Research on the solution of upward movement of agricultural products

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Abstract. Upward movement of agricultural products is an operation mode in which rural e-commerce is used as a medium to open the sales channels of local characteristic agricultural products so that the characteristic agricultural products can reach the dining tables of the common people from the fields. With the advent of the mobile Internet and big data era, the upward movement of agricultural products must be based on this trend and keep up with the development trend. Firstly, the article analyzes the current situation and existing problems of agricultural products. A transportation solution for agricultural products has been established. Finally, the implementation measures for the upward movement of agricultural products are put forward.

1. Introduction

With the deepening of reform and opening up, the level of economic development has been continuously improved, industrialization, informatization and urbanization have been further developed, and agricultural modernization, new rural construction, farmers’ living standards and living conditions have also been further developed. The improvement of farmers’ disposable income, the popularization of the Internet, the upgrading of electronic products, the improvement of rural infrastructure and the narrowing gap between urban and rural areas have provided favorable conditions for e-commerce to enter the countryside.

2. Upward current situation of agricultural products

The sale of agricultural products has always depended on traditional distribution channels. Its marketing mode is relatively backward and develops slowly. However, with the rapid development of information technology and the popularization of electronic products such as the Internet and mobile phones, people can make full use of these electronic products, keep up with the pace of the information age, apply information technology to the sale of agricultural products, and promote the rapid development of agricultural products. However, the emergence of e-commerce is for the downward trend of industrial products, that is, the development of industrial products from cities to rural areas, which is not entirely applicable to the upward trend of agricultural products. Therefore, although all the e-commerce giants have tried to develop models suitable for their own development and for the development of rural e-commerce, from the actual situation, there is still a big gap between the downward development of industrial products and the upward development of agricultural products. Even the top players in the electricity business are still stranded in the upward movement of agricultural products and are still at the exploratory stage. The scale of agricultural products ascending is relatively small and scattered. Agricultural products are mainly divided into two categories, namely
dry goods and fresh food. Judging from the current development, it is relatively easy for dry goods agricultural products to go up, because dry goods agricultural products have lower requirements on all aspects of logistics and are easy to control. However, the upward movement of fresh agricultural products is relatively poor, because the seasonal nature of fresh agricultural products is relatively strong, but consumer demand for such products is distributed throughout the year, and at certain times the climate in each region is different, so it is not possible to make large-scale upward movement of fresh agricultural products, and there is not much demand for some agricultural products distributed in scattered areas, resulting in the upward movement of agricultural products not forming scale and bringing scale benefits.

3. Analysis on problems existing in upward movement of agricultural products

There are many problems to be solved in the upward movement of agricultural products. Upward movement of agricultural products is different from that of traditional agriculture, which uses rural e-commerce as a bridge to connect rural and urban areas. Although there is great potential for upward movement of agricultural products, it has been caught in various difficulties and dilemmas.

3.1 Weak foundation of rural logistics

At present, China's rural areas are far behind cities in terms of road traffic, logistics equipment, network communication, storage capacity and so on. The technical level of rural logistics is also very low. Agricultural products require extremely high transportation, storage, distribution and other links. However, rural logistics just lacks refrigeration equipment and technology for transporting vegetables, dairy products, fruits and so on, resulting in considerable losses. According to statistics, the loss rate of vegetables, fruits and other agricultural products in the logistics links such as picking, transportation, storage and transportation reaches 25% ~ 30%, and agricultural products with a total value of 75 billion yuan each year are deteriorated in transportation.

3.2 Information network system construction needs to be improved

The information network system of rural logistics rarely has enterprise construction. The "Agricultural Material E-commerce Chain Distribution Information System" of China Post Logistics Company cannot meet the needs of modern rural logistics and distribution. Rural logistics branches set up according to administrative divisions are only set up in villages and towns, which cannot meet the needs of the vast number of farmers in time. The coverage rate of "three rural" service stations set up in administrative villages is less than 50%. At the same time, compared with the common use of computers to record inventory and sales in supermarkets in cities and towns, at present many "three rural" service stations of rural logistics are operated manually, with a low degree of informatization, lacking the ability to provide modern information services for farmers, and urgently needing to strengthen informatization transformation.

3.3 Logistics involves a wide range of regions and scattered service stations

The extensiveness and dispersion of rural logistics are determined by the characteristics of rural consumers and agricultural production. There are many administrative villages and natural villages in China, which are numerous and widely distributed. In addition, there are many problems such as seasonal and regional differences of agricultural products, diversity of production methods and great influence by natural factors. One is the instability and imbalance of rural logistics demand and supply. Second, transport vehicles for rural logistics cannot be guaranteed. It can be seen from this that in order to meet the logistics demand of farmers with small scale, large scope and diversity but large total amount, the rural logistics system will inevitably show great dispersity on the whole, with the characteristics of small scale of single service, large total amount and flexible operation.
3.4 Agricultural products are highly cyclical and easy to be unsalable
Most agricultural products still have small production and large market. Compared with industrial production, there are blind, scattered, low-end and fragmented problems. As the number of products is not large enough, it is difficult to profit from the continuous operation of e-commerce. In addition, agricultural products are affected by factors such as season and place of production, and have certain periodicity, which does not guarantee that there will always be "goods available for sale", especially fresh agricultural products.

3.5 Lack of high-end talents at the grassroots level makes it difficult to operate
At present, most agricultural products do not have a mature quality control standard system, and the "upward movement" of agricultural products is faced with such problems as whether the standards are in compliance and whether the quality is safe and reliable. Due to the low degree of standardization and branding of agricultural products, they cannot be systematically packaged and marketed, and cannot meet the market demand for standardized products such as "pollution-free products", "organic agricultural products" and "green food".

4. Transport solutions for upward movement of agricultural products

4.1 Develop high-span logistics routes to improve the efficiency of logistics transportation
At present, most of the traditional logistics are distributed according to the provincial classification mode. Regardless of the distance between the destinations, once the provinces are crossed, they must be distributed and distributed in the node areas of the province where the destinations are located and then sent to the destinations. Therefore, the logistics efficiency is not satisfactory to consumers. We need to break the original provincial division mode and establish "N horizontal and N vertical" through lines across the country. Relying on the national logistics node cities, we will connect them into logistics lines. We will take the node cities as the route center and draw circles around 100-150 kilometers to extend and broaden the routes. In the process of transportation, the speed of trunk transportation is generally faster than that of branch transportation. In the route design, the trunk line is used between the node cities and the node cities to reduce the distance of branch line transportation, save time in the early stage, reduce the time limit pressure of branch line transportation, and improve the speed of the overall transportation process. Zoning management is no longer limited by administrative planning, but can be divided freely according to business characteristics (e.g. network coverage, consumer distribution, local logistics, internal personnel division of labor, etc.) to realize the connection of rural and urban logistics information into a refined grid management mode.

4.2 Establishment of "n-transverse-n-vertical" transverse route
The formulation of the "N horizontal and N vertical" through route first determines the starting and ending areas and the route direction. Combined with the national circulation node city, determine the basic route. On the basic route, fill the regional circulation nodes to complete the route formulation. The through route has a large cross-regional extent and a long total length, ensuring that the route master plan covers all provinces and regions of the country, leaving no dead corners. In addition to the through routes, as shown in fig. 1, direct routes are set up between major logistics provinces to meet the time limit demand of large freight volume and reduce the pressure of freight volume with speed. The determination of the beginning of branch line transportation will be completed automatically by computer.
4.3 Selection basis of vertical and transverse nodes
The Ministry of Commerce and other 10 departments jointly issued the "National Distribution Plan for Circulation Node Cities (2015-2020)", which aims to speed up the construction of the national backbone circulation network, strive to enhance the function of circulation node cities, better play the basic and leading role of circulation industry, and further release the consumption potential. According to the overall national regional development strategy and the strategic deployment of "the belt and road initiative", Beijing-Tianjin-Hebei coordinated development and the Yangtze River economic belt strategy, the Plan, in combination with the national new urbanization plan and the national main functional area plan, determines the "three vertical and five horizontal" national backbone circulation channel system for 2015-2020, and clearly divides the national, regional and regional circulation node cities. The Plan selects the national circulation node cities from 4 municipalities directly under the Central Government and 333 prefecture-level administrative regions (excluding Hong Kong, Macao and Taiwan regions). This plan divides the national circulation node cities into three levels: national, regional and regional. 37 national circulation node cities and 66 regional circulation node cities are determined. According to the geographical location, we divide the regions into northwest, north, northeast, southwest, central, southeast, south and Tibet, as shown in fig. 2.

4.4 Selection of organization model of drop and hang transportation
Hanging transportation is an advanced transportation organization mode widely used and an effective means to improve transportation and logistics efficiency. "One car with many hitches" can reduce the purchase cost of tractors and improve the effective working time of each tractor. While saving the cost of car purchase, it also avoids the occurrence of invalid driving expenses. After the vehicle arrives at the destination, the tractor will dump the trailer and replace it with a new trailer to transport to another destination, thus the tractor does not need to wait for loading and unloading together with the trailer, saving a lot of loading and unloading time and improving transportation efficiency. Vigorously
developing sling transportation and improving the intensive level of road freight transportation can effectively improve the use efficiency of vehicles and energy, thus greatly reducing the unit energy consumption intensity and carbon dioxide emission intensity of the whole industry. According to the relevant data, the national road freight industry can increase the proportion of turnover volume to 10%, which can save 3-4 million tons of standard coal in fuel oil and reduce carbon dioxide emissions by 6.5-8.5 million tons. The combination of hanging and dropping modes in logistics lines can effectively reduce costs and improve transportation quality.

5. Implementation measures of upward of agricultural products

5.1 Establishment of agricultural products trading platform
The establishment of agricultural products trading platform, direct contact with farmers and buyers, unprocessed agricultural products to implement reservation system, buyers can directly reserve immature agricultural products. The appointment period is the shortest one day and the longest one quarter. In the early stage of the promotion of agricultural e-commerce, training courses will be held and the use of the teaching platform by staff will be arranged. At the same time, the outlets accept agency sales. Farmers only need to send their agricultural products to the logistics outlets and withdraw them from the outlets with receipts after the transaction is completed, as shown in Figure 3.

![Figure 3. Conception of upward movement of agricultural products.](image)

5.2 Building local brand of agricultural products
Build local brands with agricultural products with regional marks. Users have already formed a higher awareness of the product itself. For example, when it comes to P5 rice, everyone knows that the quality of the rice produced by P5 is high, and the endorsement of the regional brand of P5 rice has become deeply rooted in the hearts of the people. Consumers almost have no blind spot in their understanding of P5 rice. If they jump out of P5 mango, consumers will definitely not buy it. According to such consumer psychology, we chose some agricultural products with regional marks in the initial stage, relying on the local tourism characteristics, to shape local specialty brands. Products with regional characteristics, on the one hand, do not exist in other places. For e-commerce operators, we have the dominant power. For brand stories, we have the decision. On the other hand, because products have unique characteristics, they have the dominant power in pricing, and consumers are not particularly sensitive to prices, which can improve the unit price of customers and increase profits to a certain extent.

5.3 Implementation of "village to village" agricultural products distribution plan
In a number of nearby villages, choose the most suitable village to build a "village to village" cloud warehouse. Agricultural products from surrounding villages are gathered in the cloud warehouse first.
Those who have found buyers are sorted according to the requirements of the buyers. Those who have not found buyers are sold on behalf of the platform marketing specialist, who can generally be sold to cooperative fresh supply chain merchants. After the agricultural products are concentrated, they are sorted manually according to the quality, size and quantity of the agricultural products through the "village to village" cloud warehouse, and then sent to the sorting workstation for packing and loading and unloading through the "goods on delivery" sorting technology. As shown in fig. 4.

Figure 4. "Village to village" cloud warehouse delivery process.

5.4 Apply the "arrival of goods" picking technology
The "goods on delivery" picking, splitting and picking can complete about 800-1000 orders per hour, which is five to eight times more than the working efficiency of the traditional order operation, and is suitable for the development of large-scale e-commerce logistics distribution centers. The "goods on delivery" sorting system adopts the three-dimensional storage and dense storage, which greatly improves the density of storage operations. The picking of the whole "goods on delivery" for automated warehouse operations can reduce manual handling operations, especially pallet operations, and save labor costs.

6. Conclusion
Rural e-commerce is an effective platform for serving "agriculture, rural areas and farmers". Using digitalization as the main means, information management, market-oriented operation and cross-regional cooperation, it establishes a coordinated and efficient commercial system, reduces rural operating costs, expands the scope of transactions and increases sales channels, which is conducive to optimizing the industrial structure, prospering the real economy, increasing farmers' income and promoting rural revitalization strategy.

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