**Ethan Journal of Business Administration and Management**
ISSN: 2997-3147 |
Volume 10 Issue 3, July- September, 2022
Journal Homepage: https://ethanpub.online/Journals/index.php/E39
Official Journal of Ethan Publication

# BIG DATA ANALYTICS: DRIVING INNOVATION IN ENTERPRISE AUDITING

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**Abstract**
*Grassroots governance is a vital component of a nation's governance framework, with its effectiveness directly impacting national and societal goals, as well as the well-being of its citizens. The digital age has ushered in an era of transformation for grassroots governance, with the Communist Party of China (CPC) Central Committee placing significant emphasis on the development of "Digital China." This initiative integrates cutting-edge technologies such as artificial intelligence, big data, blockchain, and the internet into grassroots government operations. The 20th National Congress of the Communist Party of China underscored the importance of constructing a "Digital China" as a key element in achieving modern socialist goals in the digital era. In February 2023, the CPC Central Committee and the State Council unveiled the "Overall Layout Plan for the Construction of Digital China," emphasizing that building a digital China is pivotal for advancing Chinese-style modernization, gaining a competitive edge nationally, and accelerating the establishment of a new development paradigm. Grassroots digital governance is an integral component of the broader "Digital China" initiative. It leverages digital technologies to empower and advance grassroots governance towards digitalization, intelligence, and precision. Sichuan and Guizhou Provinces have made notable progress in developing and applying digital governance platforms, serving as valuable models for the nation. This paper examines their experiences, identifies existing challenges, and offers practical recommendations to enhance and propel the digital transformation and governance platform construction. It aims to contribute to the modernization of the national governance system and capabilities.*

**Keywords:** Grassroots governance, Digital China, digital governance platform, modernization, national governance system.

## Introduction

Enterprise audit plays an important role in modern social and economic life, and it is a bridge between managers and all kinds of stakeholders, and it is also an important means to guarantee the impartiality and fairness of economic activities of enterprises. With the rapid development of information technology, especially the rise of big data technology, the field of enterprise audit is undergoing profound changes. With its unique attributes, like massive, high-speed, diverse, and real-time features, big data opens up a new perspective for the auditing field, which not only has a far-reaching impact on the auditing theory, but also puts forward new requirements for auditing practice, which successfully opens up a new chapter of enterprise audit.

## 1. Overview of related concepts

### 2.1. Big data

Under the impact of technology, the concept of big data is gradually infiltrating all walks of life. Among them, enterprise audit is a core area that benefits greatly from this trend. As industry research points out, big data has had a significant impact on the way we understand and improve the world, and it is likewise reshaping the entire landscape of corporate audit. Its emergence has given a new view of development to managers in modern enterprises, so they have opportunities and abilities to gain insights into the nuances of business operations, which in turn has breathed new vitality into auditing activities.

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The core value of big data lies in its depth, breadth and speed, and with its assistance, auditors get more powerful and their data processing capabilities have been greatly improved. From internal reports to social media sentiment, the auditing mode in modern enterprises is transitioning from the previous sampling test to a full-coverage test, so that even small abnormalities within the enterprises have become invisible, dramatically improving the risk management and control effectiveness of modern enterprises. In addition, with the in-depth application of big data technology in enterprises, the traditional mode of after-the-fact audit is being replaced by real-time audit. Auditors' function has also undergone a profound transformation, from the previous "accountants" to "consultants". Meanwhile, with the advantage that big data is accurate and real-time, the auditors' professional abilities get the most out of the play, and then valuable references for the development of the enterprise's various business decisions have been provided.

What needs to be emphasized is that big data is not applied once and for all in the specific process though it has opened a new chapter for the auditing work of modern enterprises. The accuracy, comprehensiveness and confidentiality of data and information are all issues that need to be focused on in the auditing work, which should be done in the long run, make good trade-offs from the details, ensure compliance from the source to. [1]

### 2.2. Full coverage in auditing

Under the perspective of full coverage, the auditing work of modern enterprises has officially entered a new world. Among them, big data is equivalent to the ticket to enter the new world, and smart technology is equivalent to the sharp axe to open up the world. Each auditor should adapt to the innovative rhythm of the full-coverage auditing model as soon as possible, plan the route ahead of time on the basis of the current development status of enterprises, experience in the new auditing work, to provide support for enterprises in smoothly achieving the goal of sustained development.

A detailed explanation is that full-coverage audit refers to that comprehensive, in-depth, continuous auditing work is carried out for all economic activities of enterprises. This requires auditors to jump out of the previous auditing framework to carry out a comprehensive, multi-level, high-frequency review work for the auditing objects, so that every corner of enterprises can be covered by the auditing work. Compared with the traditional mode of enterprise audit, full-coverage audit can not only be the first time to find the existing problems within enterprises, but also can simplify the unnecessary auditing process, so that all kinds of business risks faced by enterprises can be effectively prevented and controlled.

The implementation of full-coverage auditing work cannot be separated from the support of big data. The introduction of big data makes it easy for auditors to control the latest business status of enterprises, analyze and interpret the unreasonable aspects that exist in the current business model of enterprises. After accurately locking the key information in the huge amount of data, auditors can accurately predict the possible future business risks on account of historical data, providing a scientific basis for enterprise decisions. [2]

## 3. The positive impact of big data technology on the full-coverage work of enterprise audit

Through a preliminary understanding of the previous content, it can be seen that introducing big data technology into the modern enterprise auditing work symbolizes that a revolutionary prologue has been opened. If modern enterprises want to get a place in the new stage for development, they should take the initiative to embrace the new technology, continue to increase the depth and breadth of the enterprise audit work, so that full-coverage mode of the enterprise audit will take root and flourish as soon as possible.

First of all, big data technology can be oriented to the various operational aspects of enterprises to obtain data information, covering all aspects of financial data and non-financial data. Compared with the traditional mode of auditing, this full-coverage information acquisition will provide strong data support for the efficient development of auditing.

Then, the advantages of the application of big data technology are also very obvious in the session of information analysis and processing. With the help of big data technology, auditors can process huge amounts of information

data within a limited time, and use big data algorithms to find out the hidden information laws. This efficient, intelligent and precise data processing will successfully achieve the goal of in-depth analysis of information data, so that the risks and loopholes that may exist in the auditing work have nowhere to hide.

Finally, another core advantage of big data technology is that it has successfully created a new mode of auditing warning. Through the comprehensive analysis of historical data, auditors are able to accurately predict the future development trend of enterprises based on the analysis results of big data technology. It points out precisely that the risks may exist in various business activities, and it promotes the development of the enterprises' auditing mode in the direction of intelligence, individuation and automation.

## 4. The implementation path of full coverage of enterprise audit in big data environment

### 4.1. Optimizing the auditing idea

If you want to successfully implement the full coverage of enterprise audit in the big data environment, optimizing the audit concept can be regarded as the most important thing. Compared with the traditional auditing mode, the full coverage auditing thinking should have in-depth, extensive and systematic characteristics at the same time.

First of all, the full-coverage auditing model in the big data environment should advocate "warning ahead of time" rather than "after-the-fact remediation". This auditing idea is mainly based on the real-time data analysis function of big data. In the specific operation, the auditor can use machine learning and other tools to carry out real-time analysis of the massive amount of enterprise data to accurately lock the financial risks that may exist, to help enterprises reduce unnecessary economic losses.

Secondly, the full-coverage audit should also be transformed from the traditional mode of localization and randomness to the comprehensive and systematic direction. By analyzing the past experience of enterprise auditing work, it can be seen that auditors will obtain more comprehensive and complete information through the implementation of comprehensive design in the big data environment, so as to establish the overall planning view in the process of imperceptible. And it can provide dynamic support for the enhancement of the core competitiveness of the enterprise.

Finally, auditors should adopt a diversified audit approach, combining internal, external and industry-related data to conduct a comprehensive audit. Traditional auditing methods mainly rely on internal financial data, while in the big data environment, auditors can access more data sources, including enterprises' operational data, market data, customer feedback, which will provide more perspectives for auditing and help auditors understand the enterprise in an all-round way.

### 4.2. Analysis of auditing information sources

In the implementation path of full coverage of enterprise auditing in the big data environment, the analysis of audit information sources is a critical link that cannot be ignored. The diversity and complexity of auditing information sources have posed new challenges to auditing technology and provided richer data support for auditing work. On the one hand, the diversity of auditing information sources requires auditors to have a higher level of technical literacy. With the process of informatization and digitization, the source of auditing information is no longer limited to the traditional financial statements, but covers all operating sessions of enterprises, including production, sales, procurement, logistics and so on. At the same time, auditing information is expanding from structured digital and textual data to unstructured data such as images, audio and video. This requires auditors to be able to use technical tools including database query, data analysis, and artificial intelligence to process and analyze various types of data; On the other hand, the breadth of auditing information sources provides auditors with a more comprehensive perspective. By analyzing enterprises' internal data, auditors can gain a deeper understanding of enterprises' operational status and business environment. In addition, auditors can utilize publicly available external data, such as industry reports, policy documents, news reports, to supplement and validate information from internal data. This integrated analysis of data can improve the comprehensiveness and accuracy of the audit.

At the same time, the analysis of auditing information sources also involves the issue of data quality.

The accuracy, completeness and timeliness of data have a significant impact on auditing results. Therefore, auditors need to assess the quality of data sources and establish a data quality management mechanism to ensure the accuracy of the audit. In addition, the analysis of auditing information sources needs to consider the issues of data security and privacy protection. In the process of collecting, storing and processing data, auditors need to comply with relevant laws and regulations to protect data security and privacy.

**4.3. Implementing data sharing construction**

In the big data environment, data sharing refers to the realization of open sharing of data resources across departments, geographic regions, industries and fields under the premise of protecting personal privacy and data security.

At first, data sharing can help auditors obtain comprehensive auditing data. By establishing a data sharing mechanism with other departments or enterprises, auditors can obtain more comprehensive and detailed data, so as to better understand the operation of enterprises and improve auditing results. This requires enterprises to establish effective data interfaces and data exchange mechanisms to realize efficient data flow through technologies such as RESTful API or GraphQL. Then, data sharing can improve the efficiency of auditing. In modern enterprises, data is often dispersed in different departments and systems, and the auditor may need to spend a lot of time and effort to obtain the data without an effective data sharing mechanism. With the help of emerging technologies such as distributed database technology and data lakes, data integration within enterprises can be realized, which makes auditing work more convenient.

However, data sharing also has issues of data security and privacy protection. When building a data sharing mechanism, it is important to consider how to protect the security of data and avoid data leakage and misuse. This requires a series of technical means, such as encryption technology and access control technology, to ensure the security of data in the sharing process. In addition, data sharing involves the issue of data governance. In order to ensure the accuracy and consistency of data, enterprises need to establish a set of comprehensive data governance mechanisms, including data standardization, cleansing, calibration and other sessions, so as to improve the quality of data and guarantee the accuracy of the audit. In the process of achieving this goal, data governance platforms, such as Alation and Informatica, can be used to achieve standardized data management.

**4.4. Establishing auditing data platform**

In the big data application of enterprise audit from the perspective of full coverage, the construction of the auditing data platform is especially critical, and plays a vital role in the development of enterprise comprehensive audit. This work requires the strong support of technical strength, covering data management, data analysis, data protection and other aspects.

The auditing data platform first needs to have the ability of centralized data management. Hence, the current cutting-edge data storage technologies, such as Hadoop Distributed File System (HDFS) and Apache Cassandra, should be used to achieve large-scale, distributed audit data management. With these technologies, complex data inside and outside enterprises can be integrated and the phenomenon of data islands in traditional auditing can be completely abandoned, which can ensure the smooth progress of full-coverage auditing. Then, big data analysis is one of the functions of the auditing data platform that cannot be ignored. Based on Hadoop, Spark and other big data processing frameworks, the auditing data platform, combined with machine learning, deep learning and other artificial intelligence technologies, can effectively mine the huge amount of audit data, so as to reveal hidden auditing risks and provide strong support for auditing decisions. For example, it is possible to dig deep into the data to realize the prediction and diagnosis of complex auditing problems by using deep learning models such as Convolutional Neural Network (CNN) and Long Short-Term Memory Network (LSTM).

Security and privacy protection, on the other hand, are issues that must be strictly considered by auditing data platforms. The data platform needs to leverage the latest security technologies, such as public key infrastructure (PKI) and blockchain, to ensure the security of auditing data in all aspects of transmission, storage, and processing.

At the same time, technologies such as differential privacy and homomorphic encryption need to be used to safeguard personal privacy and commercial secrets and prevent data breach.

The establishment of an auditing data platform is a complex and long-term process, the key to which lies in comprehensively applying a variety of cutting-edge technologies in order to achieve full coverage of the auditing work. In the specific implementation process, it is necessary to fully consider the specific situation and needs of enterprises, and select the appropriate technical route and implementation program to ensure the practicality and effectiveness of the platform.

### 4.5. Strengthening the training of auditing talents

Audit talents serve as the main body of auditing work, and their quality and ability directly determine the quality of auditing work. In the environment of big data, the quality and ability of auditing talents have new requirements that they not only have the traditional knowledge of auditing theory and the practical operation skills but also data science, data analysis, artificial intelligence and machine learning and other related knowledge and skills. Generally speaking, the cultivation of auditing talents in the big data environment should be deepened from three dimensions: technicality, innovation and practice.

First, from the technical dimension, auditing talents must have the ability to master and apply big data technology, which not only includes basic skills such as data collection, processing, analysis, and visualization, but also understands the application of advanced technologies such as machine learning and artificial intelligence in auditing. Especially in full-coverage audit, the combination of big data and artificial intelligence can realize all-round, in-depth and efficient audit of enterprise business in order to reveal the auditing risks hidden behind the huge data. Second, from the innovative dimension, in the big data environment, the auditing work is closely integrated with innovative technology, and the auditing talents should have innovative thinking, dare to challenge the traditional auditing mode, and be good at using new technology to solve auditing problems. This innovative feature is not only reflected in the application of technology, but also needs to make a breakthrough in the auditing methodology and theory, to find and solve the emerging audit problems from a new auditing perspective in the big data environment. Finally, from the practical dimension, auditing problems in the big data environment are numerous and complex, and purely theoretical education can no longer meet the training needs of auditing talents. Practical education should be vigorously promoted, such as simulated auditing cases and enterprise internships, so that auditing talents can directly contact the actual situation of big data auditing and improve their practical operation ability and problem solving ability.

Nevertheless, the training of auditing talents faces many challenges in the big data environment, and educators need to track the latest development of big data technology in time to update the teaching content and methods. In addition, a reasonable evaluation mechanism needs to be established, not only to measure the technical ability of auditing talents, but also to assess their innovation and practical ability. [5]

## 5. Conclusion

Facing the challenge of big data, the full-coverage model of enterprise audit has become an inevitable trend. Although the implementation of this model faces various difficulties, such as the transformation of auditing ideology, the integration of auditing information sources, the construction of data sharing, the establishment of an auditing data platform, and the cultivation of auditing talents, and these difficulties should not be obstacles to its progress. On the contrary, every challenge can be regarded as an opportunity for transformation, and every breakthrough is likely to provide a strong impetus for innovation in the field of enterprise audit.

In the future, the auditing community should focus more on the integration and application of technologies such as data science and artificial intelligence, and utilize advanced scientific and technological means to rebuild the traditional auditing model, so as to better serve the development of society and economy. At the same time, it has become imperative to continuously explore the best practice path of combining big data and audit, and to innovate auditing methods to adapt to the ever-changing auditing environment. In the process of full-coverage audit, the

concept of fair, just and open audit should also be actively advocated in order to strengthen the society's trust and support for enterprises.

**References**

Su Xia, Zhang Jingjing & Yin Guoqiang. (2019). Research on the New Model of Value-added Industry Audit Integrated with Internal Audit--A Study case of Power Grid in Xiongan District. Internal Auditing in China (09),71-75.

Li Zhiyuan, Feng Junke & Zhang Xinpeng. (2019). Research on the Path of Big Data to Improve the Effectiveness of Government Performance Auditing - Based on the Perspective of Full Coverage of Auditing Supervision. Internal Auditing in China (12),75-79.

Liu Lixia & Wang Shishui. (2019). Innovation and Application of Enterprise Management Accounting Tools in the Era of Big Data - Based on the Perspective of Cost Control. Friends of Accounting (10),14-19.

Niu Yanfang,Feng Zhanguo & Meng Xiangyu. (2017). Innovation and Practice of Audit Work from the Perspective of Big Data Value Chain. Auditing Research (05),17-22.

Pi Jun. (2022). Strengthening the Application of Big Data to Empower Efficient Audit - An Analysis of the Application of Big Data Auditing Techniques and Methods in the Special Auditing Survey of Balance Sheet and Income Statement of Five Enterprises in Yichun City for the Year 2021. Auditing and Finance(09),9.