

Research on Integrated Optimization Strategy of Agricultural Product Supply Chain Based on E-commerce Platform

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Abstract: In recent years, the development of China's e-commerce platform has become more and more perfect, and the degree of integration with various industries has also deepened. The integration of agricultural product supply chain helps to integrate online and offline resources, and promotes information flow, capital flow, logistics, etc. to be more efficient and convenient. However, there are some problems in China's agricultural product supply chain, such as the lack of integration concept, the backward application of information technology, the low degree of organization, and the imperfect construction of logistics facilities, which seriously restricts the optimization of supply chain. In this context, this paper explores the integration optimization strategy of agricultural product supply chain based on e-commerce platform, in order to provide a useful reference for China's agricultural product supply chain optimization.

1. Background of the study

1.1 Literature review

The rapid development of information technology has led to profound changes in various industries. It is increasingly difficult for all links in the supply chain to be freed from the value chain, and the participating entities have gradually evolved into small nodes. The supply chain management of agricultural products with multi-link and multi-agent characteristics is more integrated, and its specific integrated optimization management has become a hot issue in the field of agriculture. Hu Jingran pointed out that the agricultural product supply chain should move closer to network information technology, rely on e-commerce to achieve resource sharing, and use the hub role of e-commerce to help agricultural product supply chain members establish a new interest platform (Hu, 2019). Luo Mengshi pointed out that in order to realize the further development of agricultural products e-commerce, supply chain logistics is the basic condition. Under the e-commerce platform, the supply and demand information of agricultural products is more transparent and symmetrical, and the application of information technology can make the supply chain process scale and standardization. Based on the current status of the agricultural production chain based on the current situation, the model is constructed from the aspects of logistics organization, cooperation and support (Luo, 2019). Leng Hanhan, Dai Anran pointed out that one of the important cornerstones of agricultural product supply chain integration is the trust between the various entities, especially for the supply chain where e-commerce is leading. From this perspective, the two scholars proposed an optimized way of contract trust cooperation in the integration of agricultural product supply chain, in order to improve the competitiveness and agility of the supply chain (Leng and Dai, 2019). Wang Qin believes that under the current e-commerce environment, the inventory management efficiency of the agricultural product supply chain is low, and the information sharing mechanism does not adhere to the issue of congruence. In response to this, it is proposed to improve the supply chain service mechanism of agricultural products, build a supply chain relationship system, and give full play to leading enterprises. Suggested countermeasures such as guiding effects (Wang, 2018). Liu Zhuzhong, Gong Heying pointed out that the development of e-commerce agricultural product supply chain faces many difficulties. The application of "020" model can give full play to the advantages of online and offline integration. However, due to the

dispersion of information flow and logistics, the supply chain of agricultural products is integrated. There is still room for the status quo (Liu and Gong, 2015).

1.2 Purpose of the study

As a basic material related to the livelihood of the people, agricultural products have always been a research hotspot in the industry. With the advancement of China's "Internet" strategy, e-commerce platforms are constantly emerging. The "Internet + Agriculture" model has gradually emerged, which has brought new opportunities for the improvement of agricultural product supply chain efficiency. However, analysis of existing literature shows that there are many obstacles to the development of China's agricultural product supply chain at this stage. The low level of organization of upstream and downstream entities in the supply chain and the low utilization of information technology have severely restricted the overall efficiency of the agricultural product supply chain. Therefore, it is of great practical significance to study the agricultural product integration optimization strategy based on e-commerce platform.

2. Overview of related theory

The so-called agricultural product supply chain is essentially a network-like organizational structure characterized by agricultural products management as the core, including the entire process from the supply of production materials to planting, processing, procurement, distribution to customers (Tang, 2019). Agricultural product supply chain management is the process of unified and coordinated management of capital flow, logistics, information flow and value flow in this system. Its goal is to promote the value-added of agricultural products, consumer satisfaction, and farmers' income. Macroscopically, the agricultural product supply chain includes three major links: production, consumption, and circulation. Each link can be divided into three stages: front, middle, and back. There are many subjects and complicated processes.

In general, the agricultural product supply chain has the following characteristics: First, the asset specificity is higher. This is because the agricultural products have strong timeliness. In order to ensure product quality, multiple sorting and processing must be carried out in the production and circulation process. The supply chain is required to have a strong asset-specific type (Zhang and Wang, 2019). The second point is that the market has strong uncertainty. On the one hand, the cultivation of agricultural products is seasonal, and the market price fluctuates frequently. On the other hand, the production, processing and consumption of agricultural products are scattered, and the participants have different degrees of mastery of agricultural product market information. This has led to increased market uncertainty. The third is the high demand for logistics facilities, and the fresh activity characteristics of agricultural products require transportation and storage capacity. In the process of agricultural product circulation, there will be some loss, especially for fresh agricultural products, which requires a special cold chain distribution system.

The essence of agricultural product supply chain integration is based on the e-commerce platform, which organizes and manages all members of the supply chain, enabling each member to cooperate and coordinate in strategy, resources, processes, etc., and optimize the overall performance of the supply chain. The essence of integration is integrated management, which realizes the orderly control of information flow, capital flow and logistics within the supply chain.

3. Problems in the integration and development of agricultural product supply chain

Although China has made good progress in the integration of agricultural product supply chain in recent years, overall, the integration of agricultural product supply chain is still in its infancy. At this stage, the agricultural product supply chain has specificities such as small scale, poor service capacity, disordered order, and loose distribution. Specifically, there are several problems in the development of agricultural product supply chain integration.

Firstly, there is a lack of integration. The agricultural product supply chain is a systematic concept. In order to improve the efficiency of the supply chain, each member must play a good role

in the chain according to its core competitiveness. However, the existing supply chain model is mostly a single independent operation mode, and the overall scale is small, and it is difficult to achieve coordinated operation. The lack of integration concepts among the various entities in the supply chain is directly manifested by the fragile relationship within the chain, and most members cannot maintain long-term cooperative relationships. Moreover, some processing enterprises in some regions are backward in technology and do not have high-end processing capabilities, resulting in incomplete supply chains and difficulty in maximizing value.

Secondly, the application of information technology is backward. With the gradual popularization of modern information, the focus on the application of electronic information technology in supply chain management is increasing, and technologies such as e-commerce and RFID are emerging. In the new technology support line, supply chain costs can be effectively reduced. However, at this stage, China's application of information technology is not sufficient, information processing methods are backward, and there is a certain lag in the application of e-commerce. For example, some large-scale agricultural products do not yet have an information publishing platform. The degree of informationization between enterprises is also very large, and it is impossible to achieve rapid communication of information. For example, most agricultural product supply chains do not have information collection and the entire system function. The information on agricultural products uploaded to the e-commerce platform also has information distortion.

Thirdly, the degree of organization is low. First of all, as the main body of agricultural production, the level of farmers' organization is extremely low, and the role of farmers' cooperative cooperatives is limited. Secondly, excessive circulation of joints leads to market confusion, the level of organization of middlemen is also very low, and the proportion of small traders is very high. In the end, there are fewer leading enterprises, and the large-scale processing enterprises with strong strength are less and less organized.

Fourthly, the construction of logistics facilities is not perfect. First of all, in the current agricultural product supply chain, the upstream agricultural products are lagging behind and the agricultural products are depleted. Second, some large wholesale markets do not have advanced loading and unloading tools, and the degree of mechanization is generally low. Thirdly, there is a vacuum in the layout of logistics enterprises in some regions. Taking Xinjiang as an example, only Debon Logistics is currently engaged in the transportation of agricultural products, and there are fewer vehicles. Finally, there are fewer professional cold chain logistics companies, resulting in higher loss rates of agricultural products.

4. Integrated optimization strategy for agricultural product supply chain based on e-commerce platform

At present, China's agricultural product supply chain has basically achieved a single internal functional integration. How to concentrate on strength, integrate external functions, and promote the upgrade and optimization of the entire supply chain system is a difficult problem that needs to be broken at this stage. In view of the low level of organization and the imperfect construction of logistics facilities in China's agricultural product supply chain development, this paper constructs the following agricultural product supply chain integration optimization model (see Figure 1), in order to optimize and upgrade the existing supply chain.

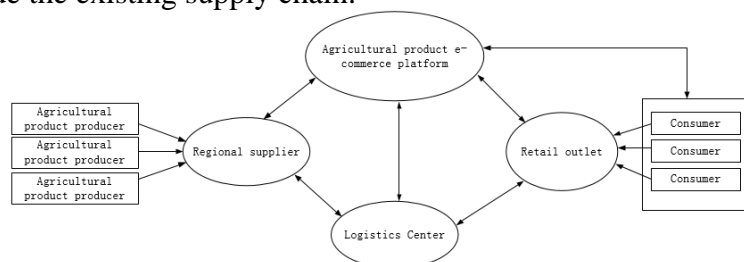


Figure 1. Agricultural Product Supply Chain Integration Optimization Model

As shown in Figure 1, the core part of the latest supply chain model is the agricultural product e-commerce platform. This platform needs to have the functions of product information uploading, logistics and service consulting, and price forecasting. There are logistics companies and regional suppliers of agricultural products directly connected to them. The supplier is connected to the specific production supply system, and the logistics enterprise is connected with the retail outlets such as suppliers and supermarkets. Consumers from the family unit enter the retail outlet or directly complete the purchase, payment, evaluation, etc. of the agricultural products online. Link.

In this model, agricultural product suppliers need to give full play to the leading role of leading enterprises and establish a modern circulation management system. The purpose of this system is mainly to jointly distribute agricultural product producers in various places, and to provide paid support to enterprises that do not have the processing technology strength.

In the specific agricultural product supply chain integration management, large-scale processing enterprises and logistics enterprises will become “value integrators”. On the one hand, the logistics center should give full play to the advantages of scale, and provide services for upstream and downstream enterprises, equipped with advanced electronic information technology, such as big data, cloud computing, etc., making it the core link of production, processing and retail. Moreover, information enterprises can also realize information interconnection between logistics enterprises, and complete the secondment of transportation equipment under the existing capital conditions. At the same time, top-down integration of existing supply chains, such as upgrading existing wholesale markets and chain companies. The wholesale market located upstream of the supply chain can be used for cross-regional deployment of bulk agricultural products, and chain companies located downstream of the supply chain can open online channels and directly target consumers.

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