Risk-based Audit Model Construction Based on Big Data Age

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ABSTRACT

With the development of big data and cloud computing technology, massive data gradually penetrated into all walks of life. New problems and challenges have emerged in the audit industry, a data-intensive industry. Based on the analysis of the impact of the current audit risk-oriented audit model in the era of big data, this paper puts forward the idea and specific content of the risk-oriented audit model which adapts to the characteristics of big data.

INTRODUCTION

The concept of the "Big data" began in the McKinsey Company. The massive data gradually penetrated into various fields. In recent years, cloud computing technology continues to develop, and the integration of big data to strengthen the impact on all walks of life. Big data age began to appear. Big data is a high-value information that automatically generated by a computer and a network that can be used to acquire and process with a new processing model. Cloud computing technology is a unified analysis, management and scheduling of the collected data according to the needs of customers. Big data age is an era that the big data and cloud computing technology brought change to economic and social life.

Certified auditor auditing is a data-intensive industry. Auditing techniques and methods have undergone tremendous changes in the era of big data, which inevitably leads to changes in audit risk. In the face of the gradual obscurity of the industry boundary and the complexity of the massive information data, the current risk-oriented audit model highlights its shortcomings.

THE IMPACT OF BIG DATA ERA ON CURRENT RISK-ORIENTED AUDIT MODEL

The audit risk under the current risk-oriented audit model consists of two parts: the risk of material misstatement and the detection risk. In the course of the audit, the
certified public accountant shall take measures to control the risk of inspection on the basis of assessing the risk of material misstatement, thereby reducing the audit risk to an acceptable level.

**The impact of big data era on the risk of material misstatement**

In the era of big data, the protection of data and information may be improperly in the audited units receiving data-clouding-storage and cloud technology services, and the audited units probably fail to make good internal control over the data-clouding-storage and cloud computing technology services, leading the increase material misstatement of the financial statements.

The data and information of the audited units are mostly stored in the cloud equipment, and the characteristics of cloud computing determines the loss of control on data. At present, the development of cloud computing has not yet perfect and the Internet virus and malicious attacks are still inevitable. The security of the financial data stored in the cloud is reduced, and the possibility of material misstatement of the financial statements of this increased.

The data security protection of cloud computing service providers have an impact on data security of the audited units. Data leakage may experience. At the same time, due to the particularity of the characteristic of data sharing, when one user has data security problems, the audited units will suffer joint data security risks.

The internal control of cloud computing technology affects the reliability of the financial report. Once the audited unit is defective to the internal control activity of the cloud computing, the security of the network by which data obtained, the rationality and the integrity of the password and the rules of the user management, and the validity of the download permission control are likely to lead to a material misstatement of financial reporting.

The information communication between the audited units and the cloud computing service providers is difficult. If the service providers do not meet the requirements of the audited units, it will lead to the increase of possibility material misstatement.

**The Impact of big data era on detection risks**

The difficulties of data collection and data analysis will increase the risk of inspection in the big data era.

**data acquisition risk**

In the era of big data, the audited units have massive business data. Certified public accountants can not guarantee the authenticity and integrity of the collected data. It is difficult to ensure that the system of data collection is secure. At the same time, the diversity of audit evidence increases the difficulty of collecting data.

**data analysis risk**

The impacts of data analysis risk on detection risks is expressed in the following areas:
Certified public accountants (CPAs) can not complete the research and analysis of full amount of data in the limited audit time, leading the increase of detection risks.

Due to the complexity of the data, the CPAs may ignore the security of the information system. If the information system of the audited unit has significant defects, detection risks increase.

Some data analysis relies on external personnel, and the data of the audited units contains various types of structured and unstructured information, such as the business information of the audited units, personal information and sensitive information, etc. Risk of disclosure of data increases the detection risks.

In the era of big data, the CPA's data collection, analysis and processing are more dependent on the audit software, but the current audit software are not keeping up with the big data.

**THE CONSTRUCTION AND THE CONCRETE CONTENT OF THE RISK-ORIENTED AUDIT MODEL IN THE BIG DATA ERA**

**Construction of risk-oriented audit model**

The massive data increase the security risks and the difficulty data analysis by CPAs, affecting the risk of material misstatement and the detection risk. The current risk-oriented audit model has some shortcomings in guiding the CPAs to correctly control the audit risk. Therefore, this paper argues that in the audit process, the CPAs need to focus on the audit risk caused by big data, that is, "data risk". In the audit process, the CPAs should understand the audited units and heir environment to assess the risk of material misstatement, also they should to assess the risk of data formation. The CPAs should not only take measures to control the audit risk in the audit process, but also should control the risk of data analysis.

Based on the above analysis, the risk-oriented audit model for the big data era e is as follows:

Audit risk = material misstatement risk \times detection risk \times data risk

**Specific content of the risk-oriented audit model under the era of big data**

**The relationship between the elements of the risk-oriented audit model**

As stated above, Audit risk = material misstatement risk \times detection risk \times data risk. The risk of material misstatement and detection risk are consistent with the definition of them under the current risk-oriented audit model. Data risk includes data misstatement risk and data detection risk.

The data misstatement risk refers to the possibility of the occurrence of misstatement in the financial statement due to the improper protection of data and failures on internal control in the entities using cloud storage and computing technical services. It includes the security risks of data storage, the joint risk of data cloud computing service providers and common users, and the control risks of lacks of recognition ability.
Data detection risk refers to the possibility of the CPAs can not be able to detect a material misstatement in the process of data collection, data storage and data analysis.

An important feature of this risk-oriented audit model is the strengthening of data risk assessment and control in the era of big data. That is, the CPAs should increase the works data misstatement identification in the process of the risk assessment. They should increase the control of data detection risks in the process of audit. The elements of the model are as follows:

In the case of a certain level of audit risk, the higher the risk of material misstatement and data material misstatement, the lower the acceptable detection risk and data detection risk.

The assessment of the risk of data material misstatement

The assessment of the risk of data misstatement can be done from the aspects of data and information system security, the risk identification capability of managers, the internal control activities of big data cloud computing services, the communication between audited units and service providers.

The data security is related to the commercial information of the audited entity. In the big data environment, the leakage of the data will lead to unimaginable consequences and need to pay enough attention. The CPAs should be concerned about the safety of the data of audited unit the security and reliability of information system. The CPAs shall also assess the data security of the big data cloud computing service providers and the common users.

The managements of the audited units identify the risk of data misstatement, and take certain measures in a timely manner, the data misstatement risk can be effectively controlled. The CPAs shall assess the risk identification capability of the audited unit managements, such as whether the managements can detect the error or fraud of the data.

When the CPAs assesses the audit risk of the audited unit, it is necessary to pay attention to the internal control activities of the audited unit on the big data cloud computing service. It includes if the audited unit designs the effective real-time monitoring procedure to prevent the organization's virus intrusion; whether the audited unit strictly controls user access, login requires identity authentication and authority; whether there is a super administrator; whether there are individual personnel to master all the core technology. These internal control activities affect the effectiveness of data information and financial statements.

The communication between the audited unit and the big data cloud computing service provider affects the compliance of the data services provided to the requirements, and therefore, the communication information between them should be a significant means assessing the material misstatement of the data for the CPAs. Such the way providers provide data, the existence of errors about the data, and the audited unit how to negotiate with the providers.
Data detection risk control

The CPAs should do a good job of data collection preparation, clear audit purposes and audit scope, be familiar with the audited units of information systems and data flow by communicating with the audited units employees. In order to ensure the security of the audited unit data, the CPAs should not touch the information system of the audited unit, and should put forward the requirement of data collection carrying out by relevant employees. The CPAs should check the before and after data collection and make sure of the integrity and authenticity of data collection, such as the total number of checks, comparison checks.

The audit units should establishment of data centers, centralized management of large audit data. In accordance with national norms, the audit units should build the engine room to ensure data center hardware security and the data center network security isolated with the Internet; should strengthen user and log management such as a complete record of data center operations. At the same time, the audit units should develop a strict data management system, carrying out strict regulatory requirements when the CPAs contact the data.

In the big data age, all the data are interrelated, and it is easy to find out the existence of the audited unit's earnings by establishing a standard database and multi-industry data association. In the data audit process, the CPAs should be concerned about the audited unit information system security. The current risk-oriented audit model concerned with data and ignores the security and reliability of the information systems that carry data. The CPAs should pay attention to the security and reliability of the audited unit information system through technical review and simulation data compliance test.

Of course, the risk of data analysis control not only need to pay attention to the reliability of the data itself and data system security, but also need the improvement of the CPAs’ ability of data analysis using the computer technical and the improvement of computer data interface and audit software. The audit data interface should be effectively upgraded to improve the audit efficiency and reduce the audit risk. The audit software can improve the audit efficiency and reduce the audit risk.

REFERENCES