

Pathways to Enhancing the Quality of Agricultural Statistical Services in the Context of Rural Revitalization

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Abstract: In the strategic context of rural revitalization, optimizing the quality of agricultural statistical services is a crucial element for advancing agricultural modernization and sustainable rural economic development. This paper focuses on the significance of enhancing agricultural statistical service quality under the backdrop of rural revitalization. It addresses current issues such as inadequate implementation of agricultural statistical survey systems, an imperfect data quality control system, and a shortage of statistical service personnel. Proposals are made to improve the statistical survey system, enhance the data quality control framework, and strengthen personnel training. These pathways offer references for elevating the quality of agricultural statistical services and implementing the rural revitalization strategy in the new era.

Keywords: Rural revitalization; Agricultural statistical services; Pathway study

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1. Introduction

The strategy of rural revitalization is a major strategic deployment proposed by the Central Committee of the Communist Party and the State Council in the context of the new era, aimed at addressing the “three rural issues” (agriculture, rural areas, and rural people). It seeks to comprehensively advance the modernization of agriculture and rural areas and achieve comprehensive economic and social development and progress in rural regions ^[1]. The implementation of this strategy is crucial for the sustainable development of agriculture and directly impacts the modernization process of the country. Agricultural statistical services, as foundational work for agricultural economic activities, play a vital role. The quality of these services directly determines the scientific nature and effectiveness of agricultural policy-making. Thus, optimizing the quality of agricultural statistical services in the context of rural revitalization is particularly important ^[2].

Agricultural statistical data form a critical basis for national macroeconomic management and are essential for formulating agricultural policies and planning. High-quality agricultural statistical services can provide the government with accurate and timely data support on agricultural production, farmer income, and rural

economic development, ensuring the scientific nature and effectiveness of policies. However, numerous issues persist in the practical application of agricultural statistical services, affecting the quality of statistical data and limiting the effectiveness of these services^[3]. The implementation of the rural revitalization strategy poses higher demands on agricultural statistical services, necessitating comprehensive improvements from various aspects to better support the modernization of agriculture and rural areas. Therefore, optimizing the quality of agricultural statistical services and enhancing the accuracy and reliability of agricultural statistical data are of significant importance for advancing the implementation of the rural revitalization strategy.

2. The significance of optimizing agricultural statistical service quality in the context of rural revitalization

2.1. Providing data support for rural and agricultural development

Optimizing the quality of agricultural statistical services can provide a scientific basis for decision-making in rural agricultural development. Agricultural statistical data cover various aspects such as agricultural production, farmer income, and the market circulation of agricultural products, comprehensively reflecting the current state and trends of rural economic development. High-quality statistical data help government departments comprehensively and accurately grasp the actual conditions of rural socio-economic development, providing a scientific basis for formulating agricultural policies, planning, and measures. Under the backdrop of rural revitalization, the government must guide agricultural production and rural economic activities through scientific decision-making, ensuring the effective use of resources and precise implementation of policies^[4]. Enhancing the quality of statistical services and improving the accuracy and reliability of data can effectively prevent decision-making errors, enhance government governance capabilities, and advance the process of agricultural modernization.

Optimizing agricultural statistical service quality also facilitates optimal resource allocation. A key to rural agricultural development lies in the rational allocation of resources such as land, water, and labor to maximize resource utilization. Agricultural statistical data, serving as a crucial source of information on resource usage, play a significant role in guiding resource allocation. High-quality statistical services can accurately grasp the distribution and usage of various resources, promptly identify any irrationalities in resource allocation, and make scientific adjustments. Based on statistical data, understanding the cultivated area, output, and trends of crops can guide farmers to scientifically adjust their planting structures, avoiding resource wastage and economic losses due to market supply-demand imbalances, thereby enhancing agricultural production efficiency and promoting sustainable rural economic development.

2.2. Promoting rural industrial upgrade

Optimizing the quality of agricultural statistical services can comprehensively reflect the current state of rural industries and provide a scientific basis for industrial upgrades. High-quality statistical data can accurately record various aspects of rural industries such as production conditions, economic benefits, and market demands. Data analysis offers a comprehensive understanding of the current development status of rural industries, identifies industries with advantages and potential, and reveals shortcomings and bottlenecks in industrial development. This has significant implications for rural area industrial planning and structural adjustment, aiding governments and businesses in devising practical development strategies to optimize and upgrade rural industries.

Enhancing the quality of agricultural statistical services can effectively promote the modernization transformation of rural industries. Agricultural statistical data not only reflect the quantity and scale of

industry development but also provide information about production methods, technological levels, and labor productivity. Utilizing this data, inefficiencies and weaknesses in traditional agricultural production methods can be identified, facilitating the introduction of advanced agricultural technologies and production models in rural areas. This elevates the level of agricultural modernization. Statistical data also support technological innovation in rural industries, encouraging agricultural research institutions and businesses to engage in technological research and application, driving rural industries towards high-technology, high-value-added directions, and achieving modernized industrial transformation.

2.3. Advancing the modernization of rural governance capabilities

High-quality agricultural statistical services can enhance the transparency and credibility of rural governance. As an objective source of information reflecting rural socio-economic development, agricultural statistical data, through openness and sharing, can improve the transparency of rural governance. Government departments can use statistical data to publicly disclose the actual conditions of rural development, enhancing transparency in governance processes and increasing government credibility. The public can also gain insights into government governance effectiveness through statistical data, enhancing trust and participation in government activities, which aids in establishing a robust social monitoring mechanism and promoting the democratization and legalization of rural governance.

Optimizing the quality of agricultural statistical services also helps to improve the efficiency and effectiveness of rural governance. High-quality statistical data enable government departments to promptly identify issues and shortcomings in rural governance, allowing for precise interventions and scientific management. Analysis of agricultural production data can reveal weak links and potential risks in agricultural production, enabling timely measures to address these issues and mitigate agricultural production risks. Statistical data on farmer incomes and living standards can provide insights into the actual needs and conditions of farmers, enabling targeted poverty alleviation and social security policies, thus enhancing the effectiveness of rural governance ^[5].

3. Issues in agricultural statistical services in the context of rural revitalization

3.1. Inadequacies in the implementation of agricultural statistical survey systems

The execution of agricultural statistical survey systems is insufficient, with grassroots statistical personnel facing challenges in practical implementation. In some regions, due to the lack of professional competence or adequate training, statistical personnel fail to collect and process data strictly according to the requirements of the statistical systems, impacting the authenticity and accuracy of the statistical data. Additionally, statistical personnel encounter low cooperation levels from survey respondents, with some farmers reluctant to provide accurate data for various reasons, further exacerbating the risk of data distortion.

The execution process of agricultural statistical surveys lacks effective monitoring and feedback mechanisms, making it difficult to supervise and correct the implementation of statistical systems in real time. Although national and local governments have established detailed agricultural statistical survey systems, the absence of adequate monitoring mechanisms in practical operations leads to poor implementation. Grassroots statistical departments lack timely review and feedback from higher authorities, resulting in delayed discovery and correction of erroneous data.

3.2. Deficiencies in the agricultural statistical data quality control system

The data collection phase lacks effective and scientific quality control measures. Agricultural statistics involve

a wide variety of data types and sources, and the lack of standards and norms during the data collection process leads to randomness and inconsistency. In some areas, the absence of uniform standards for data collection results in significant discrepancies in the same type of data across different regions, making effective comparison and comprehensive analysis of national data challenging. Additionally, outdated data collection equipment and technologies affect data quality, with some areas still relying on manual recording and paper reports, compromising the accuracy and timeliness of data.

The data verification mechanism is also flawed. Data verification, a crucial step in ensuring data quality, often remains a formality without substantial review and validation. Some regions lack strict procedures for data verification, allowing erroneous and false data to go undetected and uncorrected. Moreover, there is a lack of effective feedback mechanisms during the data verification process, leading to poor communication between higher authorities and grassroots statistical personnel. Issues identified during the verification process are not promptly addressed, affecting the effectiveness and quality of data verification.

3.3. Shortage of skilled personnel in agricultural statistical services

There is an insufficient level of professionals in agricultural statistical services. Agricultural statistical work requires solid knowledge and skills in statistics, but in practice, most grassroots personnel lack systematic professional training, leading to inadequate understanding and mastery of statistical work. As statistical work in rural grassroots is often regarded as auxiliary, staffing often consists of part-time personnel with diverse professional backgrounds and weak statistical foundations, making it challenging to meet high standards of statistical tasks and ensure data quality.

Additionally, there are barriers to career development for agricultural statistical personnel, leading to significant talent loss. Working conditions in agricultural statistical positions are relatively harsh, and the rural grassroots work environment and compensation are poor. Long-term work conditions offer limited opportunities for professional advancement and career development, leading to an unclear career outlook. As a result, many skilled statistical talents migrate to other industries or positions. This talent loss weakens the existing statistical workforce, making it difficult to train and replace new personnel, exacerbating the shortage of skilled personnel in statistical services.

4. Pathways to optimizing the quality of agricultural statistical services in the context of rural revitalization

4.1. Enhancing the execution mechanism of agricultural statistical survey systems for increased efficiency

Strengthen the legal framework for agricultural statistical surveys to ensure that statistical activities are conducted based on law and regulations. Refining relevant laws and regulations, clarifying the responsibilities and authorities of statistical institutions and personnel at all levels, strictly defining the procedures and standards for statistical surveys, and ensuring the standardization and institutionalization of statistical work. Furthermore, enhances the enforcement of statistical laws to rigorously address illegal and non-compliant activities, creating an effective legal deterrent to ensure the authenticity and accuracy of statistical data.

Establish a comprehensive management system for agricultural statistical surveys. Actively develop a scientifically sound organizational structure, clarify the division of responsibilities among statistical institutions and personnel at all levels, and form a top-down, tiered management model. Implement a tiered responsibility system where statistical institutions at each level are accountable for statistical survey tasks in their respective areas, ensuring orderly statistical operations. Also, develop detailed workflow procedures and operational

standards to ensure the orderly integration and efficient operation of all aspects of statistical surveys.

Actively promote the digitalization and intellectualization of statistical work by introducing advanced information technologies and data processing systems to enhance the automation and precision of statistical activities. Establish a unified platform for agricultural statistical data to facilitate real-time data collection, transmission, and processing, ensuring timeliness and accuracy of data. Additionally, enhance the analysis and utilization of statistical data using technologies such as big data and cloud computing to conduct in-depth mining and analysis, enhancing the data's application value and decision-support capability.

4.2. Establishing a comprehensive agricultural statistical data quality control system

Construct a comprehensive statistical data quality management system. Develop and implement quality standards and norms that cover the entire process from data collection, processing, storage, and analysis, to dissemination. Specify quality requirements for each stage to ensure effective control and assurance of data quality at every phase. Also, establish a dedicated quality management department or team to oversee and manage the quality of statistical data, ensuring that all quality control measures are properly implemented.

Introduce modern data collection and processing technologies to enhance the scientific and precise control of data quality. Utilize advanced sensor technology, remote sensing, and Internet of Things devices for data collection, minimizing human intervention and errors, and improving the objectivity and accuracy of data. Moreover, promote the use of big data and artificial intelligence technologies for intelligent processing and analysis of massive agricultural data, identifying and correcting anomalies and errors, and improving the efficiency and accuracy of data processing. Establish a unified data management platform to ensure the real-time and consistent handling of data.

Establish stringent data review and verification mechanisms. Implement multi-tiered data review procedures to systematically check and validate collected data, identifying and correcting errors and omissions. Employ various verification methods such as cross-validation, logical checks, and historical comparisons to thoroughly inspect and validate data, enhancing its accuracy and reliability. Actively establish a data feedback mechanism to promptly relay issues identified during the review and verification, process it back to data collection and processing personnel for rectification and optimization, creating a closed-loop management system for data quality.

4.3. Strengthening the development of agricultural statistical service personnel

Establish a systematic agricultural statistics education and training system, actively offering specialized courses in agricultural statistics to cultivate high-quality statistical personnel with professional knowledge and practical skills. Major universities should enhance cooperation with agricultural sectors to offer targeted, practical statistics courses covering all aspects from data collection, processing, and analysis, to application. Also, promote the integration of industry, education, and research by organizing field surveys and practical operations for students to enhance their practical skills and problem-solving abilities.

Regularly conduct in-service training and continuing education for existing agricultural statistical personnel to continually enhance their professional levels and competencies. Agricultural statistics departments should develop detailed training plans, and organize professional lectures, technical exchanges, and practical operation training to ensure that statistical personnel can master the latest statistical techniques and methods. Inviting experts and scholars from the agricultural statistics field both domestically and internationally to teach and provide guidance can broaden the perspectives of statistical personnel and enhance their professional levels. Implement tiered training according to the different ranks and job needs of statistical personnel, designing

training courses with varying levels and contents to ensure the training's relevance and effectiveness.

Establish a scientifically sound career advancement and assessment mechanism. Define clear career development paths and promotion standards, encouraging statistical personnel to continuously learn and improve their professional levels to gain higher career advancement opportunities. Establish a scientific performance evaluation system that includes statistical personnel's work performance, professional capabilities, and training situations in the assessment scope, providing corresponding rewards and promotion opportunities based on their job performance, thus motivating statistical personnel's work enthusiasm and innovation, and enhancing the overall level of statistical services.

5. Conclusion

Within the broad context of the rural revitalization strategy, optimizing the quality of agricultural statistical services is both an inevitable requirement to meet the current demands for agricultural modernization and a key element in enhancing agricultural governance capabilities and promoting sustainable rural economic development. Optimizing the quality of agricultural statistical services under the rural revitalization backdrop is a systemic project that requires coordinated efforts and long-term commitment. Sustained efforts in institutional guarantees, technological support, and talent development are essential to truly achieve a comprehensive enhancement of statistical service quality, providing solid data support and assurance for the successful implementation of the rural revitalization strategy.

Disclosure statement

The authors declare no conflict of interest.

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