Research on Countermeasures for Agricultural Product Distribution in Guangxi under the O2O Model

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Abstract. Guangxi has abundant resources of agricultural products such as lychee, longan, and sugarcane, but most agricultural products have low self value and their perishable and perishable characteristics. Therefore, the O2O model has become the development trend of agricultural product sales. With the continuous development of the O2O model for agricultural products, its delivery problems have become increasingly prominent, such as high delivery costs, low efficiency, non-standard packaging, low professional quality of delivery personnel, and a lack of professional logistics knowledge, which have hindered the development of O2O model for agricultural product delivery. Based on this, analyze the O2O model of agricultural products in Guangxi, propose reasonable suggestions for optimizing distribution issues, effectively reduce distribution costs, improve distribution efficiency, enhance customer satisfaction, expand sales channels for agricultural products, increase farmers' income, and achieve rural revitalization.

Keywords: agricultural products; O2O mode; Delivery

1 Introduction

In recent years, China's socio-economic development has been rapid, and the urbanization rate of the permanent population in China has shown a steady upward trend after breaking through 50%. China's urbanization rate has increased from 49.95% in 2010 to 64.72% in 2021, with Guangxi's urbanization rate increasing from 50.59% in 2017 to 55.08% in 2021. The increase in Guangxi's urbanization rate has driven the increasing consumption of agricultural products in Guangxi. Specifically, the urbanization development process in Guangxi is accelerating, and people are increasingly attaching importance to the quality of life. The requirements for food safety and quality are also increasing. Guangxi has abundant agricultural resources, such as fruits, vegetables, meat, aquatic products,sugarcane, etc. These agricultural products have a high level of quality, taste, and nutritional value. Therefore, residents usually choose to purchase fresh and high-quality agricultural products, which also promotes an increase in agricultural product consumption. Due to the perishable and perishable nature of agricultural products, especially fresh ones, there are high requirements for logistics technology, transportation and storage conditions, and preservation technol-

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ogy. Reducing the circulation of agricultural products can effectively reduce the logistics costs of agricultural products. Therefore, the O2O model for online trading and offline distribution of agricultural products has emerged, becoming an important business model for selling agricultural products.

In recent years, research on the distribution of agricultural products has been continuously improving. For example, Fu Haoran (2019) analyzed the distribution mode and characteristics of fresh agricultural products under the O2O mode, and proposed optimization suggestions for the problems in the distribution of fresh agricultural products under the O2O mode, aiming to improve distribution efficiency and improve the quality of agricultural products [1]. Qi Yunying (2018) took chain enterprises as an example and proposed that under the O2O model, the logistics distribution of agricultural products needs to be improved by improving logistics distribution management technology, planning and constructing distribution systems, and optimizing logistics distribution paths to improve logistics efficiency and reduce costs [2]. Zhang Wenhui, Miao Qiqi (2018) and others established a mathematical model based on the time window of acceptable products for customers, with the goal of minimizing delivery costs, to improve the actual loading rate of fresh agricultural product delivery vehicles under O2O mode, meet customers' timeliness requirements for products, and reduce logistics costs [3]. Zhang Xueli and Guo Peng (2017) took the O2O model as the background and analyzed the problems and shortcomings in the current urban fresh agricultural product intra-city distribution in Nanchang as an example. They proposed reasonable selection of distribution center addresses, strengthening the professional literacy of distribution personnel, and seeking third-party partners to create a professional O2O agricultural product intra-city distribution platform, which promoted the development of fresh agricultural product intra-city distribution [4]. The above various studies have to some extent guided the development trend of agricultural product distribution, provided solutions or optimization plans for O2O agricultural product distribution problems, and accelerated the development of O2O agricultural product distribution. However, facing the imbalance of regional development, the current distribution status of agricultural products between different regions may also vary. The issue of agricultural product distribution in Guangxi should be further studied based on existing research results and the actual situation of regional development, and reasonable suggestions should be put forward for the development of agricultural product distribution, providing reference for the development of O2O agricultural product distribution in Guangxi.

Based on this, this article takes Guangxi as an example to study the logistics and distribution problems of agricultural products in Guangxi under the O2O model, explains the current situation of agricultural product logistics and distribution in Guangxi under the O2O model, and proposes reasonable suggestions for the main problems of agricultural product logistics and distribution in Guangxi under the O2O model, aiming to reduce costs, increase efficiency, and improve service levels, so that enterprises can achieve significant development and increase farmers' income.

2 Definition of Relevant Concepts

2.1 Overview of O2O Model

2.1.1 The Connotation of the O2O Model

The O2O model refers to a business model that combines online and offline, abbreviated as "Online to Offline". In the O2O model, enterprises first attract customers through online channels such as the internet, and then complete product delivery and services through offline physical stores or delivery services[5]. This business model covers the entire process from online promotion, appointment, payment to offline consumption, service, evaluation, etc. Specifically, consumers can book goods or services on online platforms, complete transactions through online payment, and then consume or enjoy services in offline physical stores. In addition, online platforms can also provide functions such as online marketing, promotion, and evaluation. The application of the O2O model can meet the needs of consumers for convenient online consumption and offline experience services. It can also improve the sales efficiency and reduce sales costs of agricultural products, increase the passenger flow and sales volume of physical stores, improve operational efficiency, and effectively solve the problems of single sales channels and difficult delivery of agricultural products.

2.1.2 The Characteristics and Advantages of O2O Mode.

The biggest feature of the O2O model is the organic integration of online platforms and offline services. Users can browse, purchase goods or services on the online platform, and enjoy corresponding services in offline physical stores or service venues. Offline service providers can also promote and promote online platforms, achieving seamless connection between online and offline.

The O2O model provides users with richer and more comprehensive information on merchants and their services; You can make appointments, place orders, make payments, and enjoy offline services anytime and anywhere on the online platform; You can shop around to obtain products or services with higher cost-effectiveness, and the online purchase price is often lower than the price of direct offline consumption.

For merchants, the O2O model provides more opportunities for promotion and display, attracting more potential customers to consume online; Reasonably arrange operations and save costs through effective online booking and other methods; The promotion effect can be checked and each transaction can be tracked; Through Big data, cloud computing and other technologies, the production, sales, logistics and other aspects of agricultural products are managed digitally to improve the quality and efficiency of agricultural products; The shared data information can be used to analyze user needs, improve service quality, and provide consumers with a more convenient, efficient, and safe shopping experience, while also improving the quality and market competitiveness of agricultural products.

In summary, the O2O model plays a crucial role for businesses, users, and relevant stakeholders, as shown in Figure 1.

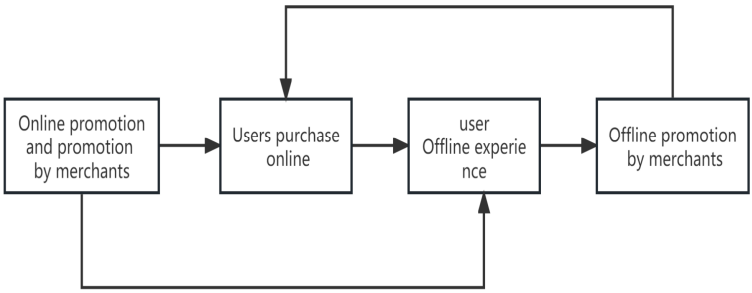

Fig. 1. O2O Operation Mode

2.2 The Meaning of Agricultural Product Logistics Distribution

Agricultural product logistics distribution refers to the process of transporting agricultural products from their origin to consumers or markets. It involves a series of activities, including collection, storage, packaging, transportation, and distribution, to ensure that agricultural products can be safely and efficiently transported from farmland to consumers[6]. The goal of agricultural product logistics distribution is to ensure the quality, safety, and freshness of agricultural products, and to improve the supply chain efficiency of agricultural products to meet consumer demand for agricultural products[7]. At the same time, it can also promote regional and international trade of agricultural products, drive rural economic development, and provide employment opportunities.

2.3 Main Modes of Agricultural Product Logistics Distribution

Agricultural product logistics distribution refers to the process of transferring agricultural products from production sites or warehouses to consumers, including the packaging, storage, loading and unloading of agricultural products. Due to the biochemical characteristics of agricultural products, they need to be kept at a certain temperature and humidity throughout the entire process to prevent their decay. At present, there are four main modes of agricultural product distribution in China, as shown in the following Table 1.

Table 1. Logistics and Distribution Mode Table of Fresh Products

Distribution model	meaning	advantage	disadvantage
Self operated delivery	Enterprises use their own fleet for delivery	The delivery method is relatively flexible	High cost
Outsourced delivery	Using third-party delivery	Low cost	Weak response ability of e-commerce enterprises
Joint distribution	Two or more enterprise alliances for delivery	Strong risk resistance ability; High service	Difficulty in management

		level	
Mixed delivery	Combining self operation and outsourcing methods	High efficiency; The delivery method is relatively flexible	Diversifying the capital of enterprises can easily lead to resource waste

3 HTE Main Problems in The Logistics and Distribution of Agricultural Products in Guangxi under the O2O Model

3.1 High Logistics Delivery Costs and Low Efficiency

Agricultural products are usually produced in rural areas, while consumer markets are typically located in urban centers, requiring long-distance transportation to deliver agricultural products to consumers. The farther the transportation distance, the higher the logistics cost. Most agricultural products have the characteristics of being perishable and prone to spoilage in general environments, which affects the value of the products themselves[8]. Agricultural products require appropriate packaging and preservation measures during delivery to ensure product quality and quality safety. These additional processing and equipment costs will also increase logistics costs. Due to the fact that O2O distribution of agricultural products is usually carried out in small batches and multiple times, rather than one-time large-scale distribution, this also leads to high distribution costs. In short, the high logistics costs of agricultural products are caused by multiple factors, including transportation distance, agricultural product characteristics, packaging and preservation costs, etc. Their distribution costs are much higher than those of ordinary products. The inherent value of agricultural products is not high, coupled with low delivery efficiency and high delivery costs, greatly reducing the profitability of upstream and downstream enterprises in the supply chain.

3.2 The Development of Logistics Distribution Models is not Mature Enough

The logistics and distribution model of agricultural products under the O2O model can improve the sales and distribution efficiency of agricultural products, reduce costs, and provide consumers with a better purchasing experience through the combination of online and offline channels. However, the current logistics distribution model in Guangxi is not mature enough and is influenced and constrained by various factors, such as infrastructure limitations, energy and environmental protection limitations, technology and human resources limitations, policy and regulatory limitations, etc. Logistics enterprises need to continuously optimize and improve based on their own actual situation and market demand. Taking the self operated logistics distribution model as an example, its biggest advantage is that it can control the entire logistics process, thereby improving logistics efficiency and service quality. However, this model requires enterprises not only to invest a large amount of funds and resources, but also to bear all logistics risks. In addition, this mode requires very high profes-

sional operation requirements, otherwise it will lead to problems such as reduced logistics efficiency and increased costs[9].

3.3 Delivery Personnel have Low Business Literacy and Moral Cultivation

In the wave of urbanization development, professional talents tend to gather in economically developed regions, while Guangxi's economic development is also relatively backward, and most logistics enterprises are still at a relatively low level of development. The threshold for engaging in the logistics industry is relatively low. For logistics delivery positions, as long as they hold the corresponding vehicle driver's license, they may become delivery personnel. They may not have certain professional skills and experience, nor have they been trained to work, do not understand the importance of logistics delivery services, and simply think that delivery is to deliver goods from the supply location to the receiving location. But logistics delivery is a very important part of logistics, closely related to customer satisfaction, and delivery personnel have direct contact with customers. The service attitude of delivery personnel directly affects customers' feelings. A poor service attitude can create a negative shopping experience for customers, which can affect customer satisfaction and loyalty, and even lower the company's brand value and damage its reputation, which is not conducive to brand building and the long-term development of logistics enterprises.

4 Suggestions For The Logistics And Distribution of Agricultural Products in Guangxi under the O2O Model

4.1 Vigorously Developing the Joint Delivery Model

With the popularization of the O2O model, it is particularly important to vigorously develop the logistics co delivery model, as it can not only effectively reduce logistics costs, but also improve delivery efficiency and enhance consumer experience. Firstly, O2O enterprises need to establish a comprehensive logistics network system, including warehousing, distribution, transportation, and other links. By cooperating with third-party logistics companies or building their own logistics system, they can achieve rapid delivery nationwide. At the same time, through big data analysis and artificial intelligence technology, intelligent sorting of orders and optimization of delivery routes are carried out, reducing delivery time and costs, and improving delivery efficiency[10]; Secondly, in order to improve the quality of delivery services and consumer trust, O2O enterprises need to strengthen their information construction, utilize advanced technologies such as big data, the Internet of Things, and artificial intelligence to update and share information on orders, inventory, and delivery, thereby improving service quality, enhancing consumer experience, and increasing consumer stickiness; Finally, innovative distribution models can be adopted, such as using new distribution methods such as intelligent express cabinets and drone delivery, or O2O enterprises can collaborate with other enterprises to innovate and promote

joint distribution models. By sharing resources such as warehousing and distribution, logistics costs can be reduced and resource utilization can be improved.

4.2 Strengthen Technical Support and Optimize the Logistics and Distribution Path of Agricultural Products

In Under the O2O model, advanced technologies such as big data, the Internet of Things (IoT), and artificial intelligence are used to optimize the logistics and distribution routes for agricultural products. For instance, intelligent scheduling and IoT are leveraged to plan the distribution routes for agricultural products in a way that takes into account factors such as transportation conditions, shelf life of agricultural products, and transportation costs, in order to provide optimal distribution routes for delivery personnel. This not only reduces transportation time and costs but also ensures that agricultural products are delivered in the shortest possible time. Secondly, utilizing big data and IoT to build a digital platform for agricultural product distribution, collecting, analyzing, managing, and making decisions on agricultural product distribution, and monitoring and analyzing the transportation situation of agricultural products at any time, predicting future logistics needs, and automatically adjusting distribution routes to improve distribution efficiency and quality, thereby reducing the loss of agricultural products, ensuring the freshness and safety of agricultural products; Finally, using IoT technology, equip agricultural products with RFID tags or GPS trackers to achieve real-time monitoring of their transportation process. This helps to timely detect and solve transportation problems, such as traffic congestion, delivery delays, etc., thereby improving delivery efficiency. Meanwhile, establish a collaborative platform that closely connects producers, distributors, delivery personnel, and consumers. Through this platform, all parties can share information in real-time and collaborate to complete tasks, thereby improving the efficiency and flexibility of the entire supply chain[11].

4.3 Strengthen the Cultivation of Logistics Talents

The logistics industry is a vital component of modern economic development, playing a critical role in promoting industrial upgrading and enhancing corporate competitiveness[12]. The scarcity of professional logistics talent is impeding the growth of the logistics industry in Guangxi. To foster professional logistics talent, the following aspects should be prioritized. First, establish a comprehensive logistics education and training system, encompassing the design of logistics curricula, internship and training mechanisms, and the development of a faculty team, to elevate the quality and competence of professional logistics talent. Second, introduce a national industry certification system to encourage logistics practitioners to actively pursue certification, enhance their vocational skills and industry recognition, and bolster the allure and competitiveness of the sector. Simultaneously, improve the compensation and benefits for logistics professionals, boost their professional identity and sense of belonging, and enhance the allure and stability of the industry. Lastly, establish a collaborative educational mechanism that integrates industry, academia, research, and

application. For instance, schools and enterprises can jointly devise training programs for logistics management professionals, conduct hands-on teaching, foster the integration of theory with practice, thereby enhancing the practical and innovative capabilities of logistics talent. In essence, bolstering the cultivation of professional logistics talent necessitates collaborative efforts from various stakeholders including industry, government, and educational institutions to jointly refine practical methods for logistics talent development, truly nurturing valuable logistics professionals for society, and collectively advancing the development and progress of the logistics industry.

5 Conclusion

With the increasing urbanization in Guangxi and the continuous improvement of people's living standards, the O2O model of agricultural products has become an important business model for selling agricultural products, and will become more and more popular and Universal generalization. Agricultural product e-commerce should continuously improve logistics and distribution systems using information technologies such as big data, the Internet of Things, and cloud computing, providing customers with better services and meeting their personalized needs, thereby providing a safeguard for the rapid circulation of agricultural products in China.

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