

# Analysis on the Application of Internet of Things in Cold Chain Logistics

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## Abstract

**With the continuous improvement of people's living standards and the continuous development of Internet of Things technology, the public is paying more and more attention to the freshness and safety of food. Cold chain logistics is widely consumed with its maximum food preservation and minimum nutritional loss. It has become the most potential logistics method in the current e-commerce industry. As an emerging technology, the Internet of Things technology can not only realize the full life cycle management of production, transportation, distribution and warehousing, and realize the visual traceability of food quality, but also help to improve logistics services. Quality and optimize the food cold chain logistics system.**

## Keywords

**Internet of Things technology, cold chain logistics.**

## 1. Introduction

The application of the Internet of Things technology in food cold chain logistics can improve service quality and enhance the efficiency of food safety management. The application of the Internet of Things technology group in cold chain logistics production and processing, warehousing and transportation, distribution and other links allows consumers to understand the cold chain in time. Food quality information in the chain process can improve the right to know the consumption, and it can also allow sellers to track the delivery speed of goods and the inventory of goods to improve sales pertinence; the cold chain logistics industry involves e-commerce, logistics management, thermodynamics, principles of refrigeration machinery, and food In many fields such as health, coupled with the communication technology, sensor technology, and big data technology covered by the Internet of Things technology, this requires compound talents with both theoretical and practical capabilities.

## 2. Analysis of cold chain logistics model of agricultural exports

### 2.1. Summary analysis of existing models

Cold chain logistics is a special agricultural product supply chain that requires low-temperature processing and low-temperature transportation, and the entire transportation cycle should be as short as possible. Through the research on the current status of my country's agricultural product export trade, several models of agricultural product cold chain logistics operation are summarized: the cold chain logistics operation model led by production and processing enterprises. As shown in Figure 2, the cold chain logistics model of agricultural product export trade led by production and processing enterprises can ensure the basic efficiency of agricultural product production and processing and the stability of supply. Although the market demand information of exported agricultural products can be obtained through the network information platform, in view of the characteristics of agricultural products, especially fresh agricultural products, and the methods and costs of cold chain logistics transportation, this type of operation mode has greater market risks.

## 2.2. Cold chain logistics operation mode selection under the background of industrial integration

Choosing a suitable cold chain logistics operation mode should be based on the efficiency of resource allocation among supply chain node enterprises, and the overall output and profit level of the supply chain. On the basis of ensuring the maximum utility of the agricultural product export supply chain, resource allocation and optimization are carried out according to the node enterprises' own advantages, and then the cold chain logistics operation mode with the largest output is selected. For agricultural products, especially fresh products such as vegetables and aquatic products, cold chain logistics and transportation play a key role in the entire industrial chain, and neither the production and processing enterprises nor the terminal retail enterprises have cold chain logistics and transportation. Therefore, agricultural products and fresh products are more suitable for cold chain logistics operation mode dominated by logistics enterprises. Vegetable products: The fresh-keeping cycle of vegetable agricultural products is short, and they are perishable and vulnerable after picking. The traditional short-distance logistics turnover and transportation methods not only easily lead to huge product losses, but also cause secondary screening and packaging, and increase the logistics turnover cost of agricultural products. In the logistics operation mode dominated by cold chain logistics enterprises, the length of the cold chain logistics transportation industry chain can be extended in the depth direction, using the methods of origin pre-cooling, sorting, packaging and transportation.

## 3. Practical application analysis

Strengthen school-enterprise cooperation and train logistics technicians. Cold chain logistics companies lack talents who understand both theory and operation. Therefore, schools should use school-enterprise cooperation and work-study models to establish a cold chain logistics talent training model that can closely integrate theory and practice, knowledge and capabilities, and make full use of schools and The resources of the enterprise pay attention to the basic principles and basic methods in the school curriculum and the cultivation of professional qualities in the enterprise; in terms of ability, it pays attention to the cultivation of the ability to analyze problems, find problems, and solve problems. In the process of teaching implementation, practical teaching links are added to cultivate students' ability to solve practical professional problems. Realize the combination of theory and practice, and then enter professional cold chain logistics technicians for JD.com.

Use smart transportation. After the refrigerated vehicle leaves the fresh logistics center, the refrigeration system needs to maintain normal operation and control the temperature within the specified temperature range. Better equipped refrigerated (storage) vehicles generally have a temperature tracking and recording system and a GPRS device, which allows the owner to track the direction of the vehicle and the temperature control in the box. Ensure accurate distribution of cold chain logistics. Enterprises need to establish a complete set of standards for refrigerating and freezing different products, reasonably arranging storage and distribution, so as to optimize the distribution of different types of goods as much as possible. This not only reduces the loss of the product itself, but also reduces the unnecessary consumption of refrigeration supply and refrigeration equipment caused by improper storage. At the same time, companies in the industry are encouraged to cooperate with each other, use third-party cold-chain logistics companies for unified distribution, collectively deploy, outsource the distribution to specialized logistics companies, and provide services by third-party cold-chain logistics companies, which can save costs. It can also reduce the pressure on the regional cold chain logistics center and improve efficiency.

## 4. Conclusion

The Internet of Things technology will play an increasingly important role in the cold chain logistics trade. Cold chain logistics talents will face the problem of gaps. We should reserve and train talents as soon as possible to meet the needs of future cold chain logistics talents. The development of IoT technology in cold chain logistics may still face severe challenges. With the continuous application of 5G technology, logistics robots and unmanned driving technology in cold chain logistics, how to solve GPS positioning accuracy, 5G technology latency and cold chain The applicability of unmanned vehicles and robot systems is the mainstream direction of future development.

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