

# Research on Supply Chain Management Countermeasures for Fresh Agricultural Products

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**Abstract.** Due to the rapid growth of China's economy and the popularization of the Internet, Online platforms are becoming increasingly popular for consumers to purchase products, online shopping platforms can provide consumers with a richer range of products and cheaper prices, and therefore favored by consumers. Fresh products, which are considered a special type of consumer goods, are subject to more restrictions on transportation and sales due to their characteristics, which solves the development dilemma of fresh products. In the face of this situation, this article mainly analyzes the problems of the cold chain logistics service system of fresh agricultural products in the context of e-commerce and puts forward the corresponding countermeasures on the basis of which, provides suggestions and guidelines for the development of the relevant logistics and fresh food industry, and then better promote the healthy and sustainable development of fresh agricultural products cold chain logistics under the background of e-commerce.

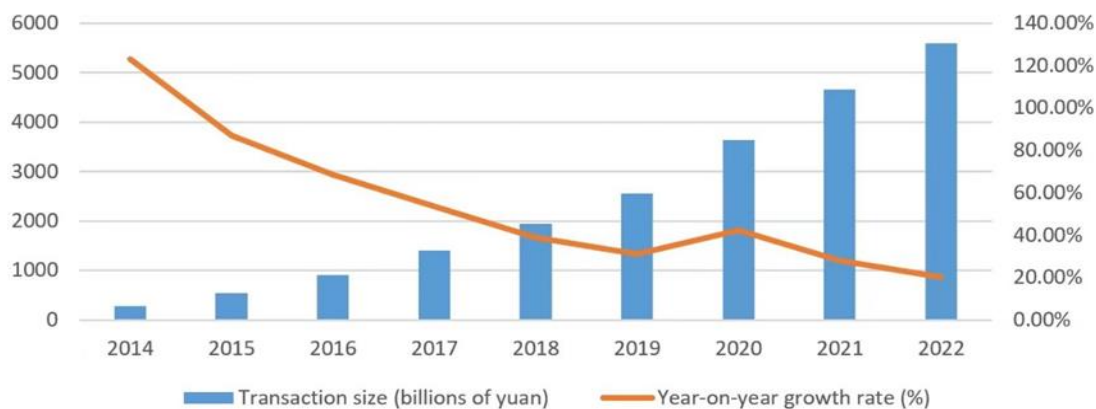
**Keywords:** Fresh products, Supply Chain, Internet, E-commerce.

## 1. Introduction

With the progress of science and technology, China has stepped into the "Internet +" era, "Internet +" refers to the "Internet + traditional industries" combined, the integration of offline resources through online sales channels, the Internet as a link between the various industries for a reasonable and effective integration, so that all kinds of resources can be fully utilized to drive consumption with the power of innovation [1]. Integration of offline resources through online sales channels for sales, with the Internet as a link to all walks of life for a reasonable and effective integration, so that all kinds of resources can be fully utilized for innovation to drive consumption. Secondly, as the saying goes, people eat for days, in the scientific and technological progress at the same time, people's demand for fresh products is also higher, live bandwagon also promotes the sale of fresh products online. Thirdly, after the epidemic outbreak at the end of 2019, it is even more ushered in a big outbreak of the online market. With the increasing normalization of the prevention and control of the new crown pneumonia epidemic, cities began to implement more stringent home isolation measures for online grocery shopping gradually from the occasional attempts of a few people to the rigid needs of many urban families, fresh food e-commerce platforms average daily turnover soared [2]. The epidemic prompted the development of fresh produce e-commerce industry blowout, the traffic dividend has become an opportunity for the development of the industry, but also prompted the competition is becoming increasingly heated [3]. The data collected can be learned (Fig.1). Although the growth rate of the transaction of sub-fresh products has slowed down in recent years the transaction volume is still huge.

In addition, China has now entered the digital economy era, and the economic benefits of agriculture have been significantly improved, not only for farmers to bring more substantial income, and improve the quality of life of farmers. At the same time, the supply-side structural reform in-depth development, and agricultural marketing innovation, which is conducive to broadening marketing channels, promoting the sale of agricultural products, to obtain more economic benefits. Under the leadership of the digital economy and digital technology and driven by market demand, fresh produce has ushered in a leap forward, and the o2o model has become an important trend in the development of fresh produce, and the transaction volume of China's fresh produce o2o model platform in the context of the post-epidemic era has seen a significant increase. The "new retail" mode

will synchronize the sale of goods online and offline and the logistics system is closely integrated but also puts forward a higher level of demand for supply chain, logistics and so on. With the improvement of people's living standards and the rapid development of the network, the online business of various industries has gradually matured, and the demand for fresh agricultural products such as fruits and vegetables, meat, aquatic products and so on continues to grow.



**Fig. 1** Transaction Size and Growth Rate of China's Fresh Food E-commerce Industry, 2014-2022  
(Photo credit: Original)

Parallel to the development of new retail and Internet commerce, the fresh products e-commerce industry is slowly breaking down traditional sales, showing a situation of multi-industry coexistence. At the same time, the supply cycle of fresh products and the perishability of the body and other related characteristics, are determined by the fresh products in the transportation process need to bear greater risks, high degree of depletion, distribution costs and other issues, the requirements of the relevant supporting transportation system are more demanding. Therefore, the study of the relevant topics to help improve the development of the industry at this stage of the predicament. The creation and development of e-commerce makes fresh agricultural products cold chain logistics realize great progress, and comprehensively improving the quality of service is an important initiative for its future development. Through the study of the service quality evaluation system for fresh agricultural products cold chain logistics in the context of e-commerce, constructing a perfect evaluation system, and ensuring its effective implementation, improving service quality is possible, but we can also effectively encourage the healthy development of fresh agricultural products' cold chain logistics in the context of e-commerce [4].

## 2. The Current State Of Development of Fresh Products in China's New Retail Industry

### 2.1. Related Concepts

E-commerce, as a new business model with unique advantages, has been widely used in various industries in China, and has played a positive and important role in promoting China's enterprises to increase their operational competitiveness, enhance their economic efficiency and promote industrial upgrading. China's economic level has been continuously improving, and the consumption structure of residents has been gradually upgraded. Driven by growing consumer demand and economic development, China's agricultural products industry is developing rapidly, agricultural infrastructure is improving, and the amount of agricultural products being produced, processed, and circulated is on the rise [5]. Therefore, agricultural products through online sales to all parts of the country are also more and more ways, the development of the industry has entered a new period.

As an important part of the "new retail" business sales field, fresh products generally refer to vegetables, meat, eggs, milk, fruits, and aquatic products, such as primary processing products, most of the preservation and purchase of fresh products and other processes [6]. There are certain special

characteristics such as high requirements for temperature and humidity and another storage environment, perishable, need to weigh the sale, and so on. The process of preservation and purchase of most fresh products has some special characteristics, such as high requirements for storage environment such as temperature and humidity, perishability, and the need to weigh and sell. Specifically, vegetable and fruit products, most of them need to be weighed and sold, Some green leafy vegetables have shorter fresh shelf lives, and some fruits have certain seasonal characteristics and regional differences, and packaging should pay attention to the problem of bumping; Meat products have more stringent requirements for preservation of freshness, including the preservation time of the fresh meat at room temperature, the need for refrigeration temperature control, etc.; a wide range of aquatic products, some of the storage environment of seafood Oxygen is required to ensure its activity, and if the transportation time is longer, there are also requirements for the oxygen content in the package. In order to meet the market and consumer demand for fresh products, we should try our best to meet the external environmental requirements of fresh products in the process of production, processing, transportation, storage, and distribution.

Fresh agricultural products e-commerce refers to the activities of fresh agricultural products trading through information network technology, Such activities make the flow of fresh agricultural products in society more convenient, the way of e-commerce for the transaction of fresh agricultural products provides more ways and channels of flow, so that such products can be trans-regional transactions, to solve the problem of difficult transactions for the operators, with the formation of fresh agricultural products e-commerce brand, e-commerce transactions have gradually become the norm, and have become an essential part of fresh agricultural products trading revenue. Fast and efficient trading methods make the information radiation of fresh agricultural products expand rapidly, bringing more trading possibilities, at the same time, this kind of e-commerce transaction will also produce a certain degree of viscosity, the formation of stable, continuous transactions[7].

## **2.2. Development of the Fresh Food Retail Industry**

As a basic consumer product in China, the market size of China's fresh food retail industry has been growing with multiple drivers such as the increase in per capita disposable income and consumer spending, enhancing the infrastructure for cold chain logistics and diversifying logistics and distribution methods [8]. According to relevant data, the online penetration rate of China's fresh food industry has rapidly increased and reached 7.91% in 2021, an increase of 1.93% from 2017. On balance, the size of the online grocery platform industry was stimulated by the epidemic and grew rapidly during 2017-2021, while the possibility of large-scale epidemics will be reduced in the future, so the growth rate may slow down. With the development of people's online fresh produce consumption habits in the future, China's fresh produce online penetration rate is yet to be further increased [9].

## **3. Problem Analysis**

### **3.1. The Distribution of Fresh Products is Difficult**

Fresh products have the characteristics of being perishable and easy to deteriorate, etc. In March 2021, the Ministry of Agriculture and Rural Planning and Design Institute released the "agricultural products circulation and the "first-kilometer" construction research report" shows: "China's agricultural products post-production loss rate is as high as 15% to 25%, resulting in an annual loss of almost 200 million tons, while the average loss rate of fresh agricultural products in developed countries is 5%, and the high loss rate of agricultural products circulation has been an important factor affecting the cost of agricultural products circulation. China's post-production loss rate of agricultural products is as high as 15% to 25%, with an annual loss of nearly 200 million tons, while the average loss rate of fresh agricultural products in developed countries is 5%, and the high loss rate of agricultural products circulation has always been an important factor affecting the cost of circulation of agricultural products in China [10]. Part of the fresh products due to their own special

characteristics require special packaging and transportation materials, so some logistics or express delivery cannot transport the relevant products, and the transportation process requires ice bags, insulation boxes and other external packaging, increasing the volume and weight of the product transportation, and therefore also increase the cost of transportation.

### **3.2. Supply Decentralized Centralized Sales Difficulties**

For fresh products, often smallholder production, relatively decentralized, with geographical, regional distribution characteristics, which leads to large-volume sales is difficult to achieve, the supply chain node members of the cooperation and coordination between the instability, easy to poor convergence, resulting in supply chain distribution link a big problem. Fresh products have high requirements for each link in the supply chain, but due to the asymmetric information of farmers, producers, sellers, consumers, and other links, each of them focuses on realizing their own interests, thus lack of effective communication and inability to articulate well, which makes the overall efficiency decline. It is not possible to guarantee the quality of fresh products during transportation effectively.

### **3.3. Higher Operating Costs of The Platform**

Fresh products community O2O mode of cost investment is mainly considered platform stationing costs, logistics transportation and distribution costs and product warehousing costs, many cost inputs in each link to a certain extent have reduced the profit margin [11]. And online sales of publicity and investment costs in the early stage and later platform operating costs and maintenance costs are too high, while the transportation and storage costs increase, which will lead to an increase in the selling price of the product, so that compared with the purchase of offline fresh products lack of more competitive.

### **3.4. Product Information is Not Equal**

Consumers in the purchase of fresh products focus on whether the product is fresh, whether it is safe and so on. Most of the goods purchased online consumers can only see the product images provided by the merchant, But due to the special nature of the fresh products themselves and the merchant's transportation process caused by the long time and differences in the transportation environment of the goods do not match the version of the case sometimes. Therefore, consumers will have a crisis of confidence in the merchant, which will have a negative impact on the merchant's reputation, brand, and platform.

### **3.5. Low Degree of Market Regulation**

The market integrity management mechanism, the e-commerce credit default disciplinary mechanism and the market quality and safety management mechanism are not yet sound, the corresponding management and supervision measures are missing, and there are no better constraints and supervision on the whole process of fresh produce from farm to consumer [12].

## **4. Suggestions**

### **4.1. Improve the Cold Chain Logistics and Transportation System**

In view of the special characteristics of fresh products, the first task is to improve the cold chain transportation and distribution system, fresh products enterprises should take the initiative to guide the relevant logistics to improve the level of cold chain logistics and transportation technology, to ensure the quality of fresh products from the origin to the hands of consumers. Secondly, fresh products enterprises or merchants should gradually introduce a variety of information technology to improve the level of cold chain logistics and transportation technology, to ensure the quality of fresh products in the upstream supply chain from the origin of the transportation to the warehouse or store,

in the process of transportation, real-time monitoring of the temperature control of the product, packaging status and other environmental factors, the use of blockchain, road intelligent planning and other technologies for the more distant, more complex road conditions [13]. In advance to Enhance transportation efficiency. This ensures the freshness and completeness of fresh products when they are delivered to consumers, improves transportation efficiency, and better meets the needs of consumers.

#### **4.2. improve the Relevant Platform System and Product Transparency**

To develop a standardized system of fresh products, the government should play a proactive role by joining industry associations and leading enterprises., unified coordination, and supervision. Adopt a unified and centralized procurement method to reduce losses and guarantee the quality of products. Adopt a transparent and open policy for information, so that consumers can trace the roots of fresh products before they buy them and show consumers the cultivation process and picking process of the products at the origin by shooting videos, to publicize the transparency of the product supply process. Secondly, consumers can go to the place of origin through online live broadcasting and answer consumers' questions in real-time to increase the interactive experience of both sides and thus increase consumers' desire to buy. To a certain extent, strengthening the interaction between enterprises or businesses and consumers, can deepen the degree of consumer experience perception [14].

#### **4.3. Provide Value-Added Services for Related Products to Broaden the Scope of Business**

Can increase consumer stickiness needs and stimulate potential consumption ability, such as noting consumer demand for dietary health, nutritional balance, the introduction of fresh products with recommended, in each combination of labeling the source of intake of each nutrient, to enhance the health awareness of residents and nutritional diet knowledge popularization, in order to consolidate the volume of consumers, fresh products and other industries are very different, the daily consumption of consumers is very large! Every family is a potential consumer. In addition to the sale of fresh products, the sale of deep-processed products to meet the needs of consumers more at the same time also reduces the lack of sales volume due to product waste and other issues.

#### **4.4. Government Guidance to Strengthen the Improvement of Relevant Law**

Laws and systems guarantees the development of e-commerce of fresh agricultural products, and it is necessary to start remediation from the regulation and implementation of e-commerce to strengthen the legal environment of e-commerce. The regulation of the market system, and effective supervision of the e-commerce environment, can improve the market environment, and create a favorable development atmosphere. So that the e-commerce platform is under the supervision of the law in an orderly manner, at the same time, but also needs supervisory departments to effectively implement the law, to help enterprises in accordance with the legal process, the formation of the market system is perfect. Improve the platform system. The platform should improve the management system and operating system, so the staff to develop the corresponding work standards, in accordance with the corresponding process of management, which will be implemented in the post, and clear job responsibilities [15].

E-commerce has raised the sales of fresh agricultural products in China to a new level, but the development of cold chain logistics requires the joint efforts of the state, e-commerce enterprises and consumers, to promote the continuous development of cold chain logistics under the background of e-commerce development and make it better for the people [16].

## **5. Conclusion**

The development of Internet technology makes the trading channels of fresh agricultural products constantly broaden, and the threshold of its trading is also lowered, to a certain extent, the increase in

competitiveness has brought more development opportunities for the industry, although, in the process of its development, there are difficulties in distribution, the difficulty of centralized sales due to the dispersion of supply, the high operating cost of the platform, the inequality of product information, and the low degree of market supervision. Although there are difficulties in the process of development, such as difficulty in distribution, difficulty in centralized sales due to dispersed supply, high cost of platform operation, unequal product information, low degree of market supervision, etc., as long as the cold chain transportation system is improved, the operation of the platform is perfected, more value-added services are provided, and the government participates in it to complete the market supervision, The online sales of fresh agricultural products and the associated logistics and transportation industry will be improved by it.

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