

Original Paper

Seizing the Opportunities of the Digital Economy to Promote the Comprehensive Revitalization of Rural Areas

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Abstract

As an important driving force for modern economic development, the digital economy is profoundly transforming traditional industries and lifestyles. Digital technology is a key component of new-quality productive forces and is crucial for the modernization of agriculture and rural areas. The digital economy reshapes agricultural productivity through informatization, breaks geographical boundaries, enhances the market competitiveness of agricultural products, and increases farmers' incomes. However, the development of the digital economy in rural areas faces challenges such as inadequate infrastructure, insufficient industrial integration, and a lack of digital literacy. To address these challenges, this paper proposes practical pathways including strengthening digital infrastructure construction, promoting the digitalization of rural industries, empowering the modernization of rural governance, and accelerating the training of digital talents. These measures can boost the high-quality development of agriculture and rural areas and achieve the comprehensive revitalization of rural areas.

Keywords

digital economy, rural revitalization, high-quality development

1. Introduction

Technology changes the world, and the digital age leads the future. The Third Plenary Session of the 20th Central Committee of the Communist Party of China proposed to “accelerate the all-round and full-chain popularization and application of new-generation information technologies”, “improve the system for promoting the in-depth integration of the real economy and the digital economy”, and “foster new industries and new business forms in rural areas”. Digital technology plays a vital role in the formation and development of new-quality productive forces. Developing the digital economy is the only way to promote high-quality economic development and an important engine for advancing

Chinese-style modernization[1]. In the journey of advancing the comprehensive revitalization of rural areas, we must seize the historic opportunities brought by the digital economy, promote the in-depth integration and innovative development of agriculture, rural areas and the digital economy, so as to inject new momentum and vitality into the modernization of agriculture and rural areas.

2. Internal Mechanisms of the Digital Economy Driving the Comprehensive Revitalization of Rural Areas

2.1 Seizing Development Opportunities to Advance the Modernization of Agriculture and Rural Areas

As a core part of the grand blueprint of Chinese-style modernization, the modernization of agriculture and rural areas is not only the key to promoting the high-quality development of agriculture and rural areas, but also a strategic choice for building a great modern socialist country in all respects. In this process, with its remarkable features of cross-time-and-space, high circulation, low cost and high efficiency, the digital economy has become an important force driving rural revitalization[2].

First, the digital economy reshapes agricultural productivity through informatization, leading the transformation of traditional agriculture from experience dependence to data-driven development, accelerating the modernization of agricultural production methods, and providing strong support for the precision and intelligence of agricultural production. Second, the digital economy breaks geographical boundaries, enabling agricultural producers to establish more direct connections with consumers, promoting the transformation of agricultural product operations towards marketization, scale and branding, and effectively improving the economic benefits of agricultural producers. Therefore, empowering rural revitalization with the digital economy can not only profoundly change farmers' production and lifestyles, but also significantly improve the production efficiency of agriculture and rural areas, gathering a powerful force to achieve the grand goal of agricultural and rural modernization[3].

2.2 Accelerating Transformation and Upgrading to Promote High-Quality Development of Agriculture and Rural Areas

Faced with challenges such as rising labor costs, mismatched output benefits, and industrial simplification, the traditional agricultural economy urgently needs transformation, and the application of digital technology has become the key to rural revitalization. The integration of the digital economy can promote the intelligent upgrading of rural industries, improve efficiency and sustainability. At the same time, it can change the traditional sales model of agricultural products, promote product diversification and characteristics, enhance market competitiveness, and increase farmers' incomes.

In addition, the digital economy creates non-agricultural jobs in rural areas and promotes the diversified development of the rural economy[4]. The digital economy is not only a need to improve the quality of life of rural residents and realize their aspirations for a better life, but also a strategic way to promote the modernization and high-quality development of agriculture and rural areas. Although the digital economy currently faces challenges such as insufficient infrastructure, shallow industrial

integration, a lack of digital skills and limited governance capacity in rural revitalization, measures such as strengthening digital infrastructure construction, accelerating the digitalization of rural industries, improving the modernization level of rural governance and training digital talents can support the comprehensive revitalization of rural areas and the modernization of agriculture and rural areas.

The wide application of technology has spawned emerging industries such as rural e-commerce, rural tourism and smart agriculture, providing farmers with broader employment opportunities and stimulating their enthusiasm for participating in digital transformation[5].

2.3 Bridging the Digital Divide to Realize Rural Residents' Aspirations for a Better Life

Against the background of the new era, rural residents' desire for a high-quality life is constantly growing. Despite historical gaps between urban and rural areas in capital, talents, technology and other aspects, the rise of the digital economy has provided new opportunities to narrow this gap.

Applying the digital concept to rural government services has greatly improved administrative efficiency, realizing the goal of "more data running and fewer people making trips", enhancing rural residents' satisfaction and sense of happiness[6]. Meanwhile, the popularization of e-commerce platforms has broken the boundaries between urban and rural areas, made up for the shortcomings of rural digital development, promoted the upgrading of rural consumption structure, realized the national sales of high-quality local products and the entry of high-quality external goods into rural areas, and significantly improved the quality of life and consumption experience of rural residents. These measures help fundamentally solve the unbalanced urban-rural development and inadequate rural development, and meet rural residents' pursuit of a better life.

3. Challenges Faced by the Digital Economy in Promoting the Comprehensive Revitalization of Rural Areas

3.1 Inadequate Digital Infrastructure Construction

Empowering rural revitalization with the digital economy is greatly restricted by infrastructure conditions, especially in the vast rural areas of China, where the popularization and application of information technology still face many challenges.

First, basic network facilities such as optical fiber networks and 5G base stations have not yet achieved full coverage, restricting the in-depth application of advanced technologies such as cloud computing, the Internet of Things and big data in rural areas, making it difficult to fully tap the potential of data resources. Meanwhile, the construction of public data platforms and application support platforms in rural areas lags behind, hindering the circulation of key data such as agricultural production, rural environment and farmers' needs, thus limiting the scientificity, effectiveness and accuracy of governance decisions[7].

Second, the funding for digital infrastructure construction in rural areas mainly comes from national financial subsidies, facing the challenge of single and insufficient funding sources, which significantly

affects the sustainability and stability of the rural digitalization process.

Third, the lag in digital infrastructure construction also exposes shortcomings in risk prevention and legal systems, increasing security risks such as information leakage, weakening rural residents' trust and acceptance of the digital economy, and hindering the popularization and in-depth application of digital technology in various fields of agricultural production and daily life.

3.2 Insufficient Digital Literacy and the Need to Improve Governance Capacity

Empowering the comprehensive revitalization of rural areas with the digital economy is a systematic project that requires enhanced digital literacy, the gathering of digital talents and the overall improvement of rural governance capacity. However, due to long-term backward development, a shortage of digital talents and low governance levels in rural areas, many challenges arise in the modernization process.

First, rural residents generally have low awareness and acceptance of the digital economy. Many young people with learning potential choose to go to cities for opportunities, resulting in the left-behind groups in rural areas generally having low education levels, advanced age, limited ability to accept new things and slow ideological renewal. These factors restrict rural residents' in-depth understanding and mastery of digital technology and the digital economy, leading to generally low digital literacy and poor ability to accept digital technology.

Second, there is a shortage of rural digital talents. On the one hand, there is an obvious shortage of professional training for digital talents in rural areas, which directly leads to a shortage of digital talents, further limiting the wide popularization and in-depth application of network technology in rural areas and hindering the further progress of rural revitalization. On the other hand, the significant gap between urban and rural development levels makes high-quality talents more inclined to stay in cities, and rural areas face great challenges in attracting and retaining digital talents, making it difficult to effectively gather sufficient talent resources to support the transformation and upgrading of the industrial structure. Third, the level of digital governance needs to be urgently improved. China's rural areas are vast and difficult to govern. Under the framework of the traditional public administration system, there are problems such as overlapping departments, difficult coordination and low management efficiency. Meanwhile, due to the low level of digitalization, problems such as information silos, information barriers and fragmented governance need to be solved urgently, which restrict and affect the democratization, scientization and modernization of rural governance to a considerable extent[8].

3.3 In-Depth Integration of the Digital Economy and Rural Industries

At present, rural areas in China are at an important turning point from the traditional industrial model to the digital and intelligent industrial transformation and upgrading, but the penetration and popularization of the digital economy in production, operation and sales are still very limited.

First, the digitalization process in the agricultural sector is still in the initial stage, especially in core processes such as R&D innovation and production practice, where digital technology has not been fully integrated, limiting farmers' ability to capture market trends and thus affecting the growth potential of

their economic income.

Second, the rural industrial structure focuses on basic production fields such as planting and breeding, while the downstream links of the industrial chain such as product deep processing and marketing are underdeveloped, becoming a key factor restricting the improvement of agricultural product added value.

Third, the single industrial structure and low level of integration of the three industries hinder the construction of a modern rural comprehensive operation network, leading to low overall operational efficiency of the agricultural industrial chain and difficulty in forming an efficient and coordinated development pattern[9].

Finally, rural industries face serious homogeneous competition. Farmers or enterprises in the same region often fall into the dilemma of identical products, lacking unique brand building and differentiated market positioning. This not only intensifies market competition, but also puts huge downward pressure on product prices, compressing profit margins extremely, which is not conducive to the sustainable and healthy development of rural industries.

4. Strategies for the Digital Economy to Promote the Comprehensive Revitalization of Rural Areas

4.1 Focusing on Digital Infrastructure Construction

General Secretary emphasized that “infrastructure is an important support for economic and social development”. The development of rural revitalization requires strong digital infrastructure support. Specifically, we should strengthen network coverage and speed improvement, focus on data center construction and the popularization of intelligent terminals, so as to promote the full implementation of the digital economy in rural areas[10].

The government should promote the construction of high-quality broadband networks in rural areas to ensure that every village can access high-speed Internet, including expanding the coverage of optical fiber networks and improving the popularity of 4G and 5G network services. By improving network bandwidth and reducing network delay, we can effectively support digital economy applications such as rural e-commerce, smart agriculture and online education.

Governments and enterprises should increase investment in rural data centers and build regional data storage and processing centers. Data centers can not only provide data storage and computing services for local enterprises and institutions, but also improve data processing capabilities and support big data analysis and cloud computing services. The construction of data centers can improve the digital service capacity of rural areas and support various applications of the digital economy.

Intelligent terminals are important carriers for the application of the digital economy. To realize the wide application of the digital economy in rural areas, it is necessary to popularize terminals such as smart phones, tablet computers and smart home devices. Governments and enterprises can reduce the purchase cost of intelligent terminals through subsidies and preferential policies to encourage rural residents to use these devices. Meanwhile, to promote the popularization of terminal equipment, we

need to provide supporting technical training and support to help farmers master usage skills and improve digital literacy.

4.2 Advancing the Modernization of Rural Governance

General Secretary pointed out: “We should make good use of modern information technology, innovate rural governance methods, and improve the level of good rural governance.” The development of the digital economy not only effectively drives rural economic development, but also increasingly penetrates into all fields of social development, triggering profound changes in social governance and empowering the modernization of rural governance.

First, promote the transparency and democratization of rural management and decision-making. Mass participation is an important feature of rural digitalization. We should vigorously build rural information service platforms and e-government systems, guide rural residents to use smart phones and other terminal equipment to provide a more diversified platform for rural residents to participate in democratic politics through online voting, opinion feedback and social media. Give full play to the digital supervision function of big data, optimize the operation process and decision-making links of village-level organizations, and publicly display key information related to people’s well-being, effectively solving the dilemmas of single supervision methods and opaque information.

Second, promote the scientization of grassroots governance[11]. Digitalization creates favorable conditions for promoting the scientization of rural governance. We should vigorously develop digital rural governance platforms such as smart government affairs, smart industries and smart culture, and promote the digitalization, intelligence and coordination of governance processes to realize information sharing and improve management efficiency. Focus on introducing technologies such as artificial intelligence and big data to deeply mine and scientifically analyze rural governance data and improve the scientificity of rural governance decision-making. Promote the interconnection among various subjects of rural governance through digitalization, and strive to achieve the effective integration and collaborative governance of resources.

Third, promote the precision of rural public services. The digital era brings new possibilities for grassroots government organizations to carry out personalized and precise public services. Relying on digital and intelligent technologies, we should vigorously promote rural smart education, smart medical care, smart legal services, as well as applications such as “one-code access” to government affairs, “one-code handling” of financial services and “one-code knowledge” of benefit services, and implement the “digital technology literacy” program for special groups, so as to provide rural residents with better, more direct and more convenient services, enhance the accessibility of rural public services, and jointly create a new chapter of rural digitalization.

4.3 Promoting the Digitalization of Rural Industries

The digital economy has significantly improved the intelligent level of agricultural production through the application of modern technologies, injecting new impetus into rural revitalization. Precision

agriculture realizes the refined management of the agricultural production process using modern technical means. The application of Global Positioning System (GPS), Geographic Information System (GIS), Remote Sensing (RS) and unmanned aerial vehicles can provide real-time data on soil, crops and climate.

These technologies enable farmers to understand the specific conditions of each piece of land in detail, including soil fertility, humidity, crop growth status, etc. Based on relevant data, farmers can formulate personalized planting plans and optimize fertilization and pesticide spraying strategies, so as to improve crop yield and quality, reduce resource waste and environmental pollution. In addition, precision agriculture helps reduce labor demand and improve the efficiency of agricultural production.

The intelligent irrigation system uses sensors, data analysis and automatic control technology to monitor soil humidity, weather conditions and crop needs in real time, and automatically adjust the irrigation volume according to the actual situation, which not only reduces the waste of water resources, but also improves the efficiency of water resource utilization. Combined with the weather forecast system, intelligent irrigation can automatically adjust the irrigation plan according to the weather forecast to avoid irrigation during rainfall, further saving water resources. The system can also provide data analysis reports to help farmers optimize irrigation strategies and improve crop growth quality.

Agricultural product traceability technology uses blockchain, Internet of Things and other means to realize the whole-process tracking from production to sales. The traceability system can record detailed information of each link. With the help of the traceability system, consumers can understand the source and processing process of products and enhance their trust in food quality. For farmers, traceability technology not only improves the market competitiveness of products, but also helps build brand image.

Promote the in-depth integration of agriculture with other industries. We should break industrial barriers with digital technology, promote the in-depth integration of agriculture with the secondary and tertiary industries, promote the effective connection of agricultural product production, processing, sales and other links, explore new sales models such as online live-streaming sales and short-video marketing, and take a comprehensive development path to revitalize rural industries.

Finally, give full play to the guiding role of government departments. Use digital technology to digitally integrate and utilize rural unique customs, historical sites, natural landscapes and other resources, explore diversified and characteristic digital transformation paths, and inject strong impetus into the sustainable development of the rural economy[12].

4.4 Accelerating the Training of Digital Talent Teams

Talent is the key to rural revitalization. To promote rural revitalization through the digital economy, the key is to cultivate a digital talent team that can go deep into rural areas, serve for a long time and achieve practical results.

First, strengthen the digital awareness of rural residents, eliminate farmers' misunderstanding of the high threshold of the digital economy, guide them to change traditional thinking, recognize the digital

economy and stimulate creativity through publicity, education and actual economic benefits.

Second, strengthen rural digital skills training, increase financial and educational investment in rural areas, adopt online and offline teaching models, establish a digital skills training system that meets the needs of farmers and industrial development, improve farmers' digital technology application capabilities, and train a group of practical talents who can lead rural revitalization.

Third, increase the introduction and training of digital talents, attract and reserve digital talents through measures such as the science and technology commissioner system, agricultural technical talent information database and talent introduction guarantee mechanism; use college student practice teams and "internet celebrity" sales models to enhance the influence of rural enterprises and the attractiveness of rural areas to digital talents.

To retain digital talents, we can optimize business processes and integrate resources through digital means, build a service platform integrating policy consultation, technical services, financing support, talent recruitment and training, narrow the urban-rural gap, encourage digital talents to take root in rural areas, fully serve the digital transformation of rural industries, and contribute to rural revitalization.

5. Conclusion

In summary, the digital economy construction for rural revitalization can start with infrastructure construction, industrial development, social governance and public services, so as to build a sound digital rural ecosystem. In addition, we can activate the rural economy by accelerating the construction of information infrastructure, promoting the digital transformation of agriculture, and fostering new industries and new business forms in rural areas; improve the modernization level of rural governance by building a digital governance system and promoting the digital transformation of rural governance; enhance rural residents' sense of happiness and gain by optimizing the supply of public services and strengthening digital skills training. These measures can promote the in-depth integration of digital rural construction and rural revitalization, thus promoting the high-quality development of the rural economy.

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