

A study of the efficacy of performance auditing services for rural governance in the context of big data

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ABSTRACT

The enhancement of rural performance auditing represents a crucial step towards the realisation of rural revitalisation. The incorporation of big data technology in rural performance auditing is an indispensable aspect of the advancement of rural governance modernisation. This paper examines the necessity of big data technology in the context of rural auditing, identifies the relevant challenges posed by big data to rural auditing, and assesses the potential risks associated with data, security, and human resources. It then puts forward a proposal for the integration of big data technology and rural performance auditing, with the objective of providing theoretical and practical support for the effective delivery of national auditing in rural governance.

KEYWORDS

big data; rural audit; rural governance

1 Introduction

The 19th National Congress of the Chinese Communist Party (CPC) proposed a strategy of rural revitalisation, which entails the enhancement of the rural governance system through the integration of self-government, the rule of law and moral rule. The "Three Steps" of rural revitalisation, as proposed by the CPC Central Committee, necessitate the eradication of poverty as a preliminary step. Furthermore, the innovation of the rural governance system and the implementation of good governance in rural areas are intrinsic to the process of rural revitalisation. As the rural revitalisation strategy gains momentum, a considerable investment of public and financial resources will be allocated to rural development initiatives. The countryside has become the final stage in the implementation of public policies and the distribution of public funds. In order to enhance the efficacy of rural governance and ensure the effective implementation of financial policies supporting agriculture, it is essential to integrate performance auditing with rural governance. The utilisation of big data technology in rural performance auditing facilitates the comprehensive integration of performance auditing, the establishment of a national audit data platform and the comprehensive promotion of national auditing. This is of transgenerational significance for the comprehensive implementation of the strategy of rural revitalisation and for the consolidation of the foundation of the Party's governance.

2 Literature review

Improving rural performance auditing is a must for rural revitalization and development. Guo Jun and Feng Jiao show that in the implementation of rural revitalization strategy the state audit can

reduce corruption by supervising the government's behavior and increasing the government's transparency ^[1]. Bao Lian argues that state auditing is an important force to safeguard the implementation of the rural revitalization strategy ^[2]. Wang Dengshan summarizes the role of national audit on rural revitalization strategy from four aspects: supervision and guarantee, normative construction, tracking and investigation, and integrity purification. With the arrival of the big data era and the continuous promotion of the national "Golden Audit Project", more and more scholars have begun to study the application of big data technology in rural auditing. Liu Jing believes that the low efficiency of poverty alleviation auditing is due to the lack of sufficient combination of Modern information technology. Lv Jinsong and Huang Kun pointed out the need to stand at the strategic level to integrate the relevant resources for poverty alleviation auditing, to innovate auditing methods, to improve the full coverage of auditing work, and to form an audit-centered mechanism for poverty alleviation supervision. Chen Wei studied the practical application methods and application effects of big data technology in poverty alleviation auditing to broaden the technical methods of poverty alleviation auditing ^[3]. Yuan Bo proposes to build an exclusive cloud audit platform to promote the role of cloud audit in the promotion of rural revitalization strategy in view of the possible audit data leakage problem ^[4].

On the practical side, China's audit authorities at all levels are also constantly exploring the deep integration of geographic information system software, computerized Python language, graphic databases and other big data technologies with audit operations.

For example, the Jiangsu Provincial Audit Office uses GIS software to map data, while combining agricultural land information for comparison, so as to discover the problem of irregularly receiving farmers' rural subsidies; the Nanjing Municipal Audit Bureau uses computer programming language to collect financial subsidy data in bulk, adopts a graphic database to map farmers' family relationship pulse, and sifts the layout of the area of arable land subsidies received through the K-means clustering algorithm, etc; the Xiangyang City The Audit Bureau of Xiangyang City utilizes geographic information technology to compare farmland data, land planning, and aerial remote sensing imagery to check for problems such as illegal occupation of arable land and unused arable land ^[5].

3 Dilemmas facing rural performance audits

3.1 Contradiction between heavy audit workload and insufficient audit capacity

According to data released by the 2020 Audit Office, The audits focused on 24 poverty-stricken counties in 24 provinces, with a sample of 7.157 billion yuan in funds, covering such items as special poverty-alleviation funds from the central government, poverty-alleviation subsidies for rural compulsory education, basic medical and healthcare subsidies for poverty-alleviation, special funds for poverty-alleviation relocations and the reconstruction of dilapidated buildings, rural infrastructure construction, water conservancy construction, and so on. As the national rural revitalization strategy advances, the workload of the auditing department will increase, and the contradiction between the limited number of auditors and the heavy auditing workload will continue to grow. tends to come to the fore.

At present, China's rural governance capacity is low, the audit force at the township level is weak, and internal audit positions are missing. Due to the lack of supervision, illegal misappropriation of agriculture-related funds, retention and idleness and other behaviors occur from time to time. These irregularities have resulted in some poor households not being able to truly benefit from the funds, and have easily triggered conflicts between farmers and village cadres, seriously affecting the credibility of the Government and not conducive to the establishment of a long-term mechanism

for rural revitalization.

3.2 Contradiction between broad audit scope and disconnected audit data

Rural performance auditing involves a wide range of business data, an audit project often involves the livelihood of people, finance, health care, infrastructure and other departments, as well as agriculture, forestry, animal husbandry, fisheries and other industries, the relationship between the business is intertwined, the volume of data is large and complex. Under traditional auditing methods, the data between business departments are often not common, and audit evidence cannot be effectively corroborated^[6]. This information asymmetry between the principal and the agent leads to a large space for fraud, the audit is difficult, the auditor can not effectively grasp the audit risk points, the audit effect is greatly affected. Therefore, how to effectively strengthen the horizontal linkage between various departments in rural performance auditing is the key to deal with the contradiction between the wide scope of auditing and the unconnected audit data.

3.3 The contradiction between rural development and the singularity of audit objectives

Getting rid of poverty is the first step in the strategic deployment of national rural revitalization, and to realize the great project of the Chinese dream, poverty eradication is only a prerequisite. To achieve the general requirements of rural revitalization of prosperous industries, ecological livability, civilized rural customs, effective governance and rich life, we should also fully understand the actual local advantages and needs, closely follow the local characteristics of the industry, and focus on ecological protection issues, farmers' education and culture, social security and other social issues from the perspective of the most concerned about the real interests of the farmers. China's rural performance audit mainly focuses on the use of poverty alleviation funds and the implementation of poverty alleviation policies, belonging to a single "relief poverty alleviation audit". The contradiction between the diversification of rural development and the single audit objective urgently requires audit institutions to fully understand the strategic deployment of the central government on rural revitalization when carrying out rural performance audits, and to develop the single "relief poverty alleviation audit" into a diversified audit objective, which not only pays attention to the implementation of poverty alleviation funds and policies, but also stands in the height of rural revitalization to examine the impact of government policies on rural education, industrial development and social security. We should not only pay attention to the implementation of poverty alleviation funds and policies, but should also stand in the height of rural revitalization to examine whether government policies have played a positive role in promoting rural education, industrial development, environment and ecology, so as to effectively protect the interests of farmers and safeguard the rights of rural development.

4 Path analysis of rural performance audit in the context of big data

4.1 Analysis of the need for rural performance audits in the context of big data

At present, big data technology is mainly used to collect and organize all kinds of relevant information required for auditing in real time through multiple analysis systems such as big data search system, natural language analysis system, relationship discovery system, geographic information system, etc., and at the same time, intelligently analyze the logical relationship between different auditing evidences, so as to identify the effective data and problematic data, and issue the

final auditing analysis report. Big data technology can cross-departmental and cross-industry collection and organization of required audit data, promoting the transformation of traditional auditing methods from sample auditing to full-data auditing, and effectively guaranteeing the efficiency and quality of auditing work. Big Data Audit New Mode Applied to Rural Areas. Performance auditing can realize the full-process tracking of data from source to destination, and with the help of the data-sharing mechanism of ministries, provinces, cities and counties, early warnings can be issued in a timely manner through the correlation of relevant data.

The application of big data technology can effectively solve the current audit manpower shortage and audit tasks, data fragmentation and audit scope and audit of a single target and rural development of the contradiction between the diversity. Because big data technology can effectively improve the government's ability to supervise and govern, the Audit Commission has made efforts to build a national cloud audit platform in the "Golden Audit" project. It can be seen that the application of big data technology in rural performance auditing is an inevitable choice for the modernization of rural governance, and is of great practical significance to the strategy of rural revitalization.

4.2 Challenges to rural performance auditing in the context of big data

4.2.1 Audit data collection quality risk

Data collection is the most fundamental aspect of big data auditing. The completeness of the data is directly related to the accuracy of the subsequent audit analysis, thus affecting the auditors' judgment on key risk points. From the point of view of the degree of data openness, open data is more real and complete than internal data. Open data has been reproduced many times with multiple backups, and even if a piece of data is lost or tampered with, technicians can make it recoverable from other backups. In contrast, rural performance audits are associated with many departments and most of the data is internal. Internal data is only kept within a controlled range as the only source of data, and if it is deleted or tampered with, it will be difficult to be detected. Therefore, the quality of the data collected in a big data audit of rural performance will be an important technical challenge.

4.2.2 Audit of data storage security risks

The audit cloud platform is an important guarantee for the big data audit of rural performance, and its completeness relates to whether the audit work can run smoothly. The data collected by rural performance auditing are stored in the auditing cloud platform through virtual technology, which involves personal privacy, industry information, departmental confidentiality, etc., and puts forward high requirements for the security of the cloud platform. Once the cloud platform is hacked or attacked by computer viruses, the relevant data may face the risk of illegal download or even destruction. Whether the audit cloud platform can support the audit operation and ensure the security of data storage will be an urgent problem to be solved in the big data audit of rural performance.

4.2.3 Auditor competency risk

The application of big data technology will change the technical methods of traditional rural performance auditing, transforming the auditing method from sampling audit to full-scope audit. Under the background of big data, on the one hand, auditors will more often find doubts by comparing data information of different departments and make inquiries and investigations to

relevant personnel according to the doubts, and in addition to changing the working methods, auditors also need to master certain computer programming skills so that they can design customized big data programs for the specific needs of rural performance auditing and make better use of auditing technology in rural auditing work. On the other hand, the auditing work needs to be based on the accounting staff. On the other hand, the audit work needs to be carried out according to the accounting information provided by the accountants, and in reality, the rural accounting practitioners' comprehensive quality is low, and their mastery of regulations and laws is not comprehensive, which provides an opportunity for irregularities and further increases the difficulty of the audit work. Therefore, the cultivation of auditing composite talents who can apply big data technology is the key to the development of big data.

4.3 Paths for improving rural performance auditing in the context of big data

4.3.1 Build a data cloud platform

In order to effectively carry out the duty of State audit to supervise the financial income and expenditure, the Audit Office has invested a great deal of human and financial resources in the construction of audit informatization. At present, the first phase of the Golden Audit Project has been successfully accepted based on the construction of application systems, local area networks, security systems, standards and specifications, personnel training and other software and hardware facilities; the second phase of the Golden Audit Project has been preliminarily completed as a national audit information system. The third phase of the Golden Audit is centered on the construction of the cloud platform, realizing the "Audit Cloud" and the "Government Cloud" data connectivity.

The cloud platform is the carrier of big data auditing, data storage through the cloud platform, all kinds of auditing resources, staffing, auditing procedures are unified through the cloud platform deployment, real-time preservation and backup of raw data and issue data analysis reports. At this stage, the construction of cloud audit platform has begun to take shape, and this new audit tool represents the development direction of future rural performance audit, which can effectively expand the breadth and depth of rural performance audit.

4.3.2 Data collection

Big data audit technology, data collection scope "wide" is a prerequisite. When collecting data, it is necessary to achieve full coverage of the special funds for household agricultural subsidies and related policy implementation audit focus, and timely transmission of relevant electronic data through the government information sharing platform and the business information platform, and at the same time, it is necessary to open up the data nodes of various departments, and to collect the basic information of finance, animal husbandry, education, ecology, agro-basic, development and reform, social security, medical care and other multi-departmental basic information across the industry and departments, so as to reach a fragmented information linkage.

In addition, in order to ensure the integrity and authenticity of the collected data, the auditing authority can build a set of blockchain security auditing platform, assign virtual addresses to relevant departments, and require that all data related to rural revitalization be transmitted through this blockchain platform. In this way, the meaning of each transaction data in the block can be kept confidential as well as the audit staff can access the complete data path, so that the authenticity and integrity of the data can be audited more effectively.

Big data technology through the village performance audit object audit information to effectively collect, the audit policy implementation, the use of funds and other situations may exist

to do a good understanding of the situation, and timely delivery of potential risks to the relevant regulatory departments, so that the risk of violation of the nip in the bud in a timely manner.

4.3.3 Data collation

Big data auditing technology, data organization requires "fine" . Massive dat there will be data duplication, data inconsistency and other issues, so you need to organize the collected data information. Data collation needs to be based on the audit of the core indicators to extract the key fields associated with the data, in order to carry out the basic classification of information, and at the same time the use of computer de-emphasis technology to timely deal with the duplication of data, missing, invalid values, to ensure that the data standardization, to provide effective data for the subsequent data analysis. The data collation process should pay special attention to the financial funds data, audit authorities at all levels can use the big data platform to form a collaborative linkage mechanism with the financial, focusing on the various types of access to financial subsidies for the data path of the enterprise, will be its tax declaration, industry and commerce, social security, geographic information comparison, the formation of doubtful databases.

4.4 Data analysis

Big data audit data analysis is about "accuracy" . The rural revitalization involves a large amount of money and covers a wide range of projects, and the massive data are linked across departments. Big data auditing can tap the depth of the data with the help of the information system for the distribution of subsidies to farmers' funds; through the auditing cloud platform, the data from different sources and formats are adjusted in a standardized format, and the correlation between the data is used to screen and compare the data, combined with various types of spatial data such as farmland, minerals, environmental protection, etc, and the use of geographic information technology, which can convert the "fragmented" information for multi-dimensional analysis and data mining, converted into reliable audit information, auditors can be more intuitive to grasp the audit of effective data, more accurate discovery of the existence of risk points. For example, when auditing rural cadre A's inspection of rural revitalization projects, the auditing cloud platform can be used to search all the pictures and video data of cadre A during that time period to find out all the information related to A. Then, through the comprehensive comparison of related information, if there is a real picture of A's figure but it is not at the project site, it can be shown that the fact of A's inspection of the project may be doubtful during that time period.

5 Conclusion

The soundness and perfection of rural auditing is an important part of the modernized rural governance system with Chinese characteristics, and rural performance auditing in the context of big data is bound to be the trend of future development, and plays an indispensable role in promoting the comprehensive implementation of the rural revitalization strategy. China's government is farsighted, after "Golden Audit Projectcontinued construction, has provided the necessary technical support for big data auditing, auditors will face greater challenges and technological change, the only way to show commitment, develop thinking, take the initiative to learn, the effective combination of big data technology and auditing, in order to push the work of rural auditing to a new level, so as to better serve the rural revitalization strategy. Thus, it can better serve the implementation of the rural revitalization strategy.

References

- [1] Guo Jun, Feng Jiao. Research on the Role Mechanism and Realization Path of National Audit in the Implementation of Rural Revitalization Strategy [J]. Modern Marketing (Chuangfu Information Edition),2018(10):180-181.
- [2] Bao Lian. Positive Impact and Implementation Path of State Audit under Rural Revitalization Strategy [J]. Contemporary Accounting ,2019(4):75-77.
- [3] CHEN Wei ,SMIELIAUSKASW. Exploring the realization method of network audit in cloud computing environment [J]. Auditing Research ,2012(3):37-44.
- [4] Yuan Bo. Study on the Promotion of Cloud Audit on Rural Revitalization Strategy in the Age of Big Data [D]. Nanjing : Nanjing Audit University ,2020.
- [5] Xu Yingjie. Research on quality improvement of rural revitalization audit [J]. Friends of Accounting ,2022(11):76-81.
- [6] Feng Xiaoxia. Research on the application status quo and countermeasures of continuous auditing based on IT technology in China [D]. Taiyuan : Taiyuan University of Technology ,2014.