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THE NOVEL THINKING EXPLORATION MODEL FOR BLOCKCHAIN TECHNOLOGY FINANCIAL SHARING SERVICES

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ABSTRACT

This paper will explore the novel thinking for blockchain technology financial sharing services in China. It will explain the formation of a shared service center and the key success factors. Then will discuss the financial decision-making for payment business process in financial sharing services, the financial sharing dangers, and solutions as well as the notions to solve the hidden danger of financial sharing, and try to carry out model design and performance evaluation. In this chapter, the blockchain thinking mode of the financial sharing service concept involves consensus thinking, the coexistence of distribution, and concentration with code as a priority. The blockchain method for financial sharing services is to identify participants on the blockchain and establish a consensus mechanism, use code to effectively control the business transactions, and zone storage mode to realize the effective connection between business transactions and financial sharing and financial sharing service based on alliance chain network. The benefits are useful for financial applications as well as Education and Training

Keywords: Blockchain, Exploration Model, Financial Sharing, Novel Thinking, Shared Service.

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INTRODUCTION

In recent years, the research on financial sharing in China has mainly focused on the implementation of financial shared services, and most of them focus on the specific problems of financial sharing service implementation or analyze specific case companies as examples. Although research perspectives vary, few of these studies integrate information technology, especially blockchain, with financial sharing. However, the current development and application of information technology have brought new challenges to the implementation of financial shared services, and it is necessary to rely on financial sharing implementation countermeasures from a technical perspective to provide guidance. Therefore, this paper intends to start from the logical thinking of blockchain technology, explore the implementation path of financial sharing under blockchain thinking, try to design a financial sharing center under blockchain technology, and analyze its benefits that are useful for financial services as well as education and training.

The model of blockchain building a financial sharing center can also be applied to multiple educational scenarios. For example, students' course selection and evaluation, teachers' teaching ability evaluation, and school grading can all be completed through the blockchain to establish a trust network. Its traceability and non-tamperable properties ensure that the screening process is transparent, open, and objective, and ultimately realizes the interconnection of universities in the education industry. Using the blockchain financial sharing model can build a trust network between academia and enterprises. The blockchain can effectively solve the problem of certificate storage in education, completely retain the learning track of education, and make the learning results of students more credible when they apply for a job. In addition, blockchain technology can complete educational credit reporting. With the blessing of these inherent advantages, the cooperation between academia and enterprises will eventually realize the situation of joint consultation, joint construction, sharing, symbiosis and common prosperity.

BACKGROUND

Since the 1980s, the financial shared service center has developed rapidly around the world, especially with the support of information technology. In China, more and more enterprises are accepting the shared service center model. In December 2013, the Ministry of Finance of the People's Republic of China issued the "Enterprise Accounting Informatization Work Specification", which pointed out that large enterprises and enterprise groups with a large number of branches and subsidiaries and widely distributed should explore the use of information technology to promote the concentration of accounting work and gradually establish financial sharing. Service Center. This regulation points out the direction for the financial management of large and medium-sized group companies in China, and also provides policy support for exploring and building a financial shared service model (Pan Feng, 2022). At present, China's financial sharing service has passed the concept introduction period and entered a stage of rapid development. In actual work, accounting positions are gradually becoming virtualized and fragmented, and more and more accounting operations are outsourced and crowdsourced (Dong Zhenheng et al., 2021). In recent years, with the rapid development of information technologies such as big data, cloud computing, and the Internet, financial sharing services have also entered the era of intelligence (Zhang Chunhui, 2016; Lai and

Zainal, 2015). The new operating model is completely different from the traditional implementation model. New requirements have been put forward for the operation and control of financial sharing centers (Ding, 2019; Lai and Liew, 2021).

The implementation of financial sharing can reduce costs (Zhang, Chen, Hu & Chang, 2008; Lai, 2018; Hamdan, Kassim, and Lai, 2021), strengthen core business (Lai, 2019; Ronan, Martin & McHughMarie, 2011), improve the efficiency of monitoring and management (Turle & Marcus, 2010; Lai, Toh, & Alkhrabsheh, 2020; Lai and Liew, 2021). Moreover, it has a delayed effect, differential effect, and short-term fluctuation effect on enterprise performance (He & Zhou, 2013; Wortley & Lai, 2017). The operation of financial shared services is influenced by many factors, and its key success factors cover two distinct approaches, one focusing on identifying the needs of a particular individual and the other identifying the general success factors for implementing a particular type of project. The two methods should be integrated within the framework of results, implementation process, and operational environment characteristics. The key success factors (CSFs) are largely dependent on users' friendliness, ease of use, environment and time (Borman & Janssen, 2013; Harrison, Scheele, Lai and Vivekarajah, 2017; Lai, 2018; Anthony, Rosliza, Lai, 2019; Rukhiran & Netinant, 2020; Lai and Liew, 2021). The key success factors of group companies' implementation of financial sharing services influence the value of financial sharing services in descending order: strategic planning, information system, process management, organizational structure design, performance management, and personnel management (He & Zhou, 2013; Hamdan, Kassim and Lai, 2021; Lai; 2020; Lai and Tong, 2022).

FINANCIAL SHARING ADVANTAGES AND DISADVANTAGES AND SOLUTIONS

With the development of financial sharing services, the focus of financial work gradually shifts to financial decision-making. At this time, the financial work is mainly to reduce the proportion of transaction links, which requires the business to be streamlined, centralized, and divided as much as possible. Financial sharing center incomplete the payment process takes cash, capital settlement layer, integrated management, the chapter filegroup, suggests accounting, fund settlement, and fund reconciliation, etc., in the traditional payment process, business processing to a file by chapter layer, layer, and capital settlement joint-funds receipt and payment processing. Before the financial data is processed in the financial sharing center, relevant business departments at all levels of each unit put forward procurement applications, which are automatically transmitted to the procurement system after approval. The procurement system automatically generates the purchase order and sends it to the supplier. After receiving the purchase order, the supplier will deliver the goods on time according to the content of the purchase order. This is similar to the principle of the supply chain. In this process, all kinds of documents generated, such as signed contracts and purchase invoices, will be converted into electronic files by special personnel through video collection and uploaded to the system. After approval, it will be sent to the financial sharing center, which will check again. After checking, the capital payment layer will automatically conduct accounting processing, and the capital settlement layer will automatically issue payment applications. There is not much manual processing in the whole process, and the chapter materials are received by mail to the bill file layer. After receiving them, they are compared with the electronic images and then sorted out and filed.

ISSUES AND PROBLEMS

Determining which business processes fall into the category of financial sharing service is the premise of establishing efficient financial sharing. In the process of accounting treatment, transactional business is still the focus of financial sharing, such as receivables, payables, general ledger business, etc. These are procedural business and management decision-making is a relatively low correlation, so its process is easier to standardize and trading volume is relatively high. In financial shared service, although the correlation between procedural business and management decisions is relatively low, the data generated by them will be the basis for the enterprise to make management decisions, so the real and complete data will affect the enterprise's financial indicators, financial analysis, management decisions, etc.

With the rapid development of the Internet, WeChat, pay treasure to the popularity of third-party payment, mobile payment also blossom everywhere, under the effective support of science and technology, the more financial sharing center takes on the form of outsourcing, crowdsourcing, has involved in the business, the type has been expanding (Sun YF, Jiang T & Lan ML, 2017). At the same time, there are also a lot of virtual and fragmented emerging positions, which makes the authenticity and integrity of data in the transaction process face new challenges. All kinds of original documents generated during business occurrence are entered into the financial sharing center through image recognition and are audited, accounting, statement analysis, and other shared business processing in the subsequent process. Then the information based on tax planning, capital control, and financial analysis of the financial sharing center comes from the original documents when the business takes place. In this process, the key to financial analysis and decision-making lies in the authenticity and integrity of the original data, so the most important control link of the whole financial sharing service in the transaction process is the authenticity and integrity of the basic data.

However, both virtual and fragmented jobs and outsourcing and crowdsourcing operations inevitably have the following hidden dangers, which are mainly reflected in the following three aspects: (1) Hidden risks of data security. Although the enterprise will break the information into small modules for crowdsourcing, which makes the information seen by business personnel incomplete, after all, the enterprise has shown the information to an external third party, so there is still the risk of data leakage. (2) Based on the trust between the two sides. Many businesses of enterprises are outsourced to third-party external organizations, which leads to uncertain time and a lack of understanding of the enterprise, thus resulting in trust problems. This will affect the recipient's work efficiency and performance, and may also have an impact on the confidentiality of the enterprise, while the outsourcing company also worries about the timely payment of the enterprise. (3) It is difficult to carry out standardized control. The control of the financial sharing center is not a cost problem, but the standardized management of the process, so it is necessary to strengthen the target control, but it is difficult to achieve in the current financial position because the virtualization and fragmentation of posts will make posts invisible, more difficult to control, increasing the difficulty of management and supervision. In addition, business outsourcing and crowdsourcing also transfer the operating cost from the inside to the outside of the enterprise, and the control of the external operation activities of the enterprise is different from the control of the internal activities, which greatly increases the difficulty of the target control.

Notions to solve the hidden danger of financial sharing

Financial sharing is extended forward to form procurement sharing and backward to form tax sharing, and supplier management and tax management are included in the scope of sharing. When the transaction involves multiple suppliers, customers, regulators, and possibly tax authorities, the emergence of blockchain technology effectively solves the transaction problem of multiple parties. Blockchain technology is to establish a series of chains by using a hash algorithm and cryptography, allowing all users on the chain to participate in the update of information, and each update will be broadcast to all users on the chain to be recognized and stored in the block, each block has a corresponding timestamp. This solves the asymmetry of information and maximizes the authenticity and tamper-proof of information. Since every user can get the latest information on the chain, this solves the problem of decentralization and increases the degree of trust. This chapter believes that the application of decentralized blockchain technology into financial sharing is a way to solve the problem of trust, prevent data leakage and strengthen control.

Blockchain thinking mode of financial sharing service

The transformation of thinking mode is the premise of upgrading and transforming financial sharing services, and technological innovation runs through its development process and never stops. Traditional financial thinking is no longer adapted to the requirements of the current enterprise development. The emergence of financial sharing services and the subsequent financial transformation make the financial work gradually match the current management needs of enterprises and give full play to the potential value. Similarly, the current thinking mode of financial shared service management is also facing new problems under new challenges, and the transformation of the thinking mode is required.

Thinking is a process in which people know things and summarize the law of development of things, as well as a logical way for people to solve problems. In essence, any kind of information technology itself is a logical way of thinking to solve some problems, and blockchain is no exception. According to Yli-Huumo, Ko, Choi, Park, Smolander (2016) and Xu, Chen, and Kou, (2019), the objective of a blockchain solution is to form a decentralized environment where no third party is in control of the transactions and data. Blockchain technology is not a specific software, but a particular technology design (Qin R S, 2017; Lai and Liew, 2021), using the hash algorithm and cryptography technology ensures that the information chain is reliable, and the user can obtain real-time blocks in the chain of all data, eliminate the risk of information asymmetry caused by the (Zhong W & Gu Y Z, 2016). It can be seen that blockchain technology is a logical way to solve the problem of asymmetric and untrue information. Job virtualization, business crowdsourcing, and other work phenomena make it difficult to control the authenticity and reliability of business information in transactional processes of financial sharing service centers. Then the thinking mode of controlling the authenticity and reliability of business information can be used in financial sharing services to form the blockchain thinking mode of financial sharing services. The thinking mode of blockchain does not only refer to the implementation of financial sharing relying on blockchain technology but more importantly, to integrate some new thinking of blockchain technology into financial sharing services. Blockchain technology itself is integrated with the operation mode of financial sharing, aiming at solving the challenges faced by financial sharing. This chapter believes that consensus thinking, coexistence thinking of distribution and concentration, and coding thinking can be extracted and introduced into and applied to the operation and management of a financial shared service center in Figure 1.

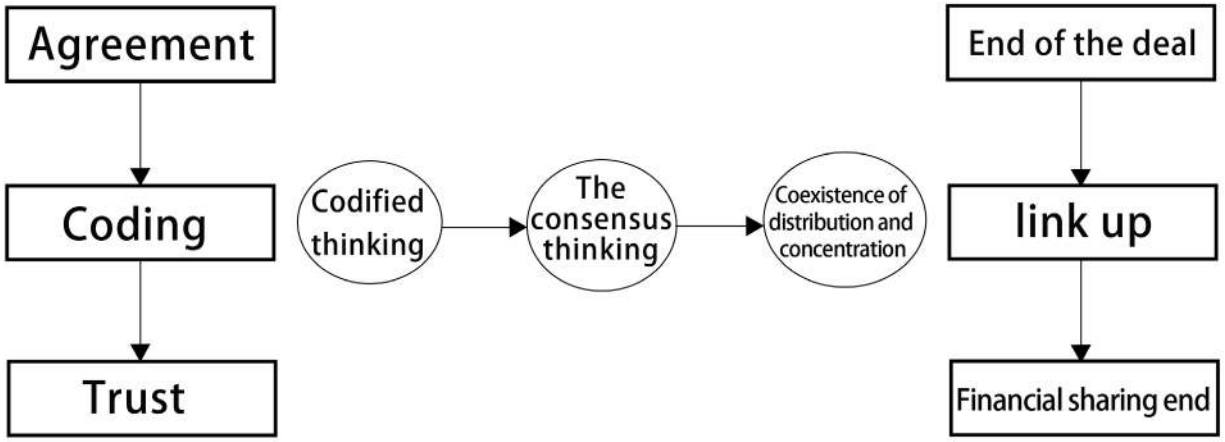


Figure 1. Blockchain thinking mode of financial sharing service.

Consensus thinking

The idea is the result of thinking activity, is people's point of view, views, etc. In general, the right idea can better guide practice. However, if members of the same organization have different or even contradictory ideas, even if the idea is correct, it will not promote the effective implementation of the practice. All kinds of disputes of social and economic problems in essence lack consensus consciousness between subjects. The implementation of the financial sharing service itself is also based on the premise of consensus, that is, the group company implementing financial sharing and its affiliated institutions reach a consensus on the implementation of financial sharing, and realize the standardization of system, flow, code, etc. The essential thinking of blockchain technology is to take consensus as the cornerstone, and only consensus can start trading and cooperation. Therefore, the blockchain thinking mode of financial shared services first needs to establish consensus thinking. Consensus thinking requires that participants in the blockchain chain reach a consensus on consciousness, that is, they have a common idea at the cognitive level.

To implement the blockchain thinking of financial sharing, consensus thinking must first be achieved, and the premise of consensus thinking is conscious consensus, that is, common ideas. Secondly, consensus thinking should realize its operating consensus under the guidance of consensus consciousness. Although consciousness determines behavior to some extent, in the implementation process of financial sharing, members of organizations with conscious consensus may not have operational consensus. In the implementation of financial sharing, the specific way to operate may be different wisdom, and may not reach a consensus. If the operating model can not reach a consensus, the standardization of financial sharing will inevitably have an adverse impact. Therefore, consensus thinking not only requires the members of the organization who share finance to have the same idea but also must realize the operating consensus under the guidance of a common idea.

Coexistence of distribution and concentration

On the one hand, distributed thinking is a decentralized business logic formed through technology, protocol, and system, which is manifested as distributed reengineering of responsibilities and rights. The current economic system gradually presents the characteristics of the platform. For

example, the financial sharing service center stores and controls the information of the whole group on one platform. Once the financial sharing service center has problems, the group is bound to face an information dilemma. On the other hand, in the implementation process of financial sharing, more and more crowdsourcing and outsourcing services, as well as fragmented and virtualized posts, pose challenges to the centralized management and control of financial sharing service centers and the confirmation of responsibilities and rights. When a thing has two extremes, if only one extreme is used and there is a problem, the other extreme can be considered for neutralization and coordination if possible, to give full play to advantages and avoid disadvantages. Therefore, centralized processing of financial sharing can be considered to introduce distributed processing to neutralize, that is, the distributed thinking of blockchain is introduced into the financial sharing center to "neutralize" risks caused by power concentration.

Financial sharing is a management model of the group (Zhang, Chen, Hu & Chang, 2008), which changes the direction of finance from simple accounting to business operation control and value creation (Qin, 2015; Al-Maweri, Sabri, Mansoor, and Lai, 2017; Lai and Tong, 2022). Through the process standardization and process reengineering of business and financial integration, the financial sharing service centrally deals with the business finance of the Group and strengthens the group's control over funds and risks in branches based on reducing costs and improving operational efficiency. It can be seen that "standardized management and enhanced control" is the most prominent value embodiment of financial sharing service, and it is not suitable to completely replace the centralized thinking of financial sharing service centers with distributed thinking. The occurrence of the underlying business and business documents produced is still in the various branches of the business, namely financial Shared terminal centralization is not business but share the end, that is to say by scattered branches of financial confirmed to financial business information-sharing center, comprehensive analysis of all information sharing center and decision, To achieve control of the entire group. In addition, the characteristics of the business terminal are decentralized, especially the phenomenon of post-virtualization makes this feature more obvious. If we can find a fusion point between the two, then we can integrate the two, Simply put, we can find a fusion point between the centralized financial sharing and the distributed blockchain, that is, the strategy block, then through the strategic block, the two can be integrated, take its benefits to avoid its disadvantages, and better implement financial sharing. Therefore, this chapter believes that a connecting point can be found between the business terminal and the financial sharing end. The business terminal adopts distributed thinking, while the financial sharing end adopts centralized thinking, and the transaction end and the financial sharing end can be effectively connected, namely, the coexistence of distribution and concentration thinking.

Think in code

In blockchain technology, the code stands for "law." The protocol of a specific business is coded first, and then the effective implementation of the protocol is restrained and controlled by the code. Using code instead of words to write contracts can avoid ambiguity and ambiguity words so that participants on the blockchain can actively and effectively perform the contract in an open and transparent chain, and minimize the default rate during contract execution. The implementation of financial sharing is a major project, which cannot be separated from the support of information technology. The operation of information technology is realized by code, and the design and storage of basic information are also expressed by code. Therefore, code plays a crucial role in the operation and implementation of financial sharing platforms. The implementation of blockchain technology

has raised the code to a higher position, which not only represents the uniqueness of things but also represents the specification and mandatory. If the business protocol of crowdsourcing and virtualization is designed as code rather than text, the ambiguity of text can be avoided, and the advantages of code such as fast storage and convenient retrieval can be better utilized. Therefore, the implementation of current financial sharing should have code-based thinking, that is, things or items are identified or designed by code.

Specifically, it is to codify the crowdsourcing and other agreement contents of the financial sharing service center, and adopt the codification thinking in blockchain -- legalize the code of the agreement. In this way, even if the business is fragmented and crowdsourced to form virtual posts, all the responsibilities and rights of each business or post have a codified agreement at the beginning, and all parties can enjoy the agreed benefits as long as they perform their duties in accordance with the agreement. Because in a blockchain, if one party has a credit problem, it will be broadcast in the chain and lose future opportunities, the codification of the protocol will become the cornerstone of mutual trust between the participants. It can be seen that code-based thinking can improve the transparency of participation of various partners in financial crowdsourcing sharing, control the performance of crowdsourcing participants and financial sharing parties through codes, thus reducing credit risks, effectively managing crowdsourcing participants, and finally achieving the goal of control.

Consensus thinking, the coexistence of distribution and concentration thinking, and coding thinking are the three thinking modes of blockchain for financial shared services, which are derived from the original business thinking under the current new situation. Consensus thinking is the premise of user thinking and flows thinking; Distributed and centralized coexistence thinking mainly takes the advantages of distributed thinking and centralized thinking respectively to optimize the platform strategy of financial sharing. Codified thinking reduces credit risks through the codification of protocols and achieves control objectives.

THE BLOCKCHAIN METHOD FOR FINANCIAL SHARING SERVICES

Identify participants on the blockchain and establish a consensus mechanism

If all participants want to carry out business activities and realize transactions on the same chain, the prerequisite is to adopt an agreed management and control mode or operation mode, which is also the consensus mechanism of blockchain. Therefore, the financial sharing service built under blockchain must be completed first to reach a consensus among participants. Participants are not randomly determined but should be combined with specific control objects. In this mechanism, financial sharing service control outsourcing, crowdsourcing personnel, or personnel in virtual positions must be included in the same chain under the same consensus mechanism. First of all, these people are added to the chain of the blockchain, including the supervisors of the financial sharing center, and then establish the same consensus agreement, which is the consensus agreement that all participants on the chain should abide by, including the increase of the block, the identified time, the effective time point and the settlement of funds, etc. In financial Shared services, each participant can increase blocks, such as after-sales staff in order to complete a business to enter their workload financial sharing system, which is on the chain block add a block, then the other nodes on the chain can be seen all participate in this block, and to determine the effectiveness of the block, And add it to the side chain of the blockchain. Under the recognition mechanism, business orders on each node reach a consistent validity, which is the time that the block is identified, namely the effective time of

the order. Once the order is deemed valid, the smart contract is triggered and disburses the funds in accordance with the agreement.

Use code to effectively control the front end of business transactions

The agreement is the key to the deal, the enterprise for outsourcing, the packages or virtual position to sign the agreement, and agreed in the agreement the terms of the specific, such as outsourcing project content, start and end time, the performance of the rights, and obligations, etc., how to effectively control of these protocols, this protocol can be respectively code. Agreement through code changes performed by the system automatically, once effective, all participants signed up because it is over, the chain so the situation became more open and transparent, the performance of all of the participants in the chain of mutual supervision, if there is a default or not, the performance of public, everything will be in the chain will affect its credibility and after about the performance. Code can be concluded from this, the agreement can be performed by the system itself, publicly on blockchain chain, it can effectively implement control for a virtual post, outsourcing and crowdsourcing, only need to add at the end of the business, are related to the chain, can automatically perform code, to the end of the business operators and the corresponding financial sharing center under effective control. Its working process is as follows: business before, code agreement over the identity of the participants in verification, validation through after the operator performs the information such as business change will be distributed to register on the chain and broadcasting, poke save blocks after all participants confirm back cover is not tampered with, to the maximum extent and ensure the authenticity of the business. In addition, at the time of signing the agreement, it may also be agreed that the payment shall be based on the amount of work done. Using image recognition technology to identify the information of the original certificate, the payer of this kind of business can be set up, and the reward can be combined with the workload to ensure the integrity of the terminal information.

Zone storage mode realizes the effective connection between business transactions and financial sharing

Blockchain technology and financial sharing have opposite characteristics. The purpose of using blockchain technology to integrate into financial sharing services is to effectively control the truth and integrity of terminal data. Due to the characteristics of the two are in conflict, the characteristics of chain block are decentralized, and financial Shared services are the goal of centralized control, both are opposite, so the distributed management of chain blocks cannot completely replace the centralized management of financial Shared services, this chapter holds that the characteristics of both can need not, The process of business should be applied to the characteristics of distributed and centralized respectively according to their characteristics, and the common points should be found and finally fused together. In practice, the whole business process can be divided into several business transactions for financial processing as in Figure 2.

In Figure 2, business transactions mainly include business activity processes and business information generated in the process. Accounting processing includes financial confirmation of business activities and subsequent capital management and tax planning. Activities before financial confirmation are business activities, and the original documents generated are business documents corresponding to business activities, and only through financial confirmation business information will be converted into financial information according to accounting standards. Therefore, strategic blocks can be set as financial confirmation points. Financial confirmation before the point of

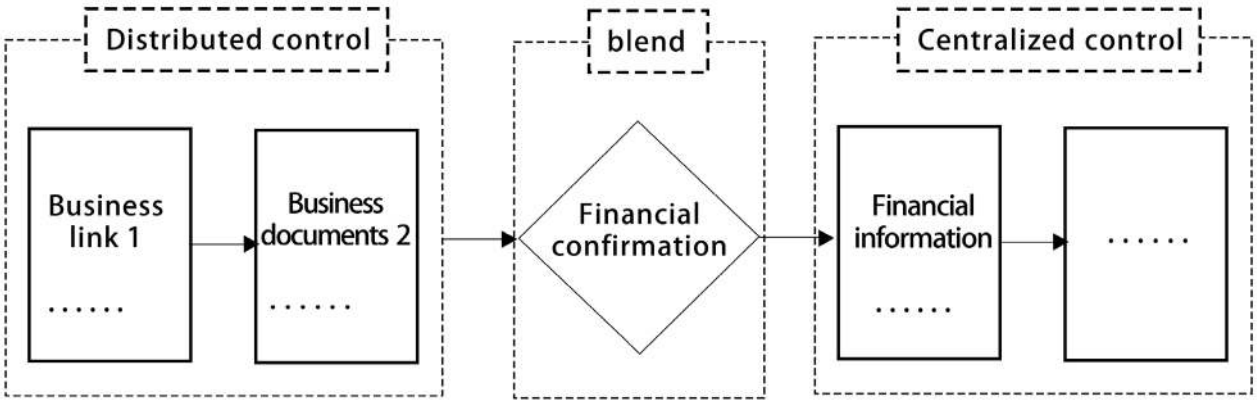


Figure 2. Integration of financial sharing distribution and concentration.

business transaction information, using blockchain thinking to control the real and complete business transaction; Financial confirmation point after the financial processing, the business transactions converted into financial information to implement centralized processing.

Use alliance chain to effectively expand financial sharing

The business of the financial shared service center is generally limited within the enterprise, but the management of the order information of upstream suppliers and the demand information of downstream customers will have an important impact on the enterprise. Therefore, the financial sharing service can be extended with the help of the alliance chain of the blockchain. On the original chain, a new chain can be added, and suppliers and customers can be added to the financial sharing to form an alliance with the original chain. This is based on the alliance. The financial sharing service formed by the chain can effectively make reasonable arrangements for the business of customers and suppliers and adjust the process. In this way, suppliers and customers can also participate in the daily management activities of the enterprise, so as to provide better services for supply, production and sales.

The internal private chain and consortium chain of enterprises are the foundation of blockchain financial sharing between enterprises. Each enterprise that establishes a financial shared service center based on blockchain technology realizes the integration of centralization and distribution through strategic blocks, and each enterprise uses the identity of the block as a block on the inter- enterprise blockchain, forming a "double". Chain blockchain" (as shown in Figure 3). In order to prevent the emergence of internal risks of "51% attack", when a new enterprise joins, it can further improve the security of the inter- enterprise blockchain by adjusting the conditions such as the entry threshold. For example, if the voting rights are not 51%, 100% voting rights can be established, that is, all companies in the chain must reach a consensus agreement, and new companies can only join the financial sharing blockchain between companies. Extending financial sharing is a win-win mechanism that can share information and interests.

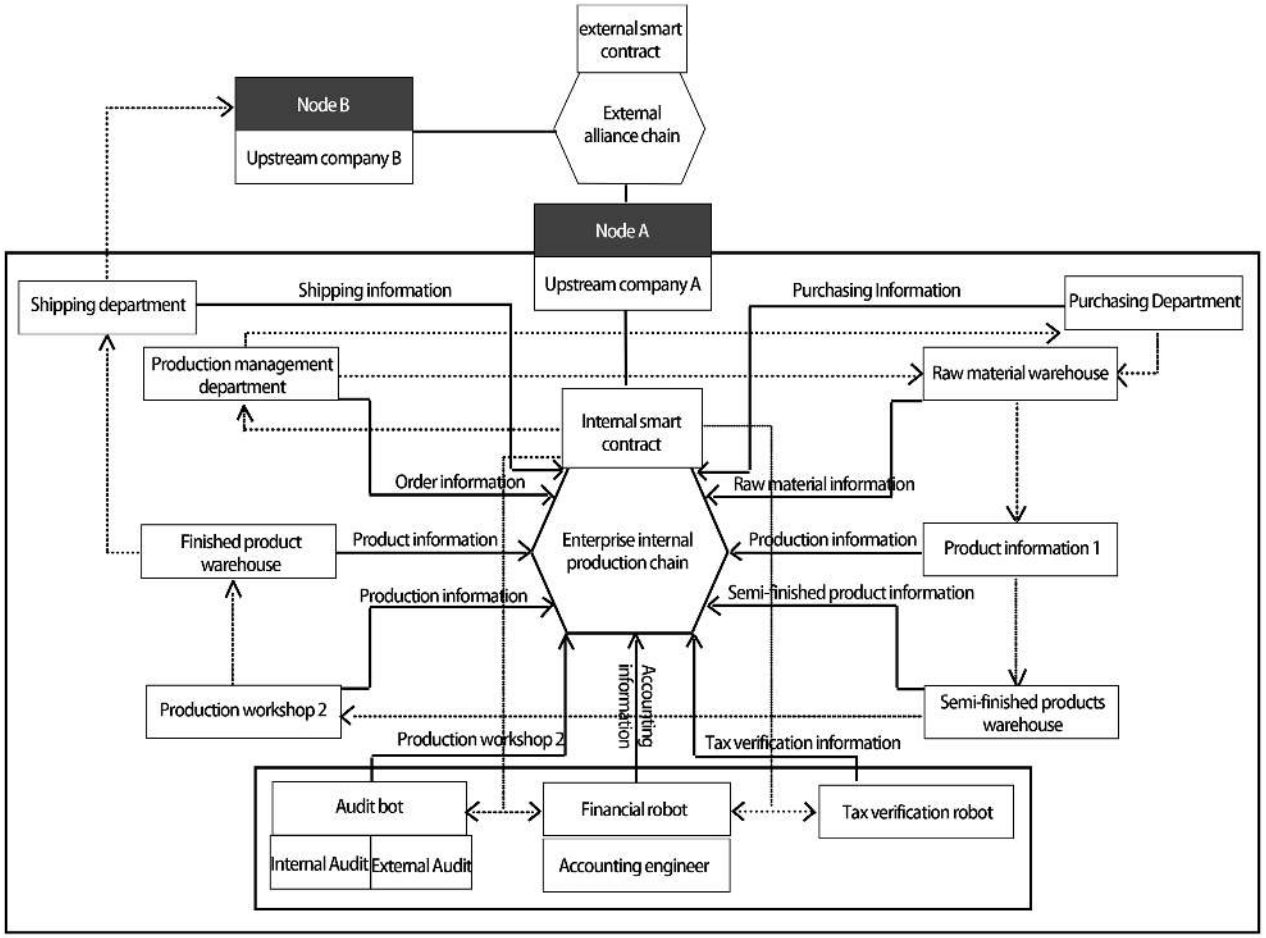


Figure 3. Financial sharing service based on "double chain".

Adapted from: (Blockchain-based framework for reengineering accounting information systems). New Accounting (09), 6-10.

DESIGN OF A FINANCIAL SHARING CENTER BASED ON BLOCKCHAIN

The original financial shared service center and business support center were replaced by data blockchain and business blockchain, respectively. Both data blockchain and business blockchain provide data and business support for the strategic blockchain. The strategic blockchain provides the strategic financial service center with relevant information such as enterprise investment risk, decision prediction, and operation warning. The Strategic Service Center will provide relevant advice and other information for the management's future decision-making after reviewing and sorting.

Take the three application areas of expense reimbursement management, centralized accounting, and centralized fund payment of financial sharing as an example. The 4-layer structure of the blockchain is introduced into the three areas of financial sharing. The assignment of responsibilities is shown in Figure 4, which respectively form three independent chain structures that operate independently but provide technical support to each other, namely data blockchain, business blockchain, and strategic blockchain.

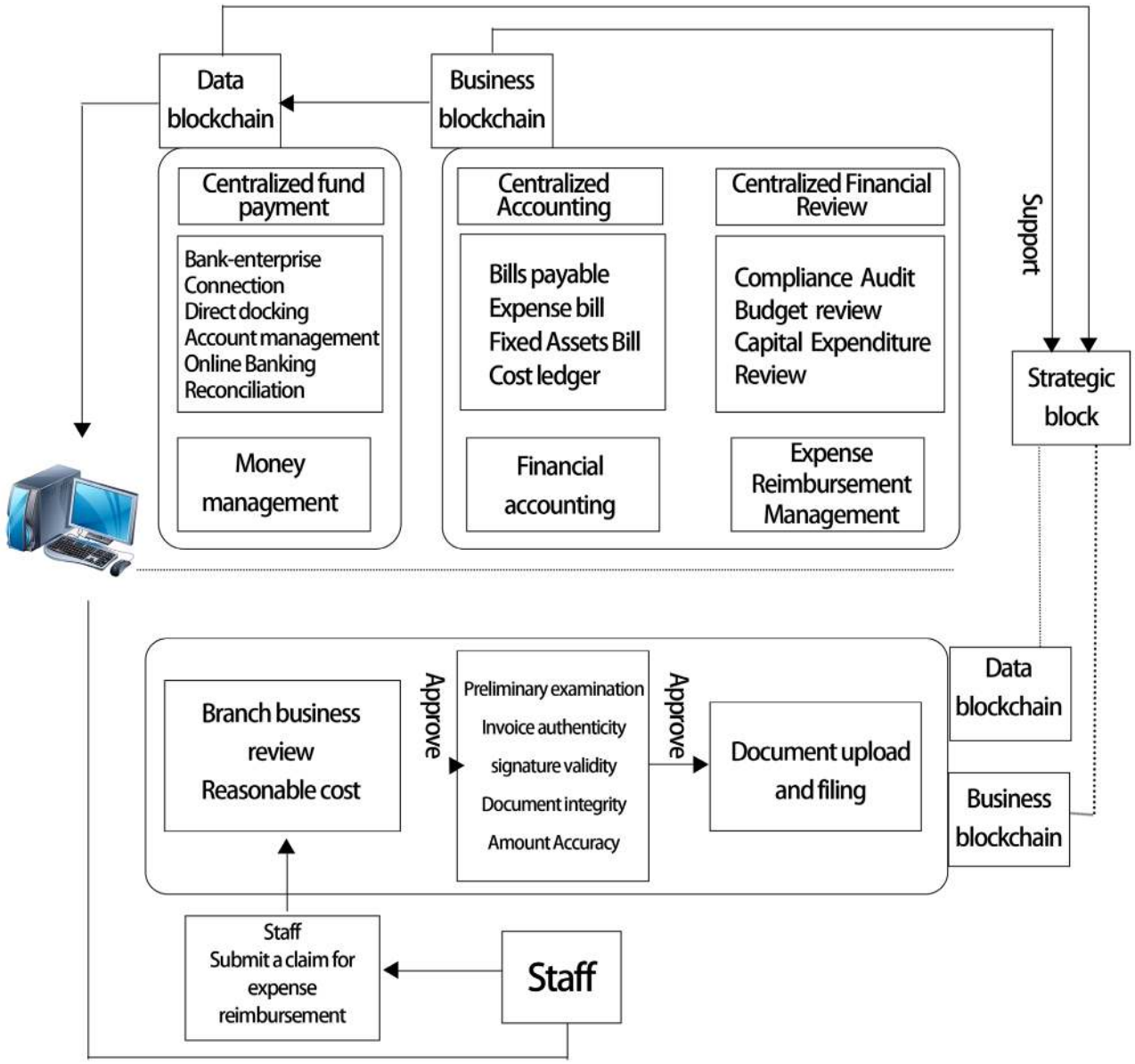


Figure 4. Workflow model of financial shared service center based on blockchain.

After the employee submits the expense reimbursement application, there is no need for the branch to review the rationality of the business and the initial review of the local documents. The pre-written program (smart contract) is directly executed by the business blockchain to verify the eligibility of the employee's application, and the data is backed up to the data. The blockchain is published and backed up in all branches and financial shared service centers (that is, the blockchain is published and backed up at all nodes); fund management is completely executed automatically by the data blockchain according to smart contracts, bank-enterprise docking, account management, online banking Reconciliation and other data are stored in the data blockchain and published on the entire network, so that each node has a corresponding record. Blockchain encryption technology adopts

the way of associating the public key with the private key, in which the public key is responsible for information encryption and verification of the private key signature, and the private key is responsible for information decryption to ensure the security of stored data; the data area of branches and financial sharing service centers Blockchain and business blockchain provide data support for strategic blockchain.

The 4-layer application functions of the blockchain are:

Data layer

The direct payment of fund management and the record of each payment and its details constitute the main content of the block body. The transaction record includes the version number of the transaction object, the number of transactions sent and received, the sending and receiving addresses of the transaction object, and the transaction timestamp. . Each block is connected end-to-end based on the Hash function to form a blockchain, which ensures that the data on the chain cannot be tampered with and forged, and realizes the traceability of transactions.

Network layer

The dissemination mechanism ensures the timeliness and security of document uploading and filing; the verification mechanism ensures the integrity and authenticity of the uploaded data.

Consensus layer

The PoW consensus mechanism ensures data consistency and consensus security by introducing computing power competition among distributed nodes. The PoS consensus mechanism ensures the decentralized and credible operation of the financial sharing service center that introduces blockchain technology.

Contract layer

Smart contracts ensure that all structural procedures are automatically executed in accordance with the contract, which converts trust in people into trust in programs and codes, improves work efficiency, and reduces labor costs.

The financial sharing center based on the consortium blockchain is constructed, as shown in Figure 5, the enterprise is in the form of a private chain, which ensures the independence and security of the enterprise. The enterprise server, the business module server of the financial sharing center, and the capital module server (where the server includes an identity authentication server, a consensus server, and a database server, etc.) are linked in the form of a consortium chain. The business data of the enterprise is linked with the business server of the financial sharing center, and the capital data is linked with the capital server, which realizes the separate management of accounts and funds and strengthens internal control. The three-module servers in the Financial Sharing Center are also connected in the form of alliance chains. The strategic module has the highest authority and can view all content. The business module and capital module exist in the form of private chains, and only their own data can be seen. Internal Control Requirements. The verification and aggregation modeling between the capital module and the business module is carried out through smart contracts, which avoids human intervention and increases the objectivity of the results. The analysis results can be fed back to the enterprise in time to help it make timely strategic adjustments.

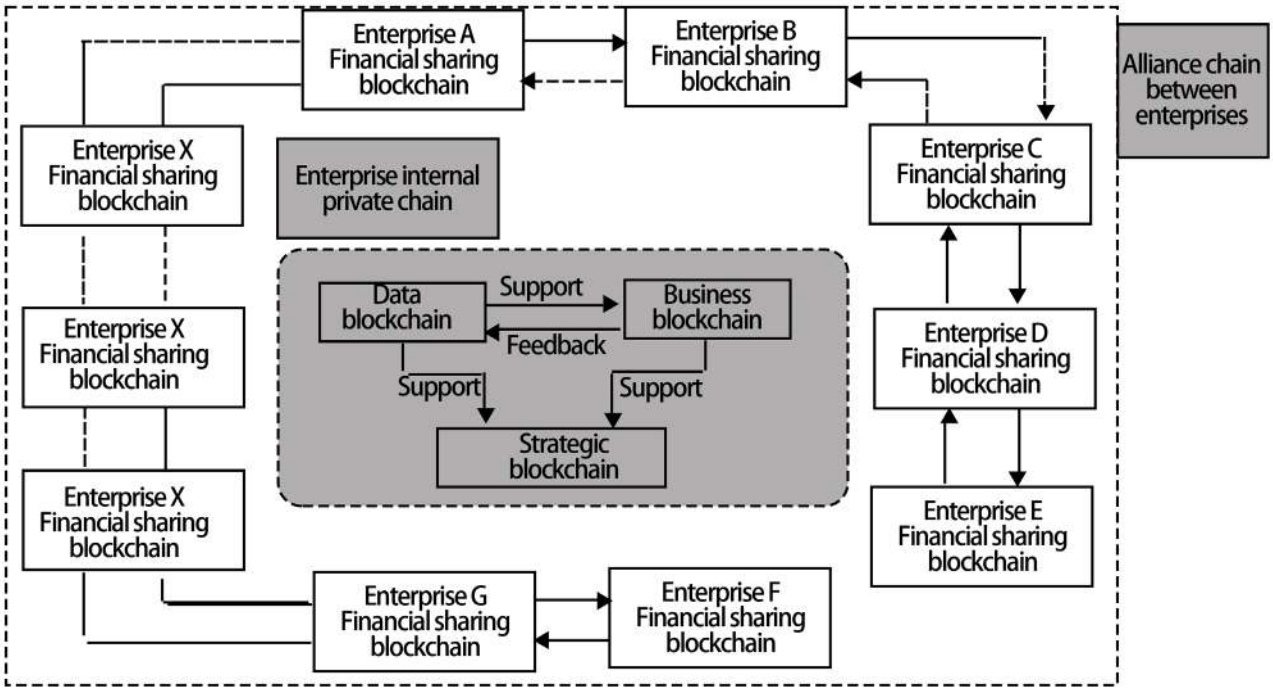


Figure 5. Construction of Financial Sharing Center Based on Consortium Blockchain.

Evaluation method and index system

This chapter uses the Analytic Hierarchy Process (AHP) to compare the blockchain financial sharing system with the financial sharing system and the traditional financial model in four dimensions: financial dimension, customer dimension, internal process and employee learning and growth.

AHP is a practical multi-criteria decision-making method. It divides the responsible target problem into several simple layers, and the most basic mode is the three-layer logical structure of the "target layer-criteria layer-scheme layer". The evaluation target is decomposed layer by layer, and the indicators are gradually refined, through expert scoring, the scores based on the evaluation indicators are multiplied by the corresponding weights [23], and the final result is obtained. This method can reduce subjective interference, correct inconsistent views, and has strong operability and applicability to both financial and non-financial indicators.

The Balanced Scorecard is an effective performance management tool. It evaluates an enterprise based on its financial and non-financial indicators. It includes four dimensions finance, customers, internal processes, and learning and growth. It has a positive effect on financial evaluation. Yang Weiping (2022), Cai Honghong (2021), etc. all used the dimension of the Balanced Scorecard to evaluate and manage the performance of the corporate financial shared service center. This chapter follows the ideas of the predecessors and continues to use these four dimensions as the criterion level for research.

The overall evaluation system is shown in Figure 6. The financial dimension selects the total cost of the shared center, employee cost, and financial forecasting and analysis capabilities as three indicators at the program level; the customer dimension includes the group company's satisfaction with financial services, the group company's satisfaction with financial risk control, and the growth of customers outside the group. The internal process mainly includes three aspects: business efficiency,

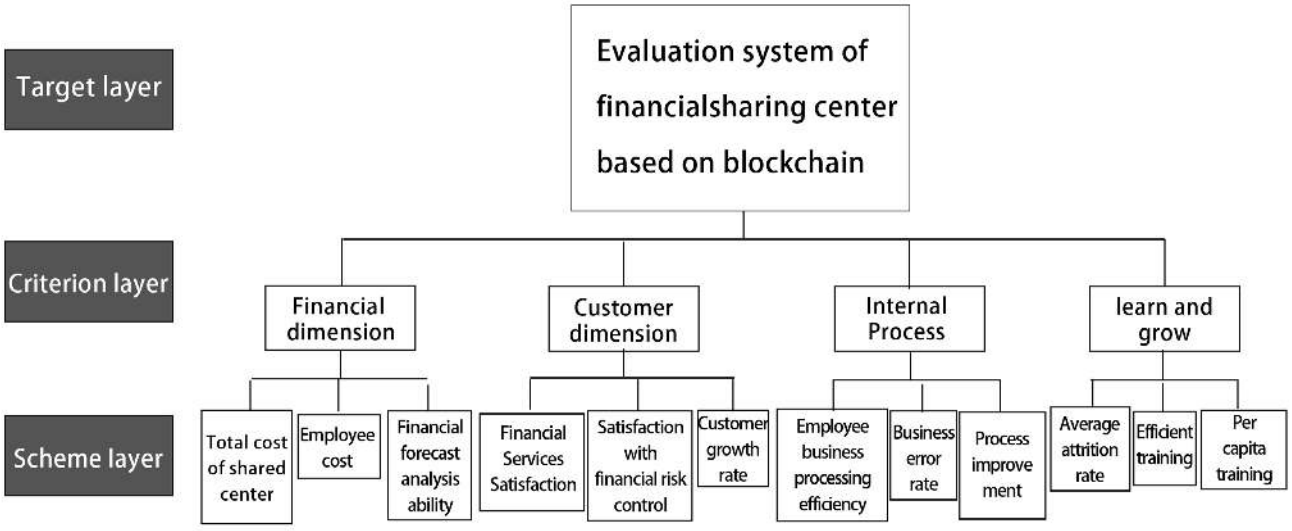


Figure 6. Evaluation system of blockchain financial sharing center.

error rate and process improvement rate; the learning and growth dimension selects three indicators: average turnover rate, training efficiency and per capita training hours.

Financial sharing center weight distribution

According to the previous research results and expert feedback, the author uses the geometric mean method to summarize the data, to obtain the judgment matrix of each level. After adjustment, the matrix of each level has passed the consistency test.

After the weight distribution of performance evaluation indicators based on AHP, the evaluation system structure and weights become very clear. The overall level judgment matrix and weight are shown in Table 1. Among the four dimensions of the criterion level, the customer dimension occupies the first place, the financial dimension and the internal process dimension are tied for second place, and the third is the employee learning and growth dimension. The improvement of any business activity is for the purpose of profit, and the customer is the basis of profit. On top of this, internal financial control and internal process simplification are also to better serve customers, so these two indicators are also important. On the whole, most of the viewpoints believe that enterprises should take customer service as the premise, increase financial management and simplify internal processes as the goal, and take talent training as the path to improve the four-in-one at the same time to achieve long-term strategic planning.

The statistical point of view of the target layer believes that the most critical indicator in the financial dimension is the financial forecasting and analysis ability (see Table 2), and the most critical indicator in the customer dimension is the group's satisfaction with risk control (see Table 3), and the internal process The most critical indicator is the process improvement rate (see Table 4), and the most critical indicator in the learning and growth dimension is the average turnover rate (see Table 5). The construction of the blockchain-based financial sharing model provides efficient forecasting and analysis capabilities, increases the intensity of risk control, greatly improves the original process, and effectively reduces the average turnover rate. In summary, we obtain a comprehensive weight distribution map (see Figure 7).

Table 1. Overall layer judgment matrix and weights.

Mode evaluation	Customer dimension	Financial dimension	Internal Process	Learn and grow	Weights
customer dimension	1	1.5	1.5	3	0.375
financial dimension	0.6667	1	1	2	0.250
Internal Process	0.6667	1	1	2	0.250
learn and grow	0.3333	0.5	0.5	1	0.125

Note: λmax: 4.0000; Consistency ratio: 0.0000<0.1; Weight to "population": 1.0000.

Table 2. Financial Dimension Judgment Matrix and Weight.

Financial dimension	The total cost of the shared center	Employee cost	Financial forecast analysis ability	Weights
The total cost of the shared center	1	0.2	0.1667	0.0836
employee cost	5	1	1	0.4443
Financial forecast analysis ability	6	1	1	0.4721

Note: λmax: 3.0037; Consistency ratio: 0.0036; Weight to "population": 0.2500.

Table 3. Customer dimension judgment matrix and weights.

Customer dimension	Group satisfaction with financial services	Group satisfaction with financial risk control	The growth rate of customers outside the group	Weights
Group satisfaction with financial services	1	0.1667	0.25	0.0852
Group satisfaction with financial risk control	6	1	3	0.6442
The growth rate of customers outside the group	4	0.3333	1	0.2706

Note: λmax: 3.0536; Consistency ratio: 0.0516; Weight to "population": 0.3750.

Table 4. Internal process dimension judgment matrix and weight.

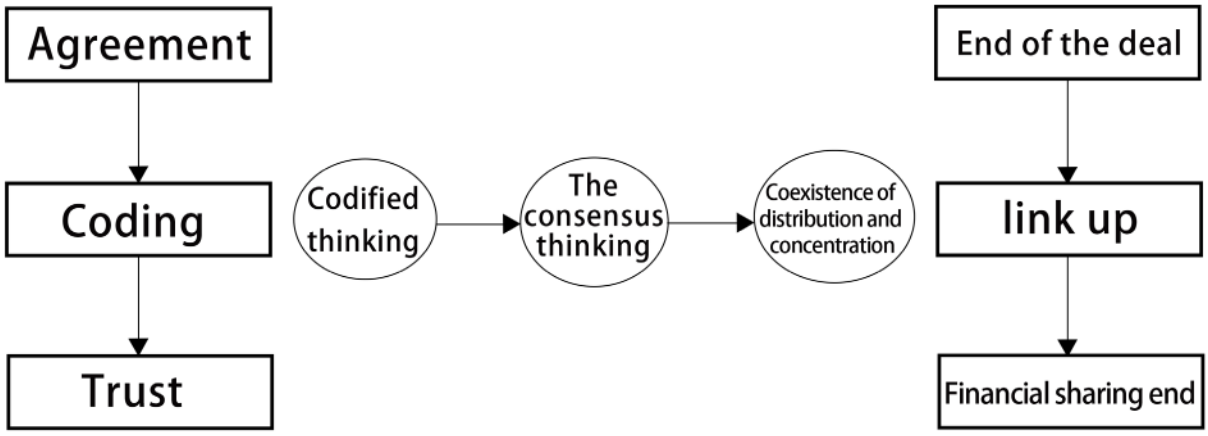
Internal Process	Employee business processing efficiency	Business error rate	Process improvement rate	Weights
Employee business processing efficiency	1	1	0.1429	0.1149
business error rate	1	1	0.1667	0.1210
Process improvement rate	7	6	1	0.7641

Note: λmax: 3.0026; Consistency ratio: 0.0025; Weight to "population": 0.2500.

Table 5. Learning and Growth Dimension Judgment Matrix and Weight.

Learn and grow	Average attrition rate	Efficient training	Per capita training hours	Weights
Average attrition rate	1	7	9	0.7854
efficient training	0.1429	1	3	0.1488
per capita training hours	0.1111	0.3333	1	0.0658

Note: λmax: 3.0803; Consistency ratio: 0.0772; Weight to "population": 0.1250.



Experts are invited to score traditional financial methods, financial sharing centers and blockchain-based financial sharing centers based on the above dimensions to obtain weights. The scoring adopts a 5-level system, A represents 100 to 90 points, B represents 89 to 80 points, and C represents 79 points. ~70 points, D represents 69 to 60 points, and E represents less than 60 points. The data is aggregated and averaged, and the percentage system is converted based on the calculation basis of the average score of each grade. The expert evaluation results are shown in Table 6.

The combined average score of the blockchain-based financial sharing model is 90.1846 points, the financial sharing model score is 82.8242 points, and the traditional financial model score is 75.9747 points. On the whole, the financial sharing model based on blockchain has significant advantages compared with the traditional model and the financial sharing model.

Table 6. Expert scoring evaluation results.

Options	Weights	Blockchain-based financial sharing model score	Financial Sharing Model Score	Traditional Financial Model Score
Group satisfaction rate with financial risk control	0.2416	90	84	76
Process improvement rate	0.191	95	85	75
Financial forecast analysis ability	0.118	92	83	75
Employee cost	0.1111	88	85	78
The growth rate of customers outside the group	0.1015	82	84	80
Average attrition rate	0.0982	90	70	75
Group satisfaction with financial services	0.0320	95	84	73
business error rate	0.0302	92	90	70
Employee business processing efficiency	0.0287	95	78	69
The total cost of the shared center	0.0209	83	83	80
efficient training	0.0186	82	85	80
per capita training hours	0.0082	85	85	85
Aggregate Average Score	90.1846	82.8242	75.9747	

Note: All data quoted with the permission of the original author.

CONCLUSIONS AND PROSPECTS

The development of information technology makes financial shared services change constantly. With the emergence and application of new technologies, the business activities of enterprises are constantly updated and changed, all of which have a certain impact on the operation of financial shared services. This paper proposes a blockchain-based financial sharing model, which uses smart contracts to liberate labor from traditional and complicated business processes. Through the consensus mechanism, the original hierarchical approval mechanism is broken, which greatly reduces operating costs while ensuring efficiency. Blockchain-based timestamps, traceability, and distributed features solve the problem of increased data security risks in traditional financial sharing centers. In today's virtual jobs, when outsourcing and extra business are normalized, the emergence and integration of blockchain technology is a trend and will be inevitable. The use of blockchain financial sharing center model can effectively solve the problem of certificate storage in education, completely retain the learning track of education, and make the learning results of students more credible when applying for jobs.

At present, the application of blockchain in the field of financial sharing is in the exploratory stage, and there are defects such as high construction cost, limited storage space of blockchain itself, and high computing cost. The researchers, academia and organisation can get new inspiration and references for the application of blockchain in the field of financial sharing from this paper.

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