Research and Discussion on the Application of Big Data and Artificial Intelligence Technology in Information Audit

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Abstract

Information audit is increasingly important in the digital age, which is an important guarantee for information quality and security. With the rapid development of big data and artificial intelligence technology, information audit is facing unprecedented opportunities and challenges. The popularization of these technologies not only profoundly changes the subject and mode of information audit, but also reshape the traditional audit rules and break through the traditional technical bottleneck. This paper systematically combs the research achievements of scholars in the field of information audit, and deeply discusses the application of big data and artificial intelligence technology in information audit. Through in-depth analysis, this paper reveals the operation mode of these two technologies in information audit, and puts forward feasible suggestions for the future development and application of information audit. This paper aims to provide a useful reference for promoting the healthy development of information audit in the context of emerging technologies in China.

Keywords

Information audit, Big data, Artificial intelligence, Development and application.

1. Introduction

Driven by the wave of digitalization, information audit is gradually becoming the key link to ensure enterprise information security and improve information quality. The traditional information audit method has been inadequate in the face of massive data and highly complex information environment. Therefore, with the help of cutting-edge technologies such as big data and artificial intelligence, information audit is gradually realizing technology upgrading and model innovation. The introduction of big data technology enables auditors to process and analyze massive data more efficiently, and dig out the potential associations and laws between data. The information audit system can quickly obtain and analyze massive information, and better find and locate potential risk points. As a tool for intelligent processing and simulation of human intelligence, artificial intelligence technology can be combined with various algorithms and models to carry out intelligent analysis and processing of information. Its application can make the audit process more intelligent and automatic, and greatly improve the efficiency and accuracy of the audit work. This paper will focus on the application of big data and artificial intelligence technology in information audit, in order to provide useful reference for the innovation and development of information audit work in China.

2. Literature Review

At present, scholars' research in the field of information audit mainly includes theoretical basis, technology application, practical cases and innovation of audit methods, etc. More and more scholars integrate big data technology and artificial intelligence technology with information audit, which has achieved good results.

Wei Sunyuan [1] analyzed how big data technology can improve the efficiency and quality of statistical analysis of audit data, and discussed the opportunities and challenges of audit work in the context of big data. Shi Xiaojie [2] discussed the formulation and implementation of information system audit standards in the big data environment, and emphasized the importance of audit standards and its impact on audit quality. Dong Weifeng [3] put forward the challenges and opportunities faced in the era of big data audit, and discussed the key issues such as the construction of big data audit platform, talent training and information security. Liu Yang [4] discussed the application of big data visualization technology in audit work, including data collection, processing, analysis and visual display of audit results. Wu Xuan [5] studied the combination of artificial intelligence theory, technology and audit theory and technology, and discussed the application of intelligent system in the field of audit, including the construction of intelligent audit system, the design of internal control evaluation system, etc. Liu Sai [6] studied the characteristics of management accounting information data in the era of artificial intelligence and its impact on audit forensics, and discussed how to improve the quality and efficiency of audit forensics. Cheng Ping, Yu Chang and other scholars [7] studied how to apply ChatGPT, a generative artificial intelligence technology, to enterprise internal audit to improve the efficiency, quality and risk management ability of audit, and discussed the risks that may be encountered in the application process and their coping strategies.[8] Yang discusses the application status, potential advantages and challenges of artificial intelligence technology, especially expert systems and neural networks in the field of audit, and proposed future research directions to promote the intelligent development of audit work.

3. The application of Big Data in Information Audit

3.1. Application of big data technology in information collection and processing

Big data technology plays an important role in information collection and processing. Through big data technology, the efficient collection, storage and processing of massive data can be realized, and to help enterprises and institutions to better audit information. In terms of information collection, big data technologies are able to automatically collect data from a variety of sources, including structured data and unstructured data, to achieve comprehensive information coverage. In terms of information processing, big data technology can analyze and mine massive data through data mining and other means, discover the potential laws and values, and provide support and reference for decision-making. In addition, big data technology can also help to achieve real-time processing and analysis of data, so as to make the use of information more timely and effective. In these ways, big data technology provides strong support for the collection and processing of information audit in the early stage, and has become an important tool for information audit.

4. The Role of Big Data Analysis in Information Audit

The role of big data analysis in information audit is to promote the digital transformation of audit work, improve the audit efficiency and quality of audit, and help audit departments to better cope with the complex and changeable business environment and risks and challenges.

Based on the historical background, technology development and investigation and visit, this paper summarizes the role of big data analysis in information audit.

4.1. Abnormal patterns and trends were found

When auditors use big data analysis to audit financial data, they can quickly find out problems such as abnormal transactions and data tampering through in-depth mining and analysis of massive data. By establishing effective data models and algorithms, big data analysis can help auditors identify potential risks and abnormal patterns, thus improving audit efficiency and reducing the possibility of human error. In addition, big data analysis can also help auditors to better understand the operation situation of enterprises, find out the potential problems hidden behind the data, provide more comprehensive audit services and suggestions for enterprises, and further enhance the reliability and accuracy of audit.

4.2. Real-time monitoring and early warning

Using big data technology, audit departments can establish a real-time monitoring system to continuously monitor and analyze data flow, and achieve comprehensive coverage of financial activities of enterprises. By monitoring real-time changes in data, auditors can respond quickly and issue timely warnings when abnormalities are found, helping corporate management to take necessary measures to deal with potential risks and problems. This real-time monitoring and early warning mechanism not only improves the perception ability of enterprises to the potential risks, but also helps to strengthen the internal control and risk management, providing strong support for the stable operation of enterprises.

4.3. Deep mining of the data associations

Through big data analysis, auditors can use advanced data mining technology and algorithms to deeply dig the correlation between data and reveal the hidden laws and clues behind the data. This data-driven audit method can help auditors to more fully understand the performance of business operations, identify potential abnormal patterns and trends, and thus improve the depth and accuracy of audit work. Through detailed analysis of massive data, auditors can better identify risk points and sources of problems, and formulate corresponding solutions in time, so as to provide enterprises with more reliable and comprehensive audit services, and further improve the efficiency and quality of audit.

4.4. Enhance decision support

Auditors can use big data knowledge and technology to provide management with more comprehensive and accurate data support, and help them understand the operations and risks of enterprises. Such data support can not only effectively guide the management to make more sensible decisions, but also help to improve the decision efficiency and quality of enterprises. Through the analysis of big data, auditors can provide more convincing data arguments for the management, so that the management can more accurately grasp the current situation and future development trend of the enterprise, so as to better formulate strategic planning and business decisions.

5. The Application of Artificial Intelligence Technology in Information Audit

5.1. Application of artificial intelligence in data mining and pattern recognition

Artificial intelligence plays an important role in information audit, especially in data mining and pattern recognition. Through machine learning algorithms and deep learning technologies, artificial intelligence can quickly and accurately analyze massive amounts of data and discover potential abnormal patterns or patterns. This automated data analysis process greatly

improves audit efficiency and can help auditors better understand the meaning behind the data. Thus, to help enterprises to better find the potential risks and problems, improve the audit quality and effect.

5.2. The role of artificial intelligence in the process of audit rules and process optimization

Artificial intelligence technology also plays an important role in audit rules and process optimization. By introducing intelligent algorithms and automated tools, the audit process can be performed more efficiently, reducing human error and repetitive work. AI can also optimize audit rules based on historical data and real-time information to make them more accurate and timely. This intelligent audit process can not only save time and cost, improve work efficiency, but also improve the comprehensiveness and accuracy of audit, and provide more reliable data support for enterprise decision-making.

6. Conclusion and Suggestion

The application of big data and artificial intelligence technology has brought unprecedented opportunities and challenges to information audit. Only by constantly strengthening research and practice, improving technical level and professional quality, can we better adapt to the audit needs of the information age and provide more powerful support for economic and social development. Through the research, the paper makes the following suggestions for the development of information audit under new technologies:

Continuous learning and research: Information auditors need to continue to learn and study the latest developments of big data and artificial intelligence technology, understand their application in information audit, and maintain professional knowledge.

Investment in technical training and resources: The organization provides the necessary training and resources to enable audit teams to master big data and artificial intelligence tools and improve the efficiency and accuracy of information audit.

Formulate audit rules adapted to new technologies: Audit departments need to formulate flexible and adaptable audit rules according to the characteristics of big data and artificial intelligence technologies to better respond to the audit needs of the digital age.

Strengthen data security and privacy protection: When using big data and artificial intelligence for information audit, it is necessary to strengthen data security and privacy protection to ensure that sensitive information will not be leaked.

Acknowledgments

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