Research on Improving Strategies of Financial Fraud in Listed Companies Based on Blockchain Technology

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ABSTRACT *: In recent years, a series of fraud scandals that have shocked the world have dealt a heavy blow to investor confidence, shaken the credit foundation of the capital market, and threatened the industry and the country's macroeconomic decision-making. Since my country established the socialist economic system with Chinese characteristics, the market economy has developed by leaps and bounds. In order to protect its own interests and ensure its market position, the company partly rushed to go public and partly in order to avoid delisting. It used methods such as whitewashing financial statements to create false financial data, which seriously affected the normal order of the market economy. Blockchain technology has developed rapidly in other industries based on its decentralization, independence, and confidentiality. However, most of the accounting industry currently stays at the macro level of the technology's disruptive impact on the entire accounting field. This article analyzes my country's listing The current situation of the company's financial fraud and its causes, and at the same time, the unique characteristics of blockchain technology are studied, and it is hoped that the application of blockchain technology will reduce the possibility of financial fraud in listed companies and protect the interests of investors.*

KEYWORDS - *Listed company Financial fraud Blockchain*

I. INTRODUCTION

Financial fraud cases continue to occur in various countries, which have severely affected the economic development and brought heavy losses to the society. There is no effective solution to completely eliminate financial fraud. With the continuous deepening of my country's reform and opening up, scandals of corporate financial fraud have been frequently exposed. In order to maintain a good financial order in the securities market, whether it is to optimize internal control of enterprises, strengthen the supervision of government departments, or through financial sharing platforms, can only reduce the risk of financial fraud, which is difficult to cure, and still restricts the actual operation of enterprises. Based on the blockchain technology, this article explores the feasibility of applying blockchain technology to the governance and prevention of financial fraud from the reasons and motivations of financial fraud, regulates the behavior of listed companies in my country, and improves the defects of corporate governance. Reduce the risk of corporate financial fraud and maintain the normal operation of the social economy.

II. ANALYSIS OF FINANCIAL FALSIFICATION MEANS OF LISTED COMPANIES

At present, the characteristic of financial fraud is that it involves multiple industries. There are not only many listed companies with financial fraud, such as household appliances (Jinya Technology), food processing (Wanfu Biotech), medical and pharmaceutical (Erkang Pharmaceutical), energy equipment (Xintai Electric), agricultural non-staple food (Kanghua Agriculture), etc. , And include all walks of life, such as industry, agriculture, new energy, and high-tech, etc., there have been financial frauds. Among them, the manufacturing industry, agriculture, forestry, animal husbandry, sideline fishery and other industries have a higher frequency of financial fraud. The second is the frequent occurrence of financial fraud. Between 2008 and 2018, a total of 730 financial frauds occurred, with an average of nearly 73 financial frauds occurring each year. Financial frauds of listed companies are characterized by frequent occurrences in China.

(1) The Basic Situation of Financial Fraud in my country's Listed Companies

In recent years, the problem of financial fraud in listed companies has frequently appeared in the public's field of vision. With the continuous development of my country's securities market, the number of listed companies in my country has also increased year by year. According to statistics from PricewaterhouseCoopers, the number of A-share listed companies in my country reached a peak of 3483 in 2017. However, as the "quantity" of listed companies is gradually increasing, along with the increase there are the frequently exposed "quality" issues of listed companies. In the past ten years, the number of cases of financial fraud has been on the rise. In 2016, it has almost doubled compared to 2015. Some listed companies have tried to manipulate their financial data for two or even three consecutive years in order to pursue their own interests. In the typical

financial fraud incidents that have occurred in recent years, we can see that the "toxin of financial fraud" has penetrated into many industries in my country, such as the Yabaite incident in the building materials industry, the Sainty ship incident in the shipbuilding industry, and the Wanjiang incident in the transportation industry. The logistics incident, the Xintai Electric incident in the machinery and equipment industry, the Xinzhongji incident in the agricultural industry, and the Zixin Pharmaceutical incident in the pharmaceutical industry have all been poisoned by financial fraud. In terms of the degree of fraud, the amount of fraud by listed companies in my country is even more jaw-dropping. Yabaite inflated revenue by nearly 600 million yuan, Jiuhao Group increased revenue by 265 million yuan through fictitious business, and Wanfu Shengke inflated profits by about 100 million yuan, Kangmei Pharmaceutical's inflated bank deposits by 30 billion yuan, etc., all of the above are sufficient to explain the large number, wide range, deep degree, and poor methods of financial fraud in my country's listed companies. (2)Capital budget

(2) The main means of financial fraud of listed companies- Maliciously tampering with the amount of economic business-related contracts and bills

The full name of Huaze Diamond Nickel is Chengdu Huaze Diamond Ni High brand reputation. But the company was also exposed to fraudulent performance and huge losses. In order to conceal the long-term occupation of large amounts of funds by the company's related parties, the financial staff, under the instruction of Chairman Wang Tao, collected copies of invalid bills and repeatedly entered the accounts for repayment, in order to achieve the purpose of tampering with the accounts receivable. Wang Tao instructed the company's finance company to enter the high amount of invalid bills into the account and tamper with the amount of bills receivable. The annual amount of invalid bills accounts for more than 99% of the ending balance of bills receivable. Some bills have the problem that there is no acceptor or the issuer's signature, and there is also the issue that the issuer recorded on the note is inconsistent with the company's book records.

(3) The main means of financial fraud of listed companies-Falsifying third-party financial institution statements

When the China Securities Regulatory Commission conducted a special inspection of the financial reports of IPO filing companies, it found that Tianfeng Energy Conservation Company's basic bank account records and the actual internal accounting records of the company found more problems. In order to ensure independence, the inspectors personally went to China Construction Bank to obtain a new bank statement, but the actual statement was quite different from the one provided by the company. After in-depth investigation, it was found that Tianfeng Energy Conservation recorded in its subsidiary account at the end of 2011 that the account balance of the CCB 3102 account was 30,380,019.96 yuan, but the CCB bank statement showed that the account at the end of 2011 was only 3,800,19.96 yuan. Tianfeng Energy Conservation directly falsified the fund balance on the subsidiary account. At the same time, in order to ensure the success of the fraud, it also cooperated with the audit agency to falsify the bank statement.

(4) The main means of financial fraud of listed companies-Whitewash reports, inflated income

Kangdexin used related parties to fabricate multiple sales transactions, which resulted in huge amounts of accounts receivable in the statements; secondly, in the procurement process, the amount of purchases from customers and the signed contracts were also fictitious. Fictitious purchase expenses, production expenses, R&D expenses, and product transportation expenses are used to achieve false high operating costs, R&D, and sales expenses, so as to match revenue and costs to prevent auditors from finding out, although the data in the report is all Supported by relevant business data, but the business data is false.

III. CHARACTERISTICS OF BLOCKCHAIN TECHNOLOGY

1. The structure of the blockchain

There are many kinds of blockchain systems, but any system has a common core structure and operating principle. This is the most basic blockchain system structure, and other systems are constantly expanding. In this network system, all nodes have the same state, and their interaction forms a peer-to-peer network.

(1) Blockchain ledger

Blockchain refers to a chain formed by connecting multiple data blocks. Like the accounting ledger, the accounting ledger formed by the company every month corresponds to each block, and the accounting ledger formed by sequential connection corresponds to the block chain formed by a series of blocks.

(2) Consensus mechanism

In the blockchain accounting system, the ledger data of all nodes must be consistent. Because there is a central server, it is easy to reach a consensus on the "central" software architecture. For example, publicly disclosed information such as "emergency stop, green and yellow traffic lights" transmitted through traffic in modern society. Blockchain is a decentralized P2P network structure. dispersion. Each node has the same state. One node is not dominant. Currently, in order to maintain the same ledger data for each node, the blockchain system must establish a set of rules that all nodes agree to and use these rules to verify the data. This rule is a consensus algorithm. The consensus algorithm conforms to the spirit of the blockchain. The blockchain system

has many consensus algorithms, such as POW (Proof of Work) and POS (Proof of Stack stock proof mechanism).

(3) Cryptographic algorithm

Cryptographic algorithms are the foundation of the blockchain system, and there are many applications in the blockchain, such as hashing algorithms, public key algorithm encoding and decoding algorithms. Hashing algorithm is very important, and its applications mainly include block hashing and Merkel root tree structure. The hash value calculated by the block hash is very similar to each unique traceable ID number, and these hash values are concatenated to form a blockchain. It is guaranteed that this structure will not change the blockchain data. Each block has its own tag tree. Different blockchain structures have different Merkle tree details, but the basic structure is the same.

(4) Network routing blockchain

Corresponds to the antenna of the network routing blockchain system. Through multiple antennas, each node forms a connected huge network system, and each node can easily establish contact with the huge network. Blockchain is a decentralized system. Since there is no central server, each node communicates with neighboring nodes to ensure data synchronization with other neighboring nodes. Therefore, the nodes act as mutual servers. Providing the same information on each node will match the role of the server. In the blockchain system, this function is usually called a node protocol. Therefore, network routing is mainly responsible for connecting nodes to support nodes to synchronize data.

2. The general workflow of the blockchain

Recording different transactions may set different conditions, but in fact, the process of blockchain is similar. Use cases to understand the general workflow of the blockchain. Suppose B buys a batch of products from cosmetics sales company A and wants to remit the price of the products to company A. First, B sends a transaction to A and prepares to form a new block with a unique hash value. The next transaction is broadcast on the network, and other receiving nodes will identify the reliability and legitimacy of the received transaction information. The verified transaction record is the current end block of the blockchain of other nodes in the entire network. The next time B completes the payment to company A, each node will maintain its own data and maintain its integrity. The data consistency of each node in the network. To sum up, the process of the blockchain mainly revolves around broadcasting and receiving data, so that the data is not damaged, so that every node in the network participates in and maintains the public ledger.

IV. SUGGESTIONS FOR BLOCKCHAIN TECHNOLOGY TO PREVENT FINANCIAL FRAUD

Under the distributed accounting model of blockchain technology, the authority of each node is equal and is maintained by the consensus mechanism. Under this model, every piece of accounting information will be reviewed by every node of the blockchain, reducing the multi-level management approval authority. The existence of non-tamperability requires a consensus with multiple participants when modifying accounting information, which greatly increases the difficulty of financial fraud. This also makes financial fraud technically difficult to implement, effectively reduces the chance of fraud by the management of listed companies, and further reduces the space for fraud. If certain data changes, in addition, blockchain technology reveals the company's operations throughout the network, so operators cannot put pressure on the company's internal auditors to manipulate financial data, and the independence of internal auditors is also gained Improved.

1. Utilize the first feature of blockchain technology-decentralization

Using this feature, we can "remove" the accounting center of the financial department of a listed company. Every economic business that occurs in the daily operations of a listed company can be recorded on the distributed ledger of the blockchain by all participants of the business. Through distributed accounting and storage, each node realizes self-verification, transmission and information transmission. Management, without the need for financial personnel to record in traditional third-party financial software afterwards (the third-party financial software currently used by companies are Kingdee, UFIDA, SAP, Oracle, etc.), which will change the traditional third-party financial department used by listed companies The removal of the three-party financial software is essentially "removing" the accounting center of the finance department. Therefore, the financial personnel of listed companies will not be able to tamper with the data through traditional financial software, and the third-party financial software developers will naturally not be able to modify the data by themselves. It laid the foundation for the authenticity of every business of the listed company.

2. Use the second feature of blockchain technology-openness

Since the data of the blockchain is open to everyone, anyone can query the data of the blockchain through the public interface. Therefore, in the future, all small and medium-sized investors or people who are concerned about the company can view the data of listed companies on the blockchain. This openness will undoubtedly make the public's supervision of listed companies unprecedentedly increased, and this kind of supervision It is at any time rather than waiting until the listed company has disclosed the information before the

public can see it. For example, the annual A-share annual report is published before the end of April of the following year, and the amount of information disclosed is relatively small. This kind of post-event supervision cannot change the established facts, but anytime supervision is process supervision, which can achieve the whole process supervision before, during and after the event. Under such public supervision, the pressure of financial fraud in listed companies will inevitably increase. , The possibility of financial fraud will be greatly reduced.

3. Use the fourth feature of blockchain technology-security

This feature is that as long as you cannot control 51% of all data nodes in the blockchain, you cannot modify the network data, which makes the blockchain relatively safe and avoids subjective and artificial data changes. In the daily operation of a listed company, there are many participants involved in the occurrence of a business, not only the company's employees, managers, but also external suppliers, customers, banks, and taxation departments. These people are all involved in the blockchain. Both constitute the data nodes of the blockchain, so it is more difficult to control 51% of the nodes, and with the increase in business volume, the number of nodes is increasing, and it becomes almost impossible to modify the data.

Although the supervision system of listed companies has been continuously improved in recent years, problems have also continued to appear at the same time, but the decentralization, real-time and immutability nature of blockchain technology has ensured the reliability of auditing. It also plays an important role in enhancing the independence of auditors and improving the efficiency of government supervision. The application of blockchain technology is still in the exploratory stage, and some technical problems have not been resolved. However, through continuous investment in human, financial and material resources, the blockchain accounting industry is building a new value Internet with a devastating impact. This is far beyond our imagination. There is no doubt that it will provide key technical support for listed companies in China to solve the pro

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