

# Research on the Path of Rural Revitalization Enabled by Digital Economy

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**Abstract:** First of all, this paper introduces the background of rural revitalization strategy and the development of digital economy, and then analyzes the mechanism of rural revitalization enabled by digital economy. Secondly, the paper deeply analyzes the main challenges faced by digital technology entering rural industries, including infrastructure, talent shortage, policy environment and innovation level, and discusses how to deal with these challenges and realize agricultural transformation and upgrading. Finally, the paper puts forward a targeted realization path and a set of systematic path framework, covering multiple dimensions such as infrastructure construction, talent cultivation, policy support and industrial integration.

**Keywords:** Digital economy, Rural revitalization, Information technology, Path study.

## 1. Introduction

On February 13, 2024, the document "Opinions of the Central Committee of the Communist Party of China and The State Council on Comprehensively Promoting the Key Work of Rural Revitalization in 2023" pointed out that we must persist in solving the problems of "agriculture, rural areas and farmers" and comprehensively promote rural revitalization. Driven by the rapid progress and application of digital technologies such as mobile Internet, big data, cloud computing and artificial intelligence, the digital economy has become a new engine driving global economic growth and is increasingly becoming a key driving force for global economic growth and social progress. Especially in the context of the rural revitalization strategy, the empowering role of the digital economy in rural revitalization has become more prominent.

This paper analyzes the mechanism of rural revitalization enabled by digital economy, the main challenges faced by digital technology entering rural industries, and puts forward the targeted realization path. This study not only systematically constructs the theoretical model and path research of rural revitalization enabled by digital economy, but also has certain theoretical and practical significance for promoting the sustainable and healthy development of rural areas in China. Future research needs to pay more attention to the update iteration of digital technology and its impact on the new model of rural revitalization, so as to continuously optimize and deepen the practical strategy of rural revitalization empowered by digital economy.

## 2. Rural Revitalization Strategy and Digital Economy Development

The rural revitalization strategy was first put forward in the report to the 19th CPC National Congress. It not only has a profound historical background and realistic basis, but also is a major strategic decision made from the overall development of the Party and the country. Under the background of globalization and informatization, digital economy, as a new economic form, is having a profound impact on the global

economy.

The term "Digital E-economy" was first coined by Tapscott and Don in 1996, who argued that the digital economy is a new economic form. As a product of the new era, the digital economy has not only changed the mode of production, lifestyle and way of thinking, but also reshaped the global economic landscape. In the research of domestic scholars, Ma Jiantang (2018) believes that the connotation of digital economy is the marketization of information technology, which is the result of the extensive application of a new generation of information technology, and thus produces many new industries, new business forms and new models [1]. He Weilu et al. (2023) believe that in the era of Internet economy, e-commerce has become an important force to promote economic development and rural revitalization [2]. Cen Mingdan (2023) believes that digital economy is an important engine to promote rural revitalization and the key to driving high-quality social development [3].

In general, the digital economy is based on technologies such as artificial intelligence, blockchain, Internet of Things and cloud computing, which inherits the development model of industrial economy and agricultural economy, marking the development of human society from agricultural civilization to industrial civilization, and finally to intelligent civilization. Existing studies show that most scholars believe that digital economy can promote the development of rural revitalization, and has distinct practical significance in innovating production factors, improving living systems and modes, and promoting social development [4].

## 3. Mechanism of Rural Revitalization Enabled by Digital Economy

### 3.1. Improve Agricultural Production Efficiency

The application of intelligent agricultural equipment and precision agriculture and data analysis have played a crucial role in improving agricultural production efficiency. Through the promotion of intelligent agricultural machinery, such as driverless tractors, intelligent planters and harvesters,

agricultural production has been automated and intelligent. The use of Internet of Things technology can monitor the soil moisture, temperature and crop growth of farmland in real time, providing strong data support for precision agriculture. In addition, with the help of satellite remote sensing, drones and other advanced technologies to obtain detailed farmland data, analysis of soil fertility and the occurrence of diseases and pests, etc., to guide crop planting and fertilization. At the same time, big data analysis technology is introduced to deeply mine the data in the agricultural production process and provide scientific decision support for agricultural production. Through the application of intelligent agricultural equipment and the combination of precision agriculture and data analysis, agricultural production efficiency has been significantly improved, and new vitality has been injected into the development of modern agriculture.

### **3.2. Optimize Resource Allocation and Product Circulation**

Digital technology has built a complete supply chain system of agricultural products, making every link from production, processing, storage to sales seamless. The use of advanced logistics technologies and management strategies, such as cold chain logistics and smart warehousing, can ensure that agricultural products remain fresh and of high quality during circulation. In addition, the application of digital technology has improved the accuracy and efficiency of agricultural production, and through tools such as the Internet of Things and big data analysis, the fine management of agricultural production links has been achieved, thereby improving the quality and yield of agricultural products. The construction of digital sales channels, such as e-commerce platforms for agricultural products, has opened up new channels for online sales of agricultural products and expanded their market coverage. Through these technologies, we can not only optimize the supply chain of agricultural products, reduce the circulation cost, but also improve the market competitiveness of agricultural products and promote the sustainable development of agricultural industry.

### **3.3. Increase the Added Value of Agricultural Products**

With the rapid development of digital technology, there is a trend of innovative development in the marketing methods of agricultural products, such as the use of social media and short videos to publicize and promote agricultural products, and products can be presented to consumers through processing, packaging and innovative forms, which can increase the added value of agricultural products and reduce the cost of brand building. Many products have established traceability systems to realize the whole process traceability from farmland to table, ensure the quality and quality safety of agricultural products, and meet the diversified needs of consumers for agricultural products.

### **3.4. Promote the Diversification of the Rural Economic Structure**

Digital economy promotes the development of rural characteristic industries such as rural tourism, leisure agriculture, etc. By tapping rural cultural resources, developing rural cultural tourism products, such as farmhouse music and folk custom experience, to attract tourists and consumers and increase farmers' income. At the same time, the development of the digital economy has significantly

lowered the threshold for innovation and entrepreneurship, giving farmers the opportunity to cultivate new agricultural industries and new forms of business by developing family farms and establishing farmers' professional cooperatives. The use of Internet platforms also makes it more convenient to conduct business, attract more talents and capital to flow to the countryside, and promote the diversification and all-round development of the rural economy.

## **4. Problems and Challenges Faced**

The digital economy can not only effectively improve agricultural production efficiency, optimize resource allocation and product circulation, enhance the added value of agricultural products, and promote the diversified development of rural economic structure, so as to promote the revitalization of rural industries in an all-round way. The digital economy is penetrating into various fields of rural production, life, culture and governance with new ideas, formats and models, and has produced remarkable promoting effects on the development of rural economy and society. However, from the perspective of practical application, there are still contradictions between the integrated development of digital economy and rural industry, and the problems such as backward infrastructure construction, insufficient supply of talents, inadequate policy guarantee, and low level of innovation are prominent.

### **4.1. Backward Rural Infrastructure Construction**

Due to the small population and wide distribution in rural areas, and the relatively backward economic development, there are obvious shortcomings in the popularization of digital technology, warehousing and logistics, information circulation and sharing, financing and other aspects in rural areas. These factors jointly restrict the popularization and application of digital technology in rural areas. First, the spread of digital technology is limited. Due to the complex terrain in China's rural areas, more mountainous areas, infrastructure construction is difficult, some remote rural optical fiber and 4G network has not achieved full coverage, network signal instability, high broadband charges, network bandwidth is not enough and other problems are more common, especially those digital technologies closely related to e-commerce platforms and monitoring facilities, the popularity of rural areas is still very low. This undoubtedly increases the difficulty of promoting digital technology in rural areas. Secondly, logistics and storage facilities are inadequate. Most of the agricultural products are fresh food, which has higher requirements for logistics timeliness and storage conditions. However, the current cold chain transport and cold storage facilities in rural areas are obviously insufficient, resulting in the sales and market expansion of agricultural products are affected, which seriously restricts the development of rural economy. Third, the flow and sharing of information is hindered. Information infrastructure update fast, difficult to maintain, maintenance and operation in rural areas lack of personnel maintenance, directly affect the efficiency and quality of digital access, is not conducive to the application and promotion of rural agricultural informatization. The data systems of each platform are relatively independent, and there are cases where units with data are reluctant to open and units in need cannot get the data. Enterprises are reluctant to carry out open sharing of data due

to privacy protection or profit motive [5], which seriously restricts the cross-industry, cross-regional and cross-departmental interconnectivity of agriculture-related data, which not only leads to repeated data collection, repeated screening and repeated processing, but also difficult to transform fragmented and inefficient data resources into resource advantages, resulting in the formation of a value co-creation mechanism. Rural financing difficulties. Due to the relatively backward development of rural areas, some social capital is reluctant to invest in new digital supporting facilities in rural areas, resulting in the slow construction of digital countryside.

## 4.2. Lack of Digital Talents in Rural Areas

The shortage of digital talents in rural areas is more serious, especially those who have mastered digital technology and understand agricultural production and management. Due to the long-term one-way flow of population from rural to urban areas, China's rural labor force faces the dual challenges of population hollowing out and shortage of professional talents, resulting in a lack of young skilled talents who can promote digital technologies. In addition, residents in many underdeveloped areas are not digital literate, farmers have a low level of education, are unfamiliar with smart phones and network operations, and are difficult to quickly adapt to and apply high-tech means. For example, in the sale of agricultural products, many farmers do not know how to register and use e-commerce platforms, let alone take advantage of cloud computing and big data analysis tools to study market trends. Although the current support for rural digital talent has improved, there is still a lack of digital talent rooted in the countryside. Due to the gap between urban and rural development levels, high-quality talents prefer to stay in cities, which makes it difficult for rural areas to attract a large number of digital talents to participate in construction. Few college graduates are willing to return to their hometown to start a business, which is also because rural development is relatively backward, and the treatment in all aspects is quite different from that in the city. At the same time, some regions lack confidence and attention to the application of digital technology in rural areas, and lack incentive policies to attract and retain talents. Due to the lack of incentive mechanism and long-term mechanism for the construction of digital talents, it is difficult to cultivate rural digital talents, attract and retain talents.

## 4.3. Insufficient Policy Protection

At present, the Party Central Committee has attached great importance to the role of the digital economy in rural revitalization, and has achieved initial results in top-level design. A series of documents and plans, such as the "Key Points for Digital Rural Development in 2023", the "Action Plan for Digital Rural Development (2022-2025)" and the "Digital Rural Development Strategy Outline", are aimed at promoting rural revitalization enabled by the digital economy. However, at the specific implementation level, it still faces the problem of insufficient supply of fiscal, financial and scientific and technological support policies. First of all, the fiscal support policy is not enough and needs to be strengthened. Fiscal policy is the cornerstone of promoting the deep integration of the digital economy and the real economy, and plays a key role in enhancing confidence in rural revitalization, stabilizing the agricultural market and expanding effective investment in rural areas. Therefore, the

national financial support for the digital economy must be synchronized with the development speed of rural revitalization. Secondly, there are deficiencies in financial support policies, and the source of funds is relatively simple. The promotion of rural revitalization by digital economy requires the construction of large-scale digital infrastructure, which requires a large amount of capital investment in the early stage. Third, science and technology support policies are insufficient, and science and technology support capacity needs to be strengthened. Although the digital economy is developing rapidly, as an emerging field, it has not yet fully adapted to the needs of rural revitalization. In the fields of basic research and key technology research related to the digital economy, there are still insufficient R&D investment, imperfect scientific research team system, and insufficient supply of key technologies.

## 4.4. The Degree of Industrial Integration Is Not High and the Level of Innovation Is Low

In China's rural areas, the degree of integration between the first, second and third industries is not ideal, and the synergistic development effect between the digital economy and other industries such as agriculture and rural service industry is not significant enough. This is mainly reflected in the limited scope of application of digital technology, and the mutual support and promotion between industries is not strong. This situation limits the overall development and upgrading of rural economy. Secondly, innovation and entrepreneurship activities in rural areas are relatively insufficient, which restricts the formation and development of new industries and new business forms to a certain extent. Although China has made some progress in promoting the digital transformation of agriculture, the technological architecture capacity and industrial model innovation are still weak. The lack of an effective mechanism to promote the innovation mode of deep integration of digital technology and various industries in rural areas has directly affected the optimization and upgrading of industrial structure in rural areas. From the perspective of industrial chain, China's rural industry is still in a low position in the global industrial chain and value chain, most of which are in the middle and low-end links [6]. This leads to low added value, competitiveness is not strong, but also affects the sustainable development of rural industries and farmers' income growth.

## 5. Conclusions and Suggestions

The use of digital economy to comprehensively promote the development of rural industries is an important measure to achieve rural revitalization at this stage. However, how to realize the effective link between the digital economy and the rural industry, ensure the flexible application of digital information technology in the rural revitalization, and better alleviate the pains of the initial integration of the digital economy and the rural industry are the problems that must be solved to realize the digitalization of the rural industry at present. In view of the existing problems, this paper puts forward a set of systematic path framework, including strengthening infrastructure construction, strengthening talent training, increasing policy support, promoting industrial integration and other dimensions.

(1) Optimize the development environment of digital industry and strengthen the construction of rural

infrastructure. In order to promote the development of digital countryside, it is necessary to continuously strengthen the construction of infrastructure related to digital economy, so as to expand the development scale and development level of digital industry. Rural development cannot be separated from the support of infrastructure. In the process of promoting the construction of digital countryside, it is necessary to attach importance to the comprehensive application of digital technology, integrate digital engine into the construction of rural infrastructure, constantly increase the capital investment in the construction of rural digital infrastructure, build more Internet receiving stations, and provide stable Internet access for remote areas [7]. Ensure comprehensive and systematic rural development. In order to solve the problems existing in the construction of digital countryside, it is necessary to improve the efficiency of co-construction, sharing and sharing of infrastructure, and establish a solid digital foundation for the revitalization of rural industry.

(2) Strengthen the cultivation of digital rural talents to ensure the support of rural industrial development talents. Digital talents are the basis for digital economy to empower rural industries. It is necessary to accelerate the cultivation of high-quality comprehensive talents and vigorously cultivate digital technical talents. In order to achieve the goals and tasks of the rural revitalization strategy, it is necessary to attract more talents to participate in rural construction. Fully activate the elements of digital talents, not only to strengthen the guidance of digital skills, the use of online and offline channels to carry out digital village special training. Actively cooperate with relevant colleges and universities, set up skills training courses, hire agricultural experts to guide industrial construction, etc. [8], establish a multi-level, multi-form and multi-faceted new digital talent education system, but also tap and cultivate rural local talents, use multiple incentive mechanisms to stimulate rural self-development motivation and vitality, and guide contemporary aspiring young people to participate in the revitalization of rural industries. Establish a strong talent support and security system to provide an intellectual basis for the development of rural industries and help rural industries develop at a high quality and level.

(3) Government policy support. In order to promote the role of the digital economy in rural revitalization and achieve comprehensive rural development, government agencies need to take the following four measures. First of all, increase financial support, including providing tax relief, talent support and incentive pilot measures, while ensuring that the digital culture industry policy is financially supported, increase financial investment in the field of digital economy, and ensure that fiscal policy can effectively support the implementation of the rural revitalization strategy. Second, expand the source of financial funds. In addition to traditional loans from financial institutions, more funds can be attracted to the construction of the digital economy for rural revitalization through various ways such as government guidance funds and social capital cooperation. Third, strengthen the ability to support science and technology. Increase investment in basic research and research and development of key technologies related to the digital economy, establish a sound scientific research team system, and provide adequate supply of key technologies to meet the needs of rural revitalization. Finally, strengthen the cooperation and exchanges with academic research institutions and related industries, adopt the strategy of combining external introduction and internal incubation to

cultivate diversified entities, and create cultural products with local characteristics, ethnic customs and humanistic characteristics.

(4) Promote the scale, integration and intensification of rural industries. Actively promote the deep integration of the digital economy and the scale, integration and intensification of rural industries, and promote the transformation and upgrading of rural industries to digital. First of all, actively promote digital technology for the digital management of rural land, so that it covers all aspects of agricultural production, including sowing, fertilization and so on. At the same time, improve farmers' ability to obtain information, so that they can more rationally plan agricultural production and product types, reduce energy consumption costs, opportunity costs and sunk costs of agricultural production, and provide a solid guarantee for the efficiency and modernization of rural industries. Secondly, promote the digitalization of rural industrial circulation and vigorously develop rural inclusive finance. Specifically, through the establishment of a platform to benefit agriculture industry, break the geographical and time restrictions on product sales, solve the incentives and restrictions of slow sales and other problems from the source, realize the free flow of personnel, technology and other elements, and inject strong impetus into the development of rural industries; Introduce and improve the relevant inclusive financial system, introduce a large number of inclusive finance to participate in the development of rural industries, and break through capital restrictions. At the same time, with the development of the digital economy, vigorously cultivate emerging economic models such as rural e-commerce live streaming and e-commerce sales, so that they can effectively connect with the terminal sales of agricultural products and industrial development, and constantly increase farmers' income. Finally, through digital technology, rural primary, secondary and tertiary industries have achieved deep integration. By enhancing the competitiveness and innovation ability of agriculture, we can promote the integration of agricultural industrial chain and the upgrading of value chain, provide new impetus for the new development model of rural areas, and improve the balance, harmony and ecological friendliness of rural industrial layout.

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