

Research on the Problems and Countermeasures of the "Last Mile" of Rural E-Commerce Logistics Distribution

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Abstract: The strong enthusiasm of rural residents for online shopping has spurred efforts to address the problems existing in the "last mile" of rural E-commerce logistics distribution. However, a series of drawbacks, such as the lack of dedicated distribution facilities and professional talents, have hindered the progress of rural "local delivery." This paper aims to elaborate in detail on the relevant theories, current situation analysis, main existing problems, and corresponding countermeasures regarding the "last mile" of rural E-commerce logistics from several aspects. By referring to a wide range of materials and drawing on the research of various scholars on the "last mile" problem of rural E-commerce logistics distribution, this paper analyzes the advantages and some deficiencies of large enterprises like JD.com and Alibaba in the "last mile" of rural E-commerce logistics distribution, and puts forward its own insights, so as to point out a development path for the development of rural logistics and promote the vigorous development of rural logistics in China.

Keywords: Rural E-Commerce; logistics Distribution; The Last Mile; Countermeasures

1. Introduction

With the enhancement of China's scientific and technological strength, E-commerce and its derivatives have witnessed rapid development, constantly influencing our lives [1]. The rapid development of the Internet has brought many conveniences to our lives and provided new paths for production and development. However, in order to further develop E-commerce and its derivatives, it is necessary to solve the problems existing in the "last mile" of rural logistics distribution. At the

same time, solving this problem is of great strategic significance for improving people's sense of happiness, solidly promoting rural revitalization, and achieving high - quality rural prosperity. Due to the significant improvement of farmers' material conditions and the popularization of Internet technology in rural areas, the strong enthusiasm of villagers for online shopping has spurred efforts to solve the problems existing in the "last mile" of rural E-commerce logistics distribution [2]. Some scholars believe that in E-commerce logistics, the "last mile" is the only stage that directly contacts end - users. The quality of service, customer satisfaction, and stage costs directly affect the development of E-commerce logistics. In China, there is a relative lack of relevant legal documents in the field of E-commerce, so the safety of goods and the security of customer information cannot be properly guaranteed [3-4]. Regarding the solution to the problem of the "last mile" of E-commerce logistics distribution and breaking through the obstacles to the development of E-commerce logistics for a qualitative leap, many researchers have proposed the principle of combining third - party logistics with self - operated express delivery, and extending coverage vertically and horizontally to achieve full - scale coverage and convenience for all. This paper mainly studies the current situation, main existing problems, and countermeasures of the "last mile" of rural E-commerce logistics.

2. Analysis of the Current Situation of Rural E-commerce Logistics Distribution

The development of logistics distribution in rural areas is disadvantaged by the constraints of resources, roads, and talents. At the same time, there are other external factors promoting the development of the logistics industry, so it shows vigorous vitality.

2.1 Advantages of Rural E-Commerce Logistics Distribution

The scale of rural E-commerce logistics is gradually expanding, and the demand for it has also increased significantly. With the rapid development of E-commerce in China, the disposable income of farmers has grown significantly faster than that of urban residents. The change in rural consumption has further promoted the rapid development of the logistics industry [5]. Rural E-commerce logistics plays a crucial role in guiding domestic consumption in urban and rural areas, adjusting the industrial structure, and promoting harmonious urban - rural development. In recent years, more and more insightful people believe that rural E-commerce logistics is a huge market opportunity, and major enterprises have joined this development, formulating their own development strategies and investing a large amount of human, material, and financial resources. At the same time, the state plays a huge supporting role in the development of rural E-commerce logistics. Following the guidance of the Party ensures that we move forward in the right direction. For example, the rural logistics "new infrastructure" promoted by the state is conducive to generating new momentum for rural economy. The "new infrastructure" of E-commerce logistics will promote the continued sinking of the intelligent supply chain into rural areas. The COVID - 19 pandemic has forced the intelligent transformation of E-commerce logistics, improving its service capabilities. This new infrastructure has also diversified the development of rural E-commerce logistics and promoted the prosperity of rural life. At the same time, the government, in conjunction with the Ministry of Education, trains E-commerce talents and encourages them to contribute to the development of rural E-commerce in China. All these examples show that both national policies and the market promote the development of E-commerce in rural areas, which is also a major step in promoting significant progress in rural revitalization.

2.2 Disadvantages of Rural E-Commerce Logistics Distribution

Rural areas are vast, so more human, material, and financial resources are required, resulting

in an immature market development. Moreover, due to the relatively scattered residence of rural residents, customer demands and distribution cannot be centralized, wasting time and energy. At present, the development of township logistics is only a small part. Most farmers still go to counties and districts to purchase production materials and daily necessities instead of getting them directly from their villages or townships through online shopping [6]. Therefore, exploring many undeveloped markets is the key to development and an important measure to achieve economies of scale.

Due to the small scale of E-commerce in rural areas, it is difficult to have a standardized form to enter the Internet and build brand awareness, which has greatly hindered the development of rural E-commerce logistics. The scarcity of outlets has always been an obstacle to the development of rural logistics. In addition, the cost of setting up new outlets has increased sharply, which poses higher requirements for E-commerce logistics distribution [7]. Currently, in townships, there are only two logistics networks, namely, the postal service and the supply and marketing cooperatives, but their costs are high and it is difficult for them to make a profit. On the other hand, most of the outlets below the township level are express agents, and express collection is only their sideline. There are also a few express companies that build their own stores in townships. Compared with the agency model, this model has high upfront investment and subsequent operating costs. In summary, there are problems in rural E-commerce logistics distribution, such as the lack of village and township outlets, the failure to maximize the integration and utilization of existing outlets, and the rapid increase in the cost of setting up new outlets [8].

3. Main Problems Existing in the "Last Mile" of Rural E-commerce Logistics Distribution

Many disadvantages in the "last mile" of rural E-commerce logistics distribution hinder its development towards a more mature direction. The "last mile" of distribution directly faces customers, and customer satisfaction is particularly important for logistics enterprises. The main existing problems are as follows:

3.1 Lack of Talents in Rural E-Commerce Logistics

Although the state actively calls on professional logistics talents to contribute to rural areas, the reality is not so ideal, and there are not enough professional talents. The reason is that the living and working conditions in rural areas are much worse than those in cities, so most professional talents are reluctant to work in rural areas. It is difficult to attract professional talents from cities to contribute to rural logistics through various measures. Therefore, local relevant institutions need to make use of local resources and actively hire local villagers. However, most farmers have limited knowledge and have difficulty operating high - tech equipment. Without professional training, they are hard to be competent. In rural areas, many workers start working without formal training. Their low quality may lead to a decrease in customer satisfaction, which is not conducive to the development of rural E-commerce logistics.

3.2 Difficulties in Selecting the Location of Rural E-Commerce Logistics Distribution Points

China is a large country with a vast territory, and rural areas account for a high proportion. The population is large and relatively scattered. As an ancient country with a history of 5,000 years, the cultural customs and population distributions of various villages and towns vary greatly. In the journey towards the beautiful vision of rural revitalization, the process of urbanization is rapid and has achieved remarkable results. However, the infrastructure construction in rural areas has not kept up, as reflected in the weak highway transportation capacity and rugged terrain. First of all, the local government should take measures to actively carry out highway construction. As the saying goes, "To get rich, build roads first" to achieve convenient communication between the village and the outside world. However, in many remote areas, this is not the case, and the roads are mainly rural paths, which is particularly difficult for couriers who need to deliver goods on time. Secondly, the harsh environment and backward warehousing facilities in rural areas make it more difficult to select the location of logistics distribution points, hindering the development of rural E-commerce logistics.

3.3 Restrictions of the Rural E-Commerce Logistics Network and High Costs

The construction of the rural E-commerce logistics network requires strong economic strength. Except for large well - known enterprises such as China Post, JD.com, and SF Express, which have relatively complete logistics networks covering only townships, they are also unable to achieve delivery to every village. Due to the vast rural areas, the lack of sufficient outlets leads to long - distance distribution, and the scattered population results in small - batch transportation per order, causing a large amount of resource waste. The following two aspects restrict the rapid development of rural logistics: On the one hand, although farmers are enthusiastic about online shopping, due to historical and ideological influences, they mainly buy production and daily necessities online and rarely purchase large - scale home appliances. On the other hand, due to limited knowledge, it is difficult for them to master numerous complicated high - tech products and their operations, resulting in the hindered development of E-commerce logistics. If logistics enterprises want to truly reduce distribution costs, they must focus on the integration of goods, that is, the integration of outlets.

3.4 Poor Flexibility of Rural E-Commerce Logistics Distribution

Judging from the current development of logistics, only JD.com can provide door - to - door delivery in rural areas, but it only covers most rural areas, not all remote areas. Overall, logistics enterprises adopt the delivery model of customers picking up goods by themselves, which shows many disadvantages in rural areas. According to statistics, most rural villagers think it is very inconvenient to pick up express delivery in this way. Due to the lack of outlets in the village, they have to go to the town or even the county to pick up the express, which is very inconvenient. If there is a time delay, the goods will be placed in a mess, and it takes time and effort to find the target goods. In addition, due to inconvenient roads and other reasons, it takes a lot of time for many goods to reach customers, with poor timeliness and low customer satisfaction. E-commerce is supposed to bring convenience

to people, but the self - pick - up model does not fully utilize the flexibility and convenience of E-commerce, which is not conducive to the further development of rural logistics.

3.5 Low Informatization Level of Rural E-Commerce Logistics Distribution

Rural E-commerce cannot do without an information system. However, compared with the informatization level of cities, it is much lower. This situation will inevitably lead to many problems. For example, due to the low informatization level, it is impossible to seamlessly connect all links in E-commerce. Problems such as lost express deliveries and difficult logistics tracking often occur, making it difficult for the development of E-commerce logistics to proceed smoothly. In addition, the information management platforms of rural logistics enterprises are not perfect. They operate independently and have not reached cooperation and information sharing with E-commerce enterprises. Logistics enterprises and E-commerce enterprises have neither achieved information sharing nor truly exerted the advantages of the Internet. Their information transmission still relies on phone calls and text messages, which greatly wastes time costs, reduces the commodity circulation efficiency, and further increases the difficulty of solving the problem of the "last mile" of E-commerce logistics distribution.

4. Countermeasures for the "Last Mile" of Rural E-Commerce Logistics Distribution

To promote the development of rural E-commerce logistics, we should make up for the shortcomings and give full play to the advantages according to the characteristics of rural areas, explore new methods conducive to the development of rural E-commerce logistics, and help the logistics industry move towards a more complete stage. Drawing on the research results of many scholars and encouraging more people to develop new ideas, the main aspects are as follows:

4.1 Accelerate the Construction of Rural Logistics Infrastructure

To solve the many problems in the "last mile" of rural E-commerce logistics, the most basic thing is to solve the problem of an imperfect transportation network. The smooth transportation in rural areas provides the most

basic guarantee for end - delivery. In addition to transportation, warehousing facilities and transportation equipment also need to be further improved. To improve the transportation network, the following methods can be adopted: Build a first - level logistics distribution center in the county - level area as the central hub of the village and town network. In townships, use the outlets of large enterprises such as the postal service to build second - level logistics distribution centers as a transition. At the village level, the logistics system should cooperate with local large - scale supermarkets and supply and marketing cooperatives to provide basic guarantees for the final delivery. By constructing a three - level logistics distribution center system from county to township to village, a tight logistics network can be built, improving the connectivity of rural logistics and expanding the coverage. Regarding the road problem, the government mainly provides funds to build roads and other infrastructure in rural areas to meet the basic needs of logistics development. Of course, the local government should negotiate and cooperate with relevant logistics parks to guide enterprises to transfer their factories, warehouses, and distribution centers to locations with convenient transportation and wide coverage of rural areas, so as to continuously improve the infrastructure.

4.2 Introduce and Strengthen E-Commerce Talent Training

Although e - commerce has developed for more than a decade, there are few professional talents, especially left - behind professional talents in rural areas, and their quality varies. In this regard, the local government should do a good job in encouragement and introduce talents from cities to lay the foundation for rural e - commerce logistics. Training and introduction work can be carried out from the following three aspects: First, hold "Internet + Agriculture, Rural Areas, and Farmers" talent forums. Second, cooperate with third - party institutions, include the funds required for rural e - commerce logistics training projects in the national subsidy scope, strengthen e - commerce practical training relying on projects such as the training of leading rural practical talents, flexibly introduce e - commerce experts, establish long - term training cooperation relationships, promote the

cultivation of entrepreneurial talents for "Internet + Agriculture, Rural Areas, and Farmers" and new retail small and micro - enterprises, cultivate and gather professional talents in the industrial chain, hold e - commerce micro - classrooms, and actively guide the vast number of grassroots people to understand and participate in e - commerce, with a focus on cultivating practical e - commerce talents. In addition, in the e - commerce logistics industry, the work of the "last mile" in rural areas is very hard, but the salary is very low, so it has little attraction for high - quality professionals. As a virtual economic model, in e - commerce, only the employees responsible for the "last mile" of logistics distribution have face - to - face contact with customers. The quality of employees directly affects the corporate image and may also affect the competitiveness of the enterprise. Therefore, logistics companies must pay attention to the training of employee quality, which can be achieved by raising the entry threshold, increasing salary and welfare benefits, and conducting regular professional training. Reducing complaints in the "last mile" of rural e - commerce logistics distribution will make the development of e - commerce logistics more smooth.

4.3 Accelerate the Cultivation of Rural and Township Logistics Market Entities

Encourage individual capital to participate in the development of rural and township logistics, and encourage capable cooperatives and enterprises to cooperate to achieve the reallocation of resources in rural and township areas and promote the formation of rural and township logistics market entities. To cultivate rural and township logistics market entities, it is necessary to identify and cultivate characteristic products with development potential, and through the guiding effect of the government, build the brand of local agricultural products and enhance their competitiveness on the Internet. Of course, while various entities develop together, a "leading enterprise" is also needed. The local government should support the development of mainstream logistics enterprises, give full play to their advantages of large scale and complete functions, and play a leading and exemplary role.

4.4 Utilize the Public Transportation System and the Crowdsourcing Logistics Model

An important concept here is sharing and cooperation. Making the most of public resources is the essence of this model. To utilize the public transportation system, local resources should be made full use of. Logistics companies can cooperate with different passenger transport companies in towns and villages. Taxis have flexible time and routes and can be delivered to customers on time and safely according to their needs. In this process, with the help of software such as Baidu Maps and Google Maps, real - time location information can be provided, making customers more at ease. In addition to optimizing distribution through the public transportation system, the crowdsourcing logistics model can also bring new vitality to rural e - commerce logistics. The crowdsourcing model refers to entrusting the distribution business originally undertaken by enterprise employees to the public outside the enterprise. The public couriers can choose to accept the distribution according to their own time. If they complete it, they will get corresponding rewards; otherwise, they will be fined. An information platform should be established to integrate the goods distribution information of the "last mile" of rural e - commerce logistics and the information of public couriers, and a series of measures should be formulated to track the goods and assess the public couriers. This model provides great convenience and can promote the development of rural logistics, taking a big step towards truly solving the problem of the "last mile" of e - commerce logistics.

4.5 Construct the Rural Cooperative Station Model

The essence of the rural cooperative station is win - win cooperation. Considering the vast rural areas, it is very difficult for a single logistics enterprise to purchase warehousing and distribution equipment, and it is almost impossible to solve the "last mile" problem. The basic idea of the rural cooperative station is that third - party logistics enterprises such as SF Express and Tiantian Express cooperate with JD.com, Alibaba, and financial institutions to jointly establish a logistics alliance. Through the share - holding system, each party performs its own duties and gives

full play to the advantages of its own enterprise to achieve mutual benefit and win - win results. The main operation mode of the rural cooperative station is to integrate the goods delivered by all cooperative enterprises, and conduct unified planning and management. Aggregating the small amount of goods of individual logistics enterprises into a large - scale batch can reduce inventory and transportation costs and improve resource utilization. In addition, the cooperative enterprises of the cooperative station should cooperate with the local government to mobilize the enthusiasm of farmers to learn relevant knowledge and engage in relevant activities, transform the identity of villagers from consumers to sellers. These people are familiar with the local environment and are more likely to expand e - commerce business. Through the rural cooperative station model, a new pattern of rural e - commerce distribution featuring co - construction, sharing, and win - win results can be realized, which can fundamentally solve the problem of the "last mile" and thus promote the rapid development of the e - commerce industry and inject strong impetus into rural revitalization.

5. Conclusion

The "last mile" problem in rural E-commerce has been a longstanding challenge that must be addressed as it is crucial for the development of the new rural economy and the promotion of rural modernization. Efficient logistics and delivery solutions for the final leg of rural E-commerce are essential for fostering this growth. Given that the existing issues in rural E-commerce logistics are both persistent and long-term, it is necessary to be psychologically prepared for the implementation of enduring and updated solutions.

In this regard, this paper posits that breaking down the barriers between urban and rural logistics and enhancing the efficiency of logistics systems requires robust support from relevant policies. Moreover, a more efficient logistics delivery model and platform

necessitate collaborative efforts from all stakeholders. Building on existing developmental foundations, it is important to effectively utilize public transportation routes and resources. Additionally, improving the skills and qualifications of logistics personnel is vital. By establishing a collaborative and shared distribution system, we can significantly enhance the efficiency of "last-mile" delivery in rural areas.

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