Exploration on the Application of Blockchain Technology in Improving Financial Transparency

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Abstract

This paper focuses on the application of blockchain technology in improving financial transparency. With the development of the economy, the importance of financial transparency has become increasingly prominent, while the traditional financial management methods have problems such as information asymmetry. The decentralization, non-tampering and traceability of blockchain technology make it possible to solve these problems. This paper discusses the help of blockchain technology to improve financial transparency and expounds the application of blockchain technology in the financial field through the automation and transparency of financial audit, the real-time and accuracy of financial report and the optimization and transparency of asset management. At the same time, the case and practical results of blockchain technology in improving financial transparency are expounded through the case of improving government policies and supervision and the practice of promoting transparency in industry collaboration. Finally, the relevant summary is made, which mentions that with the continuous development and improvement of blockchain technology, its application in the financial field will create a more transparent and efficient financial management environment for enterprises and promote the innovation and development of the financial industry.

Keywords

Blockchain, Financial transparency, Financial management

Introduction

In today's digital age, financial transparency is very important for the sustainable development of enterprises and the establishment of social trust. However, traditional financial management has many challenges in information sharing, data security and trust mechanism [1]. With the rise of blockchain technology, it provides new ideas and possibilities for solving these problems.

As a decentralized and distributed ledger technology, blockchain technology has the characteristics of being tamper-proof, traceable, safe and reliable. Applying it to the financial field is expected to break the information island, realize real-time sharing and transparency of financial data, and improve the efficiency and accuracy of financial management [2]. Furthermore, blockchain technology can streamline financial processes by reducing intermediaries, thus lowering costs and minimizing human error.

The purpose of this study is to deeply explore how blockchain technology can bring changes to the improvement of financial transparency. Through the in-depth analysis of the principle of blockchain technology and the case analysis of its application in the financial field, it will show the great potential of blockchain technology in solving financial information asymmetry, preventing financial fraud and enhancing audit effectiveness [3]. Through the

study of these problems, I hope to provide useful references and suggestions for enterprises and related institutions in applying blockchain technology to improve financial transparency. Therefore, this study aims to provide a platform for professionals, scholars and readers interested in blockchain technology in the financial field to fully understand the application of blockchain technology in improving financial transparency [4,5]. Ultimately, it seeks to offer actionable insights for stakeholders in the financial industry to leverage blockchain effectively in creating a more transparent and trustworthy financial ecosystem. At the same time, it explores how they can combine these resources with their internal capabilities

Theoretical overview

Overview of blockchain

Blockchain is an innovative technical architecture. Through a brand-new information recording and dissemination mode, different computers are connected to form a safe and efficient information storage and transmission system. Its technical system involves cryptography, data structure, network communication and other fields, showing unprecedented security and transparency. This unique combination of technologies enables blockchain to provide a decentralized, immutable record of transactions that is resistant to tampering and fraud. As a result, it is increasingly seen as a solution to enhancing security and trust in digital transactions across various industries. The abstract structure of blockchain data is shown in the following Figure 1.

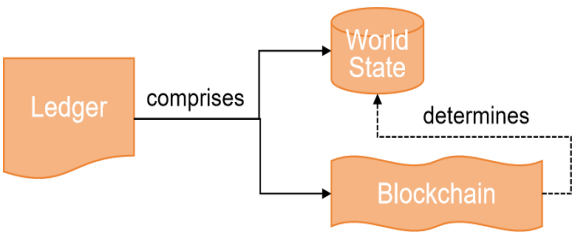

Figure 1. Abstract structure of blockchain data.

Blockchain, also known as chain data structure, records information in the form of blocks, and links these blocks together through specific algorithms to form a continuous chain. Each block contains certain information, such as transaction records, time stamps, etc., and is protected by cryptographic algorithms. This unique structural design makes the data on the blockchain highly secure and tamper-proof. As a result, blockchain technology has been widely recognized as a foundation for enhancing data integrity and trustworthiness in digital systems. Moreover, its decentralized nature opens broad application prospects in fields such as finance, supply chain management, healthcare, and smart contracts.

Blockchain has the following four characteristics:

(1) Security: The encryption algorithm of blockchain ensures the security of data transmission and effectively prevents data from being tampered with or stolen.

(2) Transparency: All data recorded in the blockchain is open and transparent, and anyone can query and verify it.

(3) Distributed: Blockchain does not depend on centralized servers or institutions, and each participant has complete data on the chain.

(4) Non-tampering: Once the data is recorded in the blockchain, it can hardly be tampered with or deleted.

Blockchain technology is widely used in finance, supply chain management, public services and other fields. For example, it can be used in the issuance and trading of digital currency to improve the efficiency and security of financial transactions; It can also be used to track and verify the commodity information in the supply chain and improve the transparency and credibility of the supply chain. Additionally, blockchain can enhance the efficiency and security of public services by enabling transparent and tamper-proof record-keeping systems. Its ability to provide a decentralized platform also ensures that sensitive data is protected while maintaining accessibility for authorized

parties. From 2014 to 2023, the registration volume and growth rate of China's blockchain-related enterprises are shown in the following Figure 2.

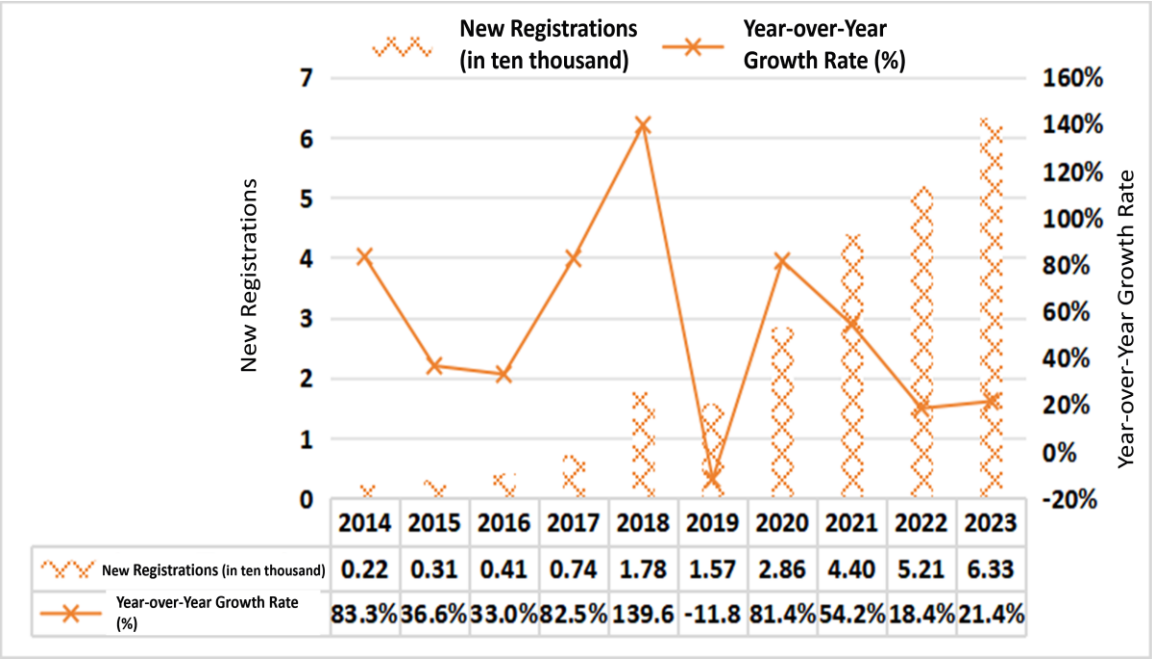

Figure 2. The registered quantity and growth rate of China's blockchain-related enterprises from 2014 to 2023.

Overview of financial transparency

Financial transparency refers to the degree and quality of disclosure of financial information by enterprises, so that stakeholders can clearly and accurately understand the financial situation, operating results and cash flow of enterprises [6].

An enterprise with high financial transparency will disclose its financial information in a clear and easy-to-understand way, including financial statements, notes to financial reports, management discussion and analysis, etc. This can help investors, creditors, employees, suppliers, customers and other stakeholders make more informed decisions. Improving financial transparency is of great significance in many aspects. First, it helps to enhance the confidence of investors. When investors make investment decisions, they need to fully understand the financial situation and operational risks of enterprises [7]. High financial transparency can reduce information asymmetry, reduce investment risks and attract more investors. Second, financial transparency helps to improve the credibility and reputation of enterprises. An open and transparent corporate image is more likely to gain market recognition and trust, which is conducive to the long-term development of enterprises. Third, financial transparency is also conducive to strengthening the internal management of enterprises [8]. Transparent financial information can encourage management to operate enterprises more cautiously, improve the level of financial management and prevent internal corruption and improper behavior.

However, it is not easy to achieve high financial transparency. Enterprises need to establish a sound financial management system to ensure the accuracy and reliability of financial information [9]. At the same time, it is necessary to follow the relevant accounting standards and regulations and standardize the disclosure process of financial information.

Therefore, financial transparency is an important guarantee for the healthy development of enterprises, which is of great significance to the sustainable development of enterprises and the

stable operation of the market [10]. In addition, it encourages accountability and responsible financial practices, which are crucial for long-term growth and risk mitigation.

Blockchain technology to help improve financial transparency

In today's digital age, blockchain technology has attracted wide attention from various industries. Among them, it has significant help to improve financial transparency. The core characteristics of blockchain technology are tamper-proof and open and transparent. These two characteristics have great application value in the financial field [11]. Tampering means that once the data is recorded in the blockchain, it cannot be modified or deleted, which effectively avoids the risk of financial fraud and forged records. Openness and transparency ensure the transparency of all transactions and records, so that every transaction can be seen by all participants. The basic situation of representative listed companies in the blockchain industry is shown in the following Table 1.

Table 1. Basic information of representative listed companies in blockchain industry.

Stock abbreviation	Stock code	Listing plate
Skyworth digital	000810.SZ	Main board of Shenzhen stock exchange
Neusoft group	600718.SH	Main board of Shanghai stock exchange
Shenzhou information	000555.SZ	Main board of Shenzhen stock exchange
Softcom power	301236.SZ	Main board of Shenzhen stock exchange
Nantian information	000948.SZ	Main board of Shenzhen stock exchange

In the traditional financial system, due to the lack of effective audit mechanism, the authenticity and accuracy of financial information are often questioned. However, the application of blockchain technology has completely changed this situation. By using blockchain technology, enterprises can record all transaction and financial information and ensure that this information cannot be tampered with. In addition, due to the openness of the blockchain, this information can be verified by anyone at any time. This has greatly improved the transparency of financial information and enhanced the trust of investors and stakeholders in the enterprise. In addition, blockchain technology can also realize automated auditing and supervision processes through smart contracts [12-14]. By writing specific program codes, smart contracts can automatically perform operations under certain conditions, such as triggering payment or automatically sending notifications. This automated process reduces the risk of human error and fraud, thus improving the accuracy and efficiency of the audit.

Therefore, blockchain technology provides a powerful tool and solution for improving financial transparency. Through its non-tampering, open and transparent characteristics and the application of smart contracts, blockchain technology can ensure the authenticity and accuracy of financial information, improve the efficiency and accuracy of auditing, and bring more trust and confidence to all stakeholders [15].

Application of blockchain technology in the financial field

Automation and transparency of financial audit

With the continuous development of science and technology, the automation and transparency of financial audits is becoming a trend. The automation of financial audit is mainly reflected in the use of advanced information technology and software tools to improve the efficiency and accuracy of audit work. For example, by using data analysis software, auditors can quickly process and

analyze many financial data and find potential problems and anomalies. Automation can also reduce the errors caused by manual operation and improve the quality of audit work. The transparency of financial audit emphasizes the openness and understandability of audit process and results. This means that audit institutions need to disclose audit methods, procedures, found problems and suggested improvement measures to stakeholders in a clear and easy-to-understand way. Transparency can enhance the credibility of audit and improve the trust of stakeholders in audit results.

Realizing the automation and transparency of financial audit has many advantages. For example, automation can greatly shorten the audit cycle, reduce the audit cost, and enable enterprises to obtain audit results in a timelier manner. Moreover, transparency can promote the internal financial management of enterprises to be more standardized and compliant and reduce the occurrence of financial fraud. In addition, transparent audit process and results also help investors, creditors and other stakeholders to make more informed decisions.

To realize the automation and transparency of financial audit, audit institutions need to constantly improve their technical ability and professional level. At the same time, enterprises need to actively cooperate with the audit work, provide accurate and complete financial information, and establish a sound internal control system. Therefore, the automation and transparency of financial audits is an important way to improve audit quality and enhance market confidence, which is of great significance to promote the healthy development of enterprises and maintain the order of market economy.

Timeliness and accuracy of financial reports

Real-time and accuracy of financial reports are two very important aspects of enterprise financial management. Real-time means that financial reports can reflect the financial situation and operating results of enterprises in a timely manner.

In today's rapidly changing business environment, timely financial information is very important for enterprises to make decisions. Real-time financial reports can help management to quickly understand the operation of enterprises, find problems in time and take corresponding measures.

At the same time, for investors, creditors and other external stakeholders, real-time financial reports can also make investment decisions or adjust credit strategies faster.

Accuracy is the core requirement of financial reporting. The data in the financial report must truly, reliably and completely reflect the actual financial situation of the enterprise. If there are errors or deviations in financial reports, it may lead to mistakes in decision making and bring serious losses to enterprises and stakeholders.

To ensure accuracy, enterprises need to establish a sound financial accounting system and internal control system to ensure the rigor and standardization of the process of collecting, recording, summarizing and reporting financial data. However, it is not easy to realize the real-time and accuracy of financial reports at the same time. In the process of pursuing real-time, data processing may not be detailed enough because of time constraints, thus affecting accuracy.

On the contrary, too much emphasis on accuracy may prolong the preparation time of the report and reduce the real-time performance. Therefore, enterprises need to find a balance between the two.

To improve the real-time and accuracy of financial reports, enterprises can adopt a modern financial management information system to realize automatic collection and processing of financial data, reduce manual intervention and improve the accuracy and timeliness of data.

At the same time, strengthening the training and quality improvement of financial personnel and improving their professional ability and sense of responsibility are also important measures to ensure the quality of financial reports.

Optimization of asset management and improvement of transparency

The optimization of asset management and the promotion of transparency are of great significance to the sustainable development of enterprises and organizations. The optimization of asset management aims to improve the efficiency and benefit of asset utilization through rational allocation of resources. This includes the scientific management of purchase, use, maintenance and disposal of assets.

When purchasing assets, it is necessary to conduct sufficient market research and demand analysis to ensure that the purchased assets meet the actual needs and strategic planning of the enterprise. In the process of using assets, we should establish a sound management system, standardize the use and operation of assets, and reduce waste and damage.

At the same time, we should strengthen the maintenance of assets, extend the service life of assets and reduce the maintenance cost. In the process of asset disposal, it should be carried out in accordance with the prescribed procedures to ensure the legality and compliance of asset disposal and maximize the value of assets [16].

The improvement of transparency requires enterprises to disclose relevant information to internal and external stakeholders in a timely and accurate manner in the process of asset management. Internally, it is necessary to let the management and employees know about the status and management of assets, to make better decisions and implement the work.

Externally, it is necessary to provide clear and transparent asset management information to investors, creditors, regulators, etc., and enhance their trust and confidence in enterprises. To improve transparency, enterprises need to establish a sound asset management information system to ensure the accuracy and timeliness of data. In addition, strengthening external information disclosure helps enterprises build a positive reputation and maintain long-term sustainable development.

At the same time, internal audit and supervision should be strengthened to prevent irregularities and corruption in the process of asset management. In the second quarter of 2024, the ranking of R&D funds for blockchain application stocks is shown in the following Table 2.

Table 2. Ranking of R&D funds for blockchain application stocks in the second quarter of 2024.

Serial number	Securities code	Securities abbreviation	R&D expenses (yuan)
1	600050	China Unicom	2.994 billion
2	600570	Hengsheng Electronic	1.162 billion
3	600839	Sichuan Changhong	1.072 billion
4	600588	Yongyou Network	1.064 billion
5	688012	Zhongwei Company	568 million
6	600718	Neusoft Group	444 million
7	002063	High Beam Software	363 million
8	002668	TCL zhijia	285 million
9	000948	Nantian Information	206 million
10	300002	Shenzhou Taiyue	193 million

The optimization of asset management and the improvement of transparency promote each other. Optimizing asset management can improve the efficiency and value of assets and provide strong support for enhancing transparency. The improvement of transparency can promote the

standardization and scientific of asset management and further optimize asset management. By optimizing asset management and improving transparency, enterprises can better cope with market competition and achieve sustainable development.

Cases and practice of blockchain technology in improving financial transparency

Improvement cases of government policies and supervision

In addition to enterprise-level applications, the government has also played an important role in promoting blockchain technology to enhance financial transparency. At the policy and regulatory level, the government has provided strong support for the application of blockchain technology by formulating relevant regulations and standards.

(1) Domestic policies and regulatory cases

China Municipal Government has played an active guiding role in promoting the development of blockchain technology. For example, the government has issued a series of policy documents on promoting the development of blockchain technology and industry and strengthening financial supervision. At the same time, the government has also set up special institutions to promote the research and development and application of blockchain technology. These measures have provided clear guidance and support for enterprises in applying blockchain technology and effectively promoted the improvement of financial transparency.

(2) Foreign policy and regulatory cases

In European and American countries, the government's support for blockchain technology is mainly reflected in strengthening financial supervision and promoting technological innovation. For example, the US government issued a series of regulations on digital currency and blockchain technology, which provided a clear legal framework and operational guidelines for financial institutions. At the same time, some governments have also cooperated with private enterprises to jointly establish a public blockchain platform to support a wider range of financial information transparency needs. In addition, the EU is also promoting the implementation of regulations on data protection and privacy to protect the security and privacy of personal data.

To sum up, blockchain technology has played an important role in improving financial transparency, whether at home or abroad, whether at the level of enterprises or governments. By introducing blockchain technology, enterprises and governments can better manage financial information, improve data transparency and strengthen financial supervision. In the future, with the continuous development and application of technology, financial transparency will be further improved. At the same time, it also provides a reference for other industries.

Practice enhancing the transparency of industry collaboration

In today's business environment, blockchain technology is playing a huge role in many fields with its unique advantages. Especially in terms of improving financial transparency, blockchain technology provides unprecedented possibilities for industry collaboration. And with the development of science and technology, the transparency of financial information has become an important cornerstone of cooperation between enterprises. In many industries, especially in supply chain management, financial services and public sector, the importance of collaborative work is self-evident. However, due to the asymmetry of information and the limitations of traditional recording methods, the transparency of industry collaboration is often challenged.

Taking supply chain management as an example, blockchain technology provides a shared and transparent information platform for participants in all links. On this platform, each participant can view

and verify the transaction information, ensuring the authenticity and accuracy of the information. For example, in the food supply chain, every link from production to sales can be recorded and tracked through blockchain technology. Once there is a food safety problem, relevant personnel can quickly find the source of the problem, which not only improves the synergy efficiency of the industry but also protects the rights and interests of consumers. In the field of financial services, blockchain technology also plays a key role in improving the transparency of collaboration. Traditional financial transactions usually involve multiple intermediaries and complex transaction processes, which leads to information being easily lost or tampered with during transmission. Blockchain technology provides a safe and transparent trading environment for financial institutions through its decentralized and tamper-proof characteristics. This not only improves the efficiency of trading but also reduces the risk of trading.

In general, blockchain technology has great potential in improving the transparency of industry collaboration. By providing a shared and transparent information platform for all participants, blockchain technology not only improves the efficiency of collaboration, but also protects the rights and interests of all parties. In the future, with the continuous development and improvement of blockchain technology, its role in enhancing the transparency of industry collaboration will be more significant.

Conclusion

In the research process of "Application Exploration of Blockchain Technology in Improving Financial Transparency", it fully embodies the great changes and potential brought by blockchain technology to the financial field.

Through the study of blockchain technology, we can understand its characteristics such as decentralization, non-tampering, traceability, etc., and can effectively solve the problems of financial information asymmetry, data security and trust, thus significantly improving financial transparency.

In practical applications, blockchain technology can realize real-time sharing and updating financial data and ensure the accuracy and integrity of information. At the same time, the application of smart contracts can automate the implementation of financial processes, reduce human intervention, and reduce the risk of errors and fraud.

In the future, more enterprises and institutions will actively explore and apply blockchain technology to promote the innovation and development of the financial industry. At the same time, it is hoped that academia and industry can strengthen cooperation, jointly study and solve the problems faced by blockchain technology in financial application and contribute to achieving a higher level of financial transparency and sustainable development of the industry.

All in all, blockchain technology has brought new opportunities and hopes for the improvement of financial transparency. Moreover, soon, blockchain technology will become an important support in the financial field and play an active role in building a more transparent and credible financial environment.

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Conflicts of Interest

The authors declare no conflict of interest.

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