

Construction and Operation Mode of Intelligent Audit based on Blockchain Technology

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Abstract

Under the background of digital era, with the progress of technical ability, the development of system performance and data protection, digital technology has become the core foundation and innovation driving force of rapid social development. In 2008, zhongbencong scholars proposed the concept of blockchain. With the continuous updating and improvement of blockchain technology, blockchain technology has been gradually applied to many fields and aspects of production development. In order to further improve the expected users' trust in the financial statements, promote the standardized development of enterprises and the good operation of economic and information systems, the traditional audit operation mode needs to be continuously upgraded to match the development characteristics of the digital era. This paper selects "blockchain + audit" as the research object. Based on the explanation and elaboration of the content, characteristics and advantages of blockchain, combined with the working methods and workflow of traditional audit, it further analyzes the disadvantages of traditional audit and the necessity of intelligent audit construction. Combined with the status quo and future prospects of blockchain technology development at home and abroad, this paper analyzes the feasibility of intelligent audit construction and the specific work content of operation mode, so as to seek the efficient combination path of "blockchain + audit" development mode, promote the development of intelligent audit, and make contributions to the development of audit industry towards semi-automatic and automatic stage.

Keywords

Digital era; blockchain; intelligent audit; operation mode.

1. Overview of Research Background and Significance

Blockchain is a distributed ledger system solution based on peer-to-peer network. It is a chain structure composed of information blocks with the characteristics of "time sequence and forward verification". Each information block is formed by stamping the transaction set within a period of time. As the blockchain technology is not perfect, and the specific application of intelligent audit needs further research. The research on "blockchain" mainly started from 2003 and grew rapidly from 2015 to 2016, but the research on "blockchain + audit" started in 2016. So far, there are few relevant research literatures and materials. The technical advantages of blockchain have the characteristics of transparency, network consensus and de trust, non tampering, traceability and intellectualization, which are highly consistent with the verification function of audit work, and lay the foundation for the intelligent audit construction of "blockchain + audit".

With the continuous development of the times, the traditional audit mode has the disadvantages of high audit cost, low work efficiency, trust problems between auditors and the audited company, and the audit is not timely. Blockchain is a kind of credit establishment

paradigm without trust accumulation. Through the digital processing of relevant contracts, documents, vouchers and other data through blockchain technology, the authenticity of transaction information records is guaranteed, and different access rights are set for the corresponding data, which can further achieve the certification effect of expected audit.

In view of the many advantages of blockchain technology and its novelty and practicability in audit application, "blockchain + audit" mode has been paid more and more attention by many countries and scholars. Relevant scholars at home and abroad have done a lot of research work on the internal control environment of blockchain, the challenges of auditors' performance, electronic audit evidence, audit framework design and audit mode change. The research and practical development of "blockchain + audit" in China is still in the preliminary research and practice stage, so it is of great significance to study it.

To sum up, based on the previous research theory, this paper analyzes the problems that need to be focused on in the application of blockchain in the audit field, and actively summarizes the relatively mature research experience of "blockchain + audit" mode at home and abroad, so as to give specific countermeasures, which can make up for the inadequacy of relevant research on blockchain audit to a certain extent, and build a blockchain based technology. The intelligent audit and operation mode of the technology provides some theoretical and practical guidance for the development of blockchain audit, which has positive theoretical and practical significance.

2. The Impact of Blockchain Technology on Accounting and Auditing

Blockchain has the characteristics of non tampering, that is, public key encryption. It can clarify the proof of ownership, further guarantee the uniqueness of financial accounting data source, and maintain the immutability of financial accounting data. Therefore, it can guarantee the authenticity and integrity of audit data, the uniqueness of audit data source, and ensure that the audit data can not be tampered with. Blockchain technology has the characteristics of decentralized account book, which can gradually enhance the transparency of transactions, improve the authenticity and reliability of audit data while improving the transparency of financial accounting information.

Blockchain technology has the characteristics of time stamp, which can clarify the transaction order, ensure the true record of data at each node, improve the difficulty of data change, further retain permanent financial accounting data records, and improve the reliability of audit data. Blockchain has the characteristics of network consensus, which can verify the legitimacy of transactions, provide real-time transaction clearing, further improve the operation efficiency of accounting processing, improve the authenticity, timeliness and reliability of audit data, and lay a certain foundation for real-time audit and continuous audit. Blockchain has programmable characteristics, so it can realize the intelligent development of accounting processing by setting accounting algorithm, promote the technical upgrading of the whole industry and the construction of a good development environment. Through the programmable technical characteristics, it can realize the intellectualization of audit work by setting audit algorithm or audit business processing rules, and promote the development and overall construction of intelligent audit.

Blockchain technology has a certain impact on audit process and audit content. In terms of internal audit business, in the preparation stage of audit implementation, the internal audit department can define the specific objectives of the audit according to the results of the determination and evaluation of blockchain technology, and carry out accurate audit after the business with risk points and potential risks is convenient. In the specific implementation stage of the audit, auditors pay extended attention to the business through the block chain, which can promote the gradual realization of comprehensive audit, further reduce the audit risk and

improve the audit quality. In the follow-up stage of audit, internal audit department can provide authentic and reliable audit data for audit information demanders more conveniently. The construction of "blockchain + audit" is essentially an innovation of audit operation mode. It can be seen from the development of a series of blockchain technology features above that the authenticity, reliability and timeliness of the financial information data of the audited unit can be improved, and the intelligent degree of audit work can be improved, so as to further improve the audit efficiency, ensure the audit quality and reduce the audit cost.

3. Research on the Construction and Operation Mode of Blockchain Audit

3.1. An Overview of the Development Stages of Auditing

The development stage of audit mainly includes audit 1.0, audit 2.0, audit 3.0 and audit 4.0. The audit 1.0 stage is generally manual audit, and its information interaction mode is centralized. The account book technology is mainly simple account book. The main feature is the simple bookkeeping method of original and single person. The cost of information bookkeeping is low and the cost of information identification is high. The main audit tool is calculator. The overall stage of audit 2.0 is information technology audit, and its information interaction mode is centralized, and the account book technology is mainly the double entry account book. If the double entry account book is used, the main feature is double entry bookkeeping, with low information bookkeeping cost and high information identification cost. The main audit tool is excel and other software. The audit stage 3.0 is generally based on big data audit, and its information interaction mode is decentralization. The account book technology is digital account book. The main feature is that the account book evolves from physical media to electronic or digital media. The main audit tool is big data analysis software. The audit stage 4.0 is generally semi-automatic and automatic, and its information interaction mode is distributed, and the account book technology is distributed. The main feature is the generation and application of distributed bookkeeping represented by blockchain. The cost of information bookkeeping is high, the cost of information identification is low, and the main audit measurement tools are sensors, Internet of things, RFID, CPS or GPS.

3.2. Discussion on the Construction Mode of Blockchain Audit

Among the four accounting firms, many of them have released audit application platforms and corresponding software. The development of intelligent audit is further realized through the combination of blockchain network and smart contract. The application platform of blockchain audit can directly connect with the financial system of the auditee in real time, so it is convenient to monitor the business transactions and financial accounts of the audited entity in real time. Through the real-time monitoring of the internal operation of the auditee, the occurrence of fraud and false transactions can be reduced. Through a series of network technology applications, audit work can greatly improve the audit efficiency and realize the light operation of audit work.

In addition, as far as the basic characteristics of the world economy in the 21st century are concerned, the macro characteristics are internationalization, financialization and intellectualization; in terms of the basic characteristics of the business environment of enterprises, the micro characteristics are customization, competition and change; as for the internal of the audited company, the technology of blockchain can improve the transparency, accuracy and timeliness of accounting information, which is also in a certain period. It reduces the moral hazard of the company's internal personnel. Through the overall operation control, it can ensure the safety of enterprise property and reduce the dependence on inspection work. Because blockchain technology can realize real-time and real centralized recording and storage of all transactions on the private chain of the financial system, further simplifying and

optimizing the internal audit work, and due to the irreversibility and time stamp functions of the blockchain, it can reduce the occurrence of account fraud and false transactions.

The current audit work needs a lot of manpower and material resources to support the audit work due to audit, inventory, field investigation and other work. Excessive field investigation and attention to details also cause a part of the waste of human and material resources and other resources. Obviously, the application degree of advanced science and technology is not high. The combination and construction of blockchain audit, because of the credibility of the system, the authenticity, effectiveness and irreversibility of transactions, can further liberate the audit staff from the daily audit work, further strengthen the audit errors and supervision, promote professionals to turn to deep research and innovative work, and gradually comply with the new requirements of the development of the digital era. The development of audit work from labor-intensive to technology intensive will promote the overall accounting and audit industry to develop in a more comprehensive and scientific direction.

4. Research on Development Case Implementation of Blockchain Audit

2020 In the first quarter of, consensus digital signed a series of contracts with the top domestic firms to further promote the implementation of the blockchain in intelligent audit. Generally speaking, there are a series of problems in the current audit mode, such as the incompleteness and untruth of the audited unit's data, the fraud between the auditee and related parties, the management's description of the company's business environment and beautification of relevant data. When the company changes the accounting firm, the change of auditors before and after will cause incoherent work, poor communication, no systematic inheritance and so on. The current audit work also causes the problems of limited operation and low efficiency of auditors. Therefore, it is urgent to upgrade the audit work based on big data system. The construction of intelligent audit helps to improve the processing speed and quality of massive information, and promotes the construction of powerful processing tools and efficient automatic processing mode. Due to the limitation of time, cost and other aspects, the traditional audit work mostly adopts the method of audit sampling for risk testing, which is difficult to cover all the work business and risk points of the audited unit. The construction and operation of intelligent audit can further improve the speed and efficiency of information processing, replace the original primary labor data processing mode, more targeted in-depth mining of the company's business risk points, and provide more insightful analysis results.

The rise of blockchain technology enables the center to find new opportunities in diversified cooperation and scientific and technological construction. Blockchain itself originates from a point-to-point e-cash transaction system. Strong transaction scenario is the advantage of blockchain. The tamper proof and traceability features of blockchain can protect the integrity of information in the chain. How to use blockchain to create a new organizational form and cooperation mode for audit business to assist small and medium-sized enterprises to carry out judicial evidence, management consulting, investment and financing services more smoothly under the new trust system is worthy of further discussion. On the basis of choosing the appropriate cooperation mode, the cooperation will jointly create an intelligent audit platform to help audit institutions to a higher level in the field of audit.

It can be seen that blockchain technology can further change the storage mode of audit data, because the application system of "blockchain + audit" is a typical distributed storage, with the same backup on each node. It can save the high cost and maintenance cost for the server and reduce the slow and negative running speed of the server at the same time of ensuring the security and integrity of data information. The emergence of the situation of the Netherlands too high. Blockchain technology can improve the way of recording data in audit. Due to the vision and development of real-time audit, blockchain technology can also use time stamp to

record all transactions and operations, further improve audit efficiency and audit quality. At the same time, it has the possibility of historical traceability and tracking of data, which can further ensure the authenticity and integrity of data. The development of "blockchain + audit" technology makes the audit gateway move forward, which can further optimize the work of internal auditors, improve the supervision level of internal auditors on the company's financial information, master the dynamic of financial information data in real time, realize the optimization of pre-warning and in-process control, and improve the audit supervision level in an all-round way. At the same time, it can effectively reduce the inquiry, correspondence and other audit procedures, and the development characteristics of de trust make the financial data information open and transparent, and it is easier to obtain sufficient and appropriate audit evidence, and reduce the audit cost in the audit process.

5. Summary

China's continuous innovation of blockchain technology and the initial formation of blockchain industry are becoming an important force to promote the realization of technological, organizational and efficiency changes in China's economic system. In this process, the economic and social environment faced by audit, especially the business development, technology application innovation and data resource management of audit objects will change greatly. The application of blockchain in audit has a significant impact on improving audit efficiency, reducing audit costs, curbing fraud, resolving trust crisis, continuously monitoring abnormal data, and improving real-time audit. It promotes the transformation of audit mode from post verification to in-process real-time monitoring and pre-processing prediction analysis, and promotes the reform of audit operation mode as a whole.

We should innovate the audit organization and management mode, build a decentralized, safe and trust intelligent audit development mode, and gradually improve the audit quality, so as to protect the interests of investors and promote the healthy and orderly development of the market. This paper starts from the construction of "blockchain + audit" and the exploration of its operation mode. According to this content, intelligent audit research is carried out. It enriches the existing research results from the selection of audit object cases and research methods, and further proves and explains that the operation mode of "blockchain + audit" can realize automatic audit, improve audit efficiency and ensure data security. At the same time, we should strengthen the company's in-process supervision, timely discover the illegal operation and possible risk points in the operation process, make real-time audit possible, and further promote the informatization and intelligent development of the audit industry.

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