Identification and Prevention of CPA Audit Risk in Big Data Era

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ABSTRACT. *In the era of big data, the progress of science and technology has led to the informatization of finance and audit. While companies and accounting firms enjoy the convenience of big data, the new audit risk also brings new challenges to CPA audit. The application of big data has changed the inherent risk of audit, control risk and inspection risk. CPAs should constantly improve their data collection ability, data storage ability, data analysis ability and computer skills, in order to promote the improvement of big data audit and protect the interests of the public. In view of this, this paper analyzes the possible new audit risks of big data audit and the corresponding improvement measures, hoping to provide some reference for the accounting firms in the CPA audit.*

KEYWORDS: *Big data, CPA audit, Audit risks*

1. Introduction

1.1 Research background

With the continuous development of economic and technological, big data gradually infiltrated into all walks of life in society, which also injected new vitality into the audit industry. In 2017, CIC pas Work Plan for Promoting the Informatization of Accounting Firms was proposed "Accounting firms should integrate internet, cloud computing and big data technology to build intelligent audit operation system and intelligent internal management information system, enhance the application of data analysis and realize the development of both information technology and data technology". In January 2020, the new coronavirus was rampant throughout China. The National Audit Office of the People's Republic of China (NAO) promoted big data auditing and strengthened the combination of on-site audit and off-site audit. In recent years, as the market competition becomes more and more fierce, the enterprise management tends to whitewash the financial statements under the pressure of performance. In 2019, there were frequent financial

fraud cases, Kangdexin financial fraud cases and so on. For CPAs, how to improve their professional quality, and then reduce the risk of inspection also plays a very important role in dealing with corporate financial fraud. Xiaoxia

Weijun Zou (2019) thinks that the main problems existing in the current audit are the lack of attention of the unit, the lag of technology, the incomplete laws and regulations, the great pressure of work, the heavy task, the incomplete personnel structure and the lack of experience [1]. With the introduction of big data, audit has appeared the lack of all-around audit talents, audit technology is difficult to solve a large number of data and other problems. Xiaoxia Ying and Lanxiang Peng (2017) believe that audit informatization in the big data era has the characteristics of rapid development, low level, incomplete and unbalanced. Failure to effectively identify the audit risk of big data will increase the possibility of audit failure, which will lead to the decrease of audit quality, the possibility of fraud, and even the decrease of social credibility to audit [2]. Therefore, how to identify and evaluate CPA audit risk in the era of big data is particularly important.

1.2 Significance of the study

This paper studies the audit risk faced by CPA in the big data era and its preventive measures, which is helpful to make CPA understand the new audit risk better, develop new audit mode, expand big data audit thinking and improve their computer level. Taking three kinds of audit risks as the logical framework, this paper can clearly identify the representative new audit risk points produced in the big data era. Taking the accounting firm as the main angle of view, through the firm's own prevention and control and putting forward suggestions to the corresponding related parties, it puts forward some suggestions on the three types of risk points of prevention and control, which has certain reference value.

1.3 Current Research Situation and Evaluation of the Current Situation

In the era of big data, financial informatization has laid a good foundation for audit informatization, but the risk brought by informatization also affects the authenticity and fairness of enterprise financial data, and also has the same influence on audit information. At present, Chinese scholars' research on CPA audit risk in big data era mainly focuses on data risk and the lack of computer audit talents.

Fang Chen (2018) believes that the new audit risks brought by the change of big data are mainly data acquisition risk, data storage risk and data forensics risk [3]. Therefore, it is necessary to strengthen the work of data security management, establish the audit evidence collection method based on big data, establish the audit standard based on big data, do a good job of preventing the audit risk of big data, and minimize the impact of big data on audit risk as far as possible.

Wei Chen (2018) put forward the risk of data collection, data storage and management, and data analysis under the network audit from the perspective of network audit, and suggested to improve the data collection method, data storage

method and strengthen the security management of data storage in the network audit, and to study the network audit data analysis method to reduce the possibility of audit risk appearing [4].

Shuai Wang (2018) analyzed the current risk of the firm from the firm level and the specific business level respectively when studying the risk control of the RH accounting firm. In the big data era, he argues, firms also face limited risks in auditing technology, industry competition, and information systems [5]. Therefore, the accounting firm should carry out the quality supervision, control system, perfect and perfect the procedure related to big data, explore the sampling method of big data audit, train and recruit the audit talents related to big data to carry out risk prevention and control.

The current scholars mainly from the perspective of big data to explain the impact on the audit risk generated by the audit industry as a whole, but not from the perspective of financial audit, according to the three categories of audit risk (inherent risk, control risk and inspection risk) systematically classify and summarize the risk of big data audit. Therefore, this paper will identify the new audit risk generated in the big data era and put forward the corresponding preventive measures based on the three categories of CPA audit risk.

2. Risk identification of CPA audit in big data era

2.1 CPA audit risk identification process

In the traditional audit process, risk assessment generally has the following three steps: Step one: To understand the audited units and their environmental questionnaires; Step two: Understand the key controls at the business level of the audited unit through the walk-through test, and test whether the internal control of the audited unit is sound and effective to identify the control risk; Step three, complete the audit plan.

In the background of big data, accounting firms need to consider many factors, such as the degree of financial informatization and its effectiveness, the sound degree of internal control of financial system, the corresponding computer level and professional ability of auditors, etc.

2.2 Identification of inherent risks

2.2.1 The physical risks inherent in financial informatization

Firstly, there are loopholes or defects inside the audit platform, and the outside is threatened by hackers and Trojan viruses. Big data is still in the stage of development, the initial design of financial professional software, late update are not perfect, resulting in information system always failure. Under the threat of hackers

and viruses, on the one hand, electronic financial information, business secrets and key information of enterprises are easy to be leaked, and bring certain economic losses to the audited units; on the other hand, electronic financial information is difficult to maintain, easy to be modified without leaving any trace of modification, and reduces the true and fair nature of financial information. Secondly, there is a risk between the audit platform of the firm and the financial system of the audited unit. Because of the different compatibility of the program itself, there are often problems of incompatibility and poor compatibility when auditing. The replacement of old and new software will also often lead to incomplete financial information docking, data disclosure and other problems, which will lead to the omission of major financial information in the audit, which may have an impact on the comprehensiveness of the final audit report and the audit opinion. In addition, big data itself has some limitations. These inherent physical risks can not be completely avoided, which is also a major difficulty in big data audit.

2.2.2 Competition and benefits increase the risk of fraud in audited units

The ethical level of the management of the audited unit is also one of the factors affecting its financial fraud. According to the big data study on the crime of employee duty embezzlement in enterprises in 2018(Xinghan Law firm), the probability of fraud in different types of enterprises is 7% for state-owned enterprises, 20% for foreign-funded enterprises and 73% for private enterprises. But the private enterprise corresponds to the CPA audit, therefore should arouse the auditor's attention more. Because of the agency relationship between management and the board of directors, the interests of management and the board of directors are often not consistent, and then the management may harm the interests of the company and increase its own income through financial fraud. And big data makes financial information electronic, tampering with financial information is not easy to leave traces, which provides further convenience for management fraud. Enterprises may also engage in financial fraud due to IPO pressure or performance pressure. Listed companies are also often forced by the pressure of stock prices to engage in financial statement fraud to ensure that the stock price rise or stability. The increasing number of cases of financial fraud increases the inherent risk of audit.

2.3 Identification of control risks

Junxue Zhang (2019) believes that in the information era, the internal control of enterprise financial operation has problems such as backward thinking of internal control, backward mode of internal control and backward information construction, and puts forward measures to strengthen the ability of internal control personnel of enterprise financial management, construct financial internal control thinking, and set up information platform for internal control of financial management [6]. The control risk mainly comes from the enterprise, if the internal control of the enterprise is poor, then the auditor faces the higher control risk when auditing. In the era of big

data, the internal control risk of enterprise finance mainly has the following two categories.

2.3.1 Financial information secrecy system is not perfect

As an important asset of an enterprise, financial information is an indispensable resource for the normal operation and management of an enterprise. With the development of big data, the security of financial information becomes more and more prominent. The key of financial information security lies in the confidentiality of information. The confidentiality of information is usually threatened by two major threats, one is unauthorized access to data, the other is that the data is stolen in the process of transmission. With the development of big data, auditors should keep pace with the times and develop new control tests to deal with the new control risks. The control test can make the auditor evaluate the integrity and effectiveness of the internal control of the audited unit, and then judge the control risk of the audited unit, and finally serve the substantive test. The auditor should determine whether there is unauthorized release of financial information, on the one hand by checking whether the computer can obtain all levels of financial information to determine the existence of authorization; on the other hand, the validity of authorization can be judged by using the computer of the financial assistant and other lower-level employees to access the higher-level financial information of the enterprise. The auditor should determine whether the risk in the process of data transmission is effectively controlled, and can determine the risk prevention and control ability of the transmission system by asking computer professionals to assess the degree of confidentiality of the system. In the case of ensuring the effectiveness of the enterprise financial information confidentiality system, the auditor can judge that the control risk of the information confidentiality system of the audited unit is low.

2.3.2 The security of the financial software system can not be guaranteed

In the era of financial information, the importance of financial software system security is obvious, in the case of its security performance can not be guaranteed, the authenticity, integrity, confidentiality of financial information will be greatly threatened. The security of financial software system has two kinds of risks, one is server collapse, the other is data tampering. For the two risks of server collapse and data tampering, the auditor should carry out control test to judge the size of control risk. First, for server collapse, auditors should carry out the following three control tests: one is to observe the operation of the server in the audited unit and ask the employees of the enterprise for more information; the other is to compare the legal documents such as the contract with the relevant books to check whether the relevant books data are missing; and the third is to simulate the collapse of the server and check whether the unsaved documents can be restored. Secondly, for the risk of data being tampered with, auditors can carry out the following two types of control tests: one is to check whether the computer with confidential documents has a password or a broken network, the other is to test whether the firewall of the

audited unit, virtual subnet is sound. Through the control test of the financial software system, the auditor can identify the effectiveness of the system security, and then judge the level of the control risk of the audited unit.

2.4 Identification of inspection risks

2.4.1 Data acquisition risk and data analysis risk

In the past traditional audit, the auditor checked some financial information to test, and inferred the actual situation of the whole according to the test results, but the sample taken could not represent the overall risk, so there was a certain inspection risk. In the era of big data, although auditors rely on big data technology, through the audit platform to carry out a full sample audit of digital financial information, reduce or even eliminate the risk of sampling, but also gave birth to a new type of data collection risk and data analysis risk. The first is the risk of data acquisition, the big data era provides massive data, but a large number of manual operations often make auditors miss some data information or can not accurately locate the scope of data selection, and then make the choice of irrational data. The imperfect audit platform technology is also a major technical obstacle for auditors to collect data comprehensively and systematically. The second is the risk of data analysis, big data audit analysis risk is mainly "set without use "," use without will "," will not be high" three types (Yan Zhou, [7]; Yan Liu, [8]). On the one hand, most accounting firms still adopt the traditional information processing method, do not deal with the audit method of big data, do not meet the requirements of big data audit; on the other hand, auditors with a large age gap, older auditors have a weak ability to accept new things; on the other hand, auditors in the use of audit software improper arbitrary results in data distortion, or analysis is not familiar with the data, analysis level is too low to lead to the wrong audit conclusions.

2.4.2 Inadequate professional quality of auditors

First of all, the China CPA Audit Standards failed to keep pace with the times and guide auditors to conduct big data audits. It is still based on traditional audit, which requires auditors to carry out sample audit with prior risk assessment, result-oriented ex post audit, effectiveness as the goal of internal control test, information contained in accounting records and other information as audit evidence, and can not cope with the development of the times and provide reasonable and effective guidance to big data. Secondly, the CPA's big data audit experience is insufficient. Jiarong Cao (2019) believes that big data audit requires auditors to find errors from the data and judge the scientific nature of business activities, and only financial knowledge can not effectively implement the big data audit work [9]. At present, the application of big data to various industries is still in the initial stage of exploration, the application time of audit industry to big data audit is short, and the cases of big data audit fraud are less, so the CPA with only theoretical knowledge is still insensitive to big data audit fraud in reality. In addition, auditors may abuse

customer privacy information. Big data analysis makes the auditor's function no longer limited to the reconciliation of past financial information, but also can predict the future business strategy of the enterprise. In this case, auditors may intentionally disclose customer financial information for their own benefit.

2.4.3 Weak information capabilities of auditors

First of all, CPA does not have big data audit thinking. In the past traditional audit, auditors only have the traditional thinking of checking and summarizing financial information, but it is difficult to understand the connotation of big data. Secondly, auditors are not familiar with professional audit software. The development of big data audit is very rapid, computer audit, cloud audit, network audit, these audit forms are more complex than manual audit, and the technical requirements for auditors are higher. In addition, accounting firms do not have perfect big data audit rules and regulations. If the audit work is carried out without strict rules and regulations, it will increase the audit risk and reduce the efficiency of the audit work. Chao Meng and Yali Li (2017) believe that some smaller accounting firms can not support the continuous use of audit software or do a good job of later maintenanc [10]. In addition to the international four and local eight, most small firms do not have enough funds for information construction, resulting in a large gap in the quality of audit in the social audit industry, and the ability of each firm to deal with audit risks is different. At the same time, the social auditors flow quickly, and it is often difficult for firms to retain high-level professional auditors with computer technology.

2.4.4 Some auditors lack professional ethics

Nowadays, the four accounting firms and the eight accounting firms basically cover most of the audit business, and the small accounting firms have little audit business about listed companies. According to the information of the top 100 accounting firms in 2018 issued by the China Institute of Certified Public Accountants in 2018, 12 of the top 20 firms have been punished and disciplined in the last three years. In 2019, frequent cases of financial fraud, such as the case of financial fraud in Yizi Island, one of the eight major accounting firms Ruihua accounting firm due to expansion and fraud cases frequent, was rectified by the CSRC many times. It can be seen that in order to seize the audit market and increase business income, accounting firms with the audited units together with financial fraud, reduce the credibility of the audit. In addition to market competition affecting auditors' participation in financial fraud, the professional ethics of auditors comes from the challenges posed by five threats, namely, threats of self-interest, familiar threats, threats of intimidation, threats of self-censorship, and threats of bias. In the era of big data, auditors will also fall into new moral dilemmas, such as how to deal with the data loss of the audited units, how to deal with the behavior of the moral hackers to abuse the collected data information, how to deal with the behavior of the audited units to abuse the customer privacy information, and so on. As noted by the

Institute of Chartered Certified Public Accountants in its report "Ethical Requirements in the Age of ACCA Digitization ", among all the ethical dilemmas faced by auditors, the principle of good faith is often the most frequently threatened, accounting for 51 per cent; 41 per cent of respondents were under pressure to compromise on ethical principles.

3. Risk Prevention of CPA audit in big data era

Inherent risk and control risk are uncontrollable risks and are usually affected by non-auditors. The inherent risk is not to consider the enterprise internal control or the procedure, the enterprise account occurrence misstatement possibility. Control risk is the possibility of misstatement due to the defects of the internal control procedure of the enterprise. For control risks, Xiaohui Shi (2019) believes that the financial internal control in the big data era has the problems of low level, poor sharing and low quality of financial personnel [11]. It is suggested that accounting and decision-making should be combined organically and the professional level and computer level of financial personnel should be comprehensively improved. Therefore, the CPA can not through its own efforts in the audit of such risks. This will focus on measures to circumvent the risks of checks that CPAs can control.

Inspection risks, as mentioned above, mainly include Data acquisition risk, Data analysis risk, Weak information capabilities of auditors, Inadequate professional quality of auditors, Some auditors lack professional ethics these four categories.

3.1 Measures to address data acquisition risk

In order to reduce the risk of data collection, we can change the audit system and method. In the system, the long-term mechanism of data collection should be established. According to the characteristics of big data audit, accounting firms should know how auditors can obtain audit information accurately and quickly, that is, to train employees to use audit platform. There are many types of audit platform and financial platform system in the market today, accounting firms should ensure that the audit platform used is compatible with most financial platform systems. Of course, the audit platform system is connected with the financial information system of the audited unit, and the cooperation of the audited unit is needed to obtain the financial information quickly and accurately. Also, the CPA Association can improve the auditing standards for data collection. Only in this way can we effectively solve the problem of incomplete and discontinuous data and create a good data environment for big data audit,

3.2 Measures to address data analysis risk

Prevention and control data analysis requires the full cooperation of accounting firms and auditors. For accounting firms, we should improve the system of audit data utilization and understand the internal relationship between financial

information. At the same time, we should strengthen the centralized analysis of data and find problems from the overall level of data. For auditors, their professional level determines the level of data analysis ability, but also determines whether they can effectively prevent and control the risk of data analysis. Therefore, accounting firms should train professional data analysis teams and constantly improve the analytical ability of auditors.

3.3 Measures to address data analysis risk

Auditors should constantly improve their professional level, computer ability and professional ethics. For the characteristics of big data audit, the traditional sampling audit model has changed, and auditors should also make corresponding knowledge supplement and experience accumulation for big data audit to ensure professionalism in the audit process. Only by constantly learning computer knowledge and putting it into practice can auditors constantly adapt to the ever-changing software and systems, keep up with the trend of the times, and fly farther and higher in the sky of audit. In the digital age, to uphold ethical behaviour and instill trust in others, firms should establish mechanisms to assess unethical behaviour, set up ethics committees, consider ethical dilemmas and inculcate a culture of ethics; CPAs must be relatively quick to learn new information and often judge it in unprecedented circumstances.

4. Conclusion

This paper takes the type of audit risk as the logical main line, analyzes the inherent risk, control risk and inspection risk in the background of big data. Only when the new audit risk is identified, the CPA can make corresponding preventive measures to improve the quality of big data audit. Big data audit puts forward higher requirements for audit standards, accounting ability, software and hardware facilities, and enterprise internal control. Taking accounting firm as the first angle of view, this paper puts forward the measures to help the enterprise to deal with the inherent risk and the control test that can be implemented to deal with the control risk, and puts forward the corresponding suggestions to the external auditor to deal with the inspection risk.

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