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# Study on the Coupling and Coordinated Development Mechanism and Implementation Path of Digital Economy Drive and Rural E-Commerce



**Abstract:** - The rural revitalization strategy is taken as an important measure to solve the problem of agriculture, rural areas and farmers, and a powerful starting point for realizing this strategy is agricultural e-commerce. The vigorous development of agricultural e-commerce helps farmers eliminate poverty, increase income, and promote agricultural industrialization. While bringing new development opportunities, it is also faced with new challenges, mainly including the lag of related supporting construction, the imbalance of regional development, and the unsustainability of development structure. With the rapid development of the digital economy, using digital technology to promote the reform of agricultural e-commerce is particularly critical, which plays an important role in promoting the digital transformation process of the agricultural economy and accelerating rural revitalization. Therefore, China should actively use a variety of digital technologies, take digital agricultural e-commerce as the core, and focus on optimizing and implementing the construction of relevant supporting facilities, innovating the development mode of agricultural e-commerce, and constructing a sustainable chain development system, thus providing new ideas and directions for the development of agricultural e-commerce and better promoting the revitalization of digital rural areas.

**Keywords:** Digital economy; Agricultural products; Rural e-commerce; Implementation path.

## I. INTRODUCTION

As China enters the second stage of digital rural construction, there will be significant progress by 2025. In this context, developing digital agricultural e-commerce is crucial to promoting rural revitalization. Digital agricultural e-commerce refers to accelerating the digital transformation of China's agricultural e-commerce through the application of various digital technologies. This not only includes the digital transformation of the platform and e-commerce business but also encompasses the digital transformation of the physical enterprises and the integrated digitization of online and offline operations. Accurate digital services can guide farmers to develop market-driven agriculture, including planting, breeding, and processing. It closely integrates with market demand, promotes the high-quality and sustainable development of China's agricultural e-commerce, and enables the development of modern agriculture and rural areas in China, which not only gives full play to the advantages of digital agricultural e-commerce but also promotes social progress. Taking the excellent development cases of agricultural e-commerce in various provinces as samples, in this paper, practical countermeasures such as upgrading digital infrastructure, innovating intelligent agricultural development, innovating e-commerce development mode, and constructing sustainable chain development system are put forward according to local conditions, thus providing strategic thinking for the development of rural economy, promoting digital agricultural products e-commerce to better play its leading role in rural revitalization, and contributing to the realization of comprehensive rural revitalization[1-2].

## II. DEVELOPMENT STATUS OF RURAL E-COMMERCE

Agricultural e-commerce refers to various trading activities of various physical agricultural products, service agricultural products and experience agricultural products using all digital technologies. The current development model mainly includes farmers' self-production and self-marketing, e-commerce platforms' support for the sale of farmers' agricultural products, cooperatives or agricultural cooperatives' selling on e-commerce platforms, integrated sales of e-commerce platform and agricultural supply chain, and combined sales of agricultural e-commerce and new retail. These models exist widely in different regions and markets and continue to innovate and evolve with the development of technologies and markets. With the rapid development of network communication technology and the logistics industry, agricultural e-commerce has made great progress with the support of national digital rural development strategies and many major policies. The structure of urban and rural residents' income is optimized. Under the background of income growth, the total retail sales of consumer goods

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in rural areas are growing faster than those in urban areas. The rise of agricultural e-commerce has promoted the transformation of agricultural development mode, which has not only motivated rural economic growth but also created many employment opportunities. Therefore, the integration of rural industry and the digital economy has gradually deepened, and the development of the rural economy has opened a new situation[3-4].

### III. DEVELOPMENT DILEMMA OF RURAL E-COMMERCE HELPING RURAL REVITALIZATION

#### A. Lagged relevant supporting construction

The lagged relevant supporting construction mainly involves infrastructure, theoretical research, cultural construction, data statistics, etc. This will influence other aspects of agricultural e-commerce, including the balance of regional development, the systematicness of development structure, and the sustainability of development. Meanwhile, infrastructure construction also lags. Although the government and relevant parties have increased investment in infrastructure construction in rural areas, there are still some problems in the imperfect infrastructure, among which the most prominent problems include long construction periods and inconsistent construction quality with expectations. Rural areas are relatively remote, with poor construction conditions, and the planning, design, approval and other links of projects are quite long, which elongates the construction time of the infrastructure, so it cannot meet the rapid development needs of agricultural e-commerce in time[5-6].

#### B. Unbalanced regional development

According to the *China Rural E-commerce Development Report (2021-2022)*, there is a clear regional imbalance in the development of agricultural e-commerce. In 2021, the distribution of rural network retail sales in various regions of China is as follows: the sales of the eastern region accounts for 78.7% of the total, the central region accounts for 13.0%, the western region accounts for 6.5%, and the northeast region accounts for 1.8%. This data reveals the huge differences in the development of rural e-commerce in different regions, and the deep cause is the imperfection of infrastructure construction. The eastern region is the main market for agricultural e-commerce, and its mature logistics distribution system and broad consumer market provide a variety of online sales channels for agricultural products, such as the rise of emerging live e-commerce, community group buying, and online celebrities' promotion. This not only meets cities' demand for agricultural products but also promotes the organic exchange of urban and rural resources. In the inland areas of the central and western regions, the development level, scale and profit of agricultural e-commerce are relatively lower than those in other regions due to the backward infrastructure, difficult storage and transportation, and great environmental impact on product quality[7-8].

#### C. Non-systematized development structure

Fragmentation of internal structure. Online trading of agricultural products includes many forms, such as online trading of futures and options, electronic trading of bulk commodities, B2B trading, online retail, community group buying, takeaway e-commerce, fresh e-commerce, prefabricated vegetable e-commerce, live e-commerce, cross-border e-commerce, as well as barter e-commerce of agricultural products. Although there are different business forms, as an e-commerce channel for agricultural products, an organic whole system should be constructed to give full play to its functions. However, the reality is not the case. There is a lack of effective coordination and interconnection between various agricultural e-commerce platforms and various channels are independent of each other, thereby resulting in poor resource sharing and information exchange. Thus, the agricultural e-commerce market is highly decentralized and shows a single-point development pattern, which limits the potential for cooperation and development within the whole industry. The e-commerce agricultural product market has failed to make the greatest use of the advantages of each development model in the development process, so it is still in a state of inaccuracy. It is worth mentioning that cross-border e-commerce B2B transactions play an important role in the world, but this part has not been paid due attention to. The attention paid by the industry and society to cross-border e-commerce of agricultural products is only cross-border retail, while the B2B transactions of cross-border e-commerce, which account for the majority (70% - 80%), have not been fully valued, thus affecting the function of cross-border e-commerce of agricultural products. This negligence influences both the expansion of cross-border trade of agricultural products and the competitiveness of e-commerce in the international market, limits the internationalization process of agricultural e-commerce, and hinders its comprehensive development on a global scale[9-10].

#### IV. RURAL REVITALIZATION PATH CENTERING ON DIGITAL AGRICULTURAL E-COMMERCE

The solution to the development of agricultural e-commerce is the development path centering on digital agricultural e-commerce. The implementation of the digital agricultural e-commerce model can not only improve the added value of agricultural products but also help to build a more perfect logistics and information network, injecting new vitality into rural revitalization. In January 2022, ten departments including the Office of the Central Network Security and Information Technology Commission and the Ministry of Agriculture and Rural Affairs jointly issued *the Digital Rural Development Action Plan (2022-2025)* and deployed eight key initiatives. Among them, the “New Format and New Model Development Action” emphasizes promoting the development of agricultural e-commerce, including implementing “Internet Plus” projects, promoting the flow of agricultural products from rural to urban areas, expanding e-commerce coverage in rural areas, accelerating the construction of rural logistics systems, creating online brands of agricultural products. From the perspective of local dynamics, a roundtable forum on “Digital Village E Construction” was held in the Yangtze River Delta region, a press conference on accelerating the construction of digital rural network infrastructure was held in Guangxi, “This is Shandong, Takaqilu Digital Village” network theme event was hosted by Shandong Provincial Network Information Office, “Jiangxi Digital Agricultural Industry Development Conference” and other activities were jointly held by Jiangxi Provincial Department of Agriculture and Rural Affairs and Fuzhou Municipal People’s Government. These measures all reflect our country’s emphasis on strengthening digital technology to help the development of agricultural e-commerce.

##### A. Using digital technology to optimize and implement supporting construction

Innovating the development of intelligent agriculture. Firstly, governments at all levels and relevant departments should accelerate the construction and application of agricultural and rural big data and guide agricultural production and agricultural product marketing by collecting, integrating and analyzing various agricultural data, including soil quality and market demand, thus promoting the development of agricultural e-commerce. Meanwhile, they should increase capital investment, support and encourage agricultural science and technology personnel to carry out technology research and development and practice, promote the innovation of intelligent agricultural technology, and improve agricultural production efficiency and product quality. In addition, they should construct agricultural science and technology demonstration bases and popular science education bases, provide farmers with the latest agricultural science and technology knowledge and technical guidance, and help them better adapt to the development needs of agricultural e-commerce to cope with various challenges in agricultural production.

Secondly, the space-ground integrated agricultural observation network should be constructed, satellite remote sensing, and meteorological monitoring and geographic information systems and other technical means should be used to monitor and manage farmland in an all-round way to improve the intelligent level of agricultural production and optimize the quality and yield of agricultural products. Scientific cultivation of agricultural products, good quality, and exquisite processing technology can effectively promote sales, obtain reasonable profits, and enable consumers to obtain benefits and farmers to get economic returns. This two-way promotion model will help promote the adjustment and upgrading of rural industrial structures. Local practice and enterprise practice are also crucial, so all regions should strengthen local practice, accelerate the sustainable development of agricultural e-commerce, and promote the vigorous development of the rural economy and the overall progress of society.

##### B. Innovating the new development model of digital agricultural e-commerce

Many e-commerce enterprises have not fully utilized the advantages of digital empowerment, and the phenomenon of homogeneous competition, repeated construction and convergent investment is very serious. As far as this phenomenon is concerned, lessons must be learned to avoid the homogenization and speculative bubble traps in the “prefabricated vegetable e-commerce blowout”. Each region should adjust e-commerce innovation according to the local actual situation and use digital technology to develop new business models and formats with regional characteristics. For example, Faku County, Shenyang City, Liaoning Province, has made great progress in rural e-commerce by introducing the “Faku model”, which integrates specific development parks, e-commerce and big data dual platforms, and focuses on data analysis, branding, and industrial integration. The e-commerce development model of “one village, one product and one store” in Jiangsu Province also helps to promote agricultural innovation and rural development. These development models are worthy of reference, but in this process, enterprises should avoid blindly following the trend, give full play to local characteristics and

resource advantages, find suitable development paths according to local conditions, and realize the sustainable development of digital agricultural e-commerce. In addition to the key elements of characteristic development, the government's policy and financial support, the strengthening of agricultural product standardization, the promotion of agricultural information construction, the improvement of logistics system construction, the change of farmers' concept, the cultivation of compound talents, the holding of social training and seminars, the strengthening of agricultural product brand construction and the establishment and improvement of after-sales service system and other auxiliary means are all helpful to promote the innovation and development of digital agricultural products e-commerce, thus contributing to the healthy development of digital agricultural e-commerce and the vigorous development of rural economy and the overall progress of society.

### C. *Constructing a sustainable chain system development model*

The construction of a sustainable chain system development model for agricultural e-commerce involves the construction of internal and external systems. The internal system construction mainly aims to optimize the operation mode of the e-commerce platform, improve the management efficiency of the agricultural product supply chain, strengthen the cooperation between farmers and producers, and establish an effective information management system. Among them, optimizing the operation mode of e-commerce platforms involves user interface design, optimization of shopping experiences, personalized algorithm recommendation of e-commerce platforms and the application of multi-channel marketing strategies. E-commerce platforms should be more intelligent, use big data and artificial intelligence technology to more accurately analyze consumer behavior, provide personalized shopping experiences and product recommendations, and enable consumers to easily find their required agricultural products. The core of supply chain management is to ensure the efficient and cost-effective circulation of agricultural products from producers to consumers to the largest extent. This includes improving the logistics system, reducing transportation time, and guaranteeing the freshness of agricultural products; realizing the transparency of the supply chain, and letting consumers understand the source and quality of products; optimizing inventory management and reducing waste. The digitalization of the supply chain is very crucial because establishing a stable and mutually beneficial cooperative relationship by using advanced supply chain management software is quite important. This can be achieved by providing technical support, market information, and quality control guidance. Based on reasonable pricing strategies and profit-sharing mechanisms, farmers and producers can be ensured to obtain fair benefits from them, thereby encouraging them to produce high-quality products. Effective information management systems can monitor inventory, sales and customer demand in real time, which is very important for timely adjustment of supply chain strategy. By collecting and analyzing data, e-commerce platforms can better predict market trends, adjust inventory levels, and reduce excess or shortage situations, which also helps to provide more accurate customer demand forecasts and makes the supply chain more flexible and responsive. In short, the construction of the internal system needs to comprehensively use technological innovation, supply chain management and partnership management to improve operational efficiency and service quality, thus ultimately enhancing the competitiveness of the entire agricultural e-commerce platform.

## V. CONCLUSION

The digital village strategic background provides agricultural e-commerce with more development opportunities and has great potential. Agricultural e-commerce should make full use of digital technology to cope with current challenges. By upgrading digital infrastructure construction, innovating the development model of smart agriculture, and constructing a sustainable chain development system, the digital divide between urban and rural areas will be bridged, the soft power of e-commerce development will be continuously enhanced, and the development of rural industries will be actively promoted so that the masses can better benefit from the rapid development of agricultural e-commerce. Moreover, local governments and market players should actively respond to the call of the central government to vigorously promote the development of agricultural e-commerce platforms, explore their own e-commerce development system for agricultural products by combining local natural endowments and social reality, realize the sustainable and healthy development of agricultural e-commerce, and help rural revitalization.

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