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Research on Optimization of Internal Audit Process under the Background of Big Data

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Abstract

In the era of big data, it is especially vital to optimize the internal audit process. Traditional methods are increasingly inadequate to handle the burgeoning volume of data and intricate environments. Consequently, leveraging big data technology to enhance audit processes has become essential. The role of internal audit should evolve from mere supervision to a service-oriented function, aiming to bolster governance, uncover issues, and enhance value. Nevertheless, challenges such as inadequate audit independence and feeble rectification mechanisms persist. The integration of big data technology with internal audit practices can markedly elevate the quality and efficiency of audits, and foster innovation in audit methodologies. To optimize the audit process, it is imperative to define clear objectives, propose practical and viable solutions, and further refine the quality and sophistication of audit work through techniques like data preprocessing and analysis.

Keywords

Big Data; Internal Audit; The Audit Process.

1. Introduction

In the contemporary era of big data, the optimization of internal audit processes has become especially critical and pressing. As information technology rapidly progresses, the volume of data encountered by businesses is experiencing exponential growth. This surge in data presents challenges for traditional audit methodologies and tools, which struggle to keep pace with the increasingly intricate and dynamic audit landscape. Consequently, businesses must proactively leverage the benefits of big data technology to refine and enhance their current auditing procedures.

2. Internal Audit

The International Association of Internal Auditors (IAA) emphasizes that internal audit should be more reflected as a "service" aimed at adding value to organizations and achieving their goals. In contrast, China's internal audit function has traditionally focused more on supervision. However, with the continuous progress of internal audit practices, the functional positioning is gradually shifting towards a direction that emphasizes both supervision and service. The transformation of the internal audit function can be executed across four dimensions: firstly, by optimizing organizational mechanisms and enhancing top-level design through a variety of measures; secondly, by reinforcing governance functions, with a focus on "coordinated development and security," and prioritizing risk management within the security domain; thirdly, by bolstering the disclosure function and considering the integration of industry review as pivotal to transformation and upgrading; and finally, by enhancing value-added functions and establishing clear mechanisms for rectification and accountability[1].

Thus, internal audit fulfills a critical function: initially, it acts as a deterrent to effectively prevent violations and illegal activities within the organization; secondly, it implements

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preventative measures to safeguard the integrity and security of corporate assets; thirdly, its role in verification is to oversee and assess the performance of the management team; and finally, its promotional impact aids enterprises in achieving their objectives [2], thereby bolstering the organization's capacity to respond to risks. Through internal auditing, companies can enhance their operational efficiency and effectively address a range of organizational risks. Nonetheless, this necessitates that firms fully leverage their finite internal resources.

The execution of internal audits not only constitutes a fundamental aspect of audit work but also presents potential risks to the risk management and internal control frameworks of enterprises. To begin with, during the performance of internal audit tasks, companies frequently encounter issues with efficiency and effectiveness. The emergence of this problem is largely attributable to insufficient audit independence. A deficiency in auditing independence can result in auditors being susceptible to various external influences that may compromise their objective impartiality during task execution. Furthermore, the issues uncovered during audits often lack effective rectification mechanisms, leading to a lack of timely and effective resolution. Simultaneously, the low level of disclosure and application of internal audit findings impedes the full utilization of these results, further diminishing the actual impact of audit work. Secondly, in the implementation of the dual-layer audit system, which combines "external audits" with "internal audits," the content of internal and external audits frequently fails to achieve effective information exchange[3]. The occurrence of information silos has resulted in inadequate collaboration mechanisms and systems between internal and external audits. Due to the absence of effective information sharing and communication mechanisms, the efficiency of audit information transmission is significantly reduced, which not only increases the complexity of audit work but may also lead to the wastage of audit resources. Additionally, poor information transmission can result in repetitive work during audits, further diminishing the efficiency and quality of audit work. Consequently, addressing these issues and enhancing the efficiency of collaboration between internal and external audits has become a critical concern in the realm of enterprise audit practices.

3. Combining Big Data Technology with Internal Auditing

In the current era, characterized by the proliferation of information technology and digital advancements, big data has emerged as an essential resource for numerous sectors. The "Opinions of the State Council on Strengthening Audit Work," issued in 2014, for the first time, incorporated "big data" as a central element of audit activities. Consequently, as a pivotal component of corporate risk management and internal control, internal audit must hasten its assimilation with big data technology.

The integration of internal audit with big data technology, when viewed from a macro environmental perspective, is primarily evident in three key areas: national policies, the evolution of information technology, and the dataization of audit objects. Strategically, it manifests in the contradictions within resource allocation, the ongoing evolution of internal auditing practices, and the demand for innovative risk management approaches[4]. When conducting internal audits, enterprises may face challenges such as comprehensive coverage of audit supervision and efficient utilization of audit data. Nonetheless, as enterprise informatization levels continue to advance, the adoption of digital platforms can address these issues and offer technical support for auditing transformation. Consequently, the digital transformation of internal audit can be approached through three primary dimensions: the evolution of audit philosophy, innovation in audit content and methodologies, and enhancement of audit functions and infrastructure. Enterprises can perform audit analysis by setting up a data analysis platform, establish an audit monitoring platform for risk prevention and control, and create an audit operation platform to execute audit practices. Establishing an

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audit job platform represents one of the effective methods to integrate big data technology with internal auditing. To begin with, it is essential to clarify the authority responsible for data collection and to implement a real-time audit supervision system aimed at enhancing the data collection mechanism. Secondly, the establishment of big data analysis and evaluation frameworks should be pursued, alongside the expansion of computer-aided audit systems[5]. Furthermore, it is crucial to cultivate a culture of risk awareness and implement robust data management practices to safeguard data integrity. Lastly, efforts should be made to optimize the organizational structure and intensify the cultivation of talent.

Similarly, the implementation of big data technology can effortlessly reveal anomalies hidden within routine data, providing a comprehensive depiction of relevant entities. This enhances the analysis outcomes to more accurately reflect reality, thereby deepening the enterprise's self-awareness. In the realm of auditing, data points from individual projects are utilized, with various metrics serving to link these points into lines. Subsequently, the interrelations between these lines are excavated via a big data audit platform[6], thus augmenting the precision of audit suspicion identification. Furthermore, the advent of big data technology has facilitated a transformation in the modus operandi of internal auditing. It has elevated data to a central role, propelled by business imperatives, and has bolstered the comprehensive analytical capabilities of auditors. This advancement enables the computation of all audit-related data and leverages machine learning and other technological innovations to identify potential correlations within the data.

4. Optimization of Internal Audit Process under the Background of Big Data

In the era of big data, enhancing governance efficiency and ensuring economic security have become crucial for companies seeking to gain a competitive edge in the marketplace. The optimization of internal audit processes is pivotal in achieving these objectives. To delve deeper into the optimization of internal audits within the big data landscape, we can examine it through three fundamental dimensions: the drivers behind the optimization, the approach to implementation, and the outcomes realized.

Initially, from the standpoint of optimization motivation, as the informatization level of audit entities advances, data has emerged as the cornerstone and nucleus of internal auditing. The auditing process has transitioned from the conventional logic of "objectives → risks → controls" to a novel paradigm of "objectives → data → risks → controls." This shift signifies a move from an experience-based approach to one that is data-centric, encapsulating the exploratory logic inherent in data-driven auditing[7]. Consequently, the outcomes of data mining have become integral to the culmination of audit planning, establishing a self-contained cycle of "data mining → data analysis → data application → data mining" [8]. Furthermore, the integration of big data within the auditing process diminishes the laborious task of examining vouchers and insurance policies, simultaneously enhancing the efficiency and quality of information dissemination.

Secondly, concerning the implementation approach of optimization, the essence resides in setting clear optimization objectives and devising appropriate strategies. The optimization of the internal audit process is designed to innovate audit methodologies, enhance the efficiency of audit operations, mitigate audit risks, guarantee audit quality, and elevate the practical value of audit outcomes. Through the integration of internal auditing with big data technology, data preprocessing, analysis, and key indicator construction are conducted to pinpoint potential anomalies during audits.

In the final analysis, from the standpoint of maximizing efficiency, big data technology not only refines the development of audit strategies to be more precise, but also boosts auditors' data processing capabilities, rendering the implementation of audit procedures more efficient and

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superior in quality. Consequently, this enhances the value and credibility of the audit outcomes. Furthermore, the enhancement of the internal audit process through big data has also streamlined organizational hierarchies, fostering seamless and effective information flow.

5. Conclusion

In summary, big data technology has ushered in unparalleled development opportunities for internal auditing, yet it also presents numerous challenges. The internal audit department should fully leverage the unique advantages of big data technology, continuously enhancing the quality and sophistication of audit work by optimizing audit processes, boosting audit efficiency, and mitigating audit risks. Nevertheless, amidst these opportunities, the internal audit department must also confront challenges related to data security and privacy protection. Consequently, auditors need to continually enhance their data analysis skills and technical expertise to meet the demands of the big data era. Simultaneously, the audit department should bolster collaboration with the information technology department to ensure the accuracy and integrity of data. By implementing these measures, the internal audit department can fully harness the benefits of big data technology, continuously elevate the quality and sophistication of audit work, and offer robust support for the organization's healthy development.

References

[1] R. Zhou: Research on the Transformation of Internal Audit Function in Universities under the New "Three line Model" (Finance and Accounting ,China 2024),p.124-128(In Chinese).

[2] Q. Zhao, W.X.Z. Shen: Research on Innovation and Optimization of Internal Audit Function in Enterprises - Taking Jiangsu Transportation Holdings Group as an Example (Finance and Accounting Communication, China 2017),p.96-98.(In Chinese).

[3] X.H. Yang: Exploration of Quality Control Issues in Internal Audit of Enterprises - Based on the Application of "Dual Audit System"(Finance and Accounting Communication, China 2019),p. 90-94. (In Chinese).

[4] S. Wang, J. Lv, K.T. Chen: Research on Digital Audit from the Perspective of Business Audit Integration: A Case Study of Z Company (Finance and Accounting Communication, China 2024),p.144-151.(In Chinese).

[5] J.Y. Wang: Exploration of the Development Path of Internal Audit of the People's Bank of China in the Big Data Environment (Financial Development Research, China 2020),p.57-60. (In Chinese).

[6] X.R. Wang, W.L. Hou , Y.X. Hu: Construction of Big Data Intellig-ent Engineering Audit Platform - Data based Audit Model Based on "Point Line Surface" Thinking (Finance and Accounting Monthly, China 2021),p. 92-97. (In Chinese).

[7] K. Yang, G.D. Yuan, Y. Jiang: Research on Digital Literacy Identific-ation and Skill Enhancement of Internal Auditors (Finance and Accounting Newsletter,China 2023): 156-159. (In Chinese).

[8] Q.L. Zhang, J.N. He, B.S. Rui: Historical evolution of the relati-onship between internal audit work mode and informatization: based on the theory of information technology duality (Finance and Accounting Monthly, China 2022),p. 91-97. (In Chinese).