

Survey and Research on the Long-term Mechanism for Increasing Farmers' Income in Anhui Province Empowered by Digital Rural Construction

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Abstract: This article studies the impact of digital village construction on farmers' income increase, and takes Anhui Province as an example for in-depth analysis. The article firstly outlines the background and significance of digital village construction, then discusses in detail the application of digital technology in agricultural production, management, service and rural governance, and analyzes how these applications can promote farmers' income. Then, the article further discusses the impact of regional differences on the role of farmers' income, pointing out that different regions should formulate targeted development strategies according to their own characteristics. Finally, the article summarizes the important achievements and findings of digital village construction in Anhui Province, and puts forward the proposal of constructing an assessment and evaluation index system for digital village construction, with a view to promoting the sustainable development of digital village construction and helping the cause of rural revitalization to flourish.

Keywords: Digital village construction, Digital economy, Farmers' income, Long-term mechanism.

1. Introduction

With the in-depth development and popularization of Internet technology, the construction of digital villages in China has achieved remarkable results. In terms of infrastructure construction, the level of digitization and networking in rural areas has continued to improve. By the end of 2021, 512,000 administrative villages nationwide had fully realized the "village broadband", which means that the network has not only "entered the village", but also "entered the household". According to statistics, 71.90% of villages have a broadband penetration rate of 80% or more, and the penetration rate of network broadband in rural households has reached a high level. This provides farmers with more convenient access to information and lays a solid foundation for the digital development of rural industries. In terms of agricultural digitization, various regions have used 5G, big data and other information technologies to create digital management platforms, which has promoted the emergence of new agricultural models such as smart planting and smart farming. This not only improves the efficiency of agricultural production, but also increases income for farmers. For example, through e-commerce platforms, agricultural products can be sold directly to consumers, greatly improving the convenience and efficiency of sales channels. In addition, the digital rural market has also improved the added value and market competitiveness of agricultural products through branding, differentiation and high-end creation of agricultural products. Some well-known brands of agricultural products have gradually emerged in the market, further promoting the growth of the rural economy.

However, the construction of digital villages also faces some challenges. On the one hand, the problem of information asymmetry is more prominent due to the large number of subjects involved in the digital village market and the poor transmission of information. Consumers are often unable to know the real product quality and source, creating

distrust in purchasing. On the other hand, rural areas are mostly remote, with higher logistics and distribution costs and longer delivery times, which impose certain constraints on the development of the digital rural market.

2. Need For and Significance of the Study

With the rapid development and popularization of digital technology, the construction of digital villages has become an important means of promoting rural revitalization and modernization of agriculture and rural areas. As a large agricultural province, Anhui Province, increasing farmers' income is one of the core tasks of rural revitalization. However, the current development of agriculture and rural areas in Anhui Province is facing some difficulties and challenges, such as the single structure of agricultural industry, the low level of farmers' income, and the shortage of rural talents. The construction of digital countryside can provide new paths and opportunities for farmers to increase their income and promote the realization of high-quality development of agriculture and rural areas in Anhui Province.

The construction of digital villages empowers a long-term mechanism for increasing farmers' income in Anhui Province, which not only improves farmers' income level and quality of life, but also promotes the sustainable development of the rural economy and social stability. Specifically, the construction of digital villages can empower the long-term mechanism for increasing farmers' income through the following aspects:

(1) Provide information services: Provide agricultural market information, policy information, technical information, etc. through digital platforms to help farmers grasp market opportunities and improve the benefits of planting, breeding and other agricultural production.

(2) Promote industrial upgrading: Promote the upgrading of the agricultural industry through digital technology,

develop new agricultural business forms such as smart agriculture and green agriculture, improve the added value of agriculture, and increase the source of income of farmers.

(3) Promoting the mobility of talents: attracting and cultivating rural talents through digital platforms, improving the skills and quality of farmers, promoting the mobility of talents between urban and rural areas, and providing talents for rural economic development.

To sum up, digital rural construction empowers the long-term mechanism of farmers' income increase in Anhui Province with important investigation and research necessity and research significance. Through in-depth investigation and research, more scientific and reasonable policies and measures can be formulated to promote the implementation of digital village construction in Anhui Province, and provide strong support for farmers' income increase and rural revitalization.

3. Current Status of Domestic and International Research and Literature Review

As a large agricultural country, strengthening the construction work of digital countryside is very important for rural revitalization, and digital countryside has become an important part of the construction of digital China. Domestic research on digital countryside has just started, mainly in the following two aspects:

In terms of the importance of digital countryside, Zhang Hong, Du Kevin 0 et al. identify the influencing factors of high-quality rural development under the digital countryside strategy from five aspects, including the policy environment of rural development, agricultural development, medical care and pension, ecological environment, and government services; Lv Pusheng [2] believes that the key link of China's digital village construction is to accelerate the upgrading of infrastructure construction in rural areas and build up a digital village development strategy; Cui Kai and Feng Xian [3] Based on the connotation and characteristics of rural digital economy, it is pointed out that localities should promote the construction of digital countryside, focusing on planning guidance, digital environment, industry cultivation, digital talents and information services; Peng Chao [4] Peng Chao believes that digital rural construction can help promote the transformation of rural governance in the direction of openness and synergy, precision and efficiency as well as intelligence, and proposes a new model for future digital rural construction in agriculture, culture, education and healthcare.

There are fewer studies on the long-term mechanism of farmers' income increase under the construction of digital villages. Qi Wenhao and Li Mingjie [5] et al. examined the effect of farmers' income increase in digital villages by constructing a regression model, and found that digital village construction of the Internet, e-commerce platforms, inclusive finance and other methods have a significant effect on farmers' income increase; Li Hongbing and Wang Shuang [6] Starting from the perspective of e-commerce under digital village construction, the development of e-commerce in digital village construction has a significant effect on farmers' income increase and urban-rural income gap by using various empirical schemes such as mediation effect model and PSM method; Joonwon Luo and Rongfu Li [7] et al. found that agricultural digital elements have a significant positive effect

on increasing agricultural economic efficiency by analyzing national agricultural production data; Lin Haiying [8] studied from the perspective of agricultural informatization and agricultural science and technology innovation in Inner Mongolia, measured the level of agricultural informatization through the comprehensive index method, and found that agricultural informatization has a long-term and stable relationship with the growth of the agricultural economy and the increase of farmers' income.

Due to the different national conditions of countries around the world, the definition of the countryside is also different. The empirical research on the role of digital village construction on farmers' income increase is relatively scarce in foreign countries. obare believes that digital village has become the most important way to solve rural problems; Kapoor found that digital technology can promote rural economic growth.

Comprehensive research has been conducted on the long-term mechanism of digital village construction to increase farmers' income, and there is a lack of quantitative research on the effect of digital villages on increasing farmers' income, and the impact of the heterogeneity of various regions in the development of digital villages on the increase of farmers' income has also been ignored.

4. Analysis of the Long-Term Mechanism for Empowering Farmers to Increase Their Incomes through Digital Rural Construction

4.1. Grid-based Management Empowers Farmers to Increase Their Incomes

Grid management has realized effective governance and resource optimization in rural areas through scientific empowerment. In the process of promoting the construction of digital villages in Anhui Province, through grid-based management, service matters have been refined, basic hardware has been strengthened, and grid teams have been aligned, thus forming a scientific synergy for the construction of digital villages. This management mode not only improves the efficiency and precision of rural governance, but also provides farmers with more precise services. For example, through grid-based management, it is possible to accurately grasp the production and living conditions of farmers, and to identify and solve the problems they encounter in their production and life in a timely manner, thus improving the productivity and quality of life of farmers, and thus promoting their income growth.

4.2. Digital Technology for Intelligent Agricultural Production

The application of digital technology in agricultural production has greatly improved the efficiency and effectiveness of agricultural production. Through the implementation of the digital village construction project and the use of modern information technologies such as big data, Internet of Things and artificial intelligence, it is possible to realize the transformation and upgrading of traditional agriculture and create a smart brain for agricultural production. In the field of planting, the application of technologies such as intelligent germination, intelligent irrigation, and unmanned aircraft application of medicine has improved the precision and efficiency of agricultural

production; in the field of animal husbandry, the application of informatization technology has made it possible to collect and analyze real-time information on feeding, milk production, breeding, and other aspects of the industry, thus improving the production efficiency of the animal husbandry industry. The application of these technologies not only improves the efficiency of agricultural production, but also reduces farmers' production costs, thus increasing their income.

4.3. Informatization Infrastructure Development for Farmers' Income Increase

Informatization infrastructure is an important foundation for the construction of digital villages and an important means of promoting farmers' income. In promoting the construction of digital villages, Anhui Province has focused on strengthening the construction of information technology infrastructure, including 5G base stations, fiber-optic networks, logistics service stations and e-commerce service stations. The construction and improvement of these facilities have provided farmers with more convenient information services and life services, and opened up new income-generating channels for farmers. For example, through the e-commerce platform, farmers can sell their agricultural products all over the country, thus expanding the sales market and increasing the added value of agricultural products and the income level of farmers.

In summary, digital rural construction has provided a long-term mechanism for farmers to increase their income through such means as grid-based management, digital technology and information technology infrastructure construction. The implementation of these mechanisms has not only improved the efficiency and effectiveness of agricultural production, but also optimized the rural governance and service system, providing farmers with more convenient and precise services. At the same time, these mechanisms have also promoted the integrated development of rural industries and increased farmers' incomes, providing strong support for rural revitalization and the modernization of agriculture and rural areas.

5. Impact of Regional Disparities on the Role of Farmers in Increasing Their Incomes

The role of digital technology to empower farmers to increase their income shows different impacts in the three regions of Anhui Province, namely, northern Anhui, central Anhui and southern Anhui, which mainly stems from the inter-regional differences in economy, agricultural industry structure and resource environment. The following is a specific analysis of such differences:

The northern Anhui region is dominated by traditional agriculture, and the agricultural output value accounts for a relatively high proportion. Due to historical, geographical and other factors, the agricultural production methods in the region are relatively traditional, and the application of digital technology is relatively late. Therefore, the enabling role of digital technology in the region is mainly reflected in promoting the transformation of traditional agriculture to modern agriculture, and improving the efficiency and quality of agricultural production. For example, through the

promotion of intelligent agricultural equipment and Internet of Things (IoT) technology, functions such as precise fertilization, water-saving irrigation, and pest and disease monitoring can be realized, thereby improving crop yields and quality and increasing farmers' incomes.

The central Anhui region has a relatively balanced development of agriculture and industry, with a good economic foundation and technological strength. Therefore, the enabling role of digital technology in the region is not only reflected in agricultural production, but also involves a number of links such as processing and marketing of agricultural products. For example, through the application of big data and cloud computing technology, accurate analysis and prediction of the agricultural market can be realized, which can help farmers grasp market opportunities and increase the sales price and added value of agricultural products. At the same time, digital technology can also promote the integration and development of agricultural production with industry and the service industry, providing farmers with more diversified channels to increase their income.

The southern Anhui region is dominated by mountainous and hilly areas, with relatively poor conditions for agricultural production. However, the region is rich in ecological resources and specialty agricultural resources, such as tea and bamboo. The empowering role of digital technology in the region is mainly reflected in promoting the development of specialty agriculture. For example, through the application of IoT and e-commerce technologies, functions such as intelligent planting, quality tracing and online sales of characteristic agricultural products can be realized to improve the popularity and added value of characteristic agricultural products, thus increasing farmers' income.

In summary, the role of digital technology to empower farmers to increase their income presents different characteristics in different regions of Anhui Province. In order to give full play to the potential of digital technology, each region should formulate targeted development strategies according to its own economy, agricultural industrial structure and resource environment, etc., to promote the in-depth integration of digital technology and agricultural production, and to provide more support for farmers to increase their income.

6. Summary

According to the in-depth research and data collection on digital village construction in Anhui Province, the following important results and findings can be summarized:

(1) Accelerated infrastructure construction: Anhui Province has made remarkable progress in digital village infrastructure, such as 5G network coverage, fiber to the village, and construction of rural e-commerce service stations, providing a solid foundation for the development of digital villages.

(2) Preliminary formation of the digital layout of the agricultural industry: Anhui Province is actively promoting the digital layout of the entire chain of agriculture, including the digital reform of agricultural production, management, services and rural governance.

(3) Digital applications and services are constantly enriched: through the integration of all kinds of resources by digital technology, Anhui Province has made positive

progress in the fields of agricultural industrial Internet, intelligent agriculture and digital governance, effectively improving the efficiency of agricultural production and the level of rural governance.

(4) Challenges and problems: Although Anhui Province has made certain achievements in the construction of digital villages, it still faces challenges such as lagging behind in the construction of informatization infrastructure, low acceptance of digital governance among rural residents, and a lack of big data talents.

Based on the above analysis, we put forward the following suggestions to construct an index system that can assess and evaluate the construction of digital villages, promote the construction of digital villages in Anhui Province, and help the development of rural revitalization in China:

(1) Construction of a comprehensive indicator system: focusing on the core areas and key links of digital village construction, a comprehensive indicator system including infrastructure construction, digitization of the agricultural industry, digital applications and services, and digitization of rural governance will be constructed.

(2) Clarify the weights of indicators and evaluation standards: according to the importance and urgency of each indicator, clarify the corresponding weights and formulate specific evaluation standards, so as to quantitatively assess and evaluate the construction of digital villages.

(3) Strengthening data collection and analysis: establishing a sound mechanism for data collection and analysis, and regularly monitoring and evaluating indicators to ensure the accuracy and timeliness of data.

(4) Strengthening policy guidance and support: to address the shortcomings and problems in the construction of digital villages, formulate targeted policies and measures, increase financial investment and support, and guide social capital to participate in the construction of digital villages.

(5) Enhancing the digital literacy of rural residents: Enhancing the digital literacy and application capacity of rural residents through education and training, and increasing their acceptance of and participation in digital governance.

(6) Strengthening the construction of talent teams: cultivate and introduce a group of digital village construction talents who understand technology, are good at management, and know how to run a business, so as to provide talent guarantee for the sustainable development of digital villages.

By building a scientific and reasonable assessment and evaluation index system for digital village construction, it can effectively promote the construction of digital villages in Anhui Province and even the whole country, and help the cause of rural revitalization to flourish. At the same time, it also needs the joint efforts and continuous investment of the government, enterprises and all walks of life to form a good atmosphere to promote the construction of digital countryside.

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