

The Current Status and Strategies for Rural E-commerce Development in Yunnan Province under the Digital Economy Context

Tongwei Wang^{1,a,*}

¹*Yunnan School of Economics, Yunnan University of Finance and Economics, Kunming, China*

a. wangtw1115@163.com

**corresponding author*

Abstract: In the context of the digital economy, rural e-commerce, as an emerging business model, plays a significant role in promoting rural economic development. However, there are challenges in its development. This paper first conducts an in-depth analysis of the development status of rural e-commerce in Yunnan Province, identifying a series of challenges it faces, including inadequate infrastructure and logistical difficulties. Subsequently, through theoretical analysis, the paper proposes a set of solutions and strategies for the development of rural e-commerce. These solutions mainly include strengthening rural e-commerce infrastructure construction and improving network coverage, enhancing rural e-commerce talent development, raising awareness and skills among farmers, and strengthening government support and policy guidance to provide a better development environment and policy support for rural e-commerce. The research results of this paper contribute to further promoting the development of rural e-commerce and fostering rural economic prosperity.

Keywords: digital economy, rural e-commerce, strategies, Yunnan province

1. Introduction

In today's era, the rapid development of the digital economy has brought profound changes to traditional economies, breaking new ground in economic development through the application of digital technology. This transformation is particularly evident in rural areas, where it has a pronounced impact on economic development. Rural e-commerce, as a significant component of the digital economy, plays a vital role in rural economic development due to its unique advantages. However, the development of rural e-commerce is accompanied by challenges, including inadequate infrastructure and a lack of e-commerce knowledge and skills among rural residents. These challenges need to be thoroughly researched and addressed to facilitate the development of rural e-commerce.

Located on the southwestern border of China, Yunnan Province is not only an important province in China but also a crucial hub and radiating center connecting South Asia and Southeast Asia. Therefore, the economic development of Yunnan Province holds great significance. While rural e-commerce in Yunnan Province has been growing rapidly, it still lags behind more developed regions. Due to factors such as ideology, education, and technology, the initiation of rural e-commerce in Yunnan Province occurred relatively late. Rural residents in some areas have limited awareness and

access to e-commerce, and certain regions lack developed networks and information infrastructure, hindering the potential impact of the digital economy.

This paper conducts research on the development of rural e-commerce in Yunnan Province under the backdrop of the digital economy. It particularly focuses on the role of digitization in Yunnan's e-commerce, the challenges it faces, and strategies to address these challenges. The objective is to comprehensively understand the current state of rural e-commerce, analyze its challenges, and expand the analysis of the impact of the digital economy on the development path of rural e-commerce in Yunnan Province. This research aims to provide scientific insights for decision-makers, formulate relevant strategies, promote rural economic development, support poverty alleviation, rural revitalization, and contribute significantly to the construction of digital rural areas in Yunnan Province.

In terms of research methods, this paper adopts a literature review approach and case analysis. Through an extensive review of relevant literature, the latest research findings on rural e-commerce development are examined. Through case analysis, successful rural e-commerce models are studied in depth to analyze the factors contributing to their success and draw lessons from their experiences.

2. Literature Review

2.1. Relevant Studies by Domestic and International Scholars

The concept of the digital economy was first proposed by Don Tapscott in 1996 [1]. Subsequently, scholars worldwide have conducted in-depth research on the digital economy. They generally agree that the digital economy encompasses economic activities driven by information and communication technologies, aiming to promote national economic development. Kshetri pointed out that rural e-commerce in developing countries is relatively weak and suggested that one approach to developing rural e-commerce is to collaborate with the private sector and work on public-private partnerships (PPP) [2]. HAJI, through data analysis, found that rural e-commerce in BRICS countries has been developing rapidly but unevenly, and proposed deeper cooperation among BRICS countries in areas such as infrastructure, education, and remote regions [3].

In contrast, China's rural digital development started relatively late and gained momentum around 2018. Wang Yanjie and others discussed the positive impact of financial development on rural e-commerce through the intermediary effect model [4]. Liu Tingting and colleagues used micro-data from the CFPS to show that the regression coefficient of internet participation is significantly positive, indicating that increasing internet participation is an important driver of rural household consumption. The internet can influence rural household consumption by affecting their cognition and perceptions, and enhanced internet participation helps increase the preference for online consumption patterns and raises household consumption [5]. Yang Shoude and others used a spatial Durbin model for empirical analysis and demonstrated that the digital economy significantly promotes rural modernization, and e-commerce benefits rural areas through spatial spillover effects [6].

From previous research, it is evident that as the digital economy develops, e-commerce has expanded from urban to rural areas, continuously growing in scale. Additionally, the internet effectively stimulates consumption, indirectly driving the robust development of e-commerce and accelerating rural modernization. However, previous studies mainly focused on rural areas nationwide, and Yunnan Province, as a major agricultural province in China, faces unique challenges due to its natural environment, politics, economy, and other factors. It is characterized by a relatively underdeveloped interior and a high population of impoverished residents, particularly in rural areas. Therefore, this paper concentrates on studying the current status of rural e-commerce in Yunnan Province, proposing practical development and solution methods tailored to the local context to assist

Yunnan Province and even southwestern China in achieving rural revitalization and high-quality economic development.

2.2. Relevant Studies on Rural E-commerce in Yunnan Province

Development of the digital economy in Yunnan Province: In recent years, Yunnan has made some progress in the development of the digital economy. The provincial government established the “Digital Yunnan” construction leading group and issued policy documents such as the “Yunnan Province Digital Economy Development Plan.” Moreover, Yunnan Province formulated supporting measures in finance, taxation, finance, and land to attract top domestic and foreign companies, talents, venture capital, and industry funds to participate in the construction of “Digital Yunnan.” Additionally, Yunnan has strengthened cooperation with advanced domestic and international research platforms, institutions, and experts, establishing the “Digital Yunnan” International Cooperation Research Center and Yunnan Digital Economy Research Institute. Public laboratories, research and development centers, and incubation bases have been set up to support enterprises in building technology innovation centers. In the “Thousand Talents Plan” and “Ten Thousand Talents Plan,” a certain proportion of quotas were allocated to support special talent introduction for the development of the digital economy. Incentive measures such as honors, subsidies, and life assistance have been established to attract talent for digital economic development in Yunnan. Meanwhile, projects such as “One Mobile Phone for Touring Yunnan,” “One Mobile Phone for Administrative Services,” and “One Mobile Phone for Yunnan Products” have been launched, gradually forming the “One Mobile Phone” series brand [7]. In addition, major projects such as the cloud computing centers of companies like Huawei, Inspur, and China Mobile, as well as the China Forestry Big Data Center, China Forestry Rights Trading Center, and the National Agriculture and Rural Big Data Center Yunnan Branch, have been successively constructed and put into operation in Yunnan. These projects fully demonstrate Yunnan’s advantages in data resources.

The current status of digital infrastructure in Yunnan Province is a significant aspect of China’s digital economic development. It places a high emphasis on infrastructure development, which has witnessed remarkable progress in digital infrastructure. In the forthcoming era of 5G, Yunnan Province is striving to enhance its information infrastructure and foster the extensive development of related information technology industries. Collaborating with advanced technologies, it aims to drive economic transformation within the province, accelerate the further development of digital economy construction, and achieve substantial progress. To facilitate the transition from traditional manufacturing to intelligent manufacturing, the Yunnan provincial government is actively conducting experiments in the application of 5G in areas such as agriculture, industry, and the Internet of Things (IoT). In recent years, Yunnan Province has significantly accelerated the renewal of its information infrastructure, ranking 9th in the nation in terms of the length of network optical cables and the number of 4G base stations. Several key national-level data centers, including the National Anti-Drug Big Data Yunnan Center and China Forestry Big Data Center, have established their presence in Yunnan. Simultaneously, Yunnan is expediting the construction of “new infrastructure” in digitalization, incorporating cutting-edge technologies such as 5G and artificial intelligence. A series of high-level conferences, such as the inaugural meeting of the China-Thailand Ministerial Dialogue on Digital Economy Cooperation and the China-ASEAN Information and Communication Innovation Forum, have been held in Yunnan. The establishment of the Yunnan Digital Innovation (Dali) Industrial Park has contributed to the substantial growth of the information industry’s main business revenue. Moreover, the “One Mobile Phone” series of products is becoming an essential product line in Yunnan’s digital economy, driving rapid development in smart tourism, smart governance, smart cities, and the digitalization of rural areas, laying a solid foundation for Yunnan’s future digital development [8]. Despite Yunnan’s significant achievements in the field of digital development, there

are still some gaps compared to advanced levels both domestically and internationally due to relatively weak information infrastructure.

The current status of rural e-commerce development in Yunnan Province reveals a continuous expansion of transaction scale. The Yunnan Provincial Department of Commerce reports that from 2016 to 2021, the province's online retail sales increased from 34.848 billion RMB to 132.296 billion RMB, with an average annual growth rate of 39.59%. With the rapid development of "Internet+" and the enrichment of the rural online shopping market, the coverage of rural e-commerce is gradually expanding, entering a period of rapid growth. Many counties have become comprehensive demonstration areas for national e-commerce in rural areas, fully leveraging their geographical advantages to vigorously promote cross-border e-commerce platform transactions. Since the COVID-19 pandemic, rural e-commerce has become an important channel for increasing rural income, promoting the transformation and upgrading of the rural economy. Simultaneously, the service network of rural e-commerce continues to optimize its coverage, enabling even remote mountainous areas to participate in online transactions. The logistics network at the county, township, and village levels is constantly improving, facilitating better promotion and sales of high-quality products.

In summary, Yunnan Province places a high priority on the development of the digital economy and has achieved some foundational infrastructure results. Additionally, the development and transaction scale of e-commerce in rural areas continue to expand. However, there still exists a significant gap when compared to more developed regions. This paper aims to analyze the impact of the digital economy on the development of rural e-commerce in Yunnan Province, expand the analysis of the path to achieving economic development in rural e-commerce in Yunnan Province, and contribute to the high-quality development of Yunnan's economy, rural revitalization, and the economic development of neighboring provinces or countries.

3. Analysis of the Development Issues of Rural E-commerce in Yunnan

3.1. The Impact Mechanism of the Digital Economy on Rural E-commerce in Yunnan

Enhancing Informatization: The digital economy provides rural e-commerce in Yunnan with more information tools and technological support. Through technologies like the internet and mobile internet, rural e-commerce in Yunnan can access market information, product details, and consumer demands, thus improving operational efficiency and competitiveness. For instance, rural e-commerce can utilize big data analysis to precisely tailor product recommendations and services based on consumer behaviors and preferences.

Expanding Market Channels: The digital economy offers broader market channels for rural e-commerce in Yunnan Province. Leveraging technologies such as the internet and mobile internet, rural e-commerce can extend the reach of product promotion and sales to other provinces, enabling remote sales and cross-regional transactions of agricultural products. For example, rural e-commerce can use e-commerce platforms and social media channels to promote agricultural products to a wider consumer base, thereby enhancing product visibility and sales volume.

Optimizing Supply Chain Management: The digital economy provides more efficient supply chain management tools and technological support for rural e-commerce in Yunnan Province. Rural e-commerce can employ technologies like the Internet of Things (IoT) and cloud computing to achieve end-to-end tracking and monitoring of agricultural products, thereby enhancing product quality and safety. Additionally, rural e-commerce can utilize big data analytics to optimize inventory management, order processing, and logistics distribution, improving the efficiency of agricultural product circulation and reducing costs.

Enhancing Innovation Capability: The digital economy offers more opportunities for innovation and innovative business models for rural e-commerce in Yunnan Province. Through the application

of digital technologies, rural e-commerce can engage in new product development and promotion, explore novel business models, and devise innovative marketing strategies, ultimately increasing the added value and competitiveness of agricultural products. For example, rural e-commerce can leverage various livestreaming platforms to create online experiences and interactions for agricultural products, attracting more consumers to participate and make purchases.

In summary, the impact mechanism of the digital economy on rural e-commerce in Yunnan mainly revolves around enhancing informatization, expanding market channels, optimizing supply chain management, and strengthening innovation capabilities. These mechanisms drive the development and growth of rural e-commerce in Yunnan, facilitating the circulation and value addition of agricultural products.

3.2. Issues and Reasons for the Development of Rural E-commerce in Yunnan Province

1) Inadequate E-commerce Infrastructure

The rural areas of Yunnan Province have relatively weak infrastructure, including network coverage and logistics distribution. This poses challenges for rural e-commerce, particularly in the areas of order processing and logistics distribution. Specifically, in terms of network coverage, as of 2023, Yunnan Province had 25.03 million households with 5G terminal devices, achieving a 53% penetration rate, according to data from the Yunnan Provincial Communication Administration. However, due to the complex terrain of Yunnan, with mountains and rugged terrain covering as much as 84% of the region, wireless network coverage remains challenging, with many areas still lacking 5G network coverage. In terms of logistics distribution, the rural areas of Yunnan Province have poor transportation conditions, narrow and rugged roads, and an underdeveloped logistics technology environment, resulting in high distribution costs and longer delivery times, further impacting order processing and customer satisfaction in rural e-commerce.

2) Lack of E-commerce Talent and Technical Support

Rural areas of Yunnan Province face issues related to a lack of e-commerce talent and insufficient technical support, which restricts the development of e-commerce among rural residents. Firstly, Yunnan Province is located in a remote southwestern border area, which results in relatively limited educational resources, leading to lower overall educational levels among rural residents. This lack of education means that rural residents often lack knowledge and skills related to e-commerce, making it difficult for them to effectively operate e-commerce platforms. Secondly, the rural areas of Yunnan Province have a relatively weak technical support system and a shortage of professional e-commerce technology talent. The absence of technical support and solutions makes it challenging for rural residents to overcome difficulties in e-commerce platform construction, product promotion, and marketing planning, thereby constraining the development of rural e-commerce.

3) Issues with Agricultural Product Quality and Branding

During the development of rural e-commerce, there are several issues that hinder its growth. Among them, the quality and safety of agricultural products are particularly important concerns. Due to problems in the production environment and quality management of agricultural products, consumers have doubts about the quality and safety of agricultural products, which affects the reputation and sales of rural e-commerce in the market. The production environment for agricultural products in rural areas is often not standardized, with issues such as excessive pesticide use. The quality management system for agricultural products is incomplete, lacking uniform standards and regulations, which hinders effective quality monitoring and control of agricultural products. Additionally, rural e-commerce lacks consumer trust and market recognition. The absence of brand building and brand awareness, as well as low consumer trust, restricts the credibility and market share of rural e-commerce.

4) Lack of Financial Support and Financing Channels

In the process of developing rural e-commerce in Yunnan Province, there is a significant bottleneck due to a lack of adequate financial support and diverse financing channels. Specifically, rural e-commerce operations involve higher risks, including market and supply chain risks. Moreover, in rural areas, the construction of a credit system lags behind, leading to uncertainties in credit assessments for e-commerce enterprises. Consequently, traditional financial institutions tend to adopt conservative approaches when faced with financing demands from rural e-commerce businesses. On the other hand, there is a shortage of financing institutions in rural areas of Yunnan Province, and financing channels are limited, especially the absence of financial service organizations dedicated to rural e-commerce. This hinders rural e-commerce startups in need of initial-stage funding, significantly restricting their development. These two factors together contribute to financial difficulties during the development of rural e-commerce.

4. Strategies for the Development of Rural E-commerce in Yunnan Province in the Context of the Digital Economy

4.1. Strengthen Rural Informatization Infrastructure and Build Urban-Rural Logistics Systems

Economic development in rural areas of Yunnan is weak, with limited access to information, inconvenient transportation, and generally conservative attitudes among rural residents, leading to a lack of trust in e-commerce. To promote rural e-commerce in rural areas, continued progress in the planning and construction of “digital villages” is essential. The government should provide dedicated construction funds, establish stable and reliable support policies, increase investment, and simultaneously explore the establishment of a collaborative mechanism between fiscal funds and social capital to further integrate and optimize various resources in rural areas, including rural internet networks, communications, and land. In the construction of rural e-commerce, the government should play a leading role and, through cooperation with logistics companies, create logistics systems tailored to the development of rural e-commerce, addressing critical factors in overcoming logistical challenges. The government needs to establish logistics systems at the county, township, and village levels by collaborating with selected logistics companies, optimizing product packaging, warehousing, transportation, and distribution to create an integrated logistics system.

4.2. Strengthening Digital Literacy Training for Rural Residents to Provide Endogenous Momentum for Digital Economic Development

Currently, in Yunnan Province, there is a significant loss of young population from rural areas, and the phenomenon of elderly individuals remaining in villages is widespread. Education levels, age, and physical conditions pose significant obstacles for elderly individuals in rural areas when it comes to advancing digital economic development. In response, the “National Outline for Improving Digital Literacy and Skills for All 2022,” jointly released by the Central Cyberspace Administration and four other departments, emphasizes the continued importance of enhancing the mobile and digital tool skills of farmers. Therefore, establishing and optimizing a training system for digital knowledge and skills among rural residents, enhancing their capacity for digital thinking, and gradually promoting digital services and education in rural areas will serve as an endogenous driving force for advancing digital economic development. The government can facilitate this by establishing training centers for rural electronic commerce, allowing rural residents to acquire knowledge in e-commerce, mobilizing their enthusiasm, and creating more opportunities to promote online sales of agricultural products. This can indirectly attract rural youth to engage in the e-commerce industry.

4.3. Advancing Product Specialization and Standardization in Agriculture, Creating Distinctive Local Advantage Brands

Yunnan Province boasts abundant ecological resources, favorable climate conditions, and rich ethnic cultures, all of which play a critical role in enhancing the distinctiveness of agricultural products. Examples include Pu'er tea, Xuanwei ham, Yunnan fresh flower cakes, Wenshan ginseng, and Xiaguan tuo cha tea. By utilizing unique cultivation conditions or processing methods, the level of distinctiveness of agricultural products can be elevated. This can be achieved by promoting further processing of specialty agricultural products, extending the industrial chain, expanding online sales channels, and offering consumers unique product value. Simultaneously, establishing a system for standardizing specialty agricultural products, encompassing standards related to product quality, safety, and production environment, is crucial to ensure product quality and safety. Strengthening supervision over the production and sales of specialty agricultural products, increasing penalties for non-compliance, and enhancing the standardization and transparency of the specialty agricultural product market are also essential. Through various channels and media outlets, intensifying the promotion and publicity of specialty agricultural products can increase consumer awareness and willingness to purchase such products.

5. Conclusion

This paper aims to address the development challenges faced by rural e-commerce in Yunnan Province under the backdrop of the digital economy. It provides a profound analysis of the current state of rural e-commerce development in Yunnan Province, the impact mechanisms of the digital economy on the rural e-commerce sector, and the issues surrounding its development. In conclusion, rural e-commerce holds significant development potential in the context of the digital economy. By implementing strategies such as government support, infrastructure development, farmer training, and quality control measures, rural e-commerce can be further promoted, contributing to the growth of rural economies and increased income for farmers. This is of great significance in supporting rural revitalization efforts. However, it's important to acknowledge that this study has certain limitations. The observation period for this research is limited to recent years, while the factors influencing the development of rural e-commerce may require an extended timeframe to fully manifest. Additionally, this study heavily relies on publicly available data and conducts statistical and economic analyses, potentially omitting various multifaceted factors, including economic, social, policy, and technological influences. Future research can consider collecting data over longer periods to observe long-term impacts and conduct more qualitative studies to gain deeper insights into social, cultural, psychological, and other aspects affecting the development of rural e-commerce. This will contribute to a more comprehensive understanding of the current status and future trends in rural e-commerce development.

References

- [1] Nakasone, E., Torero, M., & Minten, B. (2014). *The Power of Information: The ICT Revolution in Agricultural Development*. *Annual Review of Resource Economics*, 6(1).
- [2] Kshetri, N. (2018). *Rural e-Commerce in Developing Countries*. *IT Professional*, 91–95. <https://doi.org/10.1109/mitp.2018.021921657>
- [3] Haji, K. (2021). *E-commerce development in rural and remote areas of BRICS countries*. *Journal of Integrative Agriculture*, 979–997. [https://doi.org/10.1016/s2095-3119\(20\)63451-7](https://doi.org/10.1016/s2095-3119(20)63451-7)
- [4] Wang, Y., Yang, R., & Gao, Q. (2022). *Financial Development, Information Infrastructure, and Rural E-commerce: An Empirical Study Based on the Intermediary Effect Model*. *Technology Economics and Management Research*, (04), 73–79.

- [5] Liu, T., Wen, X., & Pan, M. (2022). *Digital Economy and the Enhancement of Rural Household Consumption Capacity: Theoretical Mechanism and Empirical Testing*. *Economic Issues*, (07), 95–101.
- [6] Yang, S., & Mao, X. (2023). *Empowering Rural Modernization through Digital Commerce under the Background of the Digital Economy: An Empirical Study Based on Spatial Spillover Effects*. *Research on Business Economics*, (14), 80–85.
- [7] Ye, L., Deng, Y., & Bao, Y. (2020). *The Current Situation and Countermeasures of Blockchain Industry Development in Yunnan Province*. *China Economic and Trade Guide (Chinese)*, (04), 67-69.
- [8] Hong, Z. (2021). *Seizing the Opportunity of the Digital Economy to Accelerate the Digitalization of Yunnan Province: Yunnan Province's Practice in Digital Economic Development*. *Big Data (Chinese)*, (03), 156-160.