

Research on the Mechanism and Path of Digital Transformation of Agricultural Production in Anhui Province

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Abstract

The rational and effective application of digital technology to the field of agricultural production, so as to promote the digital transformation of agricultural production, is a key measure for China to move from a large agricultural country to an agricultural power. However, China is still facing many difficulties and obstacles in the process of implementing this initiative, and it is urgent to study and develop targeted solutions to overcome difficulties and overcome obstacles. By studying the current situation of agricultural digitalization development in Anhui Province, this paper finds the problems existing in the process of agricultural digitalization in Anhui Province. Based on this premise, this paper further studies the implementation logic of agricultural digital development and transformation in Anhui Province, so as to put forward the theoretical implementation logic of the digital transformation of agricultural production in Anhui Province, and provide effective suggestions for the digital transformation of agricultural production in Anhui Province.

Keywords

Agricultural Production; Digital Transformation; Implementation Logic; Path.

1. Introduction

Agricultural digitalization refers to the intensive and information-based agricultural technology supported by geoscience space and information technology. The concept was officially proposed by academicians of the American Academy of Sciences and the Academy of Engineering in 1997. In recent years, in order to achieve China's grand goal of moving from a large agricultural country to an agricultural power, China has successively introduced relevant policies and measures to vigorously develop agricultural digital production. In January 2019, the State Council promulgated the Digital Agriculture and Rural Development Plan (2019-2025); The Central Document No. 1 in 2021 and 2022 clearly proposed to carry out digital village timing and implement digital village construction and development projects, and the development momentum of digital agriculture in China is improving.

When the development of digital agriculture in China is thriving, Anhui Province has also introduced supporting policies and measures. In 2020, the General Office of the Anhui Provincial Government issued the "Anhui Province "Digital Jianghuai" Construction Master Plan (2020-2025), which included digital agriculture in the construction plan of Digital Jianghuai. In 2022, the Anhui provincial government proposed to deepen the construction of "digital Anhui agriculture" in the agricultural field, build an agricultural industrial Internet, and continuously cultivate digital agricultural factories and digital agricultural application scenarios. These measures have laid a solid foundation for the digital transformation and development of agriculture in Anhui Province.

2. The Development Status of Agricultural Digitalization in Anhui Province

2.1. Have Digital Agricultural Technology

On the basis of Beidou satellite navigation system and Internet of Things, digital agriculture technology in Anhui Province has been applied in many aspects such as standard planting, intelligent breeding, flood control dispatch, and drought detection, and has achieved remarkable results. For example, in the Zoomlion Smart Agriculture Demonstration Base in Eqiao Town, Wuhu City, Anhui Province, the big data platform can clearly reflect the basic situation of the farm, the yield forecast of diseases, insects and weeds, etc., so that growers can use this to carry out intelligent operations on rice and achieve standardized planting. Another example is the new agricultural model of "Internet + rice and shrimp co-production" in Quanjiao County, which uses the rice and shrimp intelligent breeding management system to monitor the water quality and water conditions of shrimp fields online and in real time, remotely control multiple aeration equipment, collect water environmental information in real time, and scientifically manage production equipment. This not only reduces environmental pollution, but also greatly increases the production of lobster, bringing huge economic benefits. As of November 2021, five intelligent demonstration bases have been built in Quanjiao County, and the informatization rate of rice and shrimp farming has reached 46%, increasing income by more than 200 million yuan.

2.2. New Economic Entities are Flourishing

In recent years, Anhui Province has actively responded to the call of the state, accelerated the construction of new rural economic entities, promoted the sustained, stable and high-quality growth of the rural digital economy, and greatly increased the happiness of farmers. The scale of online sales continues to expand, and the development momentum of rural e-commerce is improving. In 2016, the online sales of agricultural products in the province were less than 20 billion yuan, and by the end of 2020, the province's rural e-commerce sales had exceeded 60 billion yuan. By the end of 2022, the province's rural e-commerce sales have continuously exceeded 10 billion yuan and maintained an average growth rate of more than 30%. Taking Hefei as an example, in 2022, the city will achieve online sales of agricultural products of 17.843 billion yuan, a year-on-year increase of 39%.

3. The Problems of the Digital Transformation of Agricultural Production in Anhui Province

3.1. The Development of Regions and Industries Varies Greatly

At present, the development of rural digital economy in our province has the problem of large differences in industry and regional development. From the perspective of industry, the development speed of animal husbandry and aquaculture industry in our province is relatively fast, but the development speed of planting industry and facility cultivation industry is slightly lower than the national average; From a regional point of view, the development of rural digital economy in cities (counties and districts) in our province shows a trend of polarization. Regions with better development can enter the top 100 in the country, while regions with poor development are below the national average.

3.2. The Professional Quality of Practitioners is Not High Enough

To promote the development of rural digital transformation, a group of excellent and professional technical talents are needed. At present, agricultural practitioners in our province are older, have a low level of culture and education, and have great problems in mastering

Internet technology and e-commerce technology. Although some college students and migrant workers have returned to their hometowns to start businesses, most of these people are non-agricultural or non-Internet industry practitioners, which also makes it more difficult for rural digital transformation to develop.

3.3. The Development of Rural E-commerce Logistics is Insufficient

The development of rural e-commerce is inseparable from convenient logistics. At present, most cities in our province have completed the "village-to-village" project, and the rural transportation system has been gradually improved, and gradually integrated into the province's road network and railway network. In addition, our province implements a three-level rural e-commerce logistics system, and continuously builds and improves infrastructure such as rural e-commerce logistics service stations at all levels. However, because most of the agricultural products adopt the decentralized operation model, coupled with the influence of some rural areas by the mountainous terrain, it is difficult to distribute, and the current rural e-commerce logistics system cannot solve these problems well.

3.4. Insufficient Understanding of Grassroots Governments

The digital transformation of rural areas is the only way to promote the high-quality development of agriculture, but due to the late start of the rural digital economy in our province, some grassroots governments still have insufficient understanding of the rural digital economy. Some grassroots governments fail to learn the relevant content of rural digital economy in a timely and sufficient manner, so that when faced with new problems and new situations in their work, they cannot accurately find or even find the entry point to solve the problem. In addition, some grassroots governments do not pay enough attention to the development of rural digital economy, lack relevant departments, infrastructure and full-time personnel, and fail to achieve full-time posts.

4. The Logic of Realizing the Digital Transformation of Agricultural Production in Anhui Province

4.1. Government and Agricultural Research Institutes

Strengthen policy support and financial support for agricultural research institutes. The government may allocate special funds to agricultural research institutes to improve their scientific research strength, and send working groups to regularly guide the work of agricultural research institutes; Strengthen synergy and cooperation with agricultural research institutes. The government should give full play to the talent resource advantages of agricultural research institutes and universities inside and outside the province, build a talent introduction platform, build an excellent agricultural team, and initially build a provincial agricultural digital transformation development research frontier base. In addition, the government can work with agricultural research institutes to build provincial, municipal, and county-level smart parks, demonstration sites, service centers, etc. for agricultural digital transformation to stimulate the vitality of agricultural industry transformation. The government should strengthen the digital management of agriculture and build characteristic modules. The government should formulate a clear standard system for agricultural big data, build a digital transformation management platform for agricultural production that integrates big data analysis and decision-making, big data command, big data services, and integrated distribution map of agriculture and rural areas, make use of the advantages of the platform to accelerate the integration of big data in the agricultural industry, and build special modules such as "integration of government and agriculture", digital planting, digital fishery, digital Chinese herbal medicine industry, etc., to strengthen the integration of big data in the agricultural industry.

4.2. Agricultural Research Institutes and Enterprises

Agricultural research institutes should strengthen in-depth collaboration with enterprises. First of all, build a cooperation platform between agricultural research institutes and various agricultural enterprises, improve the matching degree and work efficiency between raw material supply enterprises, processing enterprises and sales enterprises, strengthen the construction of integrated processes of agricultural product supply, processing and sales, alleviate information asymmetry, and improve production and operation efficiency. Secondly, the use of advanced agricultural digital production technology, real-time monitoring of crop growth, timely adjustment of crop management mode, as far as possible to reduce the use of pesticides and fertilizers, improve the quality of crops, provide all kinds of agricultural enterprises and consumer market with objective and accurate data information, and promote the high-quality development of agricultural digital transformation. Build a data sharing platform between the supply side and the demand side of agricultural production to optimize the supply chain of agricultural products. On the supply side, reconstruct the relationship chain between producers, suppliers and sellers of agricultural products, accelerate the integration of data of the three parties, improve the resource utilization rate and work efficiency of all parties, deeply explore more consumer groups, and expand the market scale; On the demand side, the data displayed by various online and offline trading platforms is used to accurately analyze changes in consumer demand, carry out on-demand production and precision marketing, and predict consumer preferences through big data, provide more accurate decision-making solutions for producers and sellers, improve the market's ability to resist risks, and meet consumer needs to the greatest extent.

4.3. Agricultural Enterprises and Farmers

Agricultural enterprises should take the initiative to play a leading role in farmers. Agricultural enterprises are an important subject of the digital transformation of agricultural production. The transformation of digital technology, the construction of agricultural digital infrastructure, and the collection and sharing of agricultural big data are inseparable from the operation of relevant agricultural enterprises. On the one hand, agricultural enterprises provide farmers with relevant digital publicity and education, and promote the transformation of farmers' original thinking to the use of digital technology to improve agricultural production. On the other hand, agricultural enterprises use digital technology to help farmers carry out agricultural production activities, so that farmers can truly feel the convenience brought by the digitalization of agricultural production. Second, farmers need the support and help of agribusiness. Farmers are the core subjects of the digital transformation of agricultural production. Farmers are the most important practitioners of agricultural production activities, but also experienced the digital transformation of agricultural production, and it is the most direct and effective way for farmers to receive digital education and learn to use digital technology. On the one hand, farmers need to actively accept the publicity and guidance of agricultural enterprises, actively learn the technology and knowledge related to the digital transformation of agricultural production, promote the transformation of their own thinking, and cultivate the digital thinking of agricultural production. On the other hand, farmers should dare to change the original form and method of agricultural production, actively accept digital technologies and products to help them improve agricultural production activities, and learn to use and utilize these digital technologies and products.

5. Conclusions and Suggestions

This paper first analyzes the current situation of the digital development of agricultural production in Anhui Province, which strengthens the construction of rural Internet infrastructure, continuously improves the digital agricultural infrastructure, and initially

possesses digital agricultural technology. First, there are large differences in regional and industry development, and at present, there are big differences in industry and regional development in the development of rural digital economy in Anhui Province; Second, the professional quality of employees is not high enough, and agricultural workers in Anhui Province are older, have low cultural and educational levels, and have major problems in mastering Internet technology and e-commerce technology.

In view of the above problems, this paper analyzes the logic of realizing the digital transformation of agricultural production in Anhui Province from three perspectives, and puts forward the following suggestions: First, from the perspective of the government and agricultural research institutes, the government strengthens the collaboration and cooperation between agricultural research institutes and increases policy and financial support for agricultural research institutes. Second, from the perspective of agricultural research institutes and enterprises, build a cooperation platform between agricultural research institutes and various agricultural enterprises, create a data sharing platform between the supply side and the demand side of agricultural production, and optimize the supply chain of agricultural products. Third, from the perspective of agricultural enterprises and farmers, agricultural enterprises should actively play the role of leading farmers, and farmers need to learn relevant technologies for the digital transformation of agricultural production with the help of agricultural enterprises, and use digital technology products to improve agricultural production activities.

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