experiences abroad, while others still insist on using the performance appraisal mechanism under the traditional financial management model. These unreasonable performance appraisal methods can neither achieve the expected goals of the financial shared service center nor stimulate the employees' enthusiasm, so they cannot make full use of the financial shared services to reduce costs and increase efficiency. And with the emergence of blockchain technology, to a certain extent, the limitations of the financial shared service center are to find a solution. In this context, China is actively promoting the integration and development of blockchain in the economy and society, and in April 2020, for the first time explicitly pointed out that the new "infrastructure" covers artificial intelligence, cloud computing, blockchain, and other emerging technology infrastructure. As one of the "new infrastructures", blockchain has moved from the 1.0 stage to the 3.0 stage under the strong support of national policies.

Meanwhile, along with the rapid development of the economy and society, China's corporate finance shared service centers also face a series of problems such as data security risks, insufficient integration of information systems, and inefficient business processing. To efficiently cope with the above challenges, it is particularly important to adopt blockchain technology. With the arrival of the Internet era, blockchain appears in a brand new way, which is an emerging network technology, also known as decentralized distributed ledger technology. As a decentralized system, blockchain combines unique attributes of distributed bookkeeping, cryptography, and smart contracts, which can solve the above problems to a certain extent.

## 2. Deficiencies of the Traditional Financial Shared Service Center Performance Evaluation System

### 2.1. Threats to Data Security

Under the traditional financial management model, there are differences in business and management between companies in different regions, which makes it difficult to achieve efficient communication and collaboration between companies. To solve this problem, companies have started to try to establish financial shared service centers. Financial shared service center, as a traditional centralized organization, its main responsibility is to integrate the data of each regional company into a shared platform. Under this financial model, although accounting information can be updated and saved in real-time, this may also increase the security risks of accounting information. Especially in the financial sector, it is difficult to trace the root cause of information once it has been compromised. This occurs because centrally stored data is more vulnerable to attack than decentralized financial data, so the security risks posed by data leaks cannot be taken lightly. Also, when management and leaders have more power in the internal control structure, their internal control links tend to become more vulnerable, which can lead to poor decision-making. Therefore, to ensure data security, many organizations also need to put in place a comprehensive and efficient emergency alert system.

### 2.2. Inadequate Integration of Information Systems

Since the concept of financial sharing was introduced late in China, it is difficult to complete the transformation of the financial processing model in a short time. Although some enterprises have independently developed information integration systems, these systems may face challenges such as unclear computer programming logic and loss of reporting details, which can reduce the credibility and practical application value of the data. In addition, due to the

complexity of the business processing process in the financial sharing center, the lack of communication and collaboration between business departments leads to low efficiency in the financial sharing service center, which makes it difficult to meet the needs of corporate financial development. Therefore, if the construction of the information system is not perfect enough under this model, it will not be able to effectively integrate and calculate financial data, which will, to a certain extent, reduce the reliability of the financial sharing model.

### 2.3. High Duplication of Audit Efforts

At this stage, the financial shared service center of many enterprises still relies mainly on manual document auditing, a practice that not only results in a slow and inefficient auditing process but is also prone to errors, affecting the accuracy of financial information. Duplication occurs between the business end of the enterprise and the financial shared service center when auditing the same business, especially in sales, procurement, and other business processes. The front-end business team will scan the original vouchers, then convert them into an electronic format and upload them to the financial shared service center after the audit is completed. The finance shared service center will then need to re-audit them before the business processes of bookkeeping and payment can be executed. However, in this process, multiple audits may be encountered, such as failed audits, returns, or resubmissions. This not only takes up a lot of time and human resources, but the repetitive auditing work also exposes the trust issues of the traditional model.

## 3. Feasibility and Path of Blockchain Embedded in Financial Shared Service Centre Performance Evaluation

### 3.1. Blockchain Technology

Blockchain technology, originally used in Bitcoin, encrypts data using ciphers and digital signatures, and then embeds this encrypted data in existing "blocks", thus creating a "chain" structure that prevents the digital currency from being

uplicated and causing the data to be Duplication. From an enterprise perspective, blockchain technology enables the sharing of ledgers and the storage of data, with advantages such as decentralization, data tampering, and anonymity. In addition, blockchain technology allows all employees to enter data without relying on third-party financial data processing systems. Therefore, the use of blockchain technology can, to a certain extent, solve the problems of traditional centralized data systems.

### 3.2. The Fit Between Blockchain Technology Thinking and The Financial Shared Services Model

First of all, it is necessary to clarify the objectives of the financial shared service center, whose core objective is to improve the financial management efficiency of large enterprise groups. On the one hand, it is positioned as a new organizational structure model from a strategic point of view. Its main purpose is to reduce operating costs by using a centralized organizational structure. On the other hand, to achieve this strategic goal it is necessary to decompose the business and establish a unified accounting center to ensure a timely and accurate exchange of information, transfer of data, and feedback between departments. This way of thinking is highly consistent with the concept of "weak centralization" in blockchain technology and is also in line with the demand for efficient operations in financial shared service centers. Blockchain technology enables the digital processing of information, and all operations can be completed automatically according to pre-set processes, which helps to improve the efficiency of financial shared service center operations.

Secondly, the financial shared service center wanted to ensure the security and integrity of the data and wanted it to be compatible with the "private chain" and "federated chain" structures of blockchain technology. If a node fails, it will not affect other nodes, minimizing the possibility of financial data loss or corruption. In this process, the non-tamperable nature of the blockchain can improve the security of enterprise information (as shown in Figure 1).

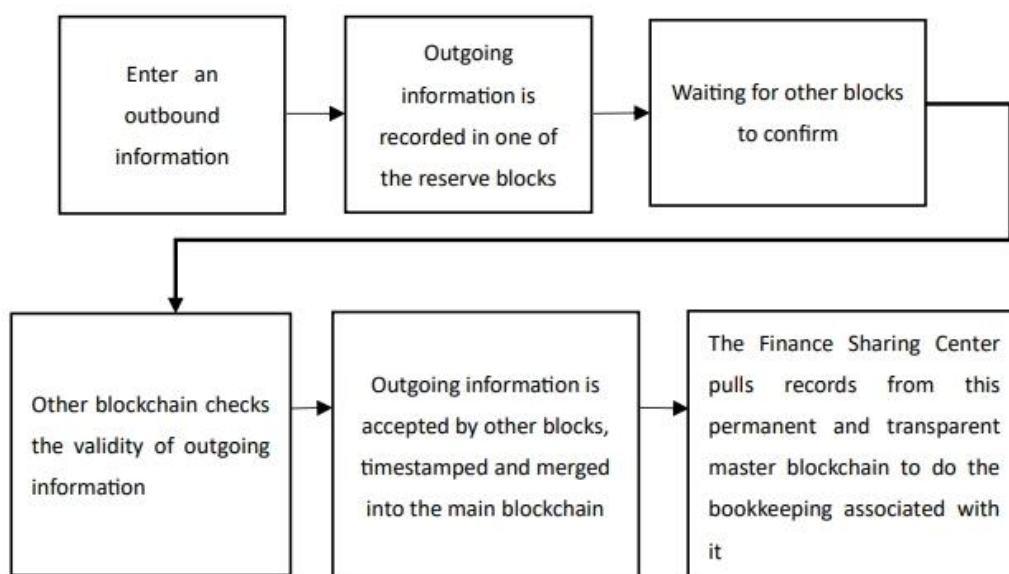


Figure 1. Description of the linking mechanism between the blockchain and the financial sharing center

### 3.3. The Fit Between Blockchain Technology Features and The Characteristics of Financial Shared Services

The introduction of blockchain technology enables the data in the 'federation chain' to be verified against each other, which is consistent with the validation criteria for transaction information in financial shared service centers. After a complete 'federation chain' is built within an enterprise, data can be shared between enterprises. Since all financial data are

open and transparent, all relevant financial information is synchronized according to the specific needs of customers in the disclosure of financial statements, which avoids the risk of human intervention as in the case of traditional financial query systems. In addition, blockchain technology can hierarchize customer permissions to ensure that all publicly available data can be fairly viewed in a distributed ledger of nodes, thus reducing investor losses due to information asymmetry (as shown in Figure 2).

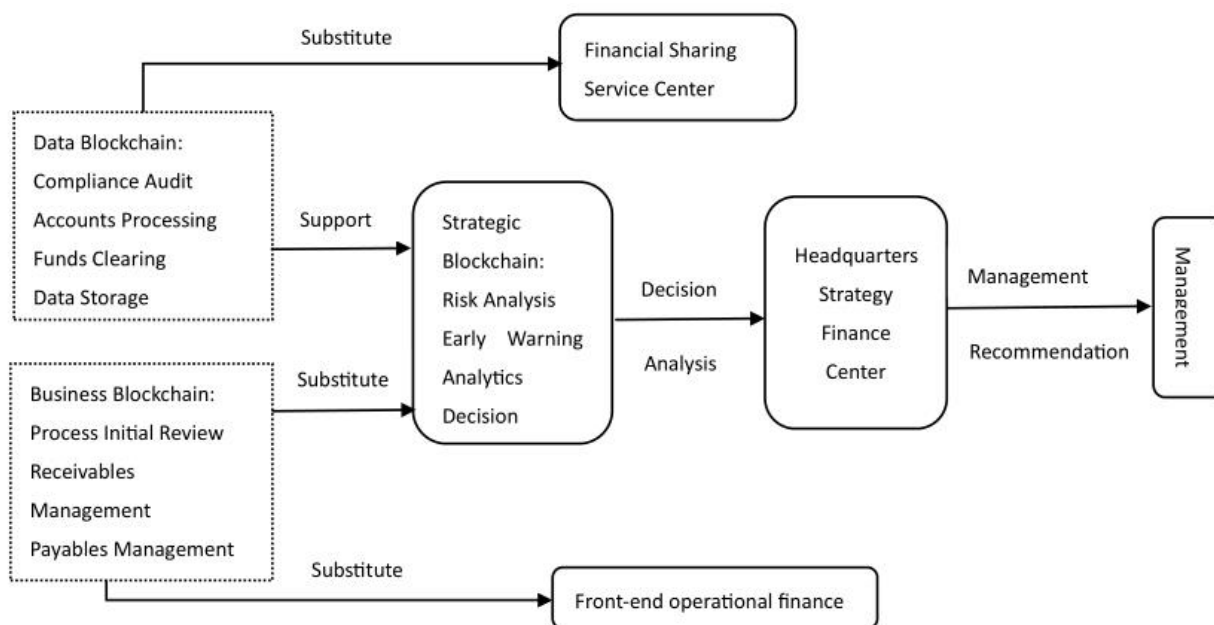


Figure 2. Blockchain technology embedded in the financial shared service center infrastructure

## 4. The Advantages of Blockchain Embedded in The Performance Evaluation of Financial Shared Service Center

### 4.1. Improve the Performance Evaluation System and Cultivate Excellent Talents

Under the financial shared service model, the repetitive monotony of financial work weakens the creativity of staff to a certain extent, thus restricting the development of individuals. Using blockchain timestamps, smart contracts, and other technologies for personnel management allows employees to reduce workforce and multi-task while achieving the goals set by the enterprise. On May 27, 2022, the Ministry of Transport of the People's Republic of China formally determined that Shandong ports as the first pilot unit of the "smart ports" and the construction of the financial shared service center is a vital part of its overall structure. The construction of the Financial Shared Service Center is a vital part of its overall structure. Port of RIZHAO established Rizhao Port's logistics blockchain platform in 2019, applying blockchain technology to the monitoring of steel exports, realizing full tracking of cargoes, and improving the transparency of data and the creditworthiness of users. At the same time, the "distributed bookkeeping" technology of blockchain was introduced to supervise the whole process of commodities, ensuring the authenticity and validity of the commodity information and the inability to be tampered with.

### 4.2. Overcoming the Data Security Problems of Traditional Shared Service Centers

The traditional financial shared service center concentrates all the economic business of the enterprise, which increases the difficulty of enterprise information transmission and processing and quickly causes the blockage of the information pathway of the financial shared center. Due to the openness and instability of the information network, there is a huge security risk, which is very easy to cause financial data leakage and virus attacks. Under blockchain decentralized distributed bookkeeping, all nodes can synchronously record changes in data, and all nodes have complete and entirely consistent sub-accounts so that even if a node is destroyed or modified, it will not cause any damage to the overall account and records, thus ensuring the security of data. On this basis, it can be combined with "Alliance Chain + Private Chain", which has both the semi-openness of Alliance Chain and the participation and privacy restrictions of Private Chain to protect the nodes' privacy better. Puhua Commercial Group Co., Ltd started to implement the "Blockchain-Financial Sharing Center Integration" project in December 2019, taking financial reimbursement as a pilot project, adopting the distributed storage technology of blockchain, storing the reimbursement information of the enterprise in the enterprise node and disseminating the information to each enterprise node on the network so that all enterprises can view the information "openly". By adopting blockchain distributed storage technology, the reimbursement information of enterprises is stored in enterprise nodes, and the information is "openly" disseminated to each enterprise node on the

network so that all enterprises can view it, which not only relieves the data storage burden of enterprises but also avoids the hidden danger of data security.

### 4.3. Reducing Operational Costs

The smart contract of blockchain makes the financial data in the process of business transmission, and ensures the completeness and accuracy of accounting information while automating the audit nodes of each process, which significantly shortens the approval process of financial processing, and effectively reduces the operating cost and time cost of finance. Under the traditional "financial sharing" model, the boring and repetitive nature of financial work has led to personnel turnover. Applying blockchain technology eliminates unnecessary, repetitive, and low-value-added work and reduces training costs for company personnel. In addition, by utilizing the DPoS consensus mechanism, similar to the decision-making method of the board of directors' voting, agents are selected for authentication, which reduces the consumption of algorithms, ensures operational efficiency, and reduces operational costs without increasing the risk. 2022, Haier Smart Home Co., Ltd utilized blockchain and big data and other technologies to establish the "Financial Sharing Digital Correspondence Data Pool + Firms One-click online application + one-click authorization by the enterprise + one-click reply to the letter by the finance company's automatic query" is the business closed loop. Using blockchain technology, the audit letter can be returned quickly, the whole process is transparent, and traces can be left in the whole process, reducing the operation nodes from fourteen to five, saving two million dollars of management costs per year.

### 4.4. Alleviating the Problem of Information Asymmetry

Under the traditional financial shared service model, because the head office and branch offices of SMEs are far away from each other, they often cannot transmit the information changes and business contents of branch offices or subsidiaries to the finance department in a timely manner, and they can't carry out effective information exchange

between financial shared service centers, which leads to the asymmetry of information. Blockchain peer-to-peer technology is characterized as flat, open, and equal, does not require layers of auditing, and can realize real-time data transmission, which solves the problem of information asymmetry that exists in the financial sharing business.

## 5. Blockchain Embedded in Financial Shared Service Center Performance Evaluation Optimization Countermeasures

### 5.1. Smart Contracts Integrated into Financial Shared Services to Optimize Performance Evaluation System

Smart contracts can realize the automatic execution of transactions, reduce manual errors, improve the operational efficiency of the business, and realize the timely evaluation of performance. Before the contract is implemented, it is ensured that the predetermined standards are met through the reasonable setting of various rules and conditions in the contract. Every transaction of the same type within the same time period, from the date of contracting, can be broadcasted to any port through the timestamp and, after passing through the verification node, continue to the next step until the enterprise completes the transaction. At this point, the financial shared service center will extract the appropriate information from the node and complete the corresponding accounting process. Due to the change in the method of transmitting data, each node will record all the processes of the transaction and can transmit the transaction data in real-time, which allows effective monitoring and management of performance, ensures the sharing of business information, and enables better protection of data security and integrity. Smart contracts can improve the speed and quality of service delivery, which in turn improves customer satisfaction and has a direct impact on the customer dimension of financial shared service center performance evaluation (as shown in Figure 3).

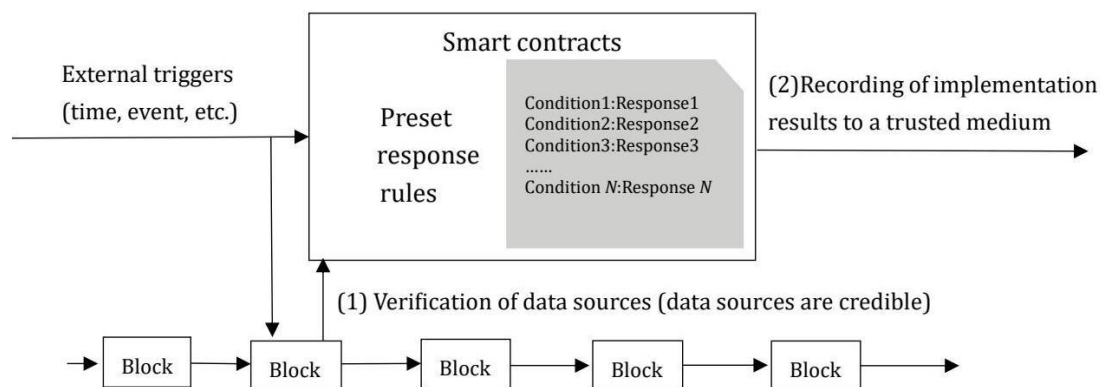


Figure 3. Operation logic of smart contract

### 5.2. Using Cryptography to Secure Data in Financial Sharing Centers

Blockchain utilizes a variety of cryptography techniques, such as hash function and asymmetric encryption, to ensure data security and privacy. The hash function has the characteristics of irreversibility and avalanche effect, which ensures that the financial data is not tampered with in the

storage and transmission on the blockchain and improves the security of the data. At the same time, the use of digital signature technology to achieve the verification of the identity of the transaction subject and the authenticity of the transaction in high-risk financial transactions, and the use of hash functions to identify whether the data has been tampered with, improve the management level of the risk of financial shared service centers, and realize the accurate evaluation of

the risk tolerance level of each department and personnel, and then realize the reasonable setting of the enterprise's

performance objectives and evaluation standards (as shown in Figure 4).

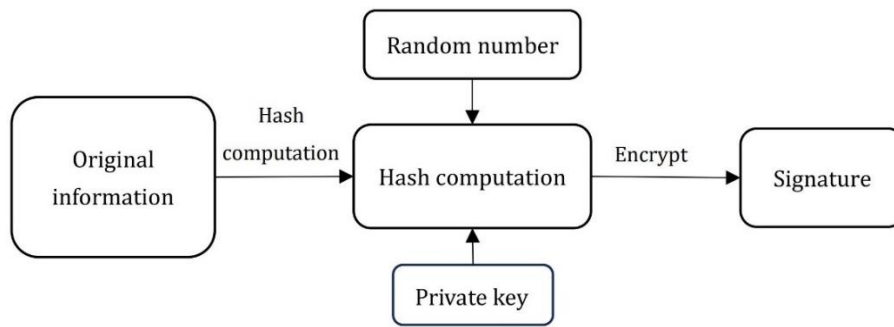


Figure 4. Schematic diagram of the message signature process

### 5.3. Utilizing Blockchain Technology to Effectively Reduce Operating Costs

Intelligent contracts are introduced at the business and consensus layers to realize repeated writing of contracts and automatic execution when conditions are met, thus saving human capital. At the same time, the finance sharing center and the treasury and capital modules of subsidiaries are incorporated into a single alliance chain, and the DPoS consensus mechanism is used to jointly maintain the ledger, achieving a flattening of the hierarchical operation and thus reducing management costs. Blockchain technology's timestamps and digital signatures ensure the traceability of information and the security and integrity of data, reducing potential costs due to data leakage or tampering. Data sharing in a peer-to-peer network allows data transmission between nodes to no longer rely on central service nodes, while there is no upper limit to the network capacity of a peer-to-peer network, and the resources of the entire network increase synchronously with the number of nodes, resulting in a better quality of service and further lowering the operating costs of financial sharing centers. Tesla has partnered with Cargo Smart, China Ocean Shipping (Group) Company, and Shanghai International Port (Group) Co., Ltd to conduct a pilot project on auto parts transportation. The project uses blockchain technology to help record the operational process of cross-border transportation of auto parts from Tesla's Shanghai factory on the chain. This ten-point project establishes a close link between consignees, freight forwarders, and ocean carriers, simplifies verification steps, and the process requires one-stop completion of verification, agency, payment, and consignment notes, which greatly saves time and labor costs and improves process efficiency.

### 5.4. Using Decentralization Technology to Alleviate Information Asymmetry

The decentralization of blockchain has three major advantages: fault tolerance, attack resistance, and conspiracy prevention. The blockchain's distributed system consists of multiple decentralized and independent nodes that are not easily breached, providing a secure data processing environment for the performance evaluation of financial shared service centers. The fairness of each node in the decentralized system gives the blockchain openness and transparency, and every modification will be notified to the other nodes, which makes it difficult for each participant on the blockchain to seek his or her own interests at the expense of others, and at the same time alleviates the problem of

asymmetric information. General Motors Finance has partnered with blockchain startup Spring to combat identity synthesis fraud and to dilute risk by taking advantage of "private or federated chains". The Massive Automotive Industry Blockchain MOBI (Mobility Open Blockchain Initiative) was founded in 2018 by Ford, GM, BMW, and a number of other companies. In January 2021, a working group led by BMW and Ford released a second-generation automotive identity standard, which will be used to combat used-vehicle marketplace fraud for used-vehicle sellers, regulators, and insurers with tamper-resistant history records, thereby reducing vehicle information mismatch. Decentralized technology strengthens compliance in financial shared service centers and ensures the validity and reliability of performance evaluation systems in multiple ways.

## 6. Conclusion

With the continuous development of modern science and technology, financial shared services have gradually become the primary trend of corporate financial change. The introduction of blockchain technology in the performance evaluation system of the financial shared service center can well solve the problems of high data security risk and information asymmetry in the traditional financial sharing model. Using blockchain technology, the performance evaluation system of financial shared service centers can be optimized, talents can be cultivated, operating costs can be reduced, and financial shared services can be promoted to develop in the direction of more reliable, safer, and more efficient.

## Acknowledgements

Fund Project: Anhui Provincial University Humanities and Social Sciences Research Key Project: Research on the Performance Evaluation System of Blockchain Technology Embedding Financial Shared Service Center (Project No.: SK2021A0236).

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