Research on the Realization Path of High-Quality Agricultural Development Enabled by Digital Economy

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Abstract. Digital economy plays a vital role in promoting the high-quality development of agriculture, especially in optimizing the agricultural industrial structure, improving production efficiency and promoting the increase of farmers' income. However, the deep integration of digital economy and agricultural modernization still faces many challenges, such as weak digital infrastructure, insufficient technological innovation capacity, lack of talent and other problems. By analyzing the successful experience of digital agriculture in Zhejiang Province, this paper discusses how digital economy helps the modernization of three agricultural systems (industrial system, production system and management system) from the two dimensions of technology empowerment and system empowerment. It is found that the wide application of digital technology is conducive to the realization of the intelligence and precision of agricultural production, while the institutional innovation provides a strong guarantee for the development of digital agriculture. In order to further promote the high-quality development of digital economy, this paper puts forward countermeasures and suggestions such as strengthening the construction of digital infrastructure, improving the ability of technological innovation, and improving the policy support system. These measures will help to achieve high-quality development of agriculture and promote the goal of rural revitalization and common prosperity.

Keywords: Digital economy; Agricultural modernization; Technology empowerment; System empowerment; High-quality development.

1 Introduction

The digital economy plays a crucial role in promoting the high-quality development of agriculture. With the continuous deepening application of digital technology in various stages and links of agriculture, the enabling effect brought by it has become more and more significant. However, in the process of promoting the modernization of agricultural industrial system, production system and management system, there are still a series of challenges and difficulties, which to some extent hinder the deep integration of digital economy and agriculture. Specifically, these challenges include the lag of digital infrastructure construction in rural areas, the lack of innovation ability of agricultural

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digital technology, the weak links of agricultural digital talent cultivation, the low degree of integration of digital economy and rural industry, as well as the imbalance of digital agricultural structure. The existence of these problems has seriously restricted the release of the efficiency of the digital economy in enabling the development of agricultural modernization, and has become an obstacle to the high-quality development of agriculture[1-4].

In order to effectively respond to these problems, we must take targeted measures and formulate practical, timely, effective and practical policies and measures. These measures should be able to fundamentally solve the pain points and difficulties, thus more fully releasing the potential of the digital economy and ensuring the steady progress of high-quality agricultural development. Specifically, under the logical framework of this paper, the digital economy promotes the modernization development of the three major agricultural systems through the two dimensions of technology empowerment and system empowerment, and then promotes the high-quality development of agriculture. In order to explore how to better empower the realization path of high-quality agricultural development of digital economy, we can give full play to the integration and reconstruction of digital technology and system in the construction and optimization of the three modern agricultural systems from the two dimensions of technology empowerment and system empowerment. We need to go deep into the industrial system, production system and management system, find precise and targeted measures in line with the actual situation, and further promote the application dimension and depth of digital economy in the agricultural field, so as to achieve high-quality development of agriculture. Before demonstrating the realization path, it is necessary to select the regions with a high current level of digital agriculture development in China for analysis, which is conducive to summarizing the realization path of high-quality development of agriculture based to the characteristics of The Times based on the basic national conditions of China, so as to realize the sublimation from practice to theory. Therefore, the development of digital agriculture in Zhejiang is selected from the perspective of the three systems of technology and modern agriculture. From the perspective of technology empowerment, Zhejiang has shown a strong ability of digital agricultural science and technology innovation. The cooperation between Alibaba, Huawei, Deppon and other enterprises and Zhejiang University of Technology, Zhejiang University and other universities has played a pivotal role in the innovation of digital agricultural technology and become a solid foundation for the development of digital agriculture in Zhejiang. Digital technology to promote the application of modern agriculture three system, has been widely used in planting, fishery, animal husbandry, established the wisdom production system, and through the digital agricultural information service system to realize the traceability of agricultural production process, intelligent and digital, promote the production efficiency and productivity level development, promote the modernization of agricultural production system construction. Digital technologies such as big data and the Internet of Things are used to provide farmers with accurate agricultural management decisions. At the same time, digital agricultural projects such as "Hema Xiansheng" and "Cainiao Logistics" provide farmers with better operational services with the help of digital technologies, which is conducive to the modern development of agricultural management system. The integration of digital

technology with characteristic industries and rural resource elements has given birth to a variety of new agricultural industries and new forms of business, such as shared agriculture, creative agriculture, customized agriculture and experience agriculture, such as Tiantai Wuyuan fruit industry and Zhejiang Qingyu Tang, promoting the modernization of the agricultural industrial system. From the perspective of institutional empowerment, the construction of Zhejiang digital government takes "empowerment + service" as the benchmark, striving to improve administrative efficiency and build a government that people first and people are satisfied with. Zhejiang digital construction to promote the development of digital agriculture provides the system support, in recent years, Zhejiang government successively issued "about the implementation opinions of accelerating the development of digital agriculture", "opinions on accelerating the construction of agricultural informatization", the Zhejiang province digital rural construction "difference" planning " and other documents, promote the elements such as the free flow of data between urban and rural areas, agricultural rural information market construction, strengthen the digital agricultural science and technology innovation, etc., to promote the digital economy and agricultural system depth fusion development, accelerate the construction of modern agriculture system. Based on the development examples of digital agriculture in Zhejiang, both technology empowerment and system empowerment have played an important role in the modernization development of the three agricultural systems, promoted the high-quality development of agriculture, and helped to promote rural revitalization and common prosperity. However, there are also some problems, such as the weak coordination of the development of digital agriculture, the insufficient depth of digital technology application and the inconsistent standards, and the lack of compound talents. Therefore, when analyzing the realization path of high-quality development of agriculture in China, Zhejiang practice provides us with a practical reference, and the exploration of the realization path is also learned from this[5-7].

2 Realization Path of High-Quality Agricultural Development Enabled by Technology Under Digital Economy

Technological empowerment is the key to the digital economy to promote high-quality agriculture. Digital technologies such as Internet, big data, cloud computing and blockchain should be integrated into all links of agriculture, strengthen their application in industry, production and operation system, and improve the level of agricultural digitalization. This will integrate the production factors, optimize the system interaction, realize the horizontal extension and vertical extension of agriculture, and improve the production efficiency and modernization level. Therefore, it is an effective way to enhance the role of the power of technology and promote the digital transformation of the three agricultural systems for agricultural modernization and high-quality development. The following realization paths are discussed from three dimensions to better play the enabling role of digital economy in agriculture.

2.1 Industrial System: Promote the Expansion of Agricultural Functions and Industrial Integration of Digital Technology

The modernization of agricultural industrial system is based on the modernization development of productive forces and production relations. The improvement of productivity is the focus of the production system, and the improvement of production relations is the core of the management system. The interaction between the two supports the modernization of the industrial system, with the focus on industrial expansion and competitiveness enhancement. Digital technology promotes the modernization of agricultural industrial system, realizes the connection of production and marketing of agricultural products, and promotes the extension of industrial chain; promotes the development of agricultural processing industry and realizes the "continuous" of agriculture; optimizes the allocation of agricultural materials and promotes the optimization of agricultural layout. However, the rural digital infrastructure is not sound, the level of technology application and industrial integration is low, it is necessary to strengthen the construction of new infrastructure, improve the degree of digital technology embedding, improve the efficiency of resource allocation, and help the high-quality development of agriculture.

First, the construction of agricultural digital infrastructure, which is the premise of the integration of digital technology and agriculture. Without infrastructure, agricultural digitization is difficult to promote, and modernization and high-quality development are out of the question. Financial support can be provided through low-interest loans and financial subsidies to promote the integration of digital infrastructure in both urban and rural areas, narrow the "first-level digital divide", and promote the development of the agricultural system. At the same time, according to the "Digital Rural Development Strategic Plan", accelerate the construction of rural digital network, to narrow the "digital divide". We also need to carry out pilot subsidies for online information services, improve the supply of information services, and promote agricultural digitalization. As an important factor of production, data needs to strengthen the safety guarantee and establish a long-term mechanism. It includes improving data collection standards and database mechanism, ensuring data quality and application value, strengthening data management and operation, and ensuring the sustainability, stability and security of digital technology empowerment.

Second, digital technology helps to expand agricultural functions. Single agricultural production is out of date, requiring multi-functional development of agriculture, covering production, ecology, culture and so on. Digital technology provides an opportunity for agricultural multi-function to promote the modernization of agricultural industrial system. It is necessary to improve the new infrastructure, realize the sharing of the whole network and the integration of urban and rural areas, and build the digital technology deeply embedded in the agricultural system. In particular, we need to improve the use of digital technologies in weak industries, such as aquaculture, planting and the quality and safety of agricultural products, strengthen the linkage of the agricultural industrial chain, strengthen weak links, innovate all links, and extend the industrial

chain. Digital technology will accelerate agricultural digitalization, expand multi-functional agriculture, promote high-quality development, and give full play to the basic role of agriculture[7-11].

2.2 Production System: Improve the Innovation Capacity and Achievement Transformation of Digital Production Technology

For the production system, the key is to solve the efficiency of agricultural production and agricultural development power. The modernization of agricultural production system aims to optimize the production process and improve the total factor productivity and productivity by introducing advanced technology and new elements. The digital economy provides an opportunity for this. Digital technologies such as the Internet, cloud computing, artificial intelligence and data are embedded in agricultural production as new elements to realize digital transformation, generate digital productivity, and provide new impetus for high-quality development. Digital technology promotes the automation, digitalization and intelligence of the whole production process. To deepen agricultural modernization, we need to strengthen the guidance of technical standards, strengthen technological innovation and digital standards, increase investment in research and development, promote the transformation of technological achievements, increase the participation and contribution of digital technology, to ensure high-quality agricultural development.

The integrated development of digital economy and agriculture requires the establishment of relevant standards and norms to promote the legal and compliant application of digital economy in the process of agricultural production and operation. On the one hand, we need to strengthen the guidance of digital technology standards and continue to deeply promote the digital transformation of agriculture. At the same time, we should constantly promote the establishment and improvement of the index system of agricultural development level, establish a relatively comprehensive and representative index evaluation system with the new development concept as the starting point, and better guide the integration of digital technology into agricultural production., On the other hand, to constantly promote the improvement of digital agricultural standards, mainly the circulation of agricultural products, agricultural products quality, network security standards, so as to further enhance digital standards in promoting the Internet, artificial intelligence, cloud computing and other digital technology application in agricultural development and promote agricultural mechanization to the positive role of digital transformation, promote agricultural management, agricultural equipment upgrade, agricultural machinery operation services in areas such as digital transformation and upgrading.

It is necessary to improve the innovation capacity of agricultural digital technology, promote the transformation of its achievements, and use new technologies such as the Internet, big data, artificial intelligence and cloud computing to enhance agricultural productivity. To be specific, it is necessary to accelerate technological breakthroughs in key technologies, focusing on core technologies such as physical signs and production environment sensors, agricultural UAV technology, and specialized satellite remote sensing technology, so as to provide technical support for agricultural production

and operation. For example, use digital technology to monitor agricultural production environment in real time and accurately control agricultural production data; realize digital management of agricultural production circulation, ensure transparency and traceability of production process; realize intelligent agricultural production and processing, and promote the standardization, intelligence and precision of production and processing process. At the same time, we will raise the level of research and development and innovation in other technologies, promote the transformation of digital technological achievements, and provide support for agricultural production. We will strengthen the supply chain and operation guarantee service system for agricultural products, promote the development of rural e-commerce, realize the precise connection of the production and marketing of agricultural products markets, and promote the modern, digital and intelligent development of agricultural production.

2.3 Operation System: Strengthen the Digital Allocation of Agricultural Resources and Digital Service Capacity

Management system is a key part of modern agriculture, and the construction of modern agricultural management system is crucial to improving efficiency, developing economy and increasing farmers' income. To accelerate the modernization of the agricultural operation system, we need to use digital technologies such as the Internet, the Internet of Things and big data to improve the efficiency of agricultural operation. Digital technology can improve the policies and systems of the cultivation, introduction, flow, use, assessment and incentive of agricultural business entities, solve the problem of "who will farm the land", realize large-scale, modern and digital operation, and solve the problem of "how to farm the land". To continuously promote the modernization construction, we need to play the role of digital technology, strengthen resource input and integration, improve service quality and capacity, and continue to cultivate agricultural business entities and improve their digital literacy. To strengthen resource input and integration, we need to expand financing channels, innovate financial services, strengthen financial supervision, and ensure that agricultural business entities obtain sufficient funds. At the same time, we will promote research on precise digital services in the whole agricultural industry chain, build an agricultural digital service system, improve the efficiency of resource integration and allocation, and expand the digital service market, especially the digital services for small farmers, so as to provide support for their modern and digital agricultural operations.

We will work hard to improve the quality and capacity of digital agriculture services. Agricultural digital services are crucial to agricultural modernization. High-level of service ability and quality is the guarantee of the construction of modern agricultural management system. We need to improve the agricultural digital service capacity to provide support for the modern agricultural operation. Specifically, it includes the establishment of remote digital technology service system to provide convenient, timely and accurate digital service; enhancing digital system and professional software integration service to meet the diversified and multi-level digital information needs of farmers.

3 The Realization Path of High-Quality Agricultural Development under the Digital Economy System

In the process of high-quality development of digital economy, in addition to technological empowerment as the core path, institutional empowerment is another important way for digital economy to enable high-quality development of agriculture. It is necessary to strengthen the institutional reconstruction and innovation in the construction and interactive optimization of the three agricultural systems of modern agriculture, give full play to the role of institutional empowerment, promote the modernization construction and optimization of the three agricultural systems, and realize the high-quality development of agriculture.

3.1 Establish an Interactive Adjustment Mechanism of "Government-Society and Market"

In the logical chain of institutional empowerment, the government, as the starting point, designs precise policies through the "service-oriented + enabling" digital government to promote the reform of agriculture and rural market. The government guides the role of society, realizes benign interaction, enhances market function, "empowerment" for agriculture-related enterprises and collective economic organizations, and provides conditions for the digital economy to penetrate agriculture. It is particularly important to build a mechanism for the interaction between the government, society and the market.

Before constructing the interactive mechanism, the government digital transformation is the first. It is necessary to improve the integration of the digital economy and the government to realize digital transformation and improve efficiency. All departments should participate in optimizing the innovation ecosystem, improving the level of innovation, decision-making and service, changing the management mode, and giving full play to the enabling role of digital technology. We will stimulate the enthusiasm of innovators, reform the talent evaluation system, and increase the enthusiasm of scientific researchers. We will reform the digital government system, meet the needs of construction, strengthen cooperation between departments, break the traditional management structure, optimize the internal structure of departments, and define their functions.

In the construction of digital government, it is very important to establish the interactive adjustment mechanism of government, society and market. The government needs to intervene reasonably, collect and analyze the data, and formulate health policies. Society needs to cultivate organizations, enhance governance capacity, and coordinate contradictions. The market needs to give full play to the role of resource allocation, improve the mechanism, and cultivate the main body. Orderly and healthy development of the social security market. The digital transformation of the government promotes innovation, empowers the market, enhances functions, and empowers agriculture-related enterprises and collective economic organizations. At the same time, a

feedback mechanism should be established to supervise government behavior and prevent transitional intervention. In short, the construction of interactive adjustment mechanism needs to realize the close connection between the government, society and the market, increase the market function, promote the embedding of digital technology in the agricultural system, and realize "intelligence" and "enrichment".

3.2 Give Full Play to the Role of "Government-Society-Market" in the Three Major Systems of Agriculture

In the logic of empowerment (), the "government-society-market" plays a role in the three systems, to realize the empowerment of agricultural and rural market elements, systems and main bodies, and promote the high-quality development of agriculture. In order to give full play to the positive role of agricultural and rural market elements, systems and main bodies in the modernization of the three systems, institutional innovation can be considered from the three aspects of industrial system, production system and management system. The author will analyze these three aspects in detail, so as to be consistent with the theoretical analysis of system empowerment.

Improve the Policy System for Modernizing the Industrial System. The modernization of the agricultural industrial system is the embodiment of the interaction between productive forces and production relations, including the vertical extension and horizontal extension of the industrial chain, the optimization of the industrial structure, and promoting the integrated development of the primary, secondary and tertiary industries. In the construction, we should attach importance to the application of digital technology and institutional construction, give full play to the institutional efficiency, and promote agricultural modernization. Specific measures include: implementing precise digital agriculture development policies, formulating system and mechanism policies according to local conditions; the government leads in consolidating new infrastructure construction, promoting digital transformation and establishing diversified supply system; constructing e-commerce development mode, promoting large-scale operation and quality upgrading of rural e-commerce, promoting industrial integration and promoting new business forms; improving grassroots governance, establishing high-level government service team, guiding many parties to participate in governance, improving rural governance capacity and level, and providing guarantee for agricultural modernization.

Improve the Policy System for Modernizing the Production System. Modernization of production system is the foundation of the modernization of agricultural system. From the perspective of technology empowerment and system empowerment, the interaction between the government, the market and the society can promote the optimal allocation of agricultural production factors, especially the digital technology and data elements. The government should clarify the decisive role of the market, guide the flow of innovation factors to agriculture-related enterprises, provide public financial support, build a collaborative innovation system, and solve the problems of agricultural science and technology. At the same time, we should attach importance to big data functions,

promote the free two-way flow of data, establish agricultural and rural big data platforms, and optimize the supply of agricultural information. Establish a data open platform to ensure data security and promote the free flow of data. In addition, the government also needs to improve relevant policies and systems, such as the household registration system, the separation of the three rights, and the policy of sending capital to the countryside, to optimize the allocation of other production factors.

Improve the Policy System for Modernizing the Management System. Management system is the core of agricultural modernization. The digital government will deepen market reform, promote the flow of resources, improve the market structure, and train agricultural operators. The government needs to build an agricultural digital talent system, organize education and training, cooperate with various resources to improve farmers' digital skills, and introduce and retain digital agricultural talents. At the same time, the government and enterprises cooperate to expand the scale of operation, innovate agricultural credit, and optimize the financing process. It is also necessary to build a diversified digital governance model to solve the problems of farmers, promote coordination and interaction, and promote the modernization of agricultural management system.

4 Conclusion

This chapter constructs a complete set of policy system for high-quality development of agriculture from two aspects of technology empowerment and system empowerment from three dimensions: industrial system, production system and management system.

In terms of technology empowerment, from the perspective of industrial system, it is necessary to expand agricultural functions and strengthen digital integration; from the perspective of production system, it is necessary to establish digital standards, enhance innovation ability and accelerate technology transformation; from the management system, resource input and integration are needed to improve digital service quality and skill quality. In terms of system empowerment, it is necessary to build the interaction mechanism between government, society and market. The government makes macro intervention, collects and analyzes data, and makes policies. At the same time, the society and the market feedback the government, supervise government behavior and prevent excessive intervention. Secondly, the role of "government-society-market" in agriculture. In terms of industrial system, we will implement digital agriculture development policies, consolidate infrastructure, and build the development model of e-commerce. In terms of the production system, the government guides the flow of innovative factors to agricultural enterprises, and establishes measures for the flow of urban and rural factors. In terms of the management system, the government cultivates digital agricultural talents and provides financial support.

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