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Research on the Dilemma and Practical Path of Rural E-commerce Driving Digital Transformation of Rural Industries in Zhanjiang City

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Abstract: *This study aims to deeply explore the role mechanism and practical path of rural e-commerce platforms in driving the digital transformation of rural industries in Zhanjiang City. By analyzing the dynamic characteristics of rural e-commerce platforms in terms of innovation, platform, users, and infrastructure, it reveals how they activate rural industrial innovation momentum, optimize rural industrial organization and operation, empower rural practitioners, and reconstruct rural industrial boundaries, thereby promoting the digital transformation of rural industries. The study found that rural e-commerce platforms provide strong support for the digital upgrading of rural industries in Zhanjiang City through multiple paths such as resource integration, model innovation, skill improvement, and industrial integration. This study constructs a theoretical analysis framework for rural e-commerce platforms driving the digital transformation of rural industries, and provides theoretical reference and practical enlightenment for further promoting the implementation of rural revitalization strategies in Zhanjiang City and other regions.*

Keywords: *Rural E-Commerce; Digital Transformation of Rural Industries; Logical Mechanism; Practical Path*

1. Introduction

The deep integration of the digital economy and the real economy has become a new engine driving the high-quality development of China's economy, and digital transformation has also become the main theme of economic and social innovation and development. In this context, promoting the construction of "Digital Villages" has been elevated to a strategic height to solve China's "three rural issues". The "Rural Revitalization" strategy proposed by the 19th National Congress of the Communist Party of China, as well as the subsequent Central No. 1 documents for many years, all emphasized the development of digital villages, and for the first time in 2024, it clearly proposed "implementing high-quality development projects for rural e-commerce", highlighting the core role of digitalization in rural revitalization, as well as the importance of bridging the urban-rural "digital divide" and developing the rural digital economy and digital industry.

How to effectively promote the digital transformation and upgrading of rural industries has become a key issue in comprehensively promoting rural revitalization. However, affected by the digital divide and development norms, the application of the digital economy in the agricultural and rural fields still faces the challenges of unbalanced and insufficient development, and the digital transformation process of rural industries is relatively slow. Zhanjiang City, as a major agricultural city, released the "14th Five-Year Plan for Agricultural and Rural Modernization (2021-2025)" in 2022, which clearly proposed to accelerate the construction of digital villages, expand the "digital +" model, improve the level of digital management services in rural areas, and create a "digital village" pilot. In this context, how to give full play to the advantages of the digital economy, carry out in-depth digital transformation and upgrading of traditional rural industries in Zhanjiang City, and open up a new path for comprehensively promoting rural revitalization has become a core issue of widespread concern in the academic and practical fields.

As one of the most widely used and effective forms of digital economy in the "three rural" fields, rural e-commerce platforms have not only demonstrated strong productivity and innovation in the fight against poverty, but also played an important role in driving the digital transformation of rural industries. However, what is the internal logic of rural e-commerce platforms helping the digital transformation of

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rural industries? How does it specifically affect the transformation and upgrading of rural industries? These issues need to be studied in depth and have important theoretical and practical value. Therefore, this study aims to systematically sort out the internal logic and practical path of rural e-commerce platforms driving the digital transformation and upgrading of rural industries in Zhanjiang City, in order to give full play to the digital empowerment and high penetration of rural e-commerce platforms, actively promote the digital transformation and upgrading of rural industries in Zhanjiang City, and provide reference for other regions.

2. Literature Review

This article reviews the existing literature related to this study, mainly focusing on the impact of digital transformation on traditional industries, the path for traditional industries to achieve digital transformation, and the ways in which the platform economy helps traditional industries achieve digital transformation.

2.1 Research on digital transformation impacts in traditional industries

Existing studies generally believe that digital transformation profoundly changes the production methods and production relations of traditional industries through the application of information technology and digital innovation (Braña, 2019)[1]. Specifically, industrial digital transformation can improve the matching efficiency of market supply and demand and significantly improve the output and efficiency of the industry by shortening the product life cycle and reducing the risk of new product development (Molinillo et al., 2017)[2]. These studies emphasize the positive role of digital transformation in promoting industrial innovation, improving efficiency, and optimizing supply and demand relations.

2.2 Research on digital transformation pathways for traditional industries

Regarding how traditional industries can achieve digital transformation, existing research focuses on exploring its realization path and key elements. Henderson's (2007) research shows that digital networks can connect urban and rural resources and enhance the cohesion of rural communities[3]. Qi Yudong et al. (2021) emphasized that the core goal should be to enhance consumer value, and digital transformation should be achieved through improving industrial efficiency, promoting cross-border integration, restructuring organizational models, and empowering industrial upgrading, and pointed out that value creation, data integration, and platform empowerment are important development directions [4]. These studies reveal that digital transformation involves multiple dimensions such as digital infrastructure, consumer demand, efficiency improvement, industrial integration, and platform support.

2.3 Research on platform economy-enabled digital transformation

The platform economy is considered an important force in promoting the transformation and upgrading of traditional industries. Its characteristics have significantly changed the information transmission and transaction methods of traditional industries, injecting new impetus into industrial upgrading (Westerman, 2016)[5]. In the industrial field, the platform economy promotes the intelligent upgrading of manufacturing and the reshaping of the value chain; in the field of small and medium-sized enterprises, the platform economy effectively promotes innovation in the market, products, channels, research and development, and organization (Yao Shujun, 2024)[6]. In the agricultural field, "agricultural e-commerce" has shown great potential in promoting farmers' entrepreneurship and employment, forcing industrial upgrading, optimizing the rural economic structure, and promoting rural modernization (Nie Fengying and Xiong Xue, 2018)[7]. Some studies have also explored the role of digital cultural industrialization and new business models such as "digital platform + cultural tourism" in expanding the development path of rural industries and helping rural revitalization (Li Xiang and Zong Zupan, 2020)[8]. However, some studies have also pointed out that rural e-commerce may have differentiated impacts on different dimensions of rural development (Li Zhiping et al., 2021)[9].

In summary, existing research fully affirms the positive role of rural e-commerce platforms in promoting the transformation and upgrading of rural industries. However, there are still the following shortcomings: First, in terms of research perspective, existing literature mostly discusses the relationship between the platform economy and the digital transformation of traditional industries from a macro level, lacking in-depth theoretical explanations and empirical tests of the micro-mechanism of rural e-

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commerce platforms driving the digital transformation of rural industries. Second, in terms of research content, research in the agricultural field mostly focuses on the specific ways in which rural e-commerce platforms affect the transformation of rural industries, but lacks a clear definition of the ultimate goal of digital transformation of rural industries, fails to systematically reveal the mechanism of rural e-commerce platforms driving the digital transformation of rural industries, and fails to propose targeted practical path solutions. In view of this, this study will be based on the research on the multi-dimensional dynamic characteristics of rural e-commerce platforms, and focus on four aspects: activating rural industrial innovation, optimizing rural industrial organization, empowering rural practitioners, and expanding the boundaries of rural industries, to address the difficulties of rural e-commerce platforms in helping the digital transformation of rural industries, and propose corresponding practical strategies, in order to make up for the shortcomings of existing research.

3. Analysis of the Dilemma of Rural E-commerce Platforms Driving the Digital Transformation of Rural Industries in Zhanjiang City

This study deeply analyzes the main dilemmas faced by the current rural e-commerce platforms in driving the digital transformation of rural industries in Zhanjiang City from four dimensions: innovation, platform, users, and infrastructure.

3.1 Innovation Dimension Dilemma: Inefficient Resource Integration and Dependence on Government Support

From the perspective of industrial organization theory, rural e-commerce platforms face the dilemma of "double failure" in the process of resource integration. On the one hand, the market mechanism has inherent defects such as information asymmetry and high transaction costs in the allocation of rural resources; on the other hand, the organizational coordination ability of the platform is restricted by the fragmented characteristics of the rural industrial structure. The deep-seated reasons for this integration dilemma are: First, the small-scale peasant economy characteristics of agricultural production lead to a low degree of industrial organization. For example, in the Zhanjiang Xuwen pineapple industry, the average operating scale of farmers is small, and the coverage rate of cooperatives is low, making it difficult to form economies of scale; second, the interest distribution mechanism in all links of the industrial chain is unbalanced, and platforms often pay more attention to the commercial value of the circulation link and insufficient investment in the production end; finally, the application depth of digital technology in the entire industrial chain is not enough, and most platforms are limited to the onlineization of the transaction link, failing to achieve data connectivity throughout the entire process.

Government support policies, to some extent, compensate for market failures but also introduce new institutional barriers. According to the theory of institutional change, the lack of synergy between mandatory institutional change (government-led) and induced institutional change (market-driven) is a key issue. The practice in Zhanjiang shows that the utilization rate of government-invested infrastructure is not high, reflecting a supply-demand mismatch. Deeper issues include: insufficient precision in policy design, failing to fully consider the actual needs of different development stages and industry types; a tendency to emphasize construction over operation during implementation, with a lack of subsequent maintenance and management mechanisms; and an evaluation system that focuses on short-term effects, neglecting the cultivation of long-term sustainable development capabilities.

3.2 Platform Dimension Dilemma: Traffic Monopoly and Functional Alienation

Research in platform economics reveals the "winner-takes-all" effect in digital markets, which is particularly evident in the agricultural product e-commerce sector. Unlike industrial product e-commerce, the traffic allocation in agricultural product e-commerce is significantly influenced by factors such as the non-standardization of products, production seasonality and cyclicality, and an imperfect quality evaluation system, leading to structural imbalances in traffic allocation. For example, in the Zhanjiang Suixi pitaya (dragon fruit) industry, leading enterprises have obtained most of the platform's recommended traffic by establishing a standardized grading system, while small farmers find it difficult to obtain sufficient exposure.

From the perspective of social functions, platforms face the challenge of realizing social value while pursuing commercial value. According to stakeholder theory, platforms need to balance the interests of investors, operators, consumers, and the community. However, the case of Zhanjiang shows that

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phenomena such as the increase in platform commission rates, the inclination of service content towards high-profit categories, and the weakening of inclusive functions reflect a possible deviation in the platform's value ranking. This may not only violate the original intention of rural e-commerce but also restrict its sustainable development.

3.3 User Dimension Dilemma: Digital Skill Gap and Training Disconnection

The latest developments in digital divide theory indicate that the digital skill gap in rural areas is a complex, multi-dimensional issue. At the individual level, it manifests as gaps in device access, differences in skill mastery, and insufficient depth of application; at the social level, it is influenced by multiple factors such as education level, social capital, and cultural traditions, showing obvious generational and gender differences. Although the penetration rate of smartphones in rural areas of Zhanjiang is relatively high, the configurations are generally low, and the elderly population has weak e-commerce skills and lacks the ability for in-depth application.

The failure of the training system can be analyzed from the perspective of adult learning theory. The practice in Zhanjiang shows that the existing training models have shortcomings in content design, teaching methods, and learning support systems, resulting in poor training results and low knowledge conversion rates. This inefficient training not only fails to effectively improve farmers' digital skills but may also exacerbate their fear of digital technology, forming a negative cycle.

3.4 Basic Dimension Dilemma: Competitive Weakness and Infrastructure Shortcomings

Industrial ecology theory provides a perspective for understanding the weakness of rural e-commerce. From the perspective of production factors, it is manifested as insufficient accumulation of human capital, an imperfect financial support system, and weak technological innovation capabilities; from the perspective of the market environment, it is reflected in insufficient market competition, low consumer awareness, and a lack of industrial supporting services. Rural e-commerce practitioners in Zhanjiang generally lack professional experience, small and micro enterprises have difficulty in financing, and there is insufficient investment in research and development, which restricts the overall competitiveness of the industry.

New structural economics emphasizes the matching of infrastructure with the stage of industrial development. The infrastructure construction in Zhanjiang has problems such as unreasonable spatial layout, "last mile" obstruction, inconsistent technical standards, and unsustainable operation models. These shortcomings not only directly restrict the development of e-commerce but also amplify the weakness of the industry through the transmission effect of the industrial chain, forming a vicious cycle. For example, the lack of cold chain logistics leads to high loss rates of agricultural products, reducing product competitiveness and market benefits.

4. Practical Paths for Rural E-commerce to Drive the Digital Transformation of Rural Industries in Zhanjiang

4.1 Innovation Dimension Driven: Activating Rural Industry Innovation

From the perspective of innovation, rural e-commerce platforms, with their dynamic characteristics of resource integration, government support, and gradual innovation, effectively activate the innovation vitality of rural industries. The resource integration capability of the platform gathers local characteristic brands and industrial advantages, giving rise to new business forms such as rural e-commerce, and cultivating new momentum for the high-quality development of rural industries. At the same time, the government's support for rural e-commerce platforms has explored new development models through land and technology shares, integrating key elements such as systems, funds, and talents, promoting collaborative innovation in rural industries, and pointing out new directions for industrial upgrading. In addition, the continuous development and experience accumulation of rural e-commerce platforms also provide a continuous source of innovation power for rural industries, guiding traditional industries to gradually embrace digital transformation.

4.2 Platform Dimension Driven: Optimizing Rural Industry Operations

In terms of the platform dimension, rural e-commerce platforms exhibit the dynamic characteristics

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of operational model differentiation and social functionality, thereby optimizing the organization and operation of rural industries. The diversity of models encourages rural industries in different regions and with different foundations to seek differentiated development paths, reshape internal and external relationships and functions, and achieve optimization of organizational structure and improvement of efficiency. At the same time, the social functions undertaken by the platform, such as helping farmers, benefiting farmers, and empowering farmers, help to clarify the goals of digital transformation of rural industries and promote them to reposition and expand their social responsibilities, better serve farmers through digital means, and promote the overall transformation of the industry.

4.3 User Dimension Driven: Empowering Rural Practitioners

From the perspective of the user dimension, the special nature of users of rural e-commerce platforms drives them to empower rural practitioners through technology, psychology, and resources, thereby promoting the digital transformation of rural industries. In response to the lack of digital skills of rural practitioners, the platform provides targeted technical training and support. Through publicity and communication, the platform has enhanced their e-commerce awareness and stimulated their enthusiasm for participation. In addition, the platform has also broadened information access channels, improved resource ownership levels and management capabilities, laying a solid human foundation for industrial digital transformation.

4.4 Basic Dimension Driven: Reconstructing Rural Industry Boundaries

In terms of the basic dimension, the relative weakness of competition and the weakness of the foundation of rural e-commerce platforms, on the contrary, promote rural industries to expand their boundaries from both horizontal and vertical aspects, accelerating digital transformation. The low barriers to entry and the high mobility of digital elements enable rural industries to more easily extend to neighboring regions and related industries, promoting deep integration between urban and rural areas and industries. At the same time, rural industries in different regions and with different basic conditions can learn from each other, learn from each other, and cooperate through the platform, improve competitiveness by extending the industrial chain, and open up the connection points of upstream and downstream industries, promoting the digital connection of the entire supply chain.

5. Conclusion

This study systematically analyzes the dilemmas and practical paths of rural e-commerce platforms driving the digital transformation of rural industries in Zhanjiang City. The study found that digital transformation is a systematic project that requires the coordinated promotion of technological innovation, system improvement, and cognitive transformation. Future research can further explore: the optimization path of multi-agent collaborative governanceproblems andthe evaluation system of digital transformation effectivenessproblems.This study not only enriches the theoretical connotation of rural digital transformation, but also provides actionable solutions for practice. With the continuous evolution of digital technology and the continuous improvement of the institutional environment, rural e-commerce platforms will inevitably play a more important role in promoting the digital transformation of rural industries.

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References

[1] Braña, F. J. (2019). A fourth industrial revolution? Digital transformation, labor and work organization: a view from Spain. Journal of Industrial and Business Economics, 46(3), 415-430.
[2] Molinillo, S., & Japutra, A. (2017). Organizational adoption of digital information and technology:

ISSN 2616-5902 Vol. 7, Issue 5: 85-90, DOI: 10.25236/AJBM.2025.070511

a theoretical review. The Bottom Line, 30(01), 33-46.
[3] Henderson, D. (2020). Demand-side broadband policy in the context of digital transformation: An examination of SME digital advisory policies in Wales. Telecommunications Policy, 44(9), 102024.
[4] Qi, Y. D., & Chu, X. (2021). Digital economy development, economic structure transformation and overcoming the middle-income trap. Journal of Finance and Economics, 47(7), 18-32+168. doi:10.16538/j.cnki.jfe.20210517.201.
[5] Westerman, W. (2016). Governance of Tanzanian pension fund investment. Central and Eastern European Journal of Management and Economics (CEEJME), (3), 189-209.
[6] Yao, S. J., Wang, X., & Xu, J. B. (2024). Digital industry development, resource allocation and improvement of green total factor productivity. West Forum, 34(4), 82-93.
[7] Nie, F. Y., & Xiong, X. (2018). Analysis of poverty reduction mechanism of "agricultural e-commerce". Journal of Nanjing Agricultural University (Social Sciences Edition), 18(4), 63-71+158.
[8] Li, X., & Zong, Z. P. (2020). Digital cultural industry: A model and path for rural economic revitalization. Journal of Shenzhen University (Humanities and Social Sciences Edition), 37(2), 74-81.
[9] Li, Z. P., & Wu, F. F. (2021). An empirical study on the impact of rural e-commerce on poverty reduction and rural revitalization. Statistics and Decision, 37(6), 15-19. doi:10.13546/j.cnki.tjyjc.2021.06.003.