Blockchain Financial Information Management Countermeasures of e-Commerce Enterprises

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Keywords: Blockchain, Ais

Abstract: Due to e-commerce enterprises' own industrial characteristics, it's difficult for the existing accounting information system to satisfy their actual demands, and there is also a gap with the ever-changing development of science and technology. In this paper, by introducing blockchain technology, the possibility of utilizing distributed ledger technology to establish a financial information management system in e-commerce enterprises was explored.

1. Introduction

Today, with the rapid development of economy and technology, it has been difficult for the traditional enterprise financial management mode to face increasing demand for financial processing of e-commerce enterprises, however, the emergence and progress of blockchain technology is expected to provide some thoughts for solving this issue. Establish a new financial information system model for enterprises by utilizing the distributed ledger with blockchain as the core technology, so as to help enterprises reduce risk and improve efficiency when processing financial data.

2. Blockchain Technology

2.1 Introduction to Blockchain Technology

As the most famous application technology in distributed ledger, blockchain technology was proposed in Nakamoto's paper published in 2008. In the paper, he created a decentralized, publicly recorded and encrypted digital currency system through chained blocks of data, which was named Bitcoin, supporting peer-to-peer trading, which ensured the security of data while eliminating the middle link. There are mainly three characteristics: decentralized,strong authentication mechanism,data cannot be tampered with after entering the block.

2.2 Introduction to Distributed Ledger Technology

Distributed ledger technology is one of the underlying technologies in blockchain technology. As an innovative approach to store and update data within and between organizations, it has attracted more and more attention in recent years. Distributed ledger is a digital ledger, which are mainly different from centralized network structure and traditional accounting system in two terms: first, the information in the distributed ledger is stored in the network, which will reflect changes to all holders of the distributed ledger simultaneously when the accounting information changes; second, the information in the system is authenticated with a password signature, with high data security. These two differences have ensured that the transaction records provided by distributed ledger are transparent and verifiable.

3. Problems Existing in Financial Information Management of e-Commerce Enterprises

3.1 Huge Volume of Accounting Information Causes Management Difficulties

The huge volume of accounting information generated in operation of e-commerce enterprises

  DOI: 10.25236/icemeet.2021.020

make data management difficult in enterprises. Different from industry, e-commerce pays more attention to transaction and sales in business environment, both the distribution of physical assets and personnel input are small, therefore, the scale of the enterprise is often not proportional to the online trading volume of the enterprise, and the data processing problem is more serious. There are various internal departments in cross-border electronic commerce, various kinds of generated accounting information, and there is a large amount of operation to request and process the same accounting information simultaneously, which resulted in a higher demand for accounting information management software. On the one hand, the transactions of cross-border electronic commerce are characterized by small amount, large number of orders and high frequency, making the date generated in transactions is huge in terms of data and varieties, which can not be compared by general production enterprises, on the other hand, under the demands of multi-departments and even multi-enterprises' simultaneous operation, different users must record identity and time more clearly for modification records of the same accounting information, so that new information has been generated and further information management requirements have been extended.

3.2 Single Storage Environment of Accounting Information Has Security Risks

Storage of a large amount of accounting information in e-commerce enterprises has been a problem for hardware facilities of enterprises. In the past, in order to store accounting information, enterprises often established enterprise database in hardware server, and continuously updated or purchased new equipment with the increase of data. The expenses of hardware maintenance increased corporate operating costs, at the same time, hardware was hard to keep up with technology, always resulting in inefficient data management. However, after the launch of specific application of cloud technology, many enterprises chose to store corporate accounting information in the leased remote servers, to read and use enterprise data in real time. But there is a disadvantage in these two methods, that is, all corporate accounting information are delivered to one or more servers, if the servers are attacked, then all corporate accounting information may be disclosed. At the same time, in addition to network attack, physical servers cannot be ruled out of the possibility of force majeure, and the physical damage to the servers in this case may directly result in the loss and damage of parts of corporate accounting information, even all information.

3.3 Efficiency and Privacy of Accounting Information in Circulation Cannot Be Considered At the Same Time

Sometimes there may be encryption requirements in transit for accounting information of e-commerce enterprises, but transmission efficiency will be lower in encryption process, resulting in conflicts with corporate operational demands. Compared with traditional modes of trade, the uniqueness of e-commerce business transactions is anonymity of identity in online transactions. When making online purchases in e-commerce sites, both parties can select to register different network identity as transaction main body according to their own situation, which has resulted in the frequent trust and privacy issues in e-commerce transactions. In order to ensure that the both parties have no objection to the quality and transportation of the products, enterprises will carry out data tracking management in logistics link, and because transportation address is related to user privacy, the corporate internal accounting information should be kept secret to some extent, to ensure that even if information is disclosed, it cannot be easily interpreted, but at the same time, in order to improve customers' usage experience and guarantee corporate quality of service, these encrypted accounting information is also required to be able to flow smoothly and use quickly among various departments of enterprises, so that contradictions in circulation of accounting information have been brought about.

4. Countermeasures of e-Commerce Information Management Using Blockchain

4.1 Establish a Distributed Financial Management Information System

E-commerce distributed financial information system from the perspective of blockchain aims to

help cross border e-commerce enterprises improve work efficiency, improve the level of financial information management of enterprises, so as to satisfy enterprises' demands for raising their own value. By establishing a distributed financial information system, enterprises can integrate data among departments in enterprises better, to further strengthen cooperation among departments and facilitate the improvement of overall profitability of enterprises. At the same time, an efficient information management system will improve the quality of accounting information in enterprises, so as to assist in corporate financial management, to achieve the purpose to raise enterprises' value.

4.2 Adopt a Decentralized Data Storage Structure

Due to the adoption of blockchain technology, the information in e-commerce distributed financial information system will be distributed in the system instead of centralized storage. There may be some differences for the operating authority of each node in the system according to the settings, but the function of receiving and storing accounting information in each node is the same, and the data copy content received is totally the same. Therefore, there is no so-called 'data center' in distributed financial information system, all data are distributed in all nodes of the system, when users of each node have usage requirements, they can perform the operations allowed within the permission after getting access to the relevant blockchain, and they don't need to make a request to the data center and wait to obtain information from it.

4.3 Combine Consortium Blockchain with Private Chain

In e-commerce distributed financial information system, the data records in blockchain are taken as clues to connect all entries for the same transaction of the both parties, and conduct automatic bookkeeping. In this system, data are transmitted among different enterprises in a form of consortium blockchain, while a form of private chain is adopted within enterprises. In consortium blockchain, the transactions between enterprises are completed on this network, the confirmation mechanism is triggered through smart contract, which makes the effective transactions of enterprises in consortium blockchain are automatically recorded, generated to data and stored in blockchain. In private chain, there are same data copies in all nodes for accounting information generated during the production and operation of enterprises, all departments can check directly through their own nodes when acquiring, they don't need to apply to the relevant business departments, at the same time, based on the operating principle of blockchain, any attempt to tamper with existing accounting information in the system will be rejected by the algorithm, not recorded.

In this way, the accounting information in the system can be kept confidential while ensuring the transmission efficiency of information in the system, so as to guarantee the availability factor and privacy of accounting information in the system simultaneously and solve the actual pain points of e-commerce enterprises.

5. Conclusion

By using blockchain, cross-border e-commerce enterprises will effectively solve the problems in the actual operation process, such as data being easily tampered with and inefficient processing, thus further helping enterprises to control operating costs and make correct business decisions.

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