

RESEARCH ON METHODS TO IMPROVE AUDIT EFFICIENCY OF RURAL REVITALIZATION PROJECTS USING BIG DATA TECHNOLOGY

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Abstract: With the deepening implementation of the rural revitalization strategy, audit work plays a crucial role in ensuring the reasonable use of project funds and the proper execution of policies. This paper aims to explore methods to enhance the audit efficiency of rural revitalization projects under the big data information technology environment. By analyzing the current state of auditing rural revitalization projects, it reveals issues such as poor fund management, ineffective project execution, and insufficient auditing capabilities. It also proposes countermeasures such as optimizing policy design, strengthening whole-process supervision, enhancing interdepartmental collaboration, applying big data information technology, and cultivating multidisciplinary auditing talents. The research results indicate that using information technology and scientific management methods can effectively improve audit efficiency, enhance project transparency, and promote the precise implementation of rural revitalization policies. The conclusion suggests that building an intelligent and efficient audit system will help ensure the sustainable development of rural revitalization projects and the achievement of strategic goals.

Keywords: Rural Revitalization Projects; Audit efficiency; Big data information technology; Fund management; Policy implementation; Whole-Process supervision

1 INTRODUCTION

With the comprehensive implementation of China's rural revitalization strategy, the development and revitalization of rural areas have been placed at the core of the national development agenda. Rural revitalization is not only an important measure to address rural poverty but also a crucial step in promoting balanced urban and rural development and achieving national modernization. As a key component of the rural revitalization strategy, rural revitalization projects involve substantial financial investments, resource allocation, and project management. Therefore, ensuring the efficient operation of these projects, the reasonable and compliant use of funds, is a necessary safeguard for achieving the goals of rural revitalization. In this context, the importance of audit work becomes increasingly prominent. Through audits, it is possible to monitor the flow of funds, ensure transparency in project execution, and enhance the effectiveness of policy implementation.

However, auditing rural revitalization projects faces complex practical challenges. Due to the extensive and intricate nature of these projects, the auditing process is often plagued by issues such as irregular fund management, low project execution efficiency, and inadequate policy implementation [1]. These problems not only affect the efficiency of audit work but also adversely impact the effectiveness of the rural revitalization strategy's implementation. For example, some regions experience fund stagnation, slow project progress, and imperfect supervision mechanisms, leading to resource waste and reduced project benefits [2].

To address these issues, it is particularly urgent to improve the audit efficiency of rural revitalization projects. With the rapid development of information technology, especially the widespread application of big data technology, auditing work has acquired new technical means to enhance efficiency and quality. Big data technology can help auditors comprehensively grasp key information such as fund flows and project execution status, enabling the monitoring and analysis of the entire project lifecycle [3]. Therefore, this study will focus on the application of big data technology in audit work, exploring how technological means can optimize audit processes and improve audit quality and efficiency.

The purpose of this study is not only to identify the key issues in the current auditing of rural revitalization projects but also to propose innovative auditing methods to address these challenges. By utilizing big data information technology, the accuracy and timeliness of audits can be enhanced, ensuring reasonable fund allocation and effective policy implementation, thereby providing solid support for the successful implementation of rural revitalization projects.

2 CURRENT STATE OF AUDITING RURAL REVITALIZATION PROJECTS

In the implementation of rural revitalization projects, the current state of fund management and project execution directly affects the efficiency and quality of audit work. Although national and local governments place high importance on rural revitalization projects, many management issues have still been identified during audits, leading to project progress falling short of expectations. These problems are not only evident in fund management but also exist in project execution and the implementation of supervision mechanisms.

2.1 Analysis of the Current State of Fund Management

The funding sources for rural revitalization projects mainly include national special funds, local government matching funds, and social capital. The scale of funding is substantial, and the scope of projects is extensive. However, in actual operations, numerous problems in fund management have been exposed. Firstly, some projects have issues with arbitrarily expanding the scope of fund usage beyond the predetermined purposes, thereby questioning the effectiveness of fund utilization [4]. Secondly, the lack of adequate matching funds from local governments affects the overall progress of projects [5]. Lastly, the scheduling and disbursement of funds for some projects are not timely, leading to project implementation delays and even instances of fund idleness [6]. These issues severely impact the efficiency of rural revitalization fund usage.

2.2 Analysis of the Current State of Project Execution and Supervision Mechanisms

In terms of project execution, governments at all levels and relevant departments have set clear goals, tasks, and responsibilities to promote rural revitalization projects. However, due to deep-seated rural poverty and weak infrastructure, project execution is particularly challenging in some regions [7]. Although local governments have formulated detailed implementation plans, some projects still experience slow progress and poor outcomes during execution [8]. Moreover, although China has established relatively comprehensive supervision mechanisms for rural revitalization projects, including internal supervision, financial audits, and social supervision across multiple levels, the effectiveness of these mechanisms is limited in some regions. The supervision methods are singular and lack sufficient collaboration, making it difficult to promptly identify and resolve issues in project execution [9].

2.3 Analysis of the Current State of Policy Implementation and Effectiveness Evaluation

The core of rural revitalization policy lies in precise execution to ensure the implementation and effectiveness of policies. However, in the actual process of policy implementation, some regions still exhibit inadequate policy execution and unclear responsibilities [10]. Additionally, the work of policy effectiveness evaluation is neither timely nor comprehensive, failing to systematically reflect the actual progress and benefits of projects. For example, some regions do not provide timely feedback or make adjustments during policy evaluations, resulting in the positive effects of policies not being fully realized and the overall effectiveness of policy implementation being weakened.

2.4 Main Problems in the Audit Process

During the audit process, issues such as chaotic asset management and imperfect supervision mechanisms in rural revitalization projects have also been identified. Many rural revitalization projects have unclear asset bases and lack management systems, affecting project operational efficiency [11]. Furthermore, the level of audit informatization is low, with dispersed grassroots data and inconsistent data quality, making it difficult for auditors to accurately grasp fund flows and project progress during audits, thereby limiting the improvement of audit efficiency [12].

Overall, numerous problems in fund management and policy execution of rural revitalization projects have been exposed during audits. To improve audit efficiency, it is necessary to further refine fund management mechanisms, strengthen project execution supervision, and enhance the level of informatization management, ensuring that funds and projects can truly serve the long-term goals of the rural revitalization strategy.

3 PROBLEMS IN AUDITING RURAL REVITALIZATION PROJECTS

In actual audit work, the complexity and breadth of rural revitalization projects have introduced numerous institutional and execution-related issues. These problems not only constrain the efficiency of audit work but also affect the effective use of rural revitalization funds and the precise implementation of policies. Through the analysis of the current state of auditing, the following main issues can be summarized.

3.1 Issues in Fund Management and Usage

Fund management problems are among the most prominent issues in the current auditing of rural revitalization projects. Audits in some regions have revealed significant instances of fund idleness, delayed disbursement, or misappropriation. For example, audits have found that some funds were not used according to the predetermined purposes, posing risks of fund misappropriation, embezzlement, and even corruption. The lack of adequate fund coordination and integration has also led to unreasonable fund distribution, causing some projects to progress slowly or even come to a standstill due to insufficient funds. Additionally, there are loopholes in the fund supervision mechanisms, preventing the timely detection and correction of irregularities in fund usage, thereby exacerbating fund management issues.

3.2 Issues in Project Construction Management and Policy Implementation

Ineffective project construction management and policy implementation are also commonly observed problems in the auditing of rural revitalization projects. In some regions, there is a lack of scientific justification during the project planning and implementation phases, leading to inadequate management during project progression, resulting in slow progress or substandard construction quality. During audits, it was also found that some projects lack technical support

during execution, and maintenance after project completion is inadequate, affecting the long-term benefits of the projects. Furthermore, some local governments have insufficient understanding of rural revitalization policies, leading to imprecise policy implementation and even forms of formalism, resulting in an increasing gap between project execution and policy objectives.

3.3 Issues in Auditing Capacity and Efficiency

Regarding auditing capacity and efficiency, some auditors do not have a comprehensive understanding of rural revitalization policies, and their professional technical methods are outdated, affecting the depth and breadth of audit work. The information systems relied upon for audit work are insufficiently developed, with dispersed and low-quality data, limiting auditors' ability to fully grasp fund flows and project progress. Moreover, audit rectifications are not timely, and recurrent issues persist, significantly diminishing the actual effectiveness of audit work. Auditors lack innovation in technical methods, employing relatively traditional audit approaches, and have not fully leveraged big data information technology's potential in audit work.

3.4 Issues in Supervision Mechanisms and Audit Rectifications

Incomplete supervision mechanisms have resulted in audit findings not being effectively rectified. There is a lack of coordinated cooperation between internal and external supervision, with supervision methods being singular and insufficient in intensity, preventing in-depth audit work. In some regions, audit rectification mechanisms are merely formalities, with rectifications being untimely and inadequate, leading to the recurrence of certain issues. Auditors face high work pressure and limited resources, making long-term tracking and rectification difficult, further increasing the challenges of audit work.

In summary, the current auditing of rural revitalization projects faces multiple dilemmas, including irregular fund management, weak project construction management, limited auditing capacity, and incomplete supervision mechanisms. These issues not only hinder the improvement of audit efficiency but also impact the comprehensive advancement of the rural revitalization strategy. Therefore, it is necessary to overcome these challenges by strengthening policy design, optimizing management processes, and enhancing the quality of auditing personnel.

4 COUNTERMEASURES AND RECOMMENDATIONS TO IMPROVE THE AUDIT EFFICIENCY OF RURAL REVITALIZATION PROJECTS

Facing the numerous problems in auditing rural revitalization projects, it is necessary to adopt comprehensive measures from multiple dimensions, including policy design, management mechanisms, technological applications, and talent cultivation, to enhance audit efficiency and quality. The following are several specific countermeasures and recommendations to help audit work better serve the implementation of the rural revitalization strategy.

4.1 Optimize Policy Design and Establish Cross-Departmental Collaboration Mechanisms

Optimizing the policy design of rural revitalization projects is the primary task to improve audit efficiency. To ensure that funds and projects closely align with the national rural revitalization strategy, the systematization and synergization of policies should be strengthened. In the early stages of project implementation, cross-departmental working groups should be established to coordinate and manage various project processes, ensuring that projects proceed smoothly within the policy framework. Cross-departmental collaboration can effectively reduce information asymmetry issues and enhance the efficiency of fund and resource allocation. At the same time, cross-departmental collaboration incentive mechanisms should be developed to evaluate the collaborative outcomes of each department and implement rewards and penalties, thereby motivating relevant departments to actively participate in project collaboration.

4.2 Enhance Local Governance Capacity and Implement Whole-Process Supervision Mechanisms

During project execution, the quality and efficiency of audit work depend on the governance capacity of local governments. To ensure whole-process supervision of projects, it is recommended to implement a whole-process tracking audit mechanism. Just as the 'curriculum ideological education' concept in teaching reform emphasizes systematization, audit work should also adopt a systematic management approach to ensure that audit work covers the entire project lifecycle, thereby enhancing the effectiveness of policy execution [13]. Through close cooperation between audit agencies and local governments, every stage from project planning to fund disbursement, project implementation, and subsequent management should be supervised to ensure the depth and continuity of audits. Local governments can also introduce third-party accounting firms to supervise projects and use remote monitoring methods to enhance supervision effectiveness. Additionally, electronic archive management systems should be promoted, with all project archives digitized to ensure that auditors can access the latest project information at any time, reducing information lag in audit work.

4.3 Strengthen Interdepartmental Collaboration and Build Information Sharing Mechanisms

In auditing rural revitalization projects, enhancing interdepartmental information sharing can significantly improve audit efficiency. Utilizing big data information technology, especially blockchain technology, can establish a shared audit platform, enabling information interoperability and connectivity between audit agencies and relevant departments. Through a shared audit platform, auditors can quickly access project-related data, reduce the workload of manual verification, and improve the accuracy and efficiency of audit decision-making. Just as nursing interventions can significantly improve the rehabilitation outcomes of patients with scoliosis, early intervention and risk warning mechanisms in audit work can similarly reduce fund management and execution deviations in rural revitalization projects, ensuring smooth project progression [14]. Information sharing can also eliminate information barriers between departments, promote data circulation and integration across different systems, thereby enhancing overall audit quality.

4.4 Utilize Big Data Information Technology to Enhance Audit Accuracy and Efficiency

Big data information technology has brought unprecedented opportunities to audit work. Just as MOOC technology is effectively applied in medical education, by introducing big data and information technology, auditors can flexibly address various fund flow issues in rural revitalization projects, improving audit accuracy and efficiency [15]. During the audit process, the use of big data analysis tools can comprehensively collect information on project fund flows and project progress, conducting multi-dimensional data mining and analysis to enhance the coverage and accuracy of audits. Similar to the precise analysis of complex data in medical research, auditing rural revitalization projects also requires precise monitoring of complex fund flows through big data technology to ensure the reasonable allocation and use of funds [16]. By constructing a big data analysis system for rural revitalization projects, auditors can quickly identify anomalies in project fund usage and make timely adjustments and rectifications. Additionally, big data technology can facilitate comparative analysis of historical audit data, effectively improving the timeliness of audit work.

4.5 Cultivate Multidisciplinary Auditing Talents

Enhancing the quality and capabilities of auditing personnel is an important guarantee for improving audit efficiency. Rural revitalization projects involve multiple fields; auditors not only need financial knowledge but also must understand specialized knowledge in agriculture, engineering, environmental protection, and other areas. Therefore, it is essential to intensify the cultivation of multidisciplinary auditing talents. It is recommended to enhance auditors' capabilities in big data auditing and information management through regular training, professional certification, and practical exercises. Additionally, audit departments should encourage auditors to learn and accumulate cross-disciplinary knowledge to improve their professionalism and decision-making abilities when dealing with complex project audits.

By implementing these countermeasures and recommendations, audit work can gradually achieve precision, intelligence, and efficiency. Supported by information technology, auditors can better grasp the overall picture of projects, enhance the comprehensiveness and effectiveness of audit supervision, and thereby safeguard the smooth implementation of the rural revitalization strategy.

5 CONCLUSION

Through the analysis of the current state of auditing rural revitalization projects, it is evident that although audit work plays an important role in ensuring the reasonable use of rural revitalization funds and the efficient advancement of projects, it still faces multiple challenges such as poor fund management, inadequate project execution, insufficient auditing capacity, and incomplete supervision mechanisms. These issues not only constrain the efficiency of audit work but also affect the precise implementation of rural revitalization policies and the maximization of project benefits. Therefore, improving audit efficiency and quality is of significant importance for the smooth implementation of the rural revitalization strategy.

To effectively address the problems in audit work, this study has proposed several countermeasures and recommendations to enhance audit efficiency. Firstly, optimizing policy design and establishing cross-departmental collaboration mechanisms to ensure close alignment between policies and projects, thereby improving the systematization and scientific management of projects. Secondly, enhancing local governance capacity through whole-process supervision and tracking audits to ensure that audit work covers every critical aspect of the project. Thirdly, utilizing big data information technology to build shared audit platforms, achieving information sharing and resource integration, thereby enhancing audit transparency and decision-making efficiency. Additionally, promoting the cultivation of multidisciplinary auditing talents to strengthen the professional quality of the audit team, enabling them to cope with increasingly complex audit tasks.

The application of big data and information technology, especially the introduction of blockchain and data analysis tools, will significantly enhance the precision and efficiency of audit work. By constructing an audit big data platform, auditors can more comprehensively grasp fund flows, project progress, and policy implementation statuses, achieving supervision and real-time feedback for the entire project lifecycle. At the same time, big data technology can help audit departments identify potential risks and issues from vast amounts of data, enabling timely response measures to minimize audit blind spots.

In the future, as the rural revitalization strategy continues to deepen, audit work will face more new challenges. Therefore, audit agencies and relevant departments should continue to improve audit mechanisms, continuously innovate audit methods, keep pace with technological developments, and continuously enhance the intelligence and technological levels of audit work. This will not only help improve the efficiency of audit work but also provide a solid guarantee for the comprehensive success of the rural revitalization strategy.

In summary, constructing a scientific and efficient audit system for rural revitalization projects will provide strong support for ensuring the transparency of fund usage, the effectiveness of policy implementation, and the maximization of project benefits. Through the continuous optimization of audit work and the application of technological means, the implementation effects of the rural revitalization strategy will become more significant, and rural development will thus reach a new level.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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