



Building a Big Data Audit Model to Promote the Coordinated and Secure Development of Universities

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Abstract. With the continuous expansion of the scale of universities and the diversification of funding sources, the importance of internal auditing in university management is becoming increasingly prominent. This article analyzes the challenges and opportunities faced by internal auditing in universities under the background of big data, and proposes to carry out information-based auditing in universities in the new development stage, construct a big data auditing model, and promote the coordinated and secure development of universities.

Keywords: Big data auditing, university coordination, and secure development.

1 Introduction

We must follow closely behind and exercise audit supervision over all localities, departments, and units that manage and use public funds, state-owned assets, and resources without exception, forming a normalized and dynamic deterrent. This has put forward new task requirements for internal audit work, but currently the existing internal audit strength in universities is weak, and there are still shortcomings in audit methods and means, which cannot meet the requirements of effectively promoting the informatization of all activities in universities and achieving full audit coverage.^[1] Only by adhering to the work philosophy of "coordinated development and security", taking the improvement of audit capabilities as the starting point, leveraging existing information systems to build big data audit models, and conducting information-based audits, can internal audits in universities achieve full coverage of audits and provide guarantees for the coordinated and secure development of schools.

2 The Current Situation of Internal Audit in Universities under the Background of Big Data

1. Insufficient targeting, unable to fully utilize information systems to perform audit functions.

Firstly, in the big data environment, electronic audit materials have gradually replaced traditional audit materials. The data of various departments and platforms in universities are intertwined. How to extract effective data from big data and provide audit basis is an important issue faced by internal audits in universities. Due to the fact that internal audit projects in universities cover performance audits, financial revenue and expenditure audits, financial and disciplinary audits, economic responsibility audits, etc., a large amount of data is required, and it is related to various non economic data within the university.^[2] Therefore, the data repetition rate is high and redundant. Many universities use campus networks for office work, which have instability and security issues such as data loss during audit work. Secondly, the evaluation indicators related to performance audit and economic responsibility audit are comprehensive data that reflect the economic activities of funds, scientific research projects, and leaders during their tenure after data extraction and processing in the audit process. The current requirements for the rating index system are becoming increasingly strict, and the use of information technology requires higher requirements for financial data. However, many universities' current internal audit evaluation methods are not sufficient to adapt to the evaluation index system under dataization. Therefore, quantitative evaluation needs to be carried out on the basis of traditional qualitative evaluation.

2. The audit efficiency is not high, and the level of audit informatization is still low.

At present, auditors mainly rely on manual review of account books, subpoenas, credit records, financial records, etc., as well as offline data analysis. Due to the fact that offline data analysis still relies to some extent on manual sampling, the "needle in a haystack" review status quo has not been fundamentally changed. In the process of accessing massive physical data, auditors often focus on observing superficial appearances and neglect to conduct more in-depth, scientific, and efficient analysis and mining of the data. Due to outdated analysis tools and methods, it is easy to miss the tracking of deep-seated audit clues, resulting in low audit efficiency. In recent years, although some internal audit institutions have developed and launched audit management systems, they are mostly used to standardize audit workflow, and there are not many cases where big data can truly promote audit informatization.

3. Difficulty in obtaining evidence.

At present, the difficulty of internal audit evidence collection in universities mainly lies in: firstly, the subjective unwillingness of the audited unit to provide audit materials, low cooperation or delay, which directly affects the efficiency and quality of audit evidence collection; Secondly, auditors have insufficient information technology and varying levels of computer proficiency, making it difficult to extract high-quality audit evidence from massive physical data; The third reason is due to various factors such as the location of physical data storage, physical media, etc., which increase the difficulty of evidence collection, or the weak relevance of audit evidence.

4. Low audit coverage.

Internal auditing in universities is limited to sampling core business systems such as academic management, research management, and business lines of key colleges, and cannot meet the needs of comprehensive risk management. Relying solely on the experience of auditors for sampling analysis is difficult to achieve full coverage of all core business systems, high-risk projects, and management departments with large business volumes in the entire university. According to the first meeting of the 20th Central Audit Committee, which emphasized the importance of adhering to auditing without any prohibited areas or blind spots, new requirements have been put forward for full coverage of auditing.^[3] To achieve full coverage of public funds, state-owned assets, state-owned resources, and the fulfillment of economic responsibilities by leading cadres in schools, it is necessary to use information technology and automation methods to correlate and dynamically analyze all data information. Therefore, internal auditing needs to be based on data analysis in order to truly implement the concept of "following closely".^[4]

3 Innovative Audit Methods and Exploration of Building Big Data Audit Models

Building a big data audit model is an inevitable trend in the informatization of internal auditing. The business of universities is diverse and multifaceted. Academic management and research management are the core business systems of universities. Financial management, asset management, bidding management, enrollment and employment management, talent management, etc. are important guarantee management systems that serve the teaching and research work of universities. In order to achieve good governance of the governance system, universities have continuously improved the construction of intelligent management systems such as smart campuses, and have also linked various major business systems of universities. Therefore, internal auditing in universities should fully understand and master the business management systems of various departments within the school. Innovative auditing methods should be used to comprehensively analyze the related data of different business systems, providing data supported predictions or improvement suggestions for the development of the school. Effective use of big data within the school to establish modular analysis can provide comprehensive and reliable real-time tracking for the implementation of development decisions, while also fully reducing audit risks and costs, expanding audit coverage, and improving work efficiency.

1. Utilize existing correlation systems to build a comprehensive internal audit information system.

In the era of big data, universities need to establish a specialized audit information system for internal auditing. This system takes audit projects as the main service direction, relevant laws and regulations as the premise, audit talents and audit object regulations as the basis, and provides support for the internal audit work of universities through high sharing, centralized management, unified scheduling, and standard specifications. At present, universities mainly use audit information systems

developed by relevant enterprises for internal audit work, such as the internal audit management system of Zhongpu University for audit operations. Establishing a specialized audit information system in universities can support integration with campus portal systems, data interconnection, and meet the requirements of internal information integration in universities.

A specialized audit management system should have a complete project implementation system, mainly including four stages: pre audit planning, audit execution, audit conclusion, and follow-up tracking. In their daily work, auditors only need to perform smooth, standardized, and standardized operations on the management system to achieve tasks such as economic responsibility audit, internal control audit, budget audit, engineering project audit, material procurement audit, and special audit investigation. At the same time, the internal audit of universities should implement closed-loop management of the entire audit project in order to ensure the authenticity and accuracy of the audit and achieve the goal of efficient work.^[5]

In the pre audit planning stage, in addition to providing relevant economic information to the audited entity, a comprehensive investigation of the risk level of the audit project is also required. Afterwards, the audit department needs to write a review plan, including the basic information of the audited object, project audit objectives, key audit areas, as well as workflow arrangements and personnel division. During the audit execution phase, it is necessary to collect data related to audit matters and prepare audit drafts for peer substantive and control testing. In the audit conclusion stage, it is necessary to write an audit report and establish an electronic audit file, as well as set up a specialized database. In the follow-up stage of the audit, auditors need to update and track the specialized database in a timely manner to understand whether the problems discovered by the university during the audit process have been rectified in a timely manner.

2. Building a big data audit model to achieve the development of audit informatization.

In the era of big data, internal audits in universities must take the construction of big data platforms as an opportunity to continuously expand audit data sources and form audit data marts; Fully tap into the value of data, establish an intelligent and convenient audit system, and have functions such as business data analysis and processing, risk warning, audit business operation and management, problem issuance and rectification tracking. One is to establish a basic management platform: used for departmental user management, permission management, and log management. The second is to establish an on-site audit platform: used for project management, archive management, knowledge base (problem library, solution library, case library, basis library), internal control evaluation (internal control architecture, internal control ledger), point management, etc. The third is to establish an off-site audit platform: data analysis model, fixed query model, audit model, risk monitoring and early warning model, and audit indicator analysis model.^[6]

Internal audit utilizes the above-mentioned big data platform to collect, clean, and analyze various types of data, quickly analyzing and mining audit clues and evidence from massive amounts of data.

In addition, the head of the internal audit department can achieve global supervision and monitoring through the "management cockpit", grasp the progress of each audit project, track the audit process, help standardize audit behavior, improve audit project implementation efficiency, and enhance audit management level. By building a big data audit model, the internal audit department can carry out audit work through information technology means and methods, effectively improving the level of internal audit informatization.

3. Using big data audit models to simplify audit evidence collection and enhance audit authority.

The off-site audit data comes from the school's academic management, scientific research management, financial management, asset management, bidding management, enrollment and employment management, and talent management systems. To a certain extent, it reflects the actual business process of the core business and service departments of universities. Actively extracting audit data is much more efficient than passively waiting for the audited unit to provide it. Taking scientific research management business as an example, if auditors only analyze a certain scientific research project when analyzing scientific research management, it greatly limits the analysis space and ideas. By analyzing and researching the data of the entire scientific research project management system, auditors can discover anomalies and risk points in scientific research project management from various aspects and perspectives of the entire school. Any anomalies in any aspect can be easily identified, ensuring the adequacy, relevance, and reliability of audit evidence collection, and truly realizing the authority of internal auditing.

4. Using big data audit models to establish risk maps and achieve full audit coverage.

After the annual audit plan is determined, it is also necessary to ensure that each audit project can be executed in an orderly and efficient manner. In the era of big data, auditors should, based on data, conduct an overall analysis and understanding of the audited objects through the collection of audit models or basic business data and necessary pre audit communication in the pre audit investigation stage. The business of universities is diverse and multifaceted. Academic and research management are the core business systems of universities. Through data analysis and the construction of warning models, they can associate and dynamically monitor the entire data information, establish risk maps, and implement precise audits. Financial management, asset management, bidding management, enrollment and employment management, talent management, etc. are important guarantee management systems that serve the teaching and research work of schools. They can also transform static auditing into dynamic auditing through data analysis and the construction of warning models, allowing business risks to be "self exposed".^[7] As long as auditors are proficient in operating audit information systems, they can identify, warn, and resolve issues early, promoting the transformation of internal audit functions from supervision to service.^[8]

4 Conclusion

At present, the application of big data platforms and data warehouses in universities is still not mature enough. Although they have traditional data platforms, they lay the foundation for data applications and achieve the integration and sharing of some data. However, data architecture work is generally carried out independently by departments, lacking unified planning across the school, resulting in limited data sharing between systems and excessive reliance on data supplementation by auditors.

In short, universities need to promote their work in data construction and internal audit informatization from the following points: firstly, establish a unified data standard for the whole school, establish a unified data quality system, complete the data transformation of relevant business systems, and integrate the data information of the whole school; Secondly, by increasing the scope of internal audit personnel's empowerment, we can enhance our comprehensive audit capabilities, so that the overall knowledge structure of the audit team can present a multidisciplinary and multi-disciplinary state, thereby improving the overall work efficiency of the team; The third is to strengthen the training of data-driven auditors. The internal audit department needs to cultivate composite talents who are familiar with the school's management business processes and have data analysis capabilities. Through the design of an internal talent allocation and circulation mechanism, the source of internal audit personnel can break through the limitations of financial or engineering management personnel, enrich the personnel composition and professional knowledge composition of the internal audit institution, and promote the overall audit capability of the internal audit institution.

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