

Research on the application of Blockchain Technology in Accounting

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Abstract: Blockchain technology, as a representative technology of the information age, has played its own advantages in the finance, supply chain management and other industries, showing a great development prospect. The application of blockchain technology decentralization, tamper, credible and capricious characteristics to enterprise accounting can effectively improve the accounting efficiency, optimize the accuracy of financial data, promote the integration of industry and finance, and thus improve the operating efficiency of enterprises.

Key words: blockchain; accounting; application

1. Foreword

Accounting adopts the method of monetary measurement, recording the accounting information of related economic activities and giving feedback to the managers, usually manifested in accounting confirmation, accounting measurement, accounting records and accounting reports and other links. Compared with the traditional accounting work, the accounting work is no longer limited to the occurrence of economic activities, but runs through the whole process of the enterprise economic business occurrence. This more comprehensive accounting method will better play the accounting effect, and show more accurate and timely accounting information for enterprise managers. As the importance of the basic work in the financial field is self-evident.

Blockchain is a decentralized distributed ledger database. Its four core features, such as decentralized, distributed, tamper-proof and smart contract, are naturally closely related to accounting. Decentralization refers to the completely flat flexible structure of the entire ledger database, each node enables self-verification and management of information; distributed ledger; tamper-proof is generated from each block based on the previous block. Once verified and added to the blockchain, there is a time stamp and unique encrypted signature to ensure that the information is true, unique and permanently stored. At present, blockchain technology has been highly concerned by enterprises. The study of its application in the accounting field, which is of great strategic significance to promote enterprises to enhance their intrinsic value and promote the development of enterprise service economy.

2. Application analysis of blockchain technology in accounting

2.1 Accounting confirmation

Accrual occurrence system is the accounting treatment basis used for most enterprises to confirm their income and expenses at present, and some administrative institutions will also adopt the collection and payment realization system. In contrast, the accrual generation system can more accurately and truly reflect the profit and loss of the current period, but its accounting treatment will be relatively complex and easy to be manipulated in the process of accounting confirmation, resulting in the inflated loss of income or expenses. The tamper-proof node identification mechanism of blockchain technology makes the recognition of revenue and expenses more convenient and real, and effectively avoids the possible financial fraud.

2.1.1 Application of blockchain technology in enterprise sales revenue recognition

Enterprises obtain revenue by selling products or services to generate profits, and the timeliness and reliability of enterprise revenue recognition will affect the decision-making and financial information credibility of enterprise managers, and ultimately affect the operating efficiency of the enterprise. For the financial department, some financial personnel may manipulate profits by recording false income and affecting the authenticity of accounting information. The credibility and imtamability of blockchain technology can effectively solve the problems of artificial manipulation and data tampering in the sales revenue recognition link, use the advantages of smart contracts to improve the efficiency of process execution and ensure the openness and transparency of the program, and effectively solve the pain points in the existing sales revenue recognition link.

Compared with the traditional sales revenue recognition link, the reconstructed sales business process in the blockchain environment presents new advantages and characteristics:

First, each link of sales revenue recognition has a more reliable trust mechanism. Intelligent contract agreement, as a kind of informatization, record all transaction information and open to all users, counterparty can be traced back to before the transaction link records query information, but if one party want to modify a node information, must through the recognition of the other nodes can be modified, which makes the whole sales process and traceability information cannot be tampered with.

Second, the sales revenue recognition of each link of the accounting work is more accurate and rapid. Each link of sales revenue recognition can be regarded as an accounting node, and each node can independently keep an account and share accounting information

with other nodes. Due to the immutability of blockchain technology, the whole process of sales revenue recognition avoids the possibility of many artificial manipulation, making the accounting data reflected accurate and true.

2.1.2 Application of blockchain technology in enterprise fee confirmation

The accuracy and timeliness of enterprise expense recognition will directly affect the accurate reflection of the current profits. Compared with the income, the expense recognition is also particularly important in the accounting work. Managers understand the consumption of enterprise resources according to the current confirmed expenses, and the accounting data reflected in the confirmation of enterprise expenses have also become the basis for the decision-making of enterprise managers.

Compared with the traditional cost recognition process, the application of blockchain technology will bring the following advantages:

In the blockchain environment, the accounting data of enterprise confirmation fees is more real and reliable. Within the enterprise and the consumer unit transmits the information through the "public key" and "private key", and the consumer unit encrypts and transmits the transaction information through the "public key" designated by the enterprise. The enterprise uses the corresponding "private key" to decrypt the transaction information, which makes the information transmission more secure and reliable. Manipulated behavior is difficult to perform under this mode.

It improves the operation efficiency of the cost confirmation process and also reduces the enterprise cost. Distributed ledger technology can record and share financial information in real time, improving the efficiency of the financial accounting process. For enterprises, a reasonable and accurate cost confirmation can let managers timely understand the operating cost of the enterprise, and managers can make accurate and rapid decisions according to this. This has a certain promoting effect on reducing enterprise cost and improving enterprise operation efficiency.

2.2 Accounting measurement

Accounting measurement is the process of measuring the economic activities of enterprises through a series of units of measurement. The application of blockchain technology to accounting monetary measurement enriches the existing monetary measurement mode. With the development of digital currency, it will become a new monetary measurement mode in the foreseeable future. As the basic underlying technology of the current digital currency, blockchain has a natural compatibility with the digital currency. Therefore, connecting the blockchain technology with the future blockchain payment and settlement system of digital currency can make the currency measurement of enterprises more accurate and efficient, and avoid the occurrence of fraud means such as related party transactions and self-transactions.

Accounting measurement work in the blockchain technology environment can effectively improve the accuracy and efficiency. It mainly has the following advantages:

First, blockchain technology can make up for some defects in the accounting measurement properties themselves, thus reducing the space for artificial manipulation. In the historical cost measurement, block chain will be the historical value of the past time recorded in the block, enterprises use block chain traceability of technology, through timestamp quickly grasp the actual value of the past a moment, when the historical cost and replacement cost appear big difference, difference information will be timely passed to the integrated management system and timely update the cost measurement to reflect the actual value. In the use of fair value measurement, because the transaction and bookkeeping work need the confirmation and audit of other nodes, the space for artificial manipulation of fair value is greatly reduced, and with the external public chain the docking makes the market information can be transmitted to enterprises more quickly and accurately, and the fair value measurement can better reflect its market value.

Second, blockchain technology improves the accuracy of accounting measurement work. Blockchain technology can store the relevant information in the measurement process into the block, and by comparing the cost and value changes with similar external measurement systems, the financial personnel can do more accurate and efficient accounting measurement work accordingly.

2.3 Accounting records

Accounting records generally use single bookkeeping method or double entry bookkeeping method, to record the economic business of the enterprise. With the development of the information age, the multi-dimensional and deep-level accounting information recording has also become a potential demand for the development of the accounting field, and the emergence of the blockchain technology has provided a huge technical support for the application of the three-type accounting method.

First, it makes the accounting work more accurate and efficient. It adopts a more efficient mode to realize the accurate record of financial data.

Second, provide decision support for enterprise managers. Blockchain technology provides technical support for real-time tracking and sharing of financial information. Enterprise managers can better understand the business situation of enterprises and make decisions according to the business information of accounting records, realize reasonable allocation of resources, realize value increment through the form of decision optimization, and improve the efficiency of enterprise operation.

2.4 Accounting Report

The financial personnel of the enterprise reflect the financial status and operating results of the enterprise to the public through the external presentation of financial information, and the financial statement is the most core accounting presentation method. Users of financial statements can understand and master the operation of enterprises in a certain period through the financial information in financial statements. However, the current accounting report mode still has some limitations: financial accounts can not reflect the overall picture of enterprise management; There is time lag between the information listed in the accounting report and the current time point; Financial statements may not be intelligible, financial data distortion problems. Accounting reports in the blockchain environment have the following advantages:

First, the traceability of financial data improves the quality of financial statement information and reduces the space for artificial manipulation of financial data. In the blockchain environment, connected transactions are easier to be tracked and queried, which reduces the intention of tampering with financial information subjectively.

Second, a more timely financial statement information disclosure under the blockchain technology. Financial information has been updated and shared in real time. The accounting reporting system is no longer limited to a fixed report date. Users of financial statements can grasp the relevant information of accounting reporting more quickly through the public chain, and the whole accounting reporting link will be more efficient.

3. The application risk of blockchain technology in accounting

1. there are market promotion risks in the accounting confirmation link. Most of the business enterprise based on associated with external clients and tax authorities, and when the external units adopt block chain technology, external public chains will not be able to form, block chain's impact on accounting confirmation also only stay in the chain of internal private on the application of this technology will greatly reduce the block chain application effectiveness.

2. There are regulatory risks in the accounting and measurement link. Block chain technology of accounting measurement will adopt digital cryptocurrency gradually replace the original monetary measurement mode, and for the regulation of the digital currency system is not perfect, enterprises under the block chain technology accounting measurement, if digital currency for regulatory problems, then use the traditional monetary measurement will be difficult to play a block chain technology in accounting measurement link accurate and efficient advantages, the disadvantages of the traditional monetary measurement will still exist.

3. There are technical risks in the accounting records link. When the three-type bookkeeping method in the blockchain environment cannot achieve the theoretical practical application effect due to technical problems, then the efficiency advantage brought by the business operation will also be greatly reduced.

4. Countermeasures and Suggestions

1. Strengthen the deep integration of blockchain and the real economy in the accounting confirmation link. The deep integration of blockchain technology and the entity industry will effectively alleviate the marketing risks in the accounting confirmation link, realize the improvement of accounting work efficiency, and at the same time, broaden the industry field of blockchain technology application and the in-depth development in various entity industries can maximize the scale benefit advantage of blockchain technology.

2. Constantly improve the legislative guarantee and supervision level in the link of accounting and measurement. The application of blockchain technology in the accounting measurement link needs to rely on a stable and safe monetary measurement system to promote the benefit of enterprise operation. For the possible regulatory risks in the accounting and measurement links, the administrative departments need to carry out risk control from the two directions of legislation and market supervision.

3. Strengthen technological innovation research and development and enterprise information construction in the accounting record link. From the perspective of industry, the basic research of blockchain underlying technology is particularly important, the country should increase the construction of blockchain technology force, encourage the innovative application of blockchain technology in the industry, to provide enough technical support for the market application of three accounting method; from the perspective of enterprises, the application of blockchain technology depends on a higher level of information, enterprises continue to improve their own digital and intelligent level will better match the application of blockchain technology related products.

With decentralization, immutability and other technical characteristics, blockchain technology can improve the efficiency of accounting work in every link of accounting, effectively reduce the phenomenon of financial fraud, and finally realize the improvement of enterprise operating efficiency. Of course, blockchain security vulnerabilities remain an important factor in applications such as distributed ledgers. Only by improving the consciousness of supervising the underlying technology of the blockchain, establishing relevant rules and regulations, and deeply combining the blockchain infrastructure with the law and the Internet artificial intelligence, can the blockchain technology develop healthily in the accounting industry.

Reference:

- [1] Jiayou Chen. The decentralized autonomous organization based on blockchain technology: core attributes, theoretical analysis and application prospects [J]. Reform, 2021 (03): 134-143.
- [2] Yang Yuan, Li Fang, Ye Tingting. Research on the application of blockchain technology in Hospital financial Management [J]. Friends of Accounting, 2021 (13): 155-160.
- [3] Li Yu, Duan Hongyue, Yin Yuyu, Gao Hongbo. Summary of blockchain-based decentralized crowdsourcing techniques [J]. Computer Science, 2021,48 (11): 12-27.
- [4] Huang Li. New characteristics and new path of governance of the grassroots from the perspective of blockchain thinking [J]. Social Science Research, 2021 (05): 134-139.
- [5] He Hui. The past life, present life and future of "blockchain + Accounting" [J]. Friends of Accounting, 2019 (18): 155-159.
- [6] Yuan Guangda, Guo Translation. Analysis of the application of blockchain technology in the accounting field [J]. Finance and Accounting, 2019 (06): 73-74.
- [7] Hu Qilei. Application research of blockchain technology in accounting-- based on the "Belt and Road" perspective [J]. Accounting and Communications, 2019 (25): 100-104.
- [8] Wang Junqian. Innovation and thinking of enterprise financial accounting management mode [J]. Financial and Economic circles, 2021(11):70-71.
- [9] Zhao Xin. Analysis of financial accounting management under the background of network economy [J]. Fortune Today, 2021(06):144-145.
- [10] Chu Yingying, Sun Jing. How does enterprise accounting management meet the requirements of the development of "internet plus" [J]. Enterprise Technology and Development, 2021(03):224-225+228.
- [11] Ma Yingxian. Enterprise accounting management innovation based on blockchain technology [J]. Investment and Cooperation, 2021(05):137-138.
- [12] Huang Zhengshu. Research on financial accounting management under the background of Internet [J]. Taxation, 2021,15(13):121-122.
- [13] Qin Wei-ting, Bai Yu. Application of blockchain technology in accounting work [J]. Investment and Cooperation,2022,(06):55-57.
- [14] Wang Yiyi, Wang Yiyi, Zhang Yuyi. The impact of blockchain on accounting business from the perspective of accounting function [J]. China Collective Economy,2022,(05):155-158.
- [15] Zhang Yajing. Problems and countermeasures of financial accounting management in the era of network economy [J]. Financial and Economic circles, 2021(12):144-145.