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Research on the Development Model of Rural E-commerce in Gaozhou under the Background of the"Hundred-Thousand-Million Project"

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Abstract: With the booming rural E-commerce in China and Guangdong's "Bai Qian Wan Project," Gaozhou's rural E-commerce development model has achieved some results yet faces problems. This study uses literature, comparative, and case analysis to explore its current situation and issues, and offers optimization suggestions. Results show Gaozhou has governmentled, enterpriseled, and cooperativeled models, but rural and tech limits cause insufficient three - industry integration. Studying this model is crucial for Gaozhou's E-commerce innovation and economic growth.

1. Research Background and Significance

1.1. Research Background

Rural e-commerce has developed vigorously with the popularization of the Internet and the growing number of rural Internet users. As a major agricultural country, the development of rural areas is of crucial importance to China. Against this backdrop, Guangdong Province has launched the "Project for High-Quality Development of 100 Counties, 1,000 Towns and 10,000 Villages". As one of the first batch of demonstration counties, Gaozhou has achieved certain results in the development of rural e-commerce, yet it still faces shortcomings in aspects such as Internet penetration and agricultural digitalization.

1.2. Research Significance

Theoretical Significance: It enriches the theoretical system of China's rural e-commerce and provides a new perspective and theoretical support for the applied research on the "Hundred-Thousand-Million Project".Practical Significance: It summarizes the advantages and disadvantages of Gaozhou's e-commerce development model, offering a reference for Gaozhou itself as well as other regions. This research is conducive to boosting the prosperity of Gaozhou's rural economy and advancing rural revitalization.

2. Analysis of the Current Situation of the Development Model of Rural E-commerce in Gaozhou

2.1. Overview of Rural Development in Gaozhou

Gaozhou is located in the southwest of Guangdong Province. Its climate and terrain are conducive to agricultural development. In recent years, remarkable achievements have been made in the work related to agriculture, rural areas, and farmers ("Three Rural Issues"). In the first half of 2024, the total output value of agriculture, forestry, animal husbandry, and fishery industries showed growth. The litchi industry has exerted a significant impact, and agriculture has driven the growth of multiple industries. Gaozhou has been selected as a pilot zone for reform and innovation.

The Agricultural Development of Gaozhou Demonstrates Modernization, Technologization, Socialization and Improved Industrial Chains, Vigorously Advancing Rural Revitalization. In 2024, the gross regional product (GRP) of our city amounted to 80.978 billion yuan, representing a year-on-year growth of 4.1%. Among the breakdown: The added value of the primary industry reached 20.412 billion yuan, with a year-on-year increase of 3.0%; The added value of the secondary industry stood at 16.792 billion yuan, achieving a year-on-year growth of 9.2%; The added value of the tertiary industry hit 43.774 billion yuan, posting a year-on-year increase of 2.6%.

Data indicates that the economic chain of rural e-commerce has never been an independent entity; instead, it constitutes an organic whole where all components mutually reinforce one another. The development of the three industries is closely interrelated.

2.2. Current Status of Rural E-commerce Development in Gaozhou

2.2.1. Growth of E-commerce Market Entities

Approximately 2,810 entities in Gaozhou are engaged in rural e-commerce, selling agricultural products, driving industrial upgrading, and improving logistics and other systems. Meanwhile, Gaozhou is also committed to promoting the transformation and upgrading of its traditional advantageous industries, accelerating the improvement of rural e-commerce distribution and service systems, cultivating a new generation of farmers, and supporting the high-quality development of the "Hundred-Thousand-Ten Thousand Project".

2.2.2. Improvement of Logistics and Distribution Service Systems

In Gaozhou, full coverage of e-commerce service stations at the town level has been achieved, and the coverage rates of logistics services and e-commerce service stations in administrative villages have met the standards. These measures have not only ensured the general coverage of logistics services in administrative villages across the city but also enabled the coverage rate of e-commerce service stations in administrative villages to exceed 50%, building a solid bridge for the continuous advancement of the "Hundred-Thousand-Ten Thousand Project".

2.2.3. E-commerce Training and Talent Development

Gaozhou has organized a variety of training courses. According to statistics, it has trained over 8,000 people, and more than 30,000 e-commerce professionals have been trained through e-commerce skills training programs. A group of outstanding e-commerce entrepreneurship leaders has emerged as a result.

2.2.4. Agricultural Product Sales and Brand Building

The vibrant and dynamic Gaozhou has stood out in the wave of e-commerce, successfully expanding sales channels for agricultural products, and a large number of leading enterprises and well-known brands have emerged. Through the establishment of the E-commerce Live Streaming Association and the E-commerce Association, more than 20 e-commerce leading enterprises and over 30 well-known e-commerce brands have emerged in Maoming City. In addition, Maoming City has also been awarded the title of "Pilot Unit for Rural Revitalization Demonstration County".

2.3. Main Development Models of Rural E-commerce in Gaozhou

2.3.1. Self-operated Rural E-commerce Model

E-commerce market entities in Gaozhou (including enterprises, individual industrial and commercial households, and farmers' professional cooperatives) purchase agricultural products from the source through self-built e-commerce platforms and sell them to consumers via online and offline channels. To sell agricultural products through self-built platforms, these entities need to possess e-commerce knowledge and related capabilities. A typical example is villagers in Caojiang Town opening online stores.

2.3.2. Platform-based Rural E-commerce Model

Gaozhou collaborates with platforms such as Taobao, organizes events, encourages promotion on Douyin, and integrates resources. For instance, it successfully held the 2023 JD Lingnan Litchi Supply Chain Solution Launch Conference, the 2023 Pinduoduo Main Site Guangdong Gaozhou Litchi Investment Promotion Conference, and the "Maoming Litchi" Brand Promotion Conference. Overview of E-commerce Sales of Maoming Litchi show in table 1. This model not only effectively promotes the integration of rural resources and enhances the competitiveness of the agricultural market but also provides consumers with a variety of choices.

Table 1: Overview of E-commerce Sales of Maoming Litchi (2021-2023)

	2021	2022	2023
Annual Total Output (10,000 tons)	59.10	54.30	63.34
E-commerce Sales Volume (10,000 tons)	7.83	6.46	7.65
E-commerce Sales Proportion	13.25%	11.90%	12.8%
E-commerce Sales Revenue Proportion	18.21%	26.76%	26.65%
Average E-commerce Purchase Price (Yuan)	8.00	13.00	9.40
Average Field Purchase Price (Yuan)	6.0	7.43	6.59

2.3.3. Cooperative-based Rural E-commerce Model

The cooperative-based e-commerce model is a new type of social organization operation method. The government, enterprises, and producers integrate their respective advantages to achieve the integration of agricultural product production and sales. In Gaozhou, the "Community-Village" companies have achieved a turnover of nearly 20 million yuan, bringing an increase of over 800,000 yuan in income to the first batch of village collectives and more than 1 million yuan in indirect benefits to local villagers. Additionally, 11 villages including Baiqiao Village in Genzi Town, Yongle Village in Shatian Town, and Panshuitang Village in Pingshan Town have distributed dividends totaling 620,000 yuan. This cooperative-based e-commerce model provides strong support for the development of rural e-commerce and drives the rapid development of the industry.

2.3.4. Social E-commerce Model

Entrepreneurs in Gaozhou build their own social e-commerce platforms through social software such as WeChat, Douyin, and Xiaohongshu, and promote agricultural products through methods like "seeding" (product recommendation) and live streaming. For example, a Maoming woman who graduated from junior high school in 1990 sells litchi on social platforms using "Gaozhou-style English," which has attracted widespread attention from netizens and expanded the influence of Gaozhou's social e-commerce.

3. Problems in the Development Models of Rural E-commerce in Gaozhou

3.1. Information Asymmetry and Logistics Distribution Difficulties in the Self-operated Rural E-commerce Model

In the development of self-operated rural e-commerce, the problem of information asymmetry not only manifests in farmers' difficulty in accessing market information, but also directly impacts their production decisions and income levels. Farmers mostly rely on traditional experience for planting and breeding, and lack the consumer demand data analysis capabilities that e-commerce platforms possess, often facing the dilemma of "whatever is planted ends up unsold". For instance, when the market demand for high-value-added specialty fruits surges in a certain season, farmers, due to information lag, still plant conventional crops on the same scale as in previous years, missing out on opportunities to increase their income. [1]Conversely, when platforms predict an oversupply of a certain type of agricultural product, if farmers fail to adjust their planting structure in a timely manner, they will face the risk of product backlogs and forced low-price sales. This information gap also weakens farmers' bargaining power in cooperation with e-commerce platforms, making it difficult for them to secure reasonable purchase prices and further squeezing their profit margins.

In the context of Gaozhou's agricultural product e-commerce, take the lychee industry as an example. Farmers often cannot accurately grasp the market demand changes for different lychee varieties. When the market demand for early-ripening and sweet-tasting "Baitangying" lychees rises, farmers, due to lack of information, still plant large quantities of varieties that ripen later and have slightly declining market popularity. As a result, they face sluggish sales and low prices during the harvest season.

The difficulty in logistics distribution is particularly prominent in Gaozhou. The complex terrain and inadequate transportation infrastructure lead to high logistics costs and low distribution efficiency. Apart from the low coverage rate of national and provincial highways, many villages are only connected by narrow rural roads, making it difficult for large logistics vehicles to pass through. Therefore, goods can only be transferred via small tricycles, which not only increases labor and time costs, but also raises the damage rate of agricultural products during transportation. This is especially critical for fresh agricultural products, which have high requirements for timeliness. In remote areas, fresh products often deteriorate due to delayed distribution, resulting in economic losses for farmers and undermining consumers' trust in rural e-commerce products. Meanwhile, the weak logistics infrastructure has turned some remote areas into "distribution blind spots". E-commerce platforms are reluctant to cover these areas due to high operating costs, leaving farmers unable to sell their high-quality agricultural products through e-commerce channels. During the lychee harvest season in Gaozhou, due to poor transportation in the producing areas of some remote fruit farmers, logistics vehicles cannot reach the orchards directly. Farmers have to first transport the lychees to centralized sorting points using small vehicles. This process is time-consuming and labor-intensive, and the lychees are highly prone to damage from jolts and collisions during transportation. Coupled with the poor timeliness of logistics distribution, it often takes more than three days for lychees to reach

consumers from the time of picking.[2] As a result, many lychees deteriorate, leading to a large number of negative reviews from consumers, which seriously damages the e-commerce reputation of Gaozhou lychees and affects their subsequent sales.Furthermore, due to the difficulty in logistics distribution, e-commerce platforms are unwilling to enter some mountainous villages in Gaozhou. Even though the lychees produced in these areas are of superior quality, they can only be sold locally and cannot reach a broader market with the help of e-commerce, thus hindering farmers' path to increasing income.

3.2. Incomplete Supply Chain and Severe Brain Drain in the Cooperative-based Rural E-commerce Model

The cooperative-based rural e-commerce model enables participants to achieve common development. However, in the process of building the agricultural product supply chain, it is difficult for the Gaozhou region to establish a complete agricultural product supply chain. Gaozhou has a large population outflow: in 2024, the number of people returning to their hometowns in Maoming during the Spring Festival reached 3.34 million, among which Gaozhou accounted for 79.6% (Note: The original "79.6" is supplemented with "%" based on logical consistency of data) and ranked second. This indicates a severe brain drain in Gaozhou, which has hindered the development of the cooperative-based rural e-commerce model.

3.3. Trust Issues and Difficulties in Traffic Acquisition in the Social E-commerce Model

Trust issues: Gaozhou is a place full of human warmth, and the foundation of social e-commerce lies in social connections. However, in recent years, some illegal merchants have used social platforms for false promotion and sold counterfeit and shoddy goods, undermining the trust foundation of Gaozhou’s e-commerce sector.

Difficulties in traffic acquisition: With the intensification of competition in the social e-commerce market, attracting traffic has become increasingly challenging.

4. Domestic Experience and Insights into Rural E-commerce Development Models

4.1. Successful Experiences of Domestic Rural E-commerce Development Models

4.1.1. Government-led Model – A Case Study of Boluo, Huizhou

As a typical demonstration county in the "Hundred-Thousand-Ten Thousand Project", Boluo County of Huizhou has achieved remarkable results through five key measures. Firstly, it has built an e-commerce system. Secondly, it has developed agriculturally advantageous industries with local characteristics by fostering the "One Village, One Product" initiative, creating a brand effect. Thirdly, it has leveraged modern technologies such as cloud computing and big data to improve quality and efficiency. Fourthly, it has promoted industrial chain integration. Fifthly, it has protected and inherited local culture through cultural inheritance and innovation, enhancing the cultural value of agricultural products.

4.1.2. Enterprise-led Model – A Case Study of the Shaji Model

The Shaji Model is an innovative rural e-commerce model, with its basic framework consisting of "farmers, networks, and companies". The core of this model lies in enabling farmers to directly participate in market transactions through e-commerce platforms. It encourages merchants to develop independently when their operations run smoothly, while providing necessary support when problems

arise. [3]The Shaji Model has not only promoted the development of local industries but also contributed to advancing new-type urbanization and agricultural modernization.

4.1.3. Cooperative-led Model – A Case Study of the Wugong Model

The Wugong Model mainly relies on the prominent regional advantages of Wugong County. In addition to selling local products, it also sources products from Northwest China, which are then processed, packaged, and sold nationwide – an e-commerce marketing model known as "Purchasing from Northwest China, Selling to the Whole Country". On this basis, e-commerce enterprises guide farmers to grow characteristic agricultural products, aggregate the scattered products of farmers, and sell them uniformly on e-commerce platforms.

4.2. Domestic Rural E-commerce Development Models for Gaozhou

4.2.1. Combining Large-Scale Operation with Intensive Cultivation

In suitable areas of Gaozhou, moderate large-scale operation should be promoted. Through land ownership confirmation and transfer, agricultural large-scale development can be advanced to improve agricultural economic benefits. On one hand, regular training should be provided for new-type professional farmers to make them the main body of agricultural production. On the other hand, the modernization of agriculture requires the prosperous development of the agricultural industry, while the prosperity of the rural industry relies on the innovation and entrepreneurship of rural talents. Therefore, it is necessary to cultivate diversified agricultural business entities and continue to support the development of farmers' professional cooperatives, agricultural enterprises, small-scale farmers, and agricultural industrialization consortia.

4.2.2. Promoting Green and Ecological Agricultural Development with Advanced Technology

Science and technology have always been the core driver of productivity, and agricultural progress is inseparable from the support of advanced technology. Therefore, it is imperative to leverage cutting-edge agricultural technologies to lead the development trend of green and ecological agriculture. Emphasis should be placed on the investment, R&D, and application of agricultural science and technology. In addition, the development of digital agricultural technologies is essential—whether for large-scale operation or small-scale farming, digital agricultural technologies such as geographic information systems (GIS) and Global Positioning System (GPS) should be applied.

4.2.3. Effective Government Support for Agricultural Development

Effective government support for agricultural development should focus on production guarantee, capacity improvement, and risk resistance, and build a precise and efficient system. On the production side, through targeted subsidies such as subsidies for cultivated land fertility protection and one-time subsidies for grain-growing farmers, the cost of grain production can be reduced. At the same time, the minimum grain purchase price policy should be implemented to stabilize farmers' income expectations and safeguard the bottom line of food security. In terms of infrastructure, continuous efforts should be made to promote the construction of high-standard farmland, improve facilities such as irrigation and roads, and enhance the disaster resistance capacity of cultivated land; efforts should also be made to promote the coverage of rural power grids and 5G networks to lay the foundation for smart agriculture. In terms of technological empowerment, relevant departments increase investment in agricultural scientific research, promote advanced technologies such as high-quality seed varieties

and water-saving irrigation, and cultivate new-type professional farmers to solve the problems of "who will farm" and "how to farm well". In terms of risk prevention and control, relevant departments improve the agricultural insurance system, expand the types of covered crops and the intensity of protection, and alleviate the impact of natural disasters and market fluctuations on farmers. These measures not only address the short-term pain points of agriculture but also consolidate the foundation for long-term development, helping to improve agricultural quality and efficiency and advance rural revitalization.

5. Optimization Schemes for the Development Model of Rural E-commerce in Gaozhou

5.1. The "E-commerce Platform + Government + Farmer" Model to Promote Diversified Development of Platforms

The county government establish a multi-level service platform, upgrade county-level service centers, create digital consumption scenarios, build a modern rural industrial system, and ensure food security. To create rural digital consumption scenarios, technologies such as artificial intelligence (AI), 5G, and mobile payment should be utilized to transform rural commercial outlets with digital technologies, create a variety of consumption scenarios, and promote the diversified development of platforms.[4]

5.2. The "E-commerce Platform + Rural Cooperative + Farmer" Model to Improve the Supply Chain and Cultivate Talents

In the "Hundred-Thousand-Ten Thousand Project", Gaozhou can implement the "E-commerce Platform + Cooperative + Farmer" model through the following measures: establishing cooperatives and profit-sharing systems; building an economic benefit-sharing mechanism of "village collective + cooperative + company + farmer" for multi-platform sales; promoting land consolidation and equity participation for unified operation; and strengthening e-commerce skills training for returning villagers and other related agriculture-supporting activities.

5.3. The "E-commerce Platform + Enterprise + Farmer" Model to Enhance Trust and Secure More Traffic

In the "Hundred-Thousand-Ten Thousand Project" of Gaozhou, the specific measures for implementing the "E-commerce Platform + Enterprise + Farmer" model are as follows. First off, we need to raise the industrialization level of rural e-commerce, and use live-streaming e-commerce to help agricultural products get to the market. Also, we can rely on e-commerce to help with poverty alleviation by boosting consumption. Gaozhou can innovatively launch the "One Enterprise Aids One Village" consumption-driven poverty alleviation initiative. With the support of business entities, it can directly drive farmers to establish various interest-linking models such as "e-commerce + farmer cooperative + poverty-stricken household" and "e-commerce + entrepreneurship leader + poverty-stricken household", forming a new e-commerce development model of "whole-society participation in poverty alleviation" to accelerate poverty alleviation and support the "Hundred-Thousand-Ten Thousand Project".[5]

6. Conclusion

Against the backdrop of the "Hundred-Thousand-Ten Thousand Project", this study focuses on the development model of rural e-commerce in Gaozhou. By adopting literature analysis, comparative

analysis, and case study methods, it examines the current status and existing problems of Gaozhou's rural e-commerce, and proposes optimization suggestions by drawing on domestic experience.

The study finds that although Gaozhou's rural e-commerce has achieved certain results with the support of policies, it still faces issues such as insufficient industrial integration and a single development model. To address these problems, strategic recommendations are put forward. The conclusion indicates that Gaozhou can take advantage of policy support to promote in-depth integration of the primary, secondary, and tertiary industries, and develop models including the "e-commerce platform + government + farmer" model, "e-commerce platform + cooperative + farmer" model, and "e-commerce platform + enterprise + farmer" model.

In the future, Gaozhou needs to continuously adjust and innovate its e-commerce development model based on the development conditions at different stages, so as to promote the development of rural e-commerce to a higher level and a deeper dimension, and contribute to the growth of the rural economy.

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