

A Brief Analysis on the Construction of Rural E-commerce Service System in Counties of Northwest Sichuan

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Abstract

Against the backdrop of the rural revitalization strategy and the Digital China initiative, developing rural e-commerce represents a crucial pathway for advancing economic and social development in counties across northwest Sichuan. This paper focuses on the construction of the rural e-commerce service system in these counties, systematically examining the current state and core needs of e-commerce development in the region through literature review and case analysis. The study reveals significant gaps in the current e-commerce service system in northwest Sichuan counties concerning infrastructure, logistics and distribution, talent support, brand building, and multi-element coordination, which are constrained by multiple factors such as geographical location, economic foundation, talent outflow, and institutional mechanisms. To address these issues, this paper proposes an optimized pathway for the service system characterized by “government guidance, market-led, and multi-stakeholder collaboration.” It emphasizes the reinforcement of infrastructure and cold-chain logistics, the implementation of localized talent development programs, the creation of distinctive regional brands, and the deep integration of e-commerce with cultural tourism and other industries. The aim is to provide theoretical references and practical guidance for enhancing the efficiency of rural e-commerce development, increasing farmers’ and herders’ incomes, and promoting sustainable regional development in northwest Sichuan counties.

Keywords

northwest Sichuan
county
rural e-commerce
service system
rural revitalization

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1. Introduction

With the rapid advancement of digital technology and the in-depth implementation of China’s rural revitalization strategy, rural e-commerce has emerged as a crucial

engine driving agricultural transformation and upgrading, as well as increasing farmers’ incomes and prosperity. Northwest Sichuan, an important ecological functional area and ethnic settlement in Sichuan Province, boasts

high-quality agricultural and pastoral products such as yaks, Tibetan medicinal herbs, and specialty fruits and vegetables, along with rich ethnic cultural and eco-tourism resources, presenting immense potential for rural e-commerce development. However, constrained by factors such as complex geographical conditions, high transportation and logistics costs, a shortage of professional talent, and an imperfect industrial chain, its e-commerce development still faces numerous challenges, particularly an underdeveloped service system that fails to adequately support efficient e-commerce operations. Constructing a systematic and sustainable rural e-commerce service system is key to addressing the difficulties in “getting agricultural products to market” and ensuring the “last-mile delivery of industrial goods to rural areas.” Focusing on counties in northwest Sichuan, this paper delves into the current state, issues, and underlying causes of their rural e-commerce service system, drawing on beneficial experiences from both domestic and international contexts. It aims to propose targeted and actionable optimization strategies, with the intention of providing valuable references for enhancing e-commerce development levels, promoting industrial integration, and facilitating rural revitalization in the region.

2. Theoretical Foundations

The service-dominant logic emphasizes that value is co-created by multiple parties through service exchanges. When applied to the field of rural e-commerce, it implies that entities such as the government, e-commerce platforms, logistics enterprises, cooperatives, and farmers need to collaborate and interact to jointly build and improve the service system, thereby achieving value co-creation. The theory of sustainable development provides important guidance for e-commerce development in northwest Sichuan, requiring that economic benefits be pursued while also taking into account ecological protection and cultural heritage. This ensures that development does not come at the expense of the environment, aligning with the region’s functional positioning as an important ecological barrier. The regional innovation system theory regards a county as an innovation unit and considers the construction

of an e-commerce service system as an important manifestation of regional innovation capability. Its core lies in promoting the flow and integration of knowledge, technology, and resources among different innovation entities, thereby stimulating local economic vitality^[1]. The digital divide theory reveals disparities in information access and technological usage capabilities among different groups. In northwest Sichuan, this manifests as farmers and herders being unable to fully participate in e-commerce activities due to insufficient digital literacy. Therefore, the construction of the service system must include mechanisms to bridge this divide, such as popularizing training and providing inclusive information services, to ensure the inclusiveness and fairness of development outcomes^[2].

3. Analysis of the Development Status and Demands of Rural E-commerce in Counties of Northwest Sichuan

3.1. Development Status of Rural E-commerce

In recent years, driven by relevant national and provincial policies, various counties in northwest Sichuan have successively launched rural e-commerce development projects. Some counties and cities have been designated as national or provincial comprehensive demonstration counties for promoting e-commerce in rural areas, receiving special fund support and initially establishing a three-tier public service network for e-commerce at the county, township, and village levels. The coverage of broadband networks and mobile communications continues to expand, with most townships having achieved 4G network accessibility, providing basic conditions for e-commerce applications. Some local e-commerce enterprises, specialized cooperatives, and individual operators have begun to conduct online sales through social e-commerce platforms such as Taobao, JD.com, Pinduoduo, Douyin (TikTok’s Chinese version), and Kuaishou, mainly dealing in products like yak jerky, dairy products, wild mushrooms, Tibetan tea, ethnic handicrafts, and tourism routes. The upward movement of agricultural products has become a focal point of development, with some counties attempting to integrate production resources through the “cooperative + farmer + e-commerce” model and sell products under a unified

brand. New business forms such as live-streaming e-commerce have also gradually emerged, becoming new channels for promoting local specialty products. Despite achieving initial results, the overall development is still in its infancy^[3]. The scale of e-commerce entities is generally small, with limited operational capabilities and high dependence on third-party platforms. Logistics and distribution are slow and costly, especially with a severe shortage of cold-chain logistics facilities, which restricts the long-distance sales of fresh agricultural products. At the same time, there is an acute shortage of professionals in operations, marketing, promotion, and data analysis, resulting in low activity levels of online stores and unsatisfactory marketing effects. A stable and sustainable business model has yet to be formed^[4].

3.2. Analysis of the Demands for Rural E-commerce Development

The internal demands for developing rural e-commerce in counties of northwest Sichuan are increasingly prominent. The most urgent need is to solve the problem of “difficulties in selling” specialty agricultural products by expanding sales channels through e-commerce platforms, reducing intermediate links, increasing product added value, and directly driving the income growth of farmers and herders. With consumption upgrading, the demand of local residents for high-quality industrial products and living services is also growing. The downward movement of industrial products helps reduce procurement costs and improve the quality of life. Relying on rich cultural and tourism resources, there is a strong market demand for an integrated model of “e-commerce + tourism,” expecting to achieve one-stop services for ticket booking, homestay booking, and specialty product sales through online platforms, thereby extending the industrial chain. The need for industrial integration is equally important. E-commerce can serve as a link to promote the coordinated development of agriculture, culture, tourism, health care, and other industries, forming new economic growth points. In terms of employment, rural e-commerce provides opportunities for returning youth and left-behind women to start businesses and find employment locally, alleviating the pressure of population outflow^[5]. In addition, there is a strong demand among farmers and herders for training in e-commerce knowledge, online

marketing skills, and smartphone applications. There is an urgent need to bridge the digital divide through systematic education and enhance their ability to participate in the digital economy. These multi-level and multi-dimensional demands collectively point to the construction of a rural e-commerce service system that is well-functioning, operates efficiently, and provides precise services^[6].

4. Constituent Elements and Operational Status of the Rural E-commerce Service System in Counties of Northwest Sichuan

4.1. Analysis of the Service System’s Constituent Elements

The construction of a rural e-commerce service system in the counties of northwestern Sichuan is a systematic project, whose effective operation relies on the coordinated support of multiple key elements. Infrastructure forms the prerequisite for system operation, encompassing broadband networks, mobile communication signals covering county-township-village levels, and a rationally distributed network of e-commerce service stations. These physical facilities provide the foundation for information transmission and transaction activities. The logistics and supply chain system serves as the core connecting production and consumption, including warehousing, sorting, transportation, and delivery networks from origin to consumer. In particular, there is a pressing need to address insufficient cold-chain logistics capacity in high-altitude areas to ensure the quality of fresh agricultural products^[7]. The talent and training system is crucial for sustainable service development, involving the cultivation and recruitment of local professionals in e-commerce operations, online store design, live-stream selling, and customer service, as well as basic skill training for farmers and herders. The platform and operational support system provides technical assistance for merchants, including the development of local e-commerce platforms or special zones, third-party platform store agency operations, and support for online store design and marketing promotion. The financial and payment services system offers essential capital turnover for e-commerce participants through inclusive credit, e-commerce-specific loans,

and convenient mobile payment solutions. The branding and marketing promotion system aims to enhance product market competitiveness by establishing regional public brands, implementing product standardization certification, and executing online marketing strategies (such as live streaming and short videos) to expand market influence. The policy and regulatory service system, led by the government, provides incentives such as fiscal subsidies, tax reductions, and land-use support, while strengthening market supervision to maintain fair competition. The information and data service system collects, analyzes, and disseminates information on market supply and demand, price trends, and consumer behavior, supporting decision-making and precision marketing. These interconnected elements collectively form an integrated framework that supports the development of rural e-commerce^[8].

4.2. Current Operation Status and Typical Models

The current operation of the rural e-commerce service system in the counties of northwestern Sichuan exhibits a landscape characterized by government leadership alongside diverse exploratory initiatives. Most counties rely on national or provincial comprehensive demonstration projects for e-commerce in rural areas, with governments funding the establishment of county-level e-commerce public service centers, township service stations, and village-level service points. This creates a basic “center + station” framework where services include business agency, information consultation, and basic training. However, some village-level stations suffer from limited functions and low utilization rates. In terms of logistics, a common model involves cooperation between postal services and courier companies. By integrating resources, basic coverage at the township level has been achieved, but last-mile delivery to villages often still depends on non-professional methods such as passenger buses carrying goods, resulting in unreliable timeliness and consistency^[9]. Regarding operational models, the government-led model is most prevalent: the government purchases services and introduces third-party operating companies to manage e-commerce service centers, organize training, connect with platforms, and conduct marketing campaigns. In enterprise-driven models,

local leading enterprises or cooperatives leverage their resource advantages to establish online sales channels and drive participation from surrounding farmers—such as yak-breeding cooperatives that centrally purchase, process, and sell members’ products. The cooperative-organized model uses farmers’ professional cooperatives as carriers to pool members’ products and sell them collectively via e-commerce platforms, thereby improving bargaining power^[10]. In recent years, a multi-stakeholder collaborative model has begun to emerge, in which the government, e-commerce platforms (e.g., JD.com, Pinduoduo), local service providers, cooperatives, and farmers form a community of shared interests, with each party contributing according to its strengths to jointly promote product sales. Despite this diversity of models, the overall integration among system components remains low. High logistics costs, shortage of specialized personnel, and weak brand influence continue to constrain the effectiveness of the service system^[11].

5. Major Challenges and Root Causes in the Development of Rural E-Commerce Service Systems in Counties of Northwestern Sichuan

5.1. Key Problems in the Service System

The rural e-commerce service system in the counties of northwestern Sichuan reveals multiple shortcomings in practical operation, restricting its overall effectiveness. Insufficient infrastructure support is a key issue: although network coverage exists in some remote villages, signal instability persists; while e-commerce service stations have been widely established, their functions remain basic and they have failed to transform into comprehensive service hubs. The inefficiency of the logistics and distribution system stands out as the most critical bottleneck. A lack of professional cold-chain logistics facilities within counties results in high post-harvest losses for fresh agricultural products. Long-distance trunk transportation incurs high costs, last-mile delivery cannot be sustained routinely, and difficulties in delivering parcels to villages—along with slow delivery times and high fees—are widespread problems. There is a severe shortage of professional talent: not only is there a lack of composite professionals skilled in e-commerce operations,

online marketing, and data analysis, but also a scarcity of local personnel capable of operating platforms or conducting live-stream sales. Existing training programs are often superficial and lack continuity, failing to meet real operational needs. On the supply side, agricultural production is predominantly fragmented and small-scale, resulting in low levels of standardization and scale. Product quality varies significantly, brand awareness is weak, development of regional public brands lags behind, and market competitiveness remains insufficient. Platform operation capabilities are generally weak: most operators rely heavily on third-party platforms, lack independent operational capacity, employ limited marketing methods, and have limited ability to leverage new traffic channels such as live streaming and short videos. The financial support system is underdeveloped, with scarce credit products tailored for micro and small e-commerce operators and narrow financing channels. Poor coordination among various service elements leads to fragmented systems, with inefficient collaboration mechanisms between government, enterprises, platforms, cooperatives, and farmers, preventing effective integration of resources. Policy support sometimes emphasizes construction over operation and hardware over software. Meanwhile, regulatory frameworks need strengthening in areas such as product quality traceability, intellectual property protection, and consumer rights enforcement^[12].

5.2. Analysis of Root Causes

The emergence of these problems stems from a complex interplay of multiple factors. Geographic and natural conditions constitute major objective constraints: northwestern Sichuan is sparsely populated, with complex terrain and cold climates, leading to high costs for building and maintaining infrastructure and great challenges in organizing logistics. The region's ecologically sensitive environment further restricts large-scale development. At the county level, weak economic foundations and limited fiscal capacity hinder sustained funding for the high-cost operation of e-commerce service systems. Small market entities have weak risk resilience, limiting the market-driven supply of services. Socio-culturally, many farmers and herders have low educational attainment, slower acceptance of new technologies, and generally low digital literacy, resulting

in insufficient motivation and capability to participate in e-commerce. At the same time, serious outflow of local talent and difficulty attracting external talent create a "double dilemma" in talent supply. Institutionally, poor inter-departmental coordination exists: e-commerce development involves multiple agencies such as commerce, agriculture, transportation, postal services, and cyberspace administration, whose policies and resources are scattered. A lack of unified planning and efficient coordination leads to fragmented and inconsistent service system development^[13]. Market maturity is low: there are few local specialized e-commerce service providers, and their service capabilities are weak, making it difficult to deliver high-quality operational, marketing, and technical support. Furthermore, inadequate understanding of the long-term and complex nature of e-commerce development has led some local governments to adopt a hasty approach. This results in policy designs that are misaligned with actual needs, with support measures failing to precisely target core weaknesses in the service system—particularly sustained investment in "soft power" areas such as logistics, talent, and branding.

6. Lessons from Domestic and International Experiences in Rural E-Commerce Service System Development

6.1. Experiences from Advanced Domestic Regions

The rural e-commerce development practices in certain regions of China offer valuable insights for building service systems. The Suichang model in Zhejiang Province centers on the local e-commerce service provider "Ganji.com," which integrates logistics, training, finance, marketing, and other resources to build a comprehensive ecosystem covering county, township, and village levels. Its success lies in cultivating a localized professional operating entity, enabling market-oriented and sustainable operations. The Shaji model in Jiangsu Province demonstrates the power of grassroots entrepreneurship: farmers spontaneously began selling furniture via e-commerce platforms, forming an industrial cluster. The government later stepped in to provide infrastructure, skills training, and market regulation, illustrating a

collaborative path of “market-led, government-guided” development. Wugong County in Shaanxi Province leveraged its geographic advantages to establish an e-commerce distribution hub with the slogan “Buy Northwest, Sell Nationwide.” By consolidating specialty agricultural products from Shaanxi and neighboring provinces and establishing large-scale warehousing, logistics bases, and sorting centers, it effectively reduced logistics costs and enhanced regional aggregation and distribution capabilities^[14]. In ethnic minority regions such as Yunnan and Guizhou, rural e-commerce development emphasizes deep integration with ethnic culture and eco-tourism. Through models like “intangible cultural heritage + e-commerce” and “tourism + e-commerce,” short videos and live streaming are used to vividly showcase ethnic customs and product-making processes. This approach has successfully created differentiated brand images and achieved dual enhancement of cultural and economic value. These cases demonstrate that successful rural e-commerce service systems typically feature clearly defined local service operators, effective collaboration between government and market forces, deep utilization of regional unique resources, and innovative logistics solutions.

6.2. International Lessons

Agriculturally advanced countries have accumulated mature experience in building agricultural e-commerce service systems. The Netherlands, a global agricultural powerhouse, boasts an efficient cold-chain logistics system and advanced technologies in produce grading, packaging, and pre-cooling, ensuring product quality stability during long-distance transport and providing solid support for agricultural e-commerce. In the United States, agricultural cooperatives play a central role in agricultural distribution. Cooperatives not only organize production but also manage branding, market expansion, and e-commerce sales collectively, effectively solving the problem of smallholders accessing large markets and reducing transaction costs. Countries such as Germany and Japan emphasize agricultural informatization, with governments or industry associations establishing authoritative agricultural information platforms that provide real-time market prices, supply-demand data, and quality standards, supporting decision-making for

producers and operators. These countries generally possess well-developed rural infrastructure and inclusive financial services, creating a favorable environment for e-commerce. Their experiences highlight the foundational roles of standardized production, organized operation, specialized logistics, and information-based services within e-commerce service systems^[15].

6.3. Implications for Northwestern Sichuan

Drawing on domestic and international experiences, counties in northwestern Sichuan should prioritize practicality and uniqueness when building their rural e-commerce service systems. They must avoid simply replicating models from plains or developed regions and instead develop adaptive pathways based on the region’s high altitude, ecological sensitivity, and multi-ethnic character. Efforts should focus on cultivating or introducing local professional e-commerce operating agencies empowered to integrate resources in logistics, training, and marketing, avoiding sustainability issues caused by excessive government control. Inspired by the “distribution center” concept, shared facilities featuring cold-chain storage, sorting, packaging, and centralized shipping could be established in relatively accessible county hubs or regional nodes to improve logistics efficiency. The “cooperative + e-commerce” model should be widely promoted to enhance the organizational level of farmers and herders, enabling scaled and standardized production and strengthening market bargaining power. Unique ethnic cultures and ecological landscapes should be deeply integrated into e-commerce marketing, using storytelling and scenographic content creation to increase product added value. Meanwhile, establishing regional agricultural information service platforms is essential to guide better alignment between production and market demand. The government should focus on addressing infrastructure gaps, improving the policy environment, and providing public services, thereby creating conditions for market mechanisms to function effectively^[16].

7. Conclusion

This study focuses on the development of rural e-commerce service systems in the counties of northwestern Sichuan, systematically analyzing their

current status, system components, existing challenges and root causes, and proposing optimization pathways by drawing on domestic and international experiences. The research reveals that while the region possesses significant resource potential for rural e-commerce development, its service system faces clear shortcomings in infrastructure, logistics, talent support, brand building, and inter-element coordination. These limitations are constrained by multiple factors including geography, economic conditions, social dynamics, and institutional mechanisms. Establishing an efficient and sustainable service system is therefore crucial to advancing

e-commerce in this region. Going forward, development should adhere to the principles of ecological priority and distinctive growth, strengthen the synergy between government guidance and market mechanisms, prioritize improvements in logistics infrastructure, cultivate localized professional talent, build regional characteristic brands, and promote deep integration of e-commerce with cultural tourism and agriculture. By doing so, a new e-commerce development model suited to the realities of high-altitude ethnic regions can be formed, providing sustained momentum for rural revitalization.

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