

# Retail logistics distribution status and optimization research

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**Abstract:** *With the improvement of people's living standards in recent years, more and more retail forms began to appear. A new form of retail, represented by large and medium-sized chain supermarkets, has developed rapidly throughout the country, bringing convenience to people's lives. But competition from supermarket chains is getting fiercer. Therefore, the requirements for logistics and distribution services with low prices, rich products and wide distribution are getting higher and higher. Studying the current situation of retail logistics and distribution, optimizing the application of modern industrial production organization principles and centralized management mode in the circulation field, aims to improve economic benefits and the coordination ability of enterprise organizations and reduce operating costs. This paper takes retail logistics distribution as the research background, analyzes the current situation of logistics distribution of some chain supermarkets and optimizes the research within half a year.*

**Keywords:** *large and medium-sized chain supermarket; Logistics distribution; Distribution status; Optimization research*

## 1. Introduction

Retail format is a product of retail enterprises making the competition in the market economy more intense. One form of retail is a supermarket chain, which is usually a group of companies that sell the same variety of goods in many supermarkets of the same supermarket. In the same way, at the same price, in these supermarkets, the decoration and display of goods are basically the same or rival. In China's retail industry, this model of chain operations shows the phenomenon of well-spread development. There are chain operations and supermarkets in each large city. However, for chain enterprises, the efficiency of logistics distribution determines whether its business and scale can develop rapidly and sustainably. For common chain supermarkets, logistics distribution is extremely important. For example, rapid price changes, frequent orders, zero goods and strict shelf life requirements determine the necessity for enterprises to purchase goods as soon as possible, so as to realize the rapid circulation of goods. Inefficient logistics distribution has seriously hindered the daily operation efficiency of supermarket chains and limited their profitability[1]. In this context, retail chains should strive to improve the efficiency of their logistics. Through the optimization of distribution mode and distribution system, we can improve the operating profitability and development ability of supermarkets.

## 2. The background of chain retail enterprises

Since the middle of the 19th century, the retail industry has changed one after another, such as shopping malls, shopping centers, convenience stores and other mainstream formats emerged one after another, and formed a fierce business competition mode and a new consumption concept, the "business flow" and "logistics" together, for the promotion of economic and social development has played a very important role. According to relevant information, the high logistics costs of general enterprises are mostly due to the high cost of distribution, so distribution optimization is particularly important for supermarket chains. Accurate and appropriate distribution scheme not only greatly reduces the distribution cost of supermarkets, but also improves the economic benefits and competitiveness of enterprises. It can be seen that how to improve the management, social and economic benefits of enterprise logistics will be the focus of chain enterprise management needs to be considered. One of the most important parts of chain enterprises is logistics distribution, so the distribution efficiency and ability of enterprise distribution center will be an important factor affecting the competitiveness of enterprises. For example, Walmart, a large chain supermarket in the United States, is not fully mature in its logistics

mode, and has problems such as low management level of information system and low efficiency of distribution operation[2]. Analyzing the problems existing in Walmart's logistics distribution and proposing solutions can provide reference value and experience for other supermarkets to improve their competitiveness and logistics management.

### **3. Analysis of current situation of chain retail enterprises**

#### ***3.1 Chain management theory***

The theory of chain management is an advanced modern business model, praised by many as another revolutionary innovation in the business world, and has a significant impact on the world. Chain operation is a business form of division of labor and cooperation between enterprises or integration between enterprises. The essence of it lies in the unity of four levels, ranging from the enterprise identification system at the lowest level to the unity of business philosophy at the highest, encompassing the unity of goods and services, as well as the unity of management.

#### ***3.2 Research on the status quo of logistics distribution at home and abroad***

##### ***3.2.1 Domestic logistics distribution status***

The development history of logistics distribution in China can be divided into four stages, the first stage is the embryonic stage before the 1980s of the 20th century. At this time, our country has not officially quoted the professional term "logistics", but the operation mode of logistics can be seen everywhere in our daily life. The second stage is the learning development stage in the 1980s and early 1990s[3]. The third stage was the beginning of the 1990s. The fourth stage is a spurt of development from the millennium to the present. From the 1980s to the present, there have been 40 years of development history.

##### ***3.2.2 Research status of foreign logistics distribution***

The knowledge and cognition of logistics in foreign countries are some time earlier than in our country. They began to study logistics in the 1950s. As one of the earliest countries to develop logistics, the development of logistics in the United States focuses on the demand center of consumers, giving priority to resources with excellent quality, and optimizing services combined with current logistics technology. To achieve information transfer and control between suppliers, we need to focus on the consumer side.

### **4. Analysis of distribution mode of chain retail enterprises**

#### ***4.1 Logistics distribution system***

With the increasingly fierce competition in the retail industry, a retail enterprise cannot only pursue the superficial expansion of the market and grasp the commodity management. The after-sales service of a retail enterprise will also directly affect the corporate image in the minds of consumers, and then affect the market occupancy of the enterprise. The establishment of logistics system affects the service and benefits of each retail chain enterprise. Therefore, the logistics system of retail chain industry is reflected in the following aspects: warehouse management, information flow management, logistics supplier management, exception processing.

#### ***4.2 Distribution mode analysis***

Different distribution service providers are the standard for the classification of distribution modes, and there are mainly the following distribution modes.

##### ***4.2.1 Self-built center distribution mode***

Self-built center distribution mode refers to: some chain supermarkets with strong economic strength, in order to meet the needs of their own development, set up a distribution center in their own enterprises to distribute for their stores.

#### **4.2.2 Third-party delivery mode**

The third party logistics distribution mode refers to the mode that the distribution business of a chain enterprise is entrusted to a third party enterprise. Due to the small scale of the enterprise itself, the distribution business cannot be completed by its own department. Chain operation enterprises for themselves, the establishment of their own distribution center is not very necessary, the cost is too large, is not conducive to the capital turnover of small enterprises, and even face the crisis of capital chain break, so only according to the needs of each store to send the distribution demand information to the third-party distribution enterprises, so that they can contract the distribution business. This distribution model is generally in the development stage, their own needs are small and small scale enterprises.

#### **4.2.3 Supplier direct matching mode**

The supplier direct distribution mode can be interpreted as that the distribution activities of chain operation enterprises do not need to be distributed through their own departments or with the help of third-party distribution enterprises. Instead, after receiving the demand information of chain enterprises, suppliers directly distribute for the stores of chain enterprises. The most important thing in this mode is the choice of supplier.

#### **4.2.4 Joint distribution mode**

Joint distribution mode refers to the distribution community with complementary functions established in a certain region, in order to improve the efficiency of logistics distribution and rationalize distribution. There are three distribution forms in the joint distribution mode: 1. Unique distribution, that is, the supermarket chain designates a company for distribution. 2. Multi-selection distribution, that is, according to the requirements of chain enterprises, several suppliers carry out unified assembly, and send the required goods to each store, which can effectively reduce distribution costs and reduce resource waste. 3. Build a distribution center. That is, each supermarket builds a distribution center according to their own needs, realizes resource sharing and unified distribution, effectively reduces the distribution costs of each supermarket chain, and thus increases corporate profits.

### **4.3 General operations of logistics distribution**

The general operation links of logistics distribution mainly include preparing goods, tallying goods, circulation processing, goods assembly and transportation, etc. Coordination and cooperation of all links can better complete the distribution task, thus reducing distribution costs and obtaining greater profits[04].

## **5. Distribution model analysis - taking Walmart as an example**

### **5.1 Introduction of Walmart supermarket chain**

Walmart Department Store Co., Ltd. is a worldwide chain enterprise headquartered in Arkansas, USA, with 8,500 stores in 15 countries around the world. It is the world's largest retail chain enterprise in terms of turnover and the world's largest retail chain enterprise in terms of employees.

### **5.2 Operation of Walmart's logistics distribution system**

#### **5.2.1 Focus on cooperation with third-party logistics companies**

Walmart has its own logistics, logistics and transportation team in the United States, and 15 other countries in the world except the United States need to find logistics service providers and form good cooperative relations with them to achieve mutual benefit and win-win situation and common development.

#### **5.2.2 Seamless point-to-point logistics system**

Walmart's establishment of a "seamless point-to-point" logistics system can be explained as: to provide fast service for stores and customers, for consumers, not through the store directly from the distribution center to the hands of consumers, for stores to reduce the distribution demand, thereby reducing logistics costs and increasing corporate profits.

#### **5.2.3 Automatic replenishment system**

Each chain store of Walmart has an automatic reissue system, so that it can clearly understand the

quantity of various commodities in the warehouse or in distribution, and make replenishment plans in time, which also helps Walmart understand the sales volume of a certain period of time in the past, and predict the future sales volume so as to prepare goods in time, so that the supply chain can be carried out quickly and smoothly, and the unnecessary costs of many intermediate links can be reduced. Thereby increasing corporate profits.

#### **5.2.4 Retail link system**

Walmart's suppliers can understand the sales status of their own products at any time according to this system, predict the future demand for their own products, so as to scientifically and reasonably calculate the output of the next stage, so that suppliers can timely adjust the operation of their own enterprises, and achieve win-win cooperation.

### **5.3 Wal-Mart distribution problems and optimization (fresh distribution)**

#### **5.3.1 Development status and existing problems of Walmart fresh logistics distribution**

Lack of strategic alliances with various stakeholders in the supply chain. Fresh products are necessities of life, so there is little change in customer demand and all delivery frequencies need to be high according to their perishable nature. The relationship between Walmart and its upstream suppliers and the application of downstream marketing concepts largely determine whether the cold chain of Walmart's fresh vegetable logistics is smooth[5].

The function of the logistics distribution center is not sound. Because many of our country's logistics and distribution centers function is not perfect, the main reason is that they are mostly from the original wholesale station or commodity warehouses and so on transformation, so some infrastructure such as transportation, storage, etc., lead to very low distribution efficiency, can not circulate the processing of the commodities, meet the needs of some customers, limit the customer base and the types of distributed items.

#### **5.3.2 Walmart fresh distribution optimization**

According to the above research on the status quo of Walmart fresh distribution, the following two corresponding solutions are proposed:

1) Standardize the interests of each link in the fresh supply chain. If those scattered farmers could be connected through some intermediary organizations in the market, reducing the number of circulation links, it would not only solve the problem of a large market scale coupled with small productivity, but also enable farmers to obtain stable income. This would reduce the risk of agricultural products being adversely affected by inappropriate prices in the absence of wholesalers, thus making the industry more standardized and organized.

2) Strengthen the construction of logistics distribution centers. By strengthening the functional construction of distribution centers, improving distribution efficiency, reducing circulation links, and enhancing customer satisfaction, distribution costs can be reduced so that enterprises can obtain profits and run smoothly.

## **6. Research on logistics distribution optimization**

### **6.1 Factors affecting distribution efficiency**

#### **6.1.1 Logistics cost factor**

The important factors in the physical distribution choice of China's retail chain enterprises are: 1. Investment scale, that is, the size of the investment amount[6]. 2, the use of existing resources, that is, the rational use of manpower, capital, equipment, information, etc., the utilization structure of resource allocation is different, and the profits brought are not the same. 3, logistics operation costs, logistics operation costs can be interpreted as procurement, warehousing, circulation processing, distribution and transportation costs and other links. 4, investment risk, investment risk can be interpreted as the risk that needs to be overcome under a specific logistics model, such as investment, equipment depreciation, etc.

#### **6.1.2 Management factors**

Compared with western developed countries, China's logistics related management concept is relatively immature, affected by many management factors, it is difficult for supermarket enterprises to

choose the optimal logistics distribution mode suitable for development. The constraints of enterprise management and technology mainly include the management level of supermarket enterprises and the operation level of supermarket logistics, including the technical constraints of flow operation.

### ***6.1.3 Logistics service elements***

The influence of logistics service elements on the choice of logistics mode is mainly reflected in three aspects: the level of distribution service, the quality of logistics service and the adaptability of logistics service.

### ***6.2 Optimization of distribution routes***

The determination of distribution route is a very important item in distribution activities, because the rationality of distribution route selection has a great impact on distribution cost, efficiency and profit, so the most reasonable and scientific distribution route should be selected according to the company's budget, so that the time of delivery of goods to customers is as short as possible, so as to reduce the cost of road loss and improve customer satisfaction.

### ***6.3 Intelligent distribution technology***

Intelligent distribution technology refers to relying on advanced technical means, so that the logistics system has the ability to learn, think and judge like human beings, and can independently solve some theoretical problems and solve complex problems such as system security. To provide customers with convenient and fast services.

### ***6.4 Rationalization of distribution***

Distribution rationalization, also known as modern logistics distribution optimization, is an important source of profit for retail chain enterprises, which can be explained as the systematic theory and method of many links in the distribution process, such as: Inventory, sorting, circulation and processing are optimized to maximize profits with the least input cost. The main content of distribution rationalization is how to improve the efficiency of distribution activities and reduce the cost of distribution process as much as possible, so as to obtain the most profits.

## **7. Conclusions**

Through the study of the status quo and optimization of retail logistics distribution, this paper first briefly introduces the general situation of chain retail enterprises and related theoretical analysis, and compares and analyzes the existing distribution models. Due to the expansion of the scale of chain enterprises, retail chain enterprises are developing in a blowout way, but because the logistics level can not keep up with the development speed, the problems of high distribution cost and low distribution efficiency appear. These problems are very important and even restrict the further development of retail chain enterprises, resulting in the imbalance of market economy. This paper puts forward several optimization suggestions for the above situation:

1) It is proposed that all links of the supply chain work together across the supply chain to complete logistics distribution activities, achieve supply chain integration, information sharing, interest sharing, and win-win cooperation among all subjects, bringing a good atmosphere to the economic market.

2) To constantly enrich theoretical knowledge in logistics, select advanced equipment, and flexibly choose a logistics distribution mode to reduce distribution costs, enhance customer satisfaction, and ensure the long-term successful operation of the enterprise.

3) The scope of cooperation should be wide, not limited to the supply chain of the enterprise, but also with other chain retail enterprises to reach strategic cooperation and joint distribution, which requires the cooperation of enterprises need to have a strong sense of cooperation, so it is also very important to find the right partner, continuous running-in between partners to achieve win-win situation. Every partner, regardless of its position in the supply chain, must fully fulfill its responsibilities and be accountable.

## References

- [1] Wuxue Jiang, Zhixiong Hu, Yan Liang, Yuqiang Chen. *Modeling and Optimization of Food Cold-chain Intelligent Logistics Distribution Network*[J]. *Advance journal of food science and technology*, 2015, 7(8):573-578
- [2] Abdisalam Hassan Muse, Samuel M. Mwalili, Oscar Ngesa. *On the Log-Logistic Distribution and Its Generalizations: A Survey*[J]. *International Journal of Statistics and Probability*, 2021, 10(3)
- [3] Nana Wan, Li Li, Xiaozhi Wu, Jianchang Fan. *Coordination of a fresh agricultural product supply chain with option contract under cost and loss disruptions*[J]. *PLoS ONE*, 2021, 16(6):e0252960
- [4] Karl-Arne Johannessen, Hans Comtet, Erik Fosse. *A Drone Logistic Model for Transporting the Complete Analytic Volume of a Large-Scale University Laboratory*[J]. *International Journal of Environmental Research and Public Health*, 2021, 18(9):4580
- [5] Wangwei. *Study on Logistics Distribution Route of Fresh Agricultural Products in Chain Market with O2O Mode*[C]//*International Conference on Education, Management, Arts, Economics and Social Science*. 2017
- [6] Sergey Pavlov. *Russian Railway's digital solutions for international freight transportation and logistics*[J]. *Global Railway?Review*, 2021, 27(3):16-18