

Original Research Article

Innovation strategy of agricultural economic management from the perspective of digital transformation

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Abstract: In today 's era, digital transformation has become a key force to promote the innovation of agricultural economic management. It not only provides a more scientific and accurate basis for agricultural decision-making, but also breaks through the limitations of traditional marketing models and promotes the vigorous development of agricultural E-commerce. However, in the process of digital transformation, agricultural economic management is also facing challenges such as imperfect digital infrastructure construction, high cost of digital technology application, and poor dissemination of agricultural digital information. The purpose of this paper is to explore the innovation strategy of agricultural economic management from the perspective of digital transformation. By strengthening the construction of digital infrastructure, reducing the cost of transformation, unblocking digital information system, standardizing data management and improving farmers ' digital literacy, we can promote the modernization transformation of agricultural economic management, realize the co-construction and sharing of agricultural data resources, and inject new vitality into the sustainable development of agriculture.

Keywords: digital transformation; agricultural economic management; innovation strategy

1. Introduction

With the rapid development of information technology, digital transformation has become the only way for the transformation and upgrading of all walks of life, and the field of agricultural economic management is no exception. In the wave of digital transformation, agricultural economic management is facing unprecedented opportunities and challenges. This paper will discuss the innovation strategy of agricultural economic management from the perspective of digital transformation, in order to provide a useful reference for promoting the modernization transformation of agricultural economic management.

2. Advantages of agricultural economic management from the perspective of digital transformation

2.1. Digital transformation improves the scientificity of agricultural decision-making

Digital transformation provides solid data support and scientific analysis methods for agricultural economic management decision-making. Through the Internet of things, big data and other technologies, multi-dimensional data such as agricultural production environment (such as soil moisture, meteorological data, crop growth status), market dynamics (such as supply and demand, price fluctuation, consumption trend) and resource allocation (such as land, water resources, agricultural materials use) are collected and integrated in real time. These massive data can be transformed into insight with decision-making value through in-depth analysis and mining of artificial intelligence algorithms, such as accurately predicting the market demand of agricultural products, optimizing the planting structure, reasonably arranging the production cycle, and scientifically allocating agricultural production materials. It has changed the mode of traditional agricultural decision-making relying on experience and intuition, made the decision-making process more objective and accurate, effectively reduced the decision-making risk, and improved the overall efficiency and benefit of agricultural economic management.

2.2. Digital transformation breaks through the traditional marketing model

The traditional agricultural marketing model has problems such as information asymmetry, single channel, many intermediate links, high marketing costs and low efficiency. Digital transformation has built a new marketing network that directly connects producers and consumers through various digital channels such as Internet platform, social media, E-commerce platform, live delivery, and agricultural APP. Producers can use these platforms to accurately target customer groups, carry out personalized brand promotion and product display, interact with consumers in real time, understand consumer demand and feedback, so as to achieve direct access of agricultural products from production to consumption. This not only shortens the marketing chain, reduces the cost consumption of intermediate links, but also enhances the pertinence and interactivity of agricultural product marketing, enhances brand influence and market competitiveness, effectively breaks regional restrictions, and broadens the sales market and coverage of agricultural products.

2.3. Digital transformation promotes the development of agricultural E-commerce

Digital transformation is the core driving force for the development of agricultural E-commerce. It provides technical basis, trading platform and supporting service system for agricultural E-commerce. On the one hand, mobile payment, big data analysis, cloud computing and other technologies ensure the convenience, safety and efficiency of agricultural E-commerce transactions ; on the other hand, various E-commerce platforms (comprehensive E-commerce, vertical agricultural E-commerce) provide rich online sales channels for agricultural products. Through agricultural E-commerce, farmers, cooperatives or agricultural enterprises can directly connect to the vast online consumer market, realize the standardization, branding and traceability sales of agricultural products, and enhance the added value of products. At the same time, the transaction data and user behavior data accumulated by the E-commerce platform can also feed back agricultural production and supply chain management, promote the accurate docking of agricultural product production and market demand, form a virtuous cycle of ' production according to sales ', and greatly promote the scale, standardization and high-quality development of agricultural E-commerce.

3. The current situation of agricultural economic management from the perspective of digital transformation

3.1. Digital infrastructure construction is not perfect

Although China 's rural digital infrastructure construction has made some progress, there is still a big gap compared with the needs of agricultural digital transformation. In some remote rural areas, the network coverage quality is not high, the network speed is slow, and the stability is poor. It is difficult to meet the requirements of network bandwidth and stability for data transmission of Internet of Things equipment, high-definition video surveillance, online training, etc. In addition, the IoT sensing devices (such as sensors, smart cameras) in agricultural production sites are under-deployed, single in type and inconsistent in standards, and the breadth and depth of data collection are limited. The lag of new infrastructure construction such as data centers and cloud computing platforms in rural areas leads to insufficient data storage, processing and analysis capabilities, and cannot effectively support the application of large-scale agricultural data, which restricts the pace of digital transformation of agricultural economic management.

3.2. High application cost of digital technology

The digital transformation of agriculture involves the investment of hardware equipment (such as sensors, intelligent agricultural machinery, Internet of things gateway), software system (such as agricultural management platform, data analysis software), network service and technical maintenance. The purchase cost, installation and commissioning cost and later operation and maintenance cost of these digital technologies and equipment are relatively high, which is difficult to bear independently for ordinary farmers and small agricultural operators with small operation scale and limited profitability. At the same time, the research and development of agricultural digital technology and adaptive transformation also need continuous capital investment. However, the current inclusive financial support and subsidy policies for agricultural digital transformation are not perfect, which leads to many agricultural business entities ' hesitancy to digital technology and limits the popularization

and application of digital technology in agricultural economic management.

3.3. Poor dissemination of agricultural digital information

The effective dissemination of agricultural digital information is the key link to realize the value of digital transformation, but there are many obstacles. On the one hand, agricultural information resources are scattered in the hands of different subjects such as government departments, scientific research institutions, enterprises, etc., lack of effective integration and sharing mechanism, forming 'information island', which makes it difficult for farmers to obtain comprehensive, accurate and timely digital information services. On the other hand, the digital information transmission channels for farmers are not smooth and accurate enough. The content of the existing information service platform is seriously homogenized, and there is a lack of personalized and customized information for different regions, different crops and different business entities. In addition, due to the low digital literacy of some farmers, their ability to obtain, distinguish and apply digital information is insufficient. Even if the information is obtained, it is difficult to use it effectively, resulting in the value of agricultural digital information can not be fully utilized.

4. Innovation strategy of agricultural economic management from the perspective of digital transformation

4.1. Strengthen the construction of agricultural digital infrastructure and integrate superior digital resources

The government should increase investment in the construction of digital infrastructure in rural areas, continue to promote the wide coverage and deep coverage of the new generation of information infrastructure such as 5G network, Internet of Things, and mobile Internet in rural areas, and improve network transmission rate and stability. At the same time, encourage and support the deployment of sensors, drones, intelligent monitoring and other IoT sensing devices in the key links of agricultural production, and build an agricultural data acquisition network that integrates the world. In addition, efforts should be made to break down sectoral and regional barriers, establish a unified agricultural data standard and sharing mechanism, integrate various data resources such as agricultural production, market circulation, quality and safety, policies and regulations, build national and provincial agricultural big data platforms, and realize the convergence, sharing and efficient utilization of superior digital resources, so as to provide a solid hardware support and data foundation for the digital transformation of agricultural economic management. Through the construction of data platform, it can promote the centralized storage and unified management of agricultural data, reduce data redundancy and repeated collection, and improve the efficiency of data use. At the same time, relying on the data platform to carry out data analysis and mining can provide accurate decision support for agricultural production and operation, and promote the development of agricultural industry in the direction of intelligence and refinement. In addition, we should also strengthen the connection between the data platform and each link of the agricultural industry chain, promote the integration of production, supply and marketing, and improve the overall efficiency of agricultural economic management.

4.2. Reduce the cost of digital transformation and improve the application level of digital technology

In order to reduce the threshold of digital transformation of agricultural business entities, it is necessary to work together in many aspects. The government can support farmers and agricultural enterprises to purchase and apply digital technology equipment and services through policies such as financial subsidies, tax incentives, and loan discounts. Encourage digital technology companies to develop low-cost, easy-to-operate, modular digital solutions and "lightweight" application tools for agricultural characteristics and needs to improve the ease of use and economy of technology. Strengthen industry-university-research cooperation, promote R & D innovation and achievement transformation of agricultural digital technology, and reduce R & D costs and application costs of core technologies. At the same time, we should cultivate and develop agricultural digital service providers, provide agricultural business entities with full-chain, low-cost technical services from consulting, training to system operation and maintenance, guide and help them improve the application level of digital technology, and achieve cost reduction and efficiency increase. In addition, it can also establish an agricultural digital

technology sharing platform to promote technical exchanges and cooperation among agricultural business entities, and realize the rapid promotion and popularization of digital technology. Through the platform to share technical resources, successful cases and lessons learned, reduce the cost of repeated R & D and trial and error, and improve the level of digital technology application in the entire agricultural industry. At the same time, the government should strengthen the supervision of the agricultural digital technology market, standardize the market order, prevent unfair competition and price fraud, and protect the legitimate rights and interests of agricultural business entities.

4.3. Unimpeded digital information system to realize the co-construction and sharing of agricultural data resources

Build up and down, left and right linkage, multi-party participation of agricultural digital information service system, smooth information dissemination channels. Build a comprehensive agricultural information service platform integrating policy release, market quotation, technical guidance, meteorological service, agricultural material supply, product sales and other functions, and promote the platform to extend to the mobile terminal to facilitate farmers to obtain information anytime and anywhere. Encourage government departments, scientific research institutes, E-commerce platforms, agricultural leading enterprises and other multi-subjects to open and share their agricultural data resources, establish a data co-construction and sharing incentive mechanism, clarify data ownership and use norms, and form a virtuous circle of data resource collection. Using big data, artificial intelligence and other technologies to intelligently screen and accurately push massive information, it provides personalized and scenario-based information services for different types of agricultural business entities, and improves the timeliness and practicability of information.

4.4. Standardize agricultural data management and enhance the security of agricultural data application

With the acceleration of China 's agricultural informatization process, China 's agricultural data is gradually becoming an important supporting force for China 's scientific and technological progress. However, in the process of data acquisition, transmission, storage and access, the lack of effective control of data acquisition, transmission, storage and access has caused great harm to the security of data. This requires enterprises to establish a sound agricultural information management system and standards, and strengthen the monitoring of data elements. When collecting data, a set of unified data collection criteria should be established to standardize the collection process, including data sources, data formats, data collection times and other requirements, so as to ensure the comparability and consistency of data. In order to ensure the authenticity and accuracy of the data, a data quality monitoring system should be established, and the collected data should be reviewed and modified regularly. In data transmission, the staff use advanced cryptographic techniques, such as SSL / TLS. In order to monitor the data in the network in real time, it is necessary to monitor the abnormal situation in the network and deal with it in time. In terms of storage, different storage strategies should be formulated according to different importance. In order to ensure data security, measures such as multi-level backup and remote backup should be taken. It is necessary to build a complete data access authorization system, scientifically configure the access rights of data according to the job requirements of the staff, and implement strict authorization management and audit system. For key and core data, it is necessary to carefully disclose and share, establish a strict data utilization and approval process, and ensure that data use is within the legal scope.

In addition, it is necessary to formulate a complete data security and data protection system, strengthen data monitoring and protection, and timely detect and process data security accidents to ensure the safety of agricultural data. Establish a data security audit mechanism to record data access, modification, deletion and other operations in detail, so as to track the traceability, timely discover and respond to potential security threats. At the same time, data security risk assessment is carried out regularly to identify possible security vulnerabilities in the system, and effective measures are taken to repair them, so as to continuously improve the security protection ability of agricultural data applications.

4.5. Strengthen the construction of farmers' digital literacy and improve the application level of farmers' digital technology

Farmers are the main body of agricultural digital transformation, and their digital literacy is directly related

to the success or failure of digital transformation. Farmers' digital literacy training should be incorporated into the national and local farmers' training system, a special training plan should be formulated, and training investment should be increased. For farmers of different ages, different educational levels and different business types, various and easy-to-understand digital technology application training is carried out, covering basic knowledge and practical skills such as smart phone use, agricultural APP operation, E-commerce platform operation, big data information acquisition and identification, and network security protection. Encourage science and technology correspondents, agricultural experts, returning youth, college student village officials, etc. to serve as digital counselors, and go deep into the field for hand-to-hand guidance. We will build offline practice places such as rural digital service stations and E-commerce service points, provide farmers with internship operations and technical consulting services, effectively improve farmers' ability to use digital technology to obtain information, manage production, carry out operations, and improve their lives, and stimulate their endogenous motivation to participate in digital transformation.

5. Conclusion

To sum up, in the face of the transformation of digital society, China's agricultural economic management should also keep pace with the times and innovate actively.

By strengthening the construction of agricultural digital infrastructure and integrating superior digital resources, it provides solid technical support for agricultural economic management. At the same time, reduce the cost of digital transformation, improve the application level of digital technology, so that more farmers can enjoy the convenience and benefits of digitization. In addition, unblocking the digital information system and realizing the co-construction and sharing of agricultural data resources will help to break the information island and improve the scientificity and accuracy of agricultural decision-making. Regulating agricultural data management and enhancing the security of agricultural data application are important cornerstones to ensure the steady advancement of agricultural digital transformation. Finally, strengthening the construction of farmers' digital literacy and improving the application level of farmers' digital technology is an indispensable part of promoting the digital transformation of agriculture. Only in this way can we go further and more stable on the road of digital transformation and inject new vitality into the sustainable and healthy development of agricultural economy.

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References

- [1] Tian Haiyan, Li Zhenhao, Ding Yingying. Research on the development path of digital transformation of agricultural economic management [J]. *Rural Science and Technology*, 2024,15 (12) : 48-51.
- [2] Tian Fengcun. Research on the path of digital economy driving agricultural economic development under the background of digital transformation [J]. *Shanxi Agricultural Economy*, 2024, (07) : 74-76.
- [3] Gou Fei, Hong Sheng. The dynamic factors and path selection of digital transformation of agricultural enterprises [J]. *Journal of Guangdong AIB Polytechnic College*, 2023,39 (04) : 16-21.
- [4] Li Huanhuan. Research on digital transformation and improvement of agricultural production efficiency in agricultural economic management [J]. *Rural economy and technology*, 2023,34 (18) : 21-24.
- [5] Huang Qingping, Li Meng, Zhou Yong, Gu Siyu. The international model, realistic blockage and breakthrough path of the integrated development of digital economy and agricultural economy [J]. *Agricultural economy*, 2023, (03):3-5.