

Original Paper

Research on the Development of Agricultural Products Logistics under the Value Chain Optimization Concept of Logistics Management

Wei Yi

Zibo Vocational College, Zibo City, Shandong Province, 255300, China

Received: July 6, 2024

Accepted: August 9, 2024

Online Published: August 28, 2024

doi:10.22158/jepf.v10n3p115

URL: <http://dx.doi.org/10.22158/jepf.v10n3p115>

Abstract

The value chain of logistics management is the key to meeting the needs of circulation entities, improving logistics efficiency, optimizing logistics division of labor, and promoting the upgrading of logistics enterprises. It plays a positive role in promoting the development of agricultural product logistics. However, it is understood that there are still many problems in China's agricultural product logistics system, such as opaque information, multiple circulation links, high costs, high losses, and low profits. These will reduce the optimization of logistics management value chain, leading to low efficiency in agricultural product circulation and entering a low consumption cycle mode. Therefore, based on the concept of optimizing the value of logistics management, this article analyzes the development difficulties of the current agricultural product reverse logistics model, explores the design and operation mode of the agricultural product reverse logistics system, proposes corresponding countermeasures to maximize the value chain of agricultural product logistics management, in order to promote the stable and sustainable development of agricultural product logistics and improve the circulation efficiency of agricultural products.

Keywords

Value chain optimization concept, Agricultural products, Reverse logistics system, Logistics development

1. Introduction

With the rapid development of China's economy and society, the market of agricultural products is increasingly prosperous. As a bridge connecting producers and consumers of agricultural products, the importance of agricultural products logistics is becoming more and more prominent. The optimization

concept of logistics management value chain is to build agricultural product logistics system according to the principles of economy and environmental protection, give full play to the ecological maintenance responsibility and economic benefits of reverse logistics mode, highlight the macroscopic nature of overall logistics management, effectively alleviate the problems of agriculture and farmers in China, improve the reasonable utilization rate of agricultural resources, and effectively reduce the pollution and destruction of ecological environment caused by energy utilization. Comprehensively promote the steady and sustainable development of our agricultural economy.

2. The Development Dilemma of the Current Reverse Logistics Model for Agricultural Products

2.1 Unclear Understanding of Reverse Logistics of Agricultural Products

Reverse logistics of agricultural products is a complex and important process that involves the recycling and reuse of valuable resources such as surplus materials and packaging generated during the circulation of agricultural products. It aims to promote the effective utilization of resources and have a positive impact on environmental protection. Therefore, the prerequisite for building a sound reverse logistics system is to form an accurate resource identification and recycling system, which will be the key to ensuring the reasonable recovery and processing of various valuable resources. However, at present, China's pollution control of agricultural product recycling is not in place. For example, in the agricultural and sideline product trading market, the treatment of waste such as fruit peels and pomace is a typical example. Due to the lack of effective recycling mechanisms, these wastes are often discarded indiscriminately, leading to biogenic pollution and posing a threat to the environment and human health. This also reflects the lack of scientific understanding of the reverse logistics model of agricultural products by relevant units and enterprises, who lack professional knowledge and technology to build an effective resource recycling system. At the same time, grassroots people lack sufficient understanding of the environmental significance and resource value of reverse logistics. They often only focus on immediate economic benefits and neglect long-term environmental benefits and resource value.

2.2 Insufficient Organizational Capacity in Reverse Logistics of Agricultural Products

The small-scale agricultural economy model has always been the main form of agricultural product production in China, which greatly restricts the industrialization development of reverse logistics of agricultural products. In many regions, although there are abundant varieties of agricultural products, the development of reverse logistics for agricultural products is still lagging behind due to the lack of a development trend that matches the value chain of agricultural products. At present, many farmers have not effectively integrated into large-scale agricultural product organizations or cooperatives, resulting in significant blind spots in resource recycling and utilization. Due to the lack of unified management and scheduling, the waste and recyclable resources generated in the harvesting, processing, and sales of many agricultural products are often ignored or disposed of arbitrarily, not only wasting valuable renewable resources but also increasing the risk of environmental pollution. In addition, the existing

reverse logistics system for agricultural products also faces a series of problems such as disconnection between online and offline, and rigid operating models. The connection between online platforms and offline logistics is not close enough, resulting in poor information transmission and affecting logistics efficiency; At the same time, due to the lack of innovation, the existing operational model appears relatively rigid and difficult to adapt to changes in market demand.

2.3 Insufficient Popularization of Cold Chain Logistics Technology for Agricultural Products

Cold chain logistics technology, as a key link in the field of agricultural product circulation, plays a crucial role in ensuring the freshness and quality of agricultural products. It is the core of achieving efficient circulation of agricultural products, which can effectively reduce losses, enhance product added value, and meet the needs of consumers for high-quality agricultural products. In recent years, China's agricultural product logistics industry has achieved significant development. According to statistics from the National Development and Reform Commission, 125 national logistics hubs have been built in China in 2023, with a total storage area of 412.294 million square meters. However, cool storage is the dominant area, while the number of room temperature and cold storage is relatively small. The storage structure shows an obvious imbalance, which increases the risk of fresh agricultural products spoilage and deterioration during transportation. Due to insufficient storage conditions, a large number of agricultural products have quality problems during transportation, resulting in more agricultural waste that needs to be processed through reverse logistics systems. This not only increases operating costs but also has a certain impact on the environment. Of course, this is directly related to the lack of clear industry implementation standards for the development of logistics in China. Compared with the international advanced level, there is still a certain gap in China's cold chain packaging, temperature control, facility equipment, and environmental protection standards. Due to the lack of unified norms and standards, the quality and safety of agricultural products in the cold chain circulation process are difficult to fully guarantee.

3. Design and Operation of Reverse Physical System for Agricultural Products under the Concept of Optimizing Logistics Management Value Chain

3.1 Operating Entity

The design and operation of reverse logistics system for agricultural products is a complex and meticulous process, which involves multiple links and collaborative cooperation among multiple parties. In this system, the supplier is first responsible for transporting agricultural products from the fields to the market, and also needs to use specialized logistics vehicles to recycle the packaging of agricultural products. Non compliant agricultural products are returned, effectively reducing resource waste and environmental pollution while enhancing the circulation value of agricultural products. Secondly, farmers and consumers need to actively participate in the resource recycling and utilization of agricultural products. By identifying and classifying agricultural products, recyclable packaging and waste should be properly disposed of to help protect the environment and bring them certain economic

benefits. The government and management departments also play the role of planning and guidance throughout the entire system. They need to provide strong support and guarantees for the development of agricultural product logistics in China by formulating relevant policies and regulations; At the same time, the government also needs to invest a large amount of resources to promote the construction and improvement of the reverse logistics system for agricultural products.

In the entire logistics system, distribution channel providers and logistics companies, as intermediaries, become the main entities connecting suppliers, farmers, consumers, and governments. They need to optimize logistics networks, improve transportation efficiency, and other measures to ensure that agricultural products can flow safely and efficiently to various links, and promote mutual connection and dependence among various entities. The government initiates the operation of the entire agricultural reverse logistics value chain through policy guidance and resource investment; Suppliers, farmers, consumers and other stakeholders work together to promote the development and improvement of the reverse logistics system through collaborative cooperation.

3.2 Circulation Structure

The importance of choosing the circulation structure for reverse logistics of agricultural products is self-evident. A reasonable circulation structure can not only ensure functional guidance and process coordination among operating entities, but also achieve the construction and integration of diversified value chains. In the reverse logistics model of agricultural products, consumers, as the initial link of reverse logistics, their behavior and choices directly affect the overall development level of logistics; The consumer's consumption concept, willingness to recycle, and behavior are all important factors to consider in logistics operations. In the reverse logistics system, channel merchants play an important role in agricultural inputs and recycled goods. They are responsible for collecting, classifying, and processing recycled agricultural products, thereby achieving effective resource recovery and value reconstruction. This can not only reduce resource waste but also promote the sustainable development of agricultural reverse logistics. The government or social enterprises also play a crucial role in the reverse logistics model, responsible for completing resource classification and regeneration, constructing a complete reverse circulation structure, and achieving maximum utilization of resources and environmental protection. It can be said that the participation of the government or social enterprises is a guarantee for improving the efficiency of reverse logistics operations and promoting the sustainable development of the entire logistics industry.

In summary, the integration of this network structure with the traditional system enables the reverse logistics model of agricultural products to better integrate into the entire supply chain system, optimize the entire logistics management value chain, not only alleviate the problems of cost increase and efficiency decrease in the forward supply chain, but also promote the coordinated development and optimization of the entire supply chain.

3.3 Circulation Mode

The reverse logistics system for agricultural products is a comprehensive logistics system driven by the

internal optimization needs of the circulation value chain. Its core goal is to achieve the maximization of circulation value by comprehensively integrating various links on the value chain. This system not only covers multiple key links such as agricultural input supply, planting production, sales, and terminal consumption, but also places special emphasis on resource recycling and environmental protection treatment, reflecting the optimization concept of logistics management value chain.

In the supply chain of agricultural inputs, the reverse logistics system emphasizes pre classification of recyclable resources to ensure that various types of agricultural inputs can be reasonably and effectively recycled after use; At the same time, the treatment of waste products has also been standardized, aiming to reduce environmental pollution and achieve resource recycling. In the planting and production process, this system advocates the use of organic fertilizers instead of traditional fertilizers to reduce waste generated in agricultural production, effectively improve the quality of agricultural products, achieve pollution-free production, and improve the economic and environmental benefits of agricultural production while reasonably reducing resource waste. In the sales process, the reverse logistics system focuses on communication and cooperation with consumers, continuously optimizing agricultural product sales strategies and service quality by collecting feedback from consumers; At the same time, encourage consumers to participate in resource recycling and reuse, and jointly promote green consumption and sustainable development. In the end consumer stage, the reverse logistics system guides consumers to recycle discarded agricultural products and packaging materials through the establishment of recycling stations, carrying out recycling activities, and other methods. After classification and processing, they are reused in agricultural production or other fields, thereby achieving the maximum utilization of resources.

4. Optimization Strategies for the Development of Agricultural Product Logistics under the Concept of Optimizing the Value Chain of Logistics Management

4.1 Strengthening the Organizational Structure of Agricultural Product Logistics Development

Under the supply side structural reform, it is necessary to start from the supply side to reform social production and consumption. For the basic and leading industry of circulation, optimizing its supply side reform requires continuously enhancing the division of labor and cooperation ability between circulation enterprises, producers, and consumers, further optimizing the commodity supply chain system, occupying domestic and foreign markets with high-quality and effective supply, improving supply quality, and achieving the transformation and upgrading goals of the circulation industry. Reverse logistics of agricultural products is a key step in achieving this reform. To strengthen the organization of agricultural product logistics development, it is necessary to start with the concept of maximizing the value chain of logistics management, breaking down value barriers between various operating entities, coordinating the relationship of the entire supply chain, and ultimately establishing a sustainable logistics system within the entire circulation system, including farmers, agricultural material suppliers, retail channel providers, and end consumers. This is not only related to the

circulation of agricultural products, but also to the optimization and upgrading of the entire agricultural industry chain.

4.2 Promote the Upgrading of Cold Chain Logistics Technology for Agricultural Products

In response to the insufficient popularization of cold chain logistics technology for agricultural products, we should actively promote the upgrading and popularization of technology. Firstly, increase investment in the construction of cold chain logistics infrastructure, improve the quantity and quality of equipment such as refrigerated warehouses and refrigerated trucks, ensure that agricultural products can maintain a constant low-temperature environment during transportation and storage, and reduce the risk of spoilage and deterioration; Secondly, strengthen the research and innovation of cold chain logistics technology, introduce advanced temperature control, packaging materials, and environmental protection technologies, and improve the efficiency and quality of cold chain logistics. Furthermore, establishing a sound cold chain logistics supervision system, formulating unified standards and regulations, in order to improve the safety and environmental protection of agricultural products in the cold chain logistics process.

4.3 Improve policies, Regulations, and Promotion of Agricultural Product Logistics

The government should introduce relevant policies and regulations to provide strong support for the development of agricultural product logistics. By formulating a development plan for reverse logistics of agricultural products, clarifying the development goals and paths of logistics in China, and guiding enterprises and social capital investment; Improve tax incentives and subsidy policies for reverse logistics of agricultural products, reduce operating costs for enterprises, and increase their enthusiasm for participating in reverse logistics. In addition, we should actively promote and educate the public to increase their awareness and participation in reverse logistics of agricultural products. Through media promotion, training courses, and other means, we should popularize the knowledge and importance of agricultural product logistics to the whole society, and guide consumers to actively participate in the recycling and reuse of agricultural product resources.

References

- Lv Yabo. Research on the Design of Agricultural Product Reverse Logistics System under the Optimization Concept of Logistics Management Value Chain. *Journal of Luohe Vocational and Technical College*, 2023, 22(5), 61-65.
- Zhuang Qianqian, Ji Weining. Design of reverse logistics system for agricultural products under the concept of optimizing logistics management value chain. *Business Economics Research*, 2021(5), 94-97.
- Zhuang Qianqian, Ji Weining. Design of reverse logistics system for agricultural products under the concept of value chain optimization. *Business Economics Research*, 2021(5), 94-97.