The Reconstruction of Accounting Information Disclosure System Based on Blockchain Technology

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Abstract. In recent years, the trust relationship of financial reports in the capital market has been severely challenged. The reliability, relevance and timeliness of the accounting information provided by the company's financial reports are obviously insufficient, and the efficiency of capital market accounting supervision has been greatly reduced. In the digital economy era, traditional double-entry accounting and financial accounting reports are no longer sufficient to serve the new economy, and it is imperative to reconstruct the accounting information disclosure system. This article attempts to implement the nine-character policy of capital market reform. Firstly, to reconstruct the accounting information disclosure system based on blockchain technology; and under the background of the system with less government intervention, various entities Automatically realize the maintenance of distributed ledger and the disclosure of financial accounting information, based on the principle of self-interest. Finally, in addition to legal restrictions, it is more difficult for untrustworthy persons to participate in the maintenance of distributed ledger, in order to increase their economic costs and achieve zero tolerance for them.

1. Introduction
In January 2019, the performance of A-share listed companies let many investors remember. In late April, Data from Tonghuashun show that 525 A-shares will be returned to the parent company in 2018 net profit lower than the previous forecast lower limit. Of these, 328 were converted from pre-earnings to losses, while 108 stocks with a margin of more than $100 million were under repair, with the largest under-pergers being Ofilm Group. And KDX’s 12.2 billion cash disappeared out of the air, Kangmei Pharmaceuticals reduced 30 billion monetary funds by correcting the previous accounting errors, which was followed by The Island of Tsingz etc. Financial reports, like "digital games", greatly challenges the trust of small and medium-sized investors in the financial reports of listed companies.

In the early stage, the research on financial fraud of listed companies mainly focused on the analysis of the causes of financial fraud, and put forward iceberg theory, fraud triangle theory, GONE theory, risk factor theory and so on. Chinese scholars also pointed out that the main reasons for financial fraud of listed companies were insufficient incentives, lack of accounting control, interest-driven, financial difficulties, institutional incentives, moral dilemmas, large shareholders hollowing out, insider trading, earnings management, etc. [1]. Later, scholars began to pay attention to the impact of equity structure and put forward the second type of agency issues about the controlling shareholders to encroach on the interests of small and medium-sized shareholders [2]. Recently, many studies have begun to analyze
financial fraud cases from the professional perspectives of auditing, internal control, organizational behavior, game theory etc. [3]. In stakeholder governance research, some scholars have studied the impact of investor protection on the company's performance and found that investor protection can improve company performance[4], promote the company's profitability[5], reduce equity financing costs and equity capital costs [6]; Quan Xiaofeng found that the information and organizational functions of investor relationship management can reduce the risk of stock price collapse and play a market stability effect [7]. In view of the importance of investor protection and the current situation of insufficient protection of investors' rights and interests in China, many scholars have tried to find effective ways to strengthen investor protection, and have proposed to improve the governance environment, introduce "defense evidence" and "class action", import classification voting system, play the role of network public opinion, set up anti-acquisition provisions in the regulations and so on.

2. The authenticity of the financial reports of listed companies has been called into question.
Based on the typical cases of illegality published on the official website of the CSRC over the years, the author identified 25 listed companies with financial fraud as research samples, and the relevant data are collated as follows:

| Table 1. Shareholding of the top five shareholders of 26 listed companies for financial fraud |
|-----------------------------------------------|---------|---------|---------|---------|---------|
| Standard          | Top one | HHI2  | HHI3  | HHI4  | HHI5  |
| More than 2/3    | 4%      | 12%   | 16%   | 24%   | 28%   |
| Majority        | 12%     | 28%   | 36%   | 56%   | 68%   |
| More than 30%   | 32%     | 84%   | 92%   | 92%   | 92%   |
| More than 20%   | 72%     | 96%   | 96%   | 100%  | 100%  |

| Table 2. Descriptive statistics on the equity structure of 26 listed companies for financial fraud |
|-----------------------------------------------|---------|---------|---------|
| Index       | The mean | The minimum | The maximum |
| Top one       | 30.21%   | 9.56%     | 88.49%   |
| HHI5         | 57.29%   | 22.68%    | 99.18%   |
| Zindex      | 3.10     | 1.00      | 8.90     |

As can be seen from The Analysis of Table 1 and Table 2:

2.1. The financial fraud company's equity is highly concentrated, and the controlling shareholder is fully capable of collusion with management. Data show that 32% of companies, one shareholder can form a substantial control, 72% of companies, one shareholder can make a significant impact, and when considering the total shareholding of the two major shareholders, 96% of companies, two shareholders can form a significant impact, 84% of companies, two major shareholders can form a substantial control. At the resolution of the general meeting of shareholders, the two major shareholders are fully capable of ruling around the results, that is, the phenomenon of "one big share alone" is very prominent.

2.2. State-owned shares are rare in the financial fraud companies. Among the 25 financial fraud sample companies, the state-owned shares appeared only in 3 companies (only 12%) of the top ten shareholders in the year of fraud, the total amount of state-owned shares held by the North Asia Group is only 5.59% and held by Beisheng Pharmaceutical Co., Ltd is 6.03%, which cannot constitute a significant influence. Only Unisplar China, with a 46.34% stake, has failed to avoid financial fraud due to the absence of an owner. In addition, the three companies' counterfeiting years were 2001, 2004 and 2005. In recent years, with widespread concern on the internal control of state-owned enterprises, the absence of state-owned shareholders in corporate governance has been significantly improved, so there are no state-owned shares in the financial fraud enterprises in recent years.
3. The value of financial reports of listed companies is facing challenges
In addition to the trust crisis of financial report, the value of financial report also faces significant challenges.

3.1. The Relevance of Financial Information is Greatly Challenged
At present, the financial report provided by the accountant includes four tables and a comment, which provides a comprehensive financial information service that is monetary and does not distinguish between the service objects. Leaving aside the authenticity of the data, many ordinary investors and even bosses simply do not understand and cannot see the information they need, thus financial report becomes a process of dealing with regulation. In the era of digital economy, the business model has undergone fundamental changes. Before, the completion of business sales is a victory. And now, sales are the beginning of business, including the sale of peripheral products, value-added services is the key. In the era of international trade, our duplem bookkeeping is sufficient to cope; In the era of large industry, cost accounting, financial statements, budget management and internal control are needed in manufacturing enterprises; and in the era of knowledge and service economy, enterprise innovation forces the accounting to serve for economy and reshape the business model.

3.2. The Timeliness of Financial Information cannot Meet the Demand
According to the regulations, the annual reports of listed companies shall be completed within 4 months from the end of the fiscal year, the semi-annual reports shall be completed within two months after the end of the semi-annual period, and the quarterly reports shall be completed within 1 month after the end of March and September. The above policy formulation is based on the background of the accounting industry at that time when accounting is with a low automation and low efficiency, so accounting consolidation takes a long time. But after such a long time, insiders have more access to inside information that they have enough time to cash it out, while small and medium-sized investors who lag behind are naturally at a disadvantage. More importantly, four months have passed since the disclosure of the results of the last year's annual report on April 30 this year. How much practical guidance does the disclosed data have?

3.3. The Efficiency of Accounting Supervision has been Greatly Reduced
The Accounting Law of the People's Republic of China makes it clear that China has formed a trinity of accounting supervision system, including internal supervision of units, social supervision with certified public accountants as the main body and government supervision with government financial departments as the main body. At present, the typical characteristics of the internal supervision of enterprises are after-the-fact supervision, the role of control and decision-making before the fact and in the course is not obvious. With the characteristics of accounting firms as the main body, audit multi-process and mainly for large groups, social supervision is difficult to trace back to the source. And the financial director of large groups is a certified public accountant, so the results of external audit probably happens to be what companies want them to see. As for government supervision, the SFC faces more than 3000 listed companies of A-shares and many companies are Big Macs. Even the company's financial personnel are difficult to say how well-known about the business, the SFC can only judge through early warning indicators, and then send inquiries to verify, which will greatly reduce the efficiency of this supervision.

4. Digital technology helps rebuild trust relationships in financial reports.

4.1. “Financial Sharing” Provides Data Support for Internal Intelligent Auditing
In the era of digital economy, the function of finance should not only be accounting and supervision, but also serve the economy and create social value. It is also the original intention of finance. Good financial management must be from a business perspective. Chen Wenlong, chief accountant of China International Travel Service, said that the company's financial sharing aims to focus on the business at
the beginning of its design. Through combing business from the first line, charting business, streamlining forms, informatizing process, it can not only realize that accounting information are from the business, but also autimize accounting vouchers, books, reports, analysis and early warning, budget control. And it can even achieve a financial sharing with full content and in-depth integration of business and finance. Under the financial sharing mode and through the analysis and diagnosis of systematic data, people can review the problems of company's strategy and operation, timely adjust the company's strategy and operation, form a dynamic cycle of data reflecting the business in time, driving business and strategic adjustments. Through "real-time reporting, one-click merger" and financial sharing of single-tier business information, it can form a financial-centric real-time data warehouse. And the real-time data itself requires that business are of lean management and can provide effective data supports for the company's internal intelligent audit and sustainable development.

4.2. “Big Data and Cloud Computing” Help Enterprises Improve Data Processing and Storage Capabilities

Big data focuses on “data” and the actual business, provides data acquisition analysis mining, and improves data storage capacity. Cloud computing focuses on “computing” and IT solutions, provides IT infrastructure, improves data processing capabilities, and makes the storage, analysis, and utilization of big data a reality. Thus, data becomes a more important factor of production than land, money, and so on. Together with Internet of Things and technologies such as the application of information sensors, radio frequency identification, global positioning systems, infrared sensors, laser scanners, we provide technical support for the establishment of financial sharing systems, access to real-time data and storage of real-time data.

4.3. Blockchain Technology Makes Auditing Automated and Popular

Blockchain is a great way to solve problems of information asymmetry and achieve collaborative trust and concerted action between multiple principals, which is what is needed to rebuild trust relationships of financial reporting Researchers have fully realized the great advantages of blockchain technology in terms of non-tamperable data and high level of trust. First, blockchain technology orderly records the real-time records that are consistent with business logic. Second, once a transaction becomes a permanent part of a distributed account and is accepted by all participants in the blockchain network, it will not be tampered with. This fundamentally avoids possible manipulation by the central institution or the risk of information tampering if the central institution is broken. Finally, the high standardization brought about by blockchain technology enables the automatic verification of most of the data in the financial statements. With the development of blockchain technology, auditing will get rid of the dependence on professionals, and become more automated and popular. [8] In March 2018, PwC adopted blockchain-based auditing services for Northern Trust's private equity operations. And in May 2018, the U.S. Patent and Trademark Office approved two IBM blockchain patents for the audit process to ensure that blockchain-based transactions and certifications meet compliance requirements.

4.4. “Mobile Internet plus 5G” Ensures that Stakeholders Have Timely Access to Personalized Financial Information

The popularity of the mobile Internet, coupled with the 5G technology and the support of the company's financial sharing database, it enables potential users of corporate financial reports to obtain the company's financial information at any time anywhere, and can trace back to the original documents to form a correct judgment. Even in the context of the development of blockchain technology in the digital economy era, information users can further verify information from the distributed books of the whole economy, instead of focusing only on the lagging professional reports. In this way, the probability of investors "trampling the thunder" will be greatly reduced and it is more conducive to the operation of benign capital markets.
4.5. Accounting Serves the Economy and Creates Value

The root of accounting is the need for economic development. With the advent of the digital economy era, the traditional accounting theory and accounting system will no longer adapt to the development of enterprises, and some even become a drag on its progress. Therefore, in order to adapt to the new business model, accounting must be innovative. Deloitte advocates “the fourth report” which is a digital asset table focused on business data. They believe that stakeholders are more concerned with focusing on non-financial data and constructing a management system which is based on data assets, covers four dimensions of users, products, channels and finance, quantify enterprise value, and can provide enterprises with comprehensive performance evaluation and in-depth management insights. This may be better able to serve the economy and create value in the age of the digital economy.

5. Conclusion

To sum up, China's A-share listed companies do exist a centralized equity structure of "one big share alone". The conspiration of large shareholders and management has its interest base and governance structure basis, and such a situation is particularly evident in private listed companies. This will directly lead to financial report largely reflecting the will of major shareholders and it’s not conducive to building a good trust relationship. More seriously, the timeliness, relevance and efficiency of financial information are all subject to a crisis of trust. With the advent of the digital economy era, with the growing maturity of digital technologies such as mobile Internet and blockchain, and coupled with the construction and testing of financial sharing centers of group companies, it will greatly assist in the innovation and auditing of financial reports and rebuild the trust relationship of financial report. However, how to take advantage of the digital technology to innovate financial reporting paradigm and realize the automation and popularization of financial auditing in the whole economy has a long way to go.

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