

Research on the Last Mile Delivery of Rural E-commerce in China

Mengjie Zeng^{1, 2, *}

¹ College of Agro-Forestry Economics and Management, Henan University of Animal Husbandry and Economy, Zhengzhou 450011, China;

² College of Economics and Management, China Agricultural University, Beijing 100083, China.

* Zengmengjie008@163.com

Abstract. Under the background of "Internet Plus", China's rural e-commerce has ushered in unprecedented development opportunities and challenges. Rural e-commerce has achieved remarkable results in increasing farmers' income and promoting rural economic development. However, the last mile delivery problem of rural e-commerce has become an obstacle and bottleneck for the further development of rural e-commerce. This paper analyzes in detail the last mile delivery problems of rural e-commerce in China, and then proposes to quicken the last mile infrastructure construction, improve rural informatization level, make the most of local logistics resources, make full use of Postal logistics system, and promote joint distribution, in order to solve the last mile delivery problems of rural e-commerce.

Keywords: Last Mile; Rural e-commerce; Internet Plus; Logistics.

1. Introduction

With China's vigorous promotion of the "Internet Plus " strategy, rural network infrastructure has been continuously improved, and the scale of rural netizens has continued to grow. According to the "42nd Statistical Report on Internet Development in China" released by China Internet Network Information Center, as of June 2018, the Internet penetration rate reaches 57.7%. There are 802 million total Internet users and 788 million mobile Internet users, among which the number of rural Internet users is 211 million, accounting for 26.3% [1]. It is foreseeable that rural areas would become new growth points and the most potential market for e-commerce [2]. Rural e-commerce also ushers in an unprecedented development opportunity. Rural e-commerce has achieved remarkable results in increasing farmers' income, promoting rural economic development, and providing an effective path for rural revitalization [3].

Although China's rural e-commerce has made great progress, the last mile delivery, which accounts for 30% of the total logistics cost, has become an obstacle and bottleneck of rural e-commerce and economic development, and needs to be solved urgently [4-9]. How to get through the last mile delivery channel of rural logistics is related to the transformation and quality improvement of China's rural e-commerce. As the last mile delivery is not smooth, the convenience of rural e-commerce is difficult to highlight. This problem is the biggest obstacle between e-commerce and rural development. The solution of this problem is still under exploration.

2. The Current Situation of Rural E-commerce Logistics Development

In order to promote the rapid development of e-commerce in rural areas, China has carried out the demonstration project of e-commerce in rural areas since 2015. By 2017, there are 756 national-level rural e-commerce demonstration counties [10]. According to statistics from the China International E-commerce Center Research Institute, by 2017, China's rural online retail sales reached 1244.88 billion yuan, up 39.1% year-on-year, while the online retail sales of agricultural products reached 243.66 billion yuan. By the end of 2017, there were 9,856,000 online shops in rural areas, up 20.7% year-on-year, and more than 28 million people were employed [11].

The development of rural e-commerce needs logistics. In recent years, local government and major e-commerce enterprises have adopted relevant strategies for rural e-commerce logistics, and achieved

certain results. With the slow growth of urban online shopping, various e-commerce giants have targeted at rural e-commerce market. Alibaba, Jindong, Suning and other e-commerce giants have started to make e-commerce strategies and logistics planning for rural market. Alibaba has set up rural Taobao section, and implemented the "thousand counties and ten thousand villages" rural e-commerce plan. It is expected to establish 1,000 county-level operation centers and 100,000 rural Taobao service stations. Currently, there are 2,118 Taobao villages, all covered by Cainiao logistics [12].

Admittedly, local government and major e-commerce enterprises have effectively promoted the development of rural e-commerce logistics, but the development of rural e-commerce logistics affected by a variety of factors is not optimistic, especially the prominent last mile delivery problems.

3. The Last Mile Delivery Problems of Rural E-commerce

3.1 Undeveloped the Last Mile Infrastructure.

Although China has made remarkable achievements in urbanization, the construction of road traffic and information lags in rural areas, especially the last mile infrastructure in rural areas is obviously backward. Although governments have vigorously implemented the "Village-to-Village Access" project, most rural roads are mainly field or dirt roads. So far, especially in remote mountain villages, rural roads have not been repaired, seriously blocking connection between rural and urban. By June 2018, China's Internet penetration rate in urban areas was 72.7 percent, while that in rural areas was 36.5 percent, which is 36.2 percentage points lower than that in urban areas. In a word, the backwardness of the last mile logistics and information infrastructure restricts e-commerce development in China rural areas.

3.2 The High Costs of the Last Mile Logistics.

Due to the large number of scattered rural areas in China, the last mile delivery network has fewer outlets, long lines and long time, which leads to the long logistics chain characteristics of rural logistics in China. In addition to China Post, most end-to-end service outlets of SF Express, Jingdong Logistics, Cainiao and other logistics express companies only extend to some counties or towns. Moreover, rural residents in China have accustomed to traditional channels, while they are still unacceptable for e-commerce shopping mode, resulting in low frequency and small customer orders of e-commerce in rural. On the one hand, the long logistics chain characteristics of China's rural logistics extend the last mile delivery time, and increase logistics costs. On the other hand, the utilization rate of logistics and distribution vehicles is not high, and it is difficult for e-commerce to achieve scale effect in China's rural. These problems greatly increase the last mile logistics and distribution costs.

3.3 Low Service Level of the Last Mile Delivery.

At present, China's rural logistics service system is generally not deep into villages, most of the service ends to counties or towns. With the gradual increase of online shopping population in rural areas, the amount of up-going and down-going commodities is also further increased. A handful of logistics service personnel are faced with heavy sorting and distribution tasks, and have no time to provide door-to-door delivery services of the last mile. In many cases, they only call the addressee to pick up goods, resulting in serious phenomenon of collecting and taking on behalf of the addressee, and high loss rate of express delivery. Recipients need to spend more time to receive goods in rural. In addition, the education level of the last mile distribution service personnel general is uneven, and they are not systematically trained. The above problems not only lead to low service level of the last mile delivery, but also reduce the enthusiasm of rural e-commerce users.

3.4 Poor Participation of Logistics Enterprises.

Most logistics enterprises is not motivated to participate in the last mile delivery of rural e-commerce, because unit cost is extremely high. On the one hand, it is difficult to gather resources and form scale effect of the last mile delivery in rural areas. Many logistics enterprises do not provide logistics services to most natural villages, and are even more reluctant to invest heavily in rural logistics systems. On the other hand, some powerful logistics companies are likely to cause monopoly in the rural logistics market, so it takes a long time for other logistics enterprises to win the rural market, especially in remote areas such as Yunnan and Guizhou. The initial investment in logistics infrastructure is large, and capital recovery period is long. Moreover, it is difficult for private small and medium-sized logistics enterprises to obtain funds from normal channels, so they have to choose high interest private loan channels. The above aspects would greatly reduce enthusiasm of logistics enterprises in participating the last mile logistics, and greatly restrict the development of rural e-commerce.

3.5 Low Informatization Level.

At present, the overall informatization level is not high in rural e-commerce logistics in China. Except Cainiao, Jingdong and Post logistics, the last mile delivery system of rural e-commerce is mainly composed of local scattered and small-scale logistics express companies. Due to lack of informatization investment, these companies have not developed mature information management system, and not established efficient logistics information communication mechanism. Firstly, information sharing between upstream and downstream nodes is not carried out, resulting in information asymmetry and weak information traceability. Secondly, the repeated input of last mile delivery resources, and the lack of resource sharing among enterprises, leads to low utilization rate of enterprise resources. Thirdly, rural logistics express enterprises generally do not introduce intelligent information system, and generally adopt manual operation with high labor cost and error rate. These situations lead to lagging logistics information, high logistics cost and low service satisfaction.

4. The Solution to the Last Mile Problems of Rural E-commerce

4.1 Quickening the Last Mile Infrastructure Construction.

The last mile infrastructure construction is related to many functions' realization such as transportation, warehousing, distribution, loading and unloading, etc. It is the key to developing rural e-commerce and promoting rural economic development. Especially for fresh agricultural products, the whole processes highly require for cold-chain logistics infrastructure. The last mile infrastructure construction is the highest investment project in rural e-commerce logistics, so it requires policies and financial support from local government. Local government can improve the last mile infrastructure construction, and provide preferential policies for e-commerce logistics enterprises. The village-level logistics system effectively links with the upper-level logistics system, and increases the coverage of rural logistics services. In order to solve the last mile problems, modern logistics facilities and infrastructure can be fully utilized in creating effective three-level county-town-village logistics system.

4.2 Improving Rural Informatization Level.

The solution to the last mile problems of rural e-commerce cannot be achieved without the support of informatization. The modern rural e-commerce logistics information system can make use of big data, cloud computing, RFID, Internet of things, traceability system and other information technologies, in order to realize information transparency and information sharing among logistics enterprises. The biggest difficulty in constructing the system is to realize logistics information integration among express companies. On the one hand, in the information age, data is wealth, so logistics companies are generally unwilling to take initiative to share customers' wealth. On the other

hand, in order to realize the extensibility of rural logistics information system, logistics enterprises can outsource the project to professional IT companies to solve technical problems, and select localized information service personnel to implement. Local government or third-party companies should integrate e-commerce logistics information to effectively meet logistics needs of users in rural areas. At the same time, local government also should strengthen construction of informatization hardware facilities, and actively build a comprehensive rural logistics information service platform. Using modern logistics information system breaks through the last mile information flow, goods flow and logistics flow, and realizes informatization development of the last mile logistics.

4.3 Making the Most of Local Logistics Resources.

To solve the last mile logistics problems, local logistics transportation resources can be combined to share logistics facilities, tools and human resources. Local public and corporate transportation resources could be made full use, such as taxis, passenger buses and motorcycles in rural areas. In rural areas, passenger buses are main transportation means for rural residents, which not only carry passengers, but also store goods in trunk. The planning routes of passenger buses are generally more reasonable, and cover a wider range. Taxis are highly mobile and flexible, which deliver goods to customers in a timely manner, completely according to customers' needs. Motorcycles also are very familiar with rural terrain, which effectively delivery goods for the last mile. Due to complexity and variability of local transportation means, there are certain risks in cooperation between e-commerce logistics enterprises and them. With the help of modern logistics information technologies, shared resource platforms can be established to effectively connect different enterprises.

4.4 Making Full use of Postal Logistics System.

The Postal logistics network extending in all directions plays a very important role in solving the last mile problems of rural e-commerce. The Postal logistics service system has covered 31 provinces and 1875 prefecture-level cities, and established more than 17,000 service outlets. The network service extends to all towns across China, and even vast rural last mile areas. Through years of operation, China Post has also actively explored in rural logistics, with a certain customer base and practical experience in rural logistics management. The Postal Logistics has established a convenient, safe, accurate and reliable brand image, and has formed a good brand reputation and customer loyalty in rural areas. Therefore, e-commerce logistics enterprises could strengthen cooperation with China Post, and work together to achieve the last mile distribution.

4.5 Promoting Joint Distribution.

The joint distribution mode can be adopted to solve problems of small and scattered last mile delivery. The joint distribution mode can form scale economy effect, and effectively reduce the cost of rural logistics. Through integrating resources and planning joint distribution network, goods can be collected at county level, and then unified upstream and downstream. The joint distribution can generally be led by industry associations, local government, or jointly funded by several e-commerce logistics enterprises. Parcels from several express companies are delivered to county-level distribution centers, and distributed according to destination villages. Taking advantages of the Postal service, major logistics enterprises can jointly deliver goods. The village-level service stations of Jingdong and Cainiao logistics could be used to form logistics alliance, jointly solving the last mile distribution problems. The joint distribution can share logistics resources and reduce unit distribution cost, but it involves more than one companies. Only by effectively coordinating responsibilities and interests of various companies, the joint distribution can be better implemented, and the last mile delivery problems be fundamentally solved.

5. Summary

The last mile delivery is an important factor in affecting the development of rural e-commerce and economic. With the development of information age and the implementation of the "Internet plus"

strategy in China, more and more rural Internet users are purchasing and selling commodities through e-commerce, which brings great opportunities and challenges to rural e-commerce logistics. Due to backward rural logistics infrastructure, low level of informatization, and scattered customers, the last mile delivery cost is high, while service level is low. How to open the last mile delivery channel of rural e-commerce is the key to developing China's rural e-commerce and economy.

Under the background of "Internet plus", local government and industry associations should take measures to promote cooperation among rural e-commerce logistics enterprises. By fully integrating rural human, material and financial resources, rural e-commerce logistics enterprises could jointly focus on solving the last mile delivery problems, and break bottlenecks of rural e-commerce development, to further promote rural modernization.

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