

Research on the Development Countermeasures of Rural E-commerce Logistics in Gao County, Yibin City, Sichuan Province under the Rural Revitalization Strategy

Li-na Liu, Jing-wen Luo, Tian-hong Zhang, Yan-hong Wang*

School of Economics, Sichuan University of Science & Engineering, Yibin 644000, China

**Author to whom correspondence should be addressed.*

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Against the backdrop of the rural revitalization strategy, the importance of rural e-commerce logistics has become increasingly prominent. Relying on its superior geographical location, rich characteristic resources, and government policy support, Gaoxian County in Yibin has unique advantages in the development of rural e-commerce logistics. However, the rural e-commerce logistics in Gaoxian County still face problems such as imperfect infrastructure, high logistics distribution costs, low informatization level, and a shortage of professional talents. By analyzing the current situation and problems of rural e-commerce logistics in Gaoxian County, this paper puts forward optimization countermeasures such as improving infrastructure construction, promoting the application of intelligent technologies, and strengthening the professional talent cultivation mechanism, with the aim of providing references for the high-quality development of rural e-commerce logistics in Gaoxian County.

Keywords: Rural e-commerce logistics; Rural revitalization; Gaoxian County

Online publication: November 14, 2025

1. Preface

The strategy of rural revitalization was first proposed in the report of the 19th National Congress of the Communist Party of China. This is a profound understanding and innovative development of the issues related to agriculture, rural areas, and farmers by the central government in the new era of socialism with Chinese characteristics. Rural revitalization is a new approach to rural development in the new era. The reason for proposing the strategy of rural revitalization is to treat rural areas and cities equally, make full use of the advantages and resources of rural areas, effectively utilize rural infrastructure, stimulate the enthusiasm of villagers for production, and give full play to the internal driving force of rural areas, thus invigorating rural development. It also presents a new idea for the

integration of the Internet and modern agriculture. In the current digital age, the importance of rural e-commerce logistics is increasingly prominent. With the popularization of the Internet and the vigorous development of e-commerce, rural areas are no longer the periphery of traditional commerce but have become a highly potential part of the e-commerce market. Rural e-commerce logistics serves as a bridge connecting rural producers with a wide range of consumers. The state has increasingly emphasized the development of rural e-commerce, which has developed rapidly, and a number of favorable policies have been introduced. The No. 1 Central Document of 2022 proposed the implementation of the “Express Delivery to Villages” project. The 2023 document emphasized accelerating the improvement of the e-commerce and express delivery logistics distribution system at the county, township, and village levels ^[1]. The 2024 document required the improvement of the county, township, and village logistics distribution system ^[2]. The No. 1 Central Document of 2025 emphasized deepening express delivery to villages and strengthening the construction of comprehensive service stations for rural express delivery logistics at the village level. Currently, 346,000 comprehensive service stations for rural express delivery logistics have been built across the country, and the coverage rate of express delivery services in administrative villages exceeds 95% ^[3].

Gao County in Yibin has a special status in the development of rural e-commerce logistics, benefiting from its superior geographical location, rich resources of characteristic agricultural products, and strong support from the government. The convenient transportation has promoted the improvement of logistics efficiency, and characteristic products such as tea and silkworms have reached a broader market through e-commerce platforms. Meanwhile, the government’s provision of financial subsidies, training, and technical support has promoted the deep integration of e-commerce and logistics. In addition, Gao County in Yibin has actively explored innovative models such as “Internet + agriculture”, effectively solving the problems of high logistics costs and difficult distribution in rural areas, and has intensified the construction of infrastructure, such as warehousing and cold chain, to further enhance service capabilities. These advantages have jointly made Gao County in Yibin an important benchmark in the field of rural e-commerce logistics, providing valuable experience for other regions.

2. The current situation of rural e-commerce logistics in Gao County, Yibin

Yibin Gao County is promoting the improvement and construction of the e-commerce industry system, building online and offline sales platforms, conducting e-commerce business training, and creating e-commerce live-streaming villages and other related measures to continuously cultivate and expand the e-commerce industry. Yibin Gao County has achieved a counter-trend growth in sales volume by making up for the shortcomings of traditional agricultural product sales through the “online + offline” dual combination model. At the same time, e-commerce demonstration towns such as Shengtian Town and Shahe Town have been successfully established. More than 50 leading enterprises of agricultural and special products and planting and breeding have settled in the “Tianhu Cloud Commerce Gao County Special Exhibition Hall”, and more and more agricultural products are entering the market through e-commerce platforms. At present, Gao County of Yibin is promoting the high-quality development of the e-commerce industry by improving the logistics distribution system and advancing the construction of infrastructure such as logistics centers and e-commerce industrial parks.

2.1. Infrastructure construction

2.1.1. The construction and development of the transportation network

In 2024, the Transportation Bureau of Gao County, Yibin City, in line with the “14th Five-Year Plan” development plan and new development demands, will continue to make efforts in accelerating the construction of trunk roads,

enhancing the level of transportation services, and improving the road network. Some of the work has achieved phased progress, and the G246 Gao County Ring Road is about to start construction. The ring road starts from Tenglong Village (Lianghekou) in Wenjiang Town, passes through Qingxi Village, Huangjing Village, Sanqing Village, Baitong Village, and other villages, and ends at the exit of Wenjiang Town (south of the Ceramic Tile Factory Bridge), connecting to the Wenjiang to Junlian section of G246. The total length of the route is 19.6 kilometers. The entire section is built to the first-class highway standard, designed as a two-way four-lane road with a speed of 60 kilometers per hour and a roadbed width of 23 meters. The shoulders on both sides are 0.5 meters long, with a total estimated investment of 2.15891 billion yuan. This project has currently obtained approval for land pre-examination, project initiation, preliminary design, etc., and has completed the EPC bidding work. It is now accelerating the procedures for land use file assembly and approval. Construction is scheduled to commence in 2024, and the project is expected to be completed and open to traffic in 2027. The Chongqing-Kunming High-Speed Railway, as an important component of the Beijing-Kunming Corridor, passes through four provinces: Yunnan, Guizhou, Sichuan, and Chongqing. This line has a total of 21 stations, among which 5 are located within Yibin City. As the first high-speed railway station in Gao County, Gao County Station is expected to become a new external transportation hub for the county in the future. The entire station area will integrate a variety of transportation modes, forming a comprehensive passenger transport hub and urban functional complex, to better serve the social and economic development of Gao County, especially the high-speed railway new district, and orderly connect the old urban area on the west bank of the Nanguang River with the high-speed railway area in the east of the river.

2.1.2. Construction of warehousing facilities

In terms of warehousing facilities, some towns and townships have begun to establish small-scale warehousing centers. For instance, Wenjiang Town has established a storage center of approximately 500 square meters for the temporary storage of agricultural products and e-commerce goods. These warehousing centers are equipped with basic moisture-proof and insect-proof facilities to ensure the quality of the goods. In January 2024, the cold chain logistics center project of Shahe Town, Gao County, is planned to be located in Tianfu Community, Shahe Town, Gao County, covering an area of approximately 50 mu. The project will be constructed in two phases. The first phase includes the construction of a cargo shed, a three-story office building, a circulating water pool, a fire water pool, a maintenance room, a distribution room, etc. The second phase of construction will mainly focus on cold storage facilities, with a static storage capacity of approximately 8,500 tons, and will also include the construction of refrigeration machine rooms, distribution rooms, and other supporting facilities. Shahe Town enjoys a favorable transportation location. It is close to Changning County and Gong County, and is also a key transportation route to the urban area of Yibin. After the completion of the cold chain logistics center, the total construction area is approximately 15,000 square meters, and the product preservation warehouse covers an area of 2,000 square meters.

2.1.3. Construction of distribution stations

In terms of the construction of logistics distribution stations, Gao County has relatively concentrated logistics distribution centers, but in rural areas, the distribution of distribution stations is still not dense enough. Take Qingfu Town as an example. Although there are some express delivery collection points, their functions are relatively single. They can only handle simple package receiving and dispatching, and lack the ability to integrate and sort goods.

2.2. Logistics service coverage

In county towns and major townships, the coverage of logistics services is relatively comprehensive ^[4]. Major express delivery brands like SF Express, YTO Express, and STO Express all have service outlets in the county seat of Gao County, and can cover towns that are relatively close to the county seat, such as Kejiu Town and Laifu Town. Residents in these areas can send and receive express deliveries relatively conveniently. However, for some remote rural areas, there is a significant gap in the coverage of logistics services. For instance, in some remote mountain villages of Fuxing Town, express delivery services can only reach the collection points in the town. Villagers have to go to the town to pick up their packages, which is extremely inconvenient for those who have difficulty moving around or live far away. From the perspective of the delivery range of e-commerce goods, for some small and easy-to-store agricultural products, such as tea and sweet potatoes, due to their low requirements for preservation technology, the delivery range can reach a relatively wide area. Then, for some fresh produce, such as fresh fruits and meats, due to the limitations of preservation technology and logistics delivery time, the delivery range is relatively narrow, mainly concentrated in the local market or nearby areas.

2.3. Operation mode

The overall operation of rural e-commerce logistics in Gao County, Yibin City, features a combination of Party building leadership, multi-mode collaboration, resource integration, and technological innovation. By establishing a three-level “Red Express” logistics system, promoting the integrated development of “e-commerce + logistics”, innovating the “transportation, post, social security, business and government + intelligent service” model, and deepening the cooperation model of “e-commerce enterprises + cooperatives + farmers”, it has effectively solved the problem of the “last mile” in rural logistics, promoted the two-way circulation of agricultural products going up and consumer goods going down, and driven the revitalization of rural industries ^[5].

2.3.1. The three-level “Red Express” logistics system model

Gao County has established a three-level logistics system at the county, town, and village levels by building county-level logistics distribution centers, town-level logistics service outlets, and village-level red stations. This has extended the end of express delivery logistics from towns to villages, effectively bridging the “last mile” for agricultural products to leave villages and enter cities, as well as consumer goods to reach rural areas and villages. For instance, through a three-level logistics system, Qingfu Town in Gao County, Yibin, has successfully helped local farmers quickly deliver vegetables, fruits, and other agricultural products to the county town and surrounding areas, solving the problem of agricultural product sales.

2.3.2. The integrated model of “e-commerce + logistics”

Yibin Gao County has promoted the coordinated development of agricultural product sales and logistics distribution through in-depth cooperation between e-commerce platforms and logistics enterprises. E-commerce platforms offer online sales channels for agricultural products, while logistics enterprises provide one-stop services including packaging, transportation, and delivery. For instance, the lemon industry in Gao County is sold through the e-commerce platform “Tianhu Yunshang Gao County Special Store.” Meanwhile, Yunda Express provides door-to-door services to ensure that the lemons are directly loaded onto vehicles from the planting bases and sent to all parts of the country. E-commerce sales account for 80% of the total sales volume.

2.3.3. The “e-commerce enterprise + cooperative + farmer” model

Through the close cooperation among e-commerce enterprises, cooperatives, and farmers, Gao County in Yibin has improved the agricultural product industrial chain and promoted the development of order agriculture. E-commerce enterprises are responsible for brand promotion and sales channels, cooperatives organize farmers for production, and farmers are responsible for planting or breeding, forming a community of shared interests. Relying on the national key leading enterprise, Zao Bai Jian Tea Industry, Dayu Village in Gao County, Yibin, has successfully established a multi-industry integrated Dayanling Rural Revitalization Demonstration Zone by adopting the model of “park + company + base + village-level organization + farmers”^[6].

2.3.4. The “Jiaoyou Society Business Administration + Intelligent Services” model

Gao County has explored a new rural logistics model integrating “transportation, postal services, supply and marketing, commerce, government affairs + intelligent services”, integrating resources to enhance the efficiency of logistics distribution. Through the innovative integration model of “Jiaoyou Station”, with town and village buses as the carrier, a two-way logistics system of “online goods to the countryside” and “agricultural products to the city” is established. At the same time, real-time sharing of logistics information is achieved through an intelligent service platform.

2.4. E-commerce transaction data of Gao County

In recent years, the transaction volume of e-commerce in Gao County has been developing positively, promoting the high-quality economic development of Gao County, Yibin. In 2020, e-commerce in Gao County achieved growth against the trend. The total transaction volume of e-commerce in the county reached 1.5 billion yuan, increasing by 15.2% year-on-year. The growth rate ranked third in the city, 9.01 percentage points higher than the city’s average. The total online retail sales reached 525 million yuan, increasing by 27.68% year-on-year. The retail sales ranked third in the city, with a growth rate 5.71 percentage points higher than the city’s average growth rate. In 2020, Laifu Town in Laigao County achieved an e-commerce output value of 16 million yuan. Currently, Laifu Town has cultivated 237 new rural business entities, and the disposable income of farmers has reached 18,462 yuan. From January to September 2022, the online retail sales in Gao County reached 510 million yuan, increasing by 23.03% year-on-year and ranking third in the city. Since 2023, Yibin has taken the vigorous development of the live-streaming economy as a breakthrough point to boost the overall high-quality development of the e-commerce industry. In the first three quarters of this year, the city’s e-commerce transaction volume exceeded 45.801 billion yuan, an increase of 18.08% year-on-year. From January to September 2023, Gao County achieved an online retail sales volume of 632 million yuan. It accounted for 6.61% and ranked third. In terms of physical online retail, Gao County achieved a physical online retail sales volume of 605 million yuan. It accounts for 7.72% and ranks third. In 2024, in terms of physical online retail, Gao County achieved a physical online retail sales volume of 725 million yuan, accounting for 7.96%, ranking third among all counties (districts).

3. The main problems existing in the development of rural e-commerce logistics in Gao County, Yibin

3.1. The infrastructure is not perfect

There are obvious shortcomings in the logistics infrastructure in the rural areas of Gao County, Yibin. On the one hand, the transportation network is not well developed. Some rural roads are narrow and in poor condition, with

problems such as dangerous Bridges and landslides, which seriously affect the passage efficiency and safety of logistics vehicles. On the other hand, the storage facilities, especially the cold chain facilities, are insufficient. There is a lack of necessary cold storage and cold chain distribution equipment, which leads to significant losses of agricultural products during storage and transportation. In addition, the distribution of logistics distribution stations is uneven, and the coverage in remote areas is insufficient, which affects the accessibility and timeliness of logistics services.

3.2. The logistics and distribution costs are high

The distribution cost of rural e-commerce logistics in Gao County, Yibin, remains high. The rural population lives scattered, and the order volume is small and not concentrated, which leads to long logistics delivery distances and high unit costs. Meanwhile, agricultural product production is seasonal, logistics demand fluctuates greatly, and the utilization rate of warehousing and transportation facilities is low during off-peak seasons, further pushing up unit costs. In addition, rural areas lack large-scale distribution, making it difficult to achieve efficient logistics operations and increasing operating costs.

3.3. Low level of informatization

The informatization construction of rural logistics in Gao County, Yibin City, lags behind. Information transmission is not timely or accurate, which has affected the efficiency of logistics order processing and distribution arrangements. Firstly, the efficiency of logistics operations is generally not high. This is mainly due to the lack of information technology means to optimize and monitor the logistics process, resulting in cumbersome and error-prone operation links. Secondly, information transmission is not smooth. The degree of information sharing between rural e-commerce enterprises and logistics enterprises is low, and they mainly rely on traditional communication methods. This not only affects the logistics speed but also increases the logistics cost. Furthermore, for fresh products that require cold chain management, due to the insufficiency of information monitoring means, the management of cold chain logistics has become particularly difficult, and the product loss rate has also increased as a result.

3.4. Shortage of professional talents

The professional technical level and management ability of logistics practitioners in rural areas of Gao County, Yibin City, are generally low. As an agricultural region, most of the rural logistics service outlets in Gao County, Yibin, are staffed by local personnel, who have relatively low knowledge and professional levels and lack systematic and continuous training. Due to the relatively low working environment and remuneration in rural areas, it is difficult to attract and retain professionals in fields such as logistics management and information technology. This leads to technical bottlenecks for logistics enterprises during their operation, making it difficult for them to achieve efficient and modern logistics services.

4. Countermeasures for Optimizing the Development of Rural E-commerce Logistics in Gao County, Yibin

4.1. Improve infrastructure construction

Infrastructure construction is the cornerstone of the development of rural e-commerce logistics in Gao County, Yibin. In terms of transportation, more investment should be made in highway construction. At present, the road

conditions in some remote rural areas of Gao County, Yibin City, are poor, making it difficult for logistics transport vehicles to pass through and increasing the transportation time and cost. Therefore, it is necessary to widen and repair these roads, raise the grade standards of the roads, and ensure the smooth flow of logistics transportation.

The improvement of warehousing facilities is also of vital importance. The agricultural products in Gao County, Yibin, are rich in variety, such as tea and fruits, but the existing storage facilities are difficult to meet the storage needs of agricultural products. More warehouses suitable for the storage of agricultural products should be built, such as constant temperature warehouses and cold storage facilities. Take fruit storage as an example. Without a cold storage, fruits are prone to spoilage and deterioration, causing huge losses. To enhance the management level of warehousing facilities, modern warehousing management systems should be adopted to achieve functions such as precise positioning of goods and rapid entry and exit from the warehouse.

The layout of logistics distribution stations needs to be optimized. At present, the logistics distribution stations in Gao County, Yibin, are mainly concentrated in the county seat and a few larger towns, while the coverage of distribution services in remote areas is insufficient. The layout of distribution stations should be rationally planned based on factors such as the population distribution in rural areas and the level of economic development. The number of stations should be increased, the distribution radius shortened, and the distribution efficiency improved.

4.2. Promote the application of intelligent technologies

Intelligent technology can greatly enhance the operational efficiency of rural e-commerce logistics in Gao County, Yibin. First of all, build a smart logistics information platform. Yibin Gao County should build a unified smart logistics information platform, integrating Internet of Things, big data, cloud computing, and other technologies to achieve the optimal allocation and efficient utilization of logistics resources. The platform should be equipped with functions such as data collection, real-time monitoring, and intelligent dispatching, covering the production, processing, storage, and transportation of agricultural products. At the same time, it should be connected with e-commerce platforms and financial institutions to form a complete supply chain service system. Through the intelligent analysis of the platform, the supply and demand changes of agricultural products can be predicted, inventory management can be optimized, and supply chain disruptions caused by demand fluctuations can be avoided. Secondly, enhance the intelligence level of logistics infrastructure. Yibin Gao County needs to intensify the intelligent transformation of rural logistics infrastructure. On the one hand, it is necessary to build smart warehousing facilities, promote automated sorting equipment, intelligent warehousing management systems, and cold chain logistics technologies to ensure the quality and safety of agricultural products. On the other hand, smart express lockers should be installed in villages with the necessary conditions to enhance the efficiency of last-mile delivery. In addition, the application of unmanned delivery technologies such as drones and unmanned vehicles in remote areas can also be explored to solve the “last mile” problem. Finally, promote the intelligence and intensification of logistics and distribution. Yibin Gao County should promote the intelligent and intensive development of rural logistics and distribution. Optimize delivery routes through big data analysis, and dynamically adjust transportation routes in combination with real-time traffic data to reduce transportation time and costs. At the same time, support postal services, express delivery, e-commerce, and other entities to carry out market-oriented cooperation, achieve unified warehousing and joint distribution, and improve the efficiency of logistics and distribution. In addition, promote the “e-commerce + origin warehouse + express logistics” model to form a unified supply chain covering collection, processing, distribution, and online sales, and enhance the efficiency of agricultural products going online^[7].

4.3. Strengthen the mechanism for cultivating professional talents

To address the shortage of rural logistics talents in Gao County, Yibin, it is necessary to take multiple approaches and establish a complete talent cultivation system. First of all, efforts should be made to enhance cooperation between schools and enterprises and promote the “order-based” talent cultivation model. By cooperating with higher vocational colleges and vocational training institutions, a curriculum system is designed based on the actual needs of enterprises, and courses related to rural logistics are offered, such as cold chain logistics and supply chain management. Meanwhile, internship bases should be established to enable students to accumulate experience in practice and enhance their practical operation skills. In addition, industry experts and business leaders are invited to the school to give lectures, sharing industry trends and practical experiences to broaden students’ horizons. Secondly, Gao County in Yibin needs to optimize its teaching staff and curriculum design to enhance the quality of talent cultivation. On the one hand, technical backbones and management elites are hired from large urban logistics enterprises to strengthen the teaching staff. On the other hand, organize teachers to participate in training and academic exchanges to enhance their teaching proficiency. The curriculum design should focus on the integration of logistics professional knowledge with information technology and management knowledge, and promptly introduce the content of emerging business forms such as live-streaming e-commerce and cross-border e-commerce. In addition, the government should introduce relevant policies to provide support, such as housing subsidies, career promotion opportunities, and economic incentives for rural logistics talents, in order to attract and retain professional talents. Finally, Gao County in Yibin should broaden the sources of talent, carry out training for returning personnel, and encourage more returning entrepreneurs and new-type farmers to participate in the rural logistics industry. Through policy guidance and systematic training, enhance their theoretical knowledge and practical ability in logistics, and inject new vitality into the development of rural logistics. At the same time, efforts should be made to promote the establishment of long-term cooperative relationships between logistics enterprises and universities and vocational colleges, jointly carry out school-enterprise cooperation projects and industry training courses, introduce actual cases and projects of enterprises, and enhance students’ understanding and practical ability of the rural logistics industry.

5. Closing remarks

The development of rural e-commerce logistics in Gao County, Yibin, is of great significance for promoting rural revitalization. By improving infrastructure construction, promoting the application of intelligent technologies, and strengthening the professional talent cultivation mechanism, the current problem of high costs faced by rural e-commerce logistics in Gao County, Yibin can be effectively addressed. This will enhance the operational efficiency and service quality of logistics, further stimulate the vitality of rural e-commerce, promote the sales of characteristic agricultural products in Gao County, Yibin, and drive the sustainable development of the rural economy. Provide strong support for the implementation of the rural revitalization strategy.

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Zhou XX, 2023, Research on the Cooperation Mechanism and Collaborative Optimization of Rural Logistics Last-Mile Distribution Alliance, thesis, Chongqing Jiaotong University.
- [2] Li JK, “Accelerated Run” Unleashes New Vitality for Development. *Guangming Daily*, November 18, 2024.
- [3] Ba Y, 2025, “Small Packages” Drive the “Big Livelihood” of Rural Revitalization. *China Quality News Network*, February 27, 2025.
- [4] Lan XB, Yang GH, Liang L, 2022, Research on the Theoretical Logic and Practical Approach of Rural E-commerce Development. *Rural Economy and Science & Technology*, 2022(19): 233–237.
- [5] Wang MX, 2024, Research on the Impact of the Integrated Development of Bee Industry in Mengyin County on Farmers’ Income Growth, thesis, Yantai University.
- [6] Wen Y, Zhao DR, Xia L, 2022, Analysis of the Model of Rural Revitalization in Yibin City and Its Implications. *China Agricultural Abstracts*, 2022(3): 46–48.
- [7] Lin M, 2024, E-commerce Enters Villages and Agricultural Products Go Online. *Agricultural Products Market*, 2024(14): 51–53.

Publisher’s note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.