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The Triple Dimensions of Digital Economy Promoting High-Quality Development of Rural Economy

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Abstract: Against the backdrop of the national comprehensive advancement of the rural revitalization strategy, the digital economy is gradually becoming a key driving force for the high-quality development of rural economy. Guided by the research approach of value analysis, problem diagnosis, and path exploration, this paper affirms the positive role of the digital economy in advancing agricultural industrial upgrading, facilitating the linkage of urban-rural factors, and enhancing the resilience of rural economy. Meanwhile, it reveals practical challenges encountered in its development, such as weak infrastructure, prominent digital divide, unbalanced regional development, and lagging institutional guarantees. To address these issues, the study proposes measures including improving rural information and logistics infrastructure to smooth service "last-mile" connections, implementing hierarchical digital skills training to enhance farmers' application capabilities, promoting in-depth integration of digital technology with industries such as agriculture and rural tourism, improving the legal system and supervision framework, and strengthening regional coordination and risk prevention. These efforts aim to unleash the structural, institutional, and innovative value of the digital economy. The research not only provides an academic reference for understanding the role and path of digital technology in the transformation of rural economy but also offers policy guidance for practical implementation.

Keywords: Digital Economy; Rural Economy; High-Quality Development; Significance; Problems; Strategies
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Introduction

General Secretary Xi Jinping pointed out: "In today's era, digital technology and the digital economy are at the forefront of the global scientific and technological revolution and industrial transformation, and they are key areas in the new round of international competition. We must seize this opportunity and occupy the commanding heights of future development."[1] Currently, a new round of scientific and technological revolution and industrial transformation characterized by digitalization, networking, and intelligentization is advancing in depth worldwide. As a crucial driving force, the digital economy is profoundly reshaping the allocation of factor resources, economic structure, and competitive landscape. Against this backdrop, China is steadily advancing the construction of a "Digital China" and the "Rural Revitalization Strategy," striving to empower the modernization of agriculture and rural areas with digitalization, resolve the urban-rural dual structure, and promote higher-quality, more equitable, and more sustainable development.

Rural areas, as the weak link yet with great potential in national modernization, urgently need the empowerment of the digital economy to achieve transformation and upgrading. With its extensive penetrability, significant synergy, and continuous

innovation, the digital economy has injected a new paradigm of precision production and intelligent management into traditional agriculture. It also provides unprecedented opportunities for the integration of rural industries, optimization of public services, and modernization of governance capabilities. From production to circulation, and from consumption to governance, digital technology is reshaping the operational logic and development path of rural economic and social systems. Empowering rural digital and intelligent governance with new-quality productive forces in agriculture can significantly improve rural governance efficiency and promote the building of a harmonious and stable beautiful rural society.[2]

In practice, the development of rural digitalization is still constrained by multiple factors: unbalanced coverage of digital infrastructure, generally low digital literacy of farmers, slow digital transformation of rural industries;[3] in addition, there are obvious regional differences in the development of digital industries, and relevant systems and governance frameworks are not yet mature. To a large extent, these problems have restricted the inclusive and shared effects that the digital economy should bring. Especially in remote areas, poverty-alleviated regions, and among smallholder farmers, the "digital divide" has not narrowed; instead, it has shown new forms due to the accelerated pace of technological iteration. If these issues cannot be systematically addressed, they will pose severe constraints on the implementation effect of the rural revitalization strategy and the high-quality development of rural economy.

Against this background, in-depth analysis of the functional logic of the digital economy empowering rural economy, identification of bottlenecks and risks in its development process, and proposal of practical optimization strategies are of great theoretical significance and practical urgency. Based on this, this study focuses on the three analytical dimensions of value interpretation, dilemma analysis, and path exploration, attempting to construct a systematic cognitive framework. It aims to provide an academic reference and practical guidance for understanding the role and path of digital technology in the transformation of rural economy.

1.The Logic of Digital Economy Empowering High-Quality Development of Rural Economy

1.1 Promoting Industrial Upgrading and Efficiency Improvement

Through emerging technologies such as big data, artificial intelligence, and the Internet of Things, the digital economy has injected new management paradigms and decision-making logic into agricultural production. The promotion of precision agriculture enables farmers to make scientific decisions based on real-time data, realizing refined operations from sowing, fertilization to pest and disease control, thereby reducing costs and improving output and quality. Rural e-commerce platforms have broken down the layers of barriers in traditional circulation channels, enabling agricultural products to directly enter urban markets. While shortening the supply-demand chain, they also reduce additional costs caused by intermediate links, significantly improving transaction efficiency.[4] Through dynamic monitoring and data-based management of agricultural production conditions, farmers can obtain more targeted guidance and support, thereby significantly enhancing the overall production efficiency and quality of crops. This not only transforms the traditional model of agricultural production but also provides a practical path for the adjustment and upgrading of rural industrial structure.

1.2 Advancing Urban-Rural Coordination and Common Prosperity

The digital economy breaks the constraints of time and space, enabling rural areas to be deeply integrated into the national and even global markets. Through e-commerce platforms, agricultural products have gradually shifted from "being sold" to "being sold well," and branding and differentiation have become important drivers for increasing the value of agricultural products. The digital economy also promotes the downward allocation of public service resources such as education and medical care, further narrowing the urban-rural gap. The construction of digital education platforms has promoted remote collaboration between urban and rural schools, which not only improves the quality of rural education but also enhances educational equity. The development of digital inclusive finance provides farmers with low-threshold credit and payment services, solving the problems of insufficient coverage and high financing difficulty of the traditional financial system, and injecting vitality into rural entrepreneurship and small and medium-sized business entities. The two-way flow of resources between urban and rural areas has laid a more solid practical foundation for the goal of common prosperity.[5]

1.3 Enhancing Rural Economic Resilience and Sustainable Development Capacity

The digital economy not only improves efficiency but also demonstrates unique advantages in enhancing rural economic resilience and sustainability. In the agricultural production link, digital platforms help farmers diversify risks. Through agricultural insurance technology, risk prediction and rapid response are realized, effectively alleviating the impact of natural disasters on agricultural production. In terms of rural governance, digital means improve the level of emergency management and public services, promote more flexible and efficient resource allocation, and ensure the continuity and security of rural economic operations. Overall, the digital economy not only enhances the stability of the rural economic system but also promotes the transformation of agriculture towards sustainability through the concept of green development and intelligent management methods, providing institutional and technological support for the long-term healthy development of rural economy.

2.Practical Dilemmas in the Process of Promoted by Digital Economy

2.1 Coexistence of Insufficient Basic Conditions and Urban-Rural Gaps

Although the penetration rate of the Internet in China has been continuously accelerating, its popularity in vast rural areas still does not exceed 50%.[6] In recent years, although the state has continuously made efforts in "new infrastructure," the level of rural network coverage and information infrastructure has been continuously improved, there are still significant shortcomings. The quality of broadband and mobile signals in some remote mountainous areas and border areas is still poor, with slow network speed and insufficient stability, which seriously restricts the popularization of digital applications. For example, even if some farmers own smartphones, they cannot smoothly conduct e-commerce transactions or online learning due to network delays or high data costs. The imperfect logistics system has also become a bottleneck for agricultural products to "go from villages to cities." Rural areas generally face problems such as insufficient cold chain facilities, limited warehousing capacity, and poor connection between trunk transportation and "last-mile" distribution. These issues lead to high loss rates and quality degradation of agricultural products during transportation, weakening their market competitiveness. These problems not only reduce farmers' enthusiasm for participating in the digital economy but also widen the gap in basic conditions between urban and rural areas to a certain extent. In other words, there is a significant mismatch between the development speed of the digital economy and the improvement of rural basic conditions, which has become a key factor restricting the high-quality development of rural areas.

2.2 Parallel Existence of Insufficient Digital Literacy and Unbalanced Development

The "digital divide" between urban and rural areas is still obvious, showing the characteristics of "double insufficiency" in technology access and capacity development. A large number of farmers lack necessary digital skills and have limited mastery of application tools such as smart terminals, e-commerce platforms, and online payments, making it impossible for them to fully utilize the opportunities brought by the digital economy. In some places, even if the government or enterprises promote the establishment of rural e-commerce platforms, the utilization rate of the platforms is low and they eventually become formalities because farmers cannot operate them and lack training support. At the same time, unbalanced regional development further amplifies this problem. Relying on advantages in capital, talents, and markets, the digital industry system and service ecology in the eastern coastal areas have begun to take shape. However, the development of digital industries in the central and western regions and underdeveloped areas is lagging behind, and there is a lack of a mature supporting environment. More prominently, agricultural products generally lack standardization, large-scale production, and branding, which restricts the sustainable development of e-commerce platforms. For example, although many local characteristic agricultural products have high quality, they are difficult to stand out in the highly competitive market due to the lack of unified standards and effective brand communication. The superimposed effect of insufficient literacy and unbalanced development makes the participation and income level of rural areas in the digital economy significantly lower than that of urban areas.

2.3 Intertwining of Institutional Lag and Risk Challenges

The rapid expansion of the digital economy in rural areas has exposed the lag of the legal system and governance capabilities. The relevant legal and regulatory system is not yet perfect, and there are many gaps in data security, privacy protection, the validity of electronic contracts, and cross-border e-commerce, resulting in insufficient protection of farmers' rights and

interests in the transaction process. More importantly, the digital governance capacity of grass-roots governments is limited, and there is a phenomenon of relying on superior instructions and lacking localized innovation. This leads to inflexibility and lack of long-term effectiveness in the implementation of policies and the promotion of digital projects. At the same time, social risk issues cannot be ignored. Due to the generally limited digital literacy of farmers, online fraud is prevalent in rural areas, which not only damages the economic interests of farmers but also undermines their trust in the digital economy. In addition, some large platforms have strong monopolistic power in the rural e-commerce market, controlling traffic and the right to formulate rules. This places farmers in a weak position of asymmetric bargaining power and uneven interest distribution. In the long run, it is easy to cause farmers' over-reliance on platforms, weaken their independent development capabilities, and may even trigger new social contradictions. The intertwining of institutional lag and risk challenges means that the development of the rural digital economy has both opportunities and hidden concerns.

3.Path Choices for Digital Economy to Promote High-Quality Development of Rural Economy

3.1 Consolidating Infrastructure and Institutional Guarantees

The implementation of the digital economy in rural areas first requires solid "hardware" and "institutional" support. In recent years, the state has vigorously promoted the extension of "Broadband China" and 5G networks to rural areas, and initial results have been achieved in some regions. However, there is still a gap in the overall coverage and stability. To truly realize the digital transformation of rural areas, it is necessary to further accelerate the construction of information infrastructure, especially the full coverage of network base stations, fiber-optic broadband, and 5G networks. The improvement of the smart logistics system is also crucial. Due to the perishable nature of agricultural products, without the support of cold chain transportation, they are prone to loss during circulation, leading to the dilemma of "good harvest but no increase in income." Therefore, the government should not only increase financial investment but also attract social capital through the PPP (Public-Private Partnership) model[7] to form a diversified investment mechanism, promoting the coordinated development of information and communication, warehousing, cold chain, transportation, and other fields.

At the same time, institutional guarantees cannot be ignored. The development speed of the digital economy is much faster than the update of relevant laws and regulations. There is a widespread legal vacuum in rural areas regarding data security, privacy protection, and electronic contracts, which directly affects the protection of farmers' rights and interests. It is necessary to speed up the improvement of the legislative framework for digital villages, clarify the rights and responsibilities of platforms and users, and establish a multi-level supervision system. In particular, legal measures are needed to regulate the access and monopoly of large e-commerce platforms to ensure that farmers can participate in competition in a fair market environment. Local governments should also improve their digital governance capabilities, avoid the situation of "high enthusiasm at the top but low response at the grassroots," and enhance farmers' trust in and participation in the digital economy through the establishment of standardized and transparent governance mechanisms.

3.2 Cultivating Digital Talents and Enhancing Farmers' Literacy

The core of the digital economy lies not only in technology but also in people. Stalin once said, "Without talents who master technology, technology is a dead thing. With talents who master technology, technology can and will surely create miracles."[8] Technologies relied on by the digital economy, such as big data, artificial intelligence, and blockchain, can truly play a role in promoting economic development only when workers have corresponding knowledge and skills and are supported by social systems and organizational structures. In other words, the development of the digital economy is not only a process of accumulating technical conditions but also a manifestation of the all-round development of people. Even if network facilities are complete, if farmers lack necessary digital skills, they will find it difficult to truly participate and benefit. Therefore, enhancing farmers' digital literacy and cultivating professional talents have become the key to promoting the digital transformation of rural areas. Specifically, three parallel paths can be adopted: First, led by the government, special training programs should be established, and concentrated training should be organized during the slack farming season to help farmers master practical skills such as e-commerce operation, smart device use, and data management. Second, educational institutions should participate by setting up majors or courses related to the rural digital economy in colleges and

vocational schools to cultivate compound talents. At the same time, university-local cooperation should be promoted to allow students to directly conduct practical work in rural areas. Third, social forces should provide supplementary support. Internet enterprises and e-commerce platforms should be encouraged to assume social responsibilities, establish training centers or demonstration bases in rural areas, which not only improve farmers' practical operation capabilities but also expand the brand influence of enterprises.

In addition, attention should be paid to the introduction and return of talents. Preferential policies can be used to attract groups such as college graduates, returned youth, and veterans to participate in the construction of the rural digital economy, alleviating the "talent shortage" in rural areas. It is also necessary to encourage "local experts" and "rural talents" to integrate with the digital economy, leveraging their familiarity with the rural environment and industries to drive farmers around them to achieve digital transformation.[9] Through the method of "introducing external talents and cultivating internal talents," a team of compound talents who understand agriculture, love rural areas, and are proficient in digital tools should be gradually built.

3.3 Promoting Industrial Integration and Regional Coordination

The value of the digital economy lies not only in improving the efficiency of a single industry but also in promoting in-depth integration of multiple industries and spawning new business formats and models. The integration of agriculture and e-commerce has broken the traditional circulation barriers, enabling agricultural products to shift from "being sold" to "being sold well"; the "agriculture + cultural tourism" model promotes rural tourism through digital platforms, which not only increases farmers' income but also enriches the leisure options of urban and rural residents. In addition, the integration of financial technology and agriculture is also forming a new driving force. Blockchain technology can be used for agricultural product traceability to ensure food safety while increasing the added value of agricultural products; digital inclusive finance provides farmers with low-threshold credit and payment services, alleviating the problem of financing difficulties.

While promoting industrial integration, attention should also be paid to the coordinated development of regions. At present, the development of the digital economy in the eastern coastal areas is relatively mature, but there is still an obvious gap in the central and western regions and remote mountainous areas. If this imbalance persists for a long time, it will widen the gap between urban and rural development and regional development. Therefore, the state should increase financial and policy support for the central and western regions, promote cooperation between the eastern and western regions, and form a complementary pattern of "eastern experience + western resources." At the same time, cross-regional digital agricultural industrial parks and agricultural product distribution centers can be established to realize the flow and sharing of factors and improve the overall coordinated development capacity. Only by achieving the diversified integration of industries and the balanced development of regions can the potential of the digital economy empowering rural areas be maximized.

4.Conclusion

Based on the logical framework of value interpretation, dilemma analysis, and path exploration, this paper systematically analyzes the mechanism and practical path of the digital economy promoting the high-quality development of rural economy. The research results show that the digital economy not only injects new momentum into rural transformation by promoting industrial upgrading, advancing urban-rural coordination, and enhancing economic resilience but also is constrained by multiple factors such as insufficient infrastructure, widened digital divide, unbalanced regional development, and lagging institutional guarantees. To realize the in-depth integration of the digital economy and rural economy, it is necessary to synergistically promote the intelligent transformation of infrastructure, the overall improvement of farmers' digital literacy, the integrated innovation of multiple industries, and the improvement of the digital governance system in the future. In this process, the overall planning of regional resources and policy coordination are indispensable; technological empowerment and institutional adaptation must advance in parallel. At the same time, potential technological and market risks should be prevented, and the interests of smallholder farmers should be effectively protected.

The high-quality development of the digital economy in rural areas is not only a process of technology application but also a systematic transformation project covering economy, society, and governance. Future development should continue to promote technology popularization and industrial innovation while strengthening humanistic care and mechanism innovation,

and build a digital economy pattern that balances efficiency and equity. With the further breakthrough of emerging technologies such as artificial intelligence and blockchain, the digital economy will show greater potential in promoting the green development of agriculture, facilitating the free flow of urban-rural factors, and improving rural governance capabilities. Only by forming a synergy in institutional design, talent training, and social participation can the in-depth value of the digital economy in serving rural revitalization and realizing common prosperity be fully unleashed.

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Conflict of Interests

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