Research on Accounting Application from the Perspective of Blockchain

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Abstract: The purpose of this study is to research on accounting application from the perspective of blockchain. We use the methods of literature review. Through the literature review, we explains the essence of blockchain technology and compares it with traditional database, and then analyzes the advantages, features and challenges of "blockchain + accounting". The results show that blockchain has the advantages and features of decentralization, no tampering, intelligent contract, and it has the chanllanges of technical risks, talents demand, huge cost of establishing a new system. Therefore, with the progress of technology, we believe that the challenges will be solved one day in the future, and blockchain technology will be widely applied in the accounting field to promote the innovation of the accounting and the progress of the times.

1. Introduction and Literature Review

As an emerging technology, blockchain is characterized by decentralization, no tampering, intelligent contract and other aspects, which will exert significant influence on accounting and financial services in many aspects.

At present, academic circles at home and abroad have focused on the impact of blockchain on the accounting field. Based on the current in the field of accounting and auditing existing research on blockchain technology, Schmitz [1] discussed the main influence of blockchain technology on accounting and auditing profession. The results showed that the themes in the blockchain ecological system of governance, transparency, trust issues, continuous auditing and intelligent contract applications can provide the enlightenment for accountants and auditors on how to develop blockchain. Boon Seng Tan [2] studied the action mechanism of blockchain technology on the accounting information system by discussing how blockchain technology affects the accounting industry. The results showed that in the AIS based on blockchain, blockchain is conducive to reducing the accounting error rate and the occurrence of fraud events. In China, Guangda Yuan [3] studied the application status of blockchain technology in the accounting field from the perspective of generalized accounting. The results showed that blockchain technology could promote the sharing of accounting information among regions and the refinement of financial management. In addition, blockchain technology can reduce the cost and improve the efficiency of audit work. Gang Wang [4] studied the influence principle of blockchain technology on enterprise accounting from the perspective of correlation between blockchain technology and information quality. The results showed that the application of blockchain technology in the field of accounting was an inevitable trend. He put forward corresponding suggestions in terms of legal requirements.

According to the existing literature, there is still insufficient research on the specific application of blockchain technology in the accounting field. Moreover, the application of China's blockchain technology in accounting and financial services is still in its infancy. It needs time to further develop the technology. Therefore, by clarifying the essence of blockchain, this paper analyzes the features and advantages of "blockchain + accounting". Then, it studies the challenges faced by "blockchain + accounting". Finally, it looks forward to the future application of blockchain technology in the field of accounting.

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2. The Essence of Blockchain

As the bottom technology in the bitcoin system, blockchain is formally manifested as a new application model based on Internet technology. In essence, it is a decentralized distributed ledger database. Its core is the incentive and constraint mechanism formed through the combination of various technologies.

As shown in Table 1, compared with traditional databases, blockchain is obviously different from the former in terms of their architecture, the way of coordination in various technologies, their advantages and disadvantages, and related application fields.

Table 1 The main differences between traditional databases and blockchain

	Traditional database	Blockchain
Architecture	Master-slave	Distributed
Coordinated way	(1) Centralize (2) Concentrate	(1) Decentralized control (2) Non-relational type
Advantages	(1) Ensure the stability and confidentiality of data (2) Faster trading speed (3) More trading capacity	(1) Fairness and transparency (2) Applicable to intelligent contract (3) Solve the problem of double payment in the digital payment system
Disadvantages	(1) Easy to appear single point of failure (2) Administrator accounts exposed to risk	(1) Large energy consumption (2) Poor scalability (3) Transaction costs are high
Application field	(1) Rapid online transactions (2) Independent application of the data storage (3) Protection of confidential information (4) No need to verify the data	(1) Currency transaction (2) Value transfer (3)The verification of credible data (4) Public key verification (5) Decentralized applications (6) The operation of the voting system

3. Advantages and Features of "blockchain + accounting"

With the arrival of blockchain 3.0 era, blockchain will play the function of triple bookkeeping system, which can work in the global scope. It will realize the functions of triple entry accounting, such as preventing records from being tampered, writing consistency of distributed copies, digital signature of receipts, guarantee the security and privacy of users, which will bring great influence and subversive changes to the accounting industry.

As shown in Figure 1, the features of blockchain technology, such as decentralization, no tampering and intelligent contract, will effectively deal with the pain points in the accounting industry, such as many participating nodes, the high verification cost and the long transaction process. It can sovle the problems of security, trust and efficiency in the field of accounting, so as to achieve the goals of co bookkeeping and mutual verification, transparent traceability, information sharing and traceability, real time settlement. Finally, it will promote the great change and progress of the accounting industry.

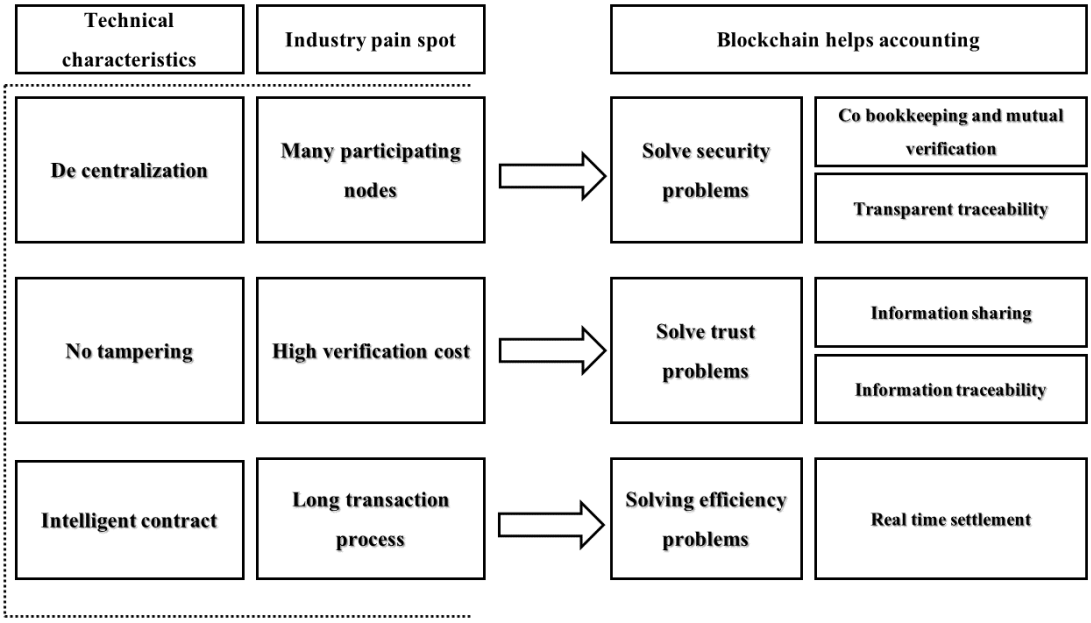

Figure 1 Blockchain technology helps accounting development

3.1 Decentralization

The most prominent feature of blockchain technology is decentralization. The decentralized system of blockchain has no central control and does not need to rely on additional third-party management or facilities. Each node can calculate and store the same information at the same time. Thus, it gradually expanding into a public general ledger with a huge capacity. Each node of the blockchain maintains the general ledger as a miner and trader, that is to say, all nodes are the center. Blockchain are highly fault-tolerant. The collapse of one node will hardly cause the collapse of other nodes or the whole system. Therefore, blockchain can effectively prevent the system from being attacked by the connected state of objects.

3.2 No Tampering

Except that the private information of trading parties does not need to be disclosed or verified, blockchain does not need to trust intermediaries. Any participant can verify and exchange data automatically and securely within the system. The cornerstone of blockchain is an asymmetric One-way Hash Algorithm, in which the information of each block is arranged strictly in chronological order, with fixed timestamp and digital password signature. Time is irreversible, and the possibility of controlling more than 51% of data nodes is very small, so blockchain itself is relatively safe and reliable.

3.3 Intelligent Contract

As a computer agreement defined digitally, intelligent contract needs a trusted execution environment of blockchain. Through a set of standardized contract terms, intelligent contracts can ensure the process of valuable transaction is completely transparent, shorten the transaction process and reduce other transaction costs related to contracts, thus effectively transforming the whole industry and improving the operation efficiency. In a fair intelligent contract system, the relevant information of transactions is recorded in the blockchain, and all data is stored in chronological order, so it is difficult to destroy the transaction information of traders and they can basically control their own intelligent contracts.

4. Challenges of "blockchain + accounting"

4.1 Technical Risks

At present, the technology of blockchain is in the initial development stage and there are still some technical risks. Blockchain technology is based on Internet technology. If there is a security

problem on the Internet, it will directly affect the security of data. Besides, blockchain connects each node through the chain, and data is transmitted through the chain. If the chain is not stable enough and leads to information errors, it may cause negative consequences. In addition, there are still many other risks such as private key loss and intelligent contract code vulnerability.

4.2 Talents Demand

The application of blockchain technology in the field of accounting is a major innovation of accounting. It needs new professional knowledge and new practical operation ability, so the quality requirements of accounting practitioners will be improved. However, at present, many accounting practitioners are lack of understanding of blockchain knowledge and specific application technology. It is easy to make mistakes in their operation process. Therefore, it is urgent to cultivate innovative talents in blockchain technology.

4.3 Huge Cost of Establishing a New System

Applying blockchain technology to the accounting field requires the establishment of a new set of infrastructure, which requires a lot of human and material resources. Legal regulation of blockchain is in its infancy, and relevant industry standards have not yet been established. All of these need time to improve.

5. Conclusion

With the development of big data, cloud computing and the Internet of things, a new round of industrial transformation is about to start. Although current blockchain technology is not mature enough, its feature of decentralization, no tampering, intelligent contract and distributed ledger nature determines that blockchain is closely related to accounting. With the continuous progress of technology, these challenges and problems faced by "blockchain + accounting" may be solved one day in the future. Blockchain technology will be widely applied in the accounting field to promote the innovation of the accounting and the progress of the times.

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