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Analysis and Countermeasures of Cold Chain Logistics Status of H New Retail Enterprise in Dongguan City

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Abstract: In recent years, with the increasing demand for fresh food online, cold chain logistics has become a hot topic, and the market potential is huge. Many enterprises have been laying out their strategies. This article analyzes the current situation of H enterprise's cold chain and finds that there are problems such as high logistics product loss rate, insufficient transportation monitoring, large investment in cold chain funds, and lack of professional talents. Improvement suggestions are also proposed. This not only contributes to the development and efficiency improvement of H new retail enterprises, but also provides successful examples for other regions, promoting the healthy development of the cold chain logistics industry.

Keywords: Logistics Cold Chain; Cold Chain Talent; Cold Chain Equipment; Logistics System

1. Introduction

In today's era, with the popularization of online shopping and the significant increase in demand for purchasing fresh produce online, it has effectively promoted the development of the cold chain logistics industry. The country's attention has increased, and the market potential is huge, with many enterprises laying out their strategies. However, there are a series of challenges in the circulation of fresh products in our country, such as high loss rates, inaccurate transportation monitoring, large investment in cold chain construction, and a shortage of professional talents. Controlling and reducing these risks are key issues that urgently need to be addressed in the cold chain logistics industry. This article takes H New Retail Enterprise in Dongguan City as the starting point for in-depth analysis. With the innovation of network and cold chain logistics technology, consumer shopping patterns are shifting towards online, and the growing demand for fresh goods brings opportunities to cold chain logistics. However, it also brings many challenges, such as high requirements for facilities and equipment, poor service quality, and insufficient reserve of professional talents in cold chain logistics distribution. Research has found that H company has shortcomings in cold chain logistics operations. In response to these issues, this article proposes solutions such as building an exclusive logistics system, strengthening the concept of cold chain transportation, optimizing each link of the cold chain to reduce costs, and emphasizing the cultivation of professional talents. The research on H enterprise can not only provide insights into the common shortcomings of China's cold chain logistics industry, but also provide successful examples for other regions, helping to promote the stable development of the entire cold chain logistics industry and achieve better progress in solving existing problems.

2. Research Methods

2.1 Literature Research Method

By collecting, identifying, and organizing literature, we aim to understand the development status of cold chain logistics in H New Retail Enterprise, gain a comprehensive understanding of its

2.2 Case Study Method

On the basis of theoretical research, taking H New Retail Enterprise as an example, this paper analyzes the current situation and existing problems of cold chain logistics development in China, and proposes measures to solve these problems, making the research of this paper reasonable to a certain extent.

2.3 Field Investigation Method

Visiting H Cold Chain Logistics Company to

observe the operation process of the cold chain can provide a more intuitive way to identify problems and propose solutions tailored to local conditions.

3. Current Research Status at Home and Abroad

3.1 Current Research Status in China

In recent years, China's cold chain logistics industry has developed rapidly, and the market size has continued to expand. Driven by government policy support and consumption upgrading, the development of cold chain logistics has accelerated, and the rise of the e-commerce industry has also expanded its market space [1]. Yin Zhenyu and Angel pointed out that in the development process of cold chain logistics, manufacturers and distributors play a key role in the fresh logistics business. However, the development of third-party logistics systems in China lags behind, with incomplete service networks and information systems, low marketization of cold chain logistics, outdated infrastructure, insufficient capital attraction, and poor market activity [2]. The country's emphasis on infrastructure construction has prompted some cold chain logistics enterprises to build and expand their refrigeration and cold storage facilities. The improvement of logistics informatization level has helped the industry move towards scale, and some enterprises have also accelerated the cultivation of cold chain logistics talents.

3.2 Current Research Status Abroad

Compared with China, developed countries started their cold chain earlier and have now matured and improved. In the field of cold chain logistics, they invest heavily in construction and actively research and develop technology. In countries such as the United States and Japan, the proportion of cold chain circulation reaches 95%, and an advanced and complete integrated production and sales system as well as a wholesale market system for agricultural cold chain logistics have been established. The infrastructure is sound, the theory is perfect, the development level is leading, and the service quality is high. Wang S pointed out that cold chain logistics in foreign countries is developing systematically, forming a complete industrial chain, achieving resource optimization and maximizing benefits, and cold chain logistics companies are transforming towards comprehensive models [3]. In cities, the rise of large chain supermarkets, the continuous addition of cold chain facilities in retail terminals, and the continuous advancement of equipment technology have effectively promoted the development of the fresh food industry. At the same time, strict food safety and quality supervision have raised higher requirements for cold chain logistics enterprises in developed countries. We are also exploring solutions to the possible chain breakage problem in international cold chain transportation. For example, Ricardo B proposed that using tray covers can help delay the temperature rise of products inside the tray until cooling conditions are restored [4].

In summary, the scale of the domestic cold chain market continues to expand, but there are problems such as facility shortages and incomplete systems; Although developed countries have rich experience in cold chain logistics, they also face challenges in improving quality and international cold chain logistics.

4. New Retail and Cold Chain Logistics Concepts

4.1 Concept of Cold Chain Logistics

Cold chain logistics refers to the engineering of maintaining a certain low temperature environment for fresh products from production, storage, transportation, sales to consumption, in order to ensure food quality and reduce losses. It is based on the low-temperature physical method of freezing [5]. With the rapid development of cold chain logistics for agricultural products in China, there is an urgent need for the government to introduce scientific and effective macro policies and corresponding countermeasures. Compared to conventional logistics, cold chain logistics requires higher capital investment and management. In terms of the division of development stages in the cold chain logistics industry, it is generally believed that a per capita economic income of $4000 is a sign of rapid growth in cold chain logistics. Some opinions also add that a 50% urbanization rate is another necessary condition [6].

4.2 New Retail Concept

New retail is to rely on the Internet, use modern information technologies such as big data and artificial intelligence, start from the consumer experience, upgrade and transform the whole life cycle of products, reconstruct the business ecosystem, build user communities with products and services as the core, and integrate new business models online and offline. It can enhance the competitiveness and sales of enterprises, and help promote sustainable development [5]. The popularization of mobile payments, the rise of the new middle class, and the transformation of consumer attitudes have spurred the emergence of new retail, attracting numerous enterprises. It promotes the integration of online and offline, shifts consumer attitudes towards value based consumption, and brings new opportunities for business development.

5. The Current Status of Cold Chain Logistics Development in H New Retail Enterprises

5.1 Introduction to H New Retail Enterprise

H New Retail Enterprise is the first new retail supermarket in China, which was restructured from Alibaba's physical supermarket and is committed to integrating online and offline to create a new shopping experience. It integrates traditional supermarket and Internet technology to create a model of "online shopping, offline shopping and community distribution", and relies on its own warehousing and logistics system to achieve full coverage of fresh and daily necessities. Consumers can shop through the app or offline stores and freely choose between delivery or self pickup [6]. Different from traditional retail, H Enterprise uses technologies such as big data to optimize the relationship between people, goods, and places, and build a complete digital logistics system from supply chain to distribution. With the help of intelligent devices, product assignments are efficient and have a low error rate. The system is divided into front-end and back-end. After the user places an order, the front-end sends information to the back-end, and the staff sorts and packages it. Within 20 minutes, it completes a 3-kilometer delivery and realizes the integration of store and warehouse. H New Retail Enterprise integrates online and offline resources, enhances user experience through innovative models, and provides high-quality fresh food and convenient shopping services. It has achieved remarkable results in the Chinese market and has had a positive impact on the new retail industry.

5.2 Introduction to Cold Chain Logistics for H New Retail Enterprises

H New Retail Enterprise adopts a cold chain logistics model based on H Company's business model. Its logistics system does not adopt the centralized logistics system of B2C e-commerce, but instead builds a decentralized and distributed fulfillment network, namely the B2B2C logistics model (see Figure 1). The B2B2C logistics model refers to the sales model that closely links suppliers, platforms, and consumers together. Because the business scope is community, the process is online order, offline pickup point pickup, and some experts call it community O2O (Online To Offline), which refers to the combination of offline business opportunities and the Internet, making the Internet an offline trading platform) mode [7]. Fresh products are transported from the base to a large warehouse, and then from the large warehouse to the store, using a large quantity and small quantity transportation method. The distance from the store to the consumer is the last three kilometers.

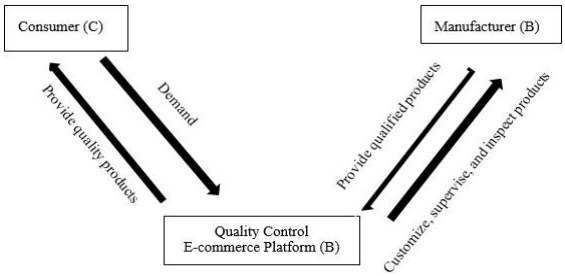

Figure 1. B2B2C Mode

Data source: Sogou Encyclopedia. https://baike.sogou.com

After purchasing goods, H New Retail Supermarket's procurement staff transport them from the base to offline stores, and then deliver them to customers' homes through the stores. Both stages rely on cold chain logistics supporting technology. During transportation, the onboard equipment of H company's refrigerated truck can monitor the temperature inside the vehicle and track and locate the vehicle. After the product is delivered, it will be stored in a multi temperature warehouse for preservation (see Figure 2). Multi temperature

layer warehouse is a multifunctional warehouse with both constant temperature and low temperature compartments, classified and stored according to the storage needs of goods, providing collaborative supply services for H enterprise's transportation and distribution. At the same time, H Enterprise's fresh logistics center will determine key storage data such as temperature and humidity based on product specifications.

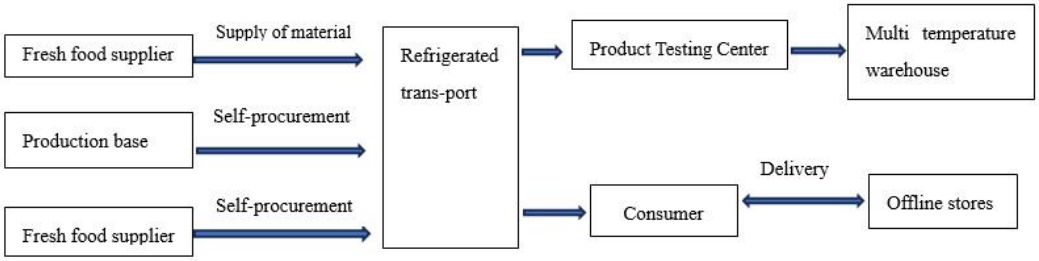

Figure 2. Flow Chart.

Data source: Red Flame Information official website

H New Retail Enterprise has created a DC temperature control processing and testing center to ensure product freshness. The temperature control processing and testing center (DC) is a temporary transit center for H New Retail Enterprise, mainly responsible for unified product testing, quality control, processing, and packaging, achieving product standardization [8]. H Enterprise Supermarket has a complete fresh logistics system that can plan according to different fresh products. Staff can combine their own plans to find the best combination and ensure the normal operation of the supermarket.

5.3 Current Status of Cold Chain Logistics Development in H New Retail Enterprises

5.3.1 Delivery mode

H Enterprise utilizes digital supply chain in distribution to achieve intelligence in all aspects from products to stores, improving operational efficiency, shortening time, and reducing error rates. By splitting customer orders and assigning responsibilities to staff, errors can be reduced, delivery times can be shortened, and freshness of goods can be ensured. At present, H Enterprise is following the trend of new retail development in China, based on expanding offline physical stores, taking the path of online and offline integration, using big data to collect customer preferences, converting offline traffic, while improving cold chain refrigeration technology, upgrading refrigeration and insulation equipment, and perfecting the fresh logistics system[9].

5.3.2 Intelligence of cold chain logistics system

H New Retail Enterprise stands out in the industry with its intelligent cold chain logistics system. Advanced equipment drives development, stores integrate online and offline information, innovate warehousing models, closely collaborate between warehousing and stores, reduce operating costs, and improve logistics efficiency. The delivery process is led by big data. After the store receives the order, it integrates information through big data analysis to develop the optimal delivery plan, shorten delivery time, and enhance customer experience. Digitalization of product ordering, utilizing big data to accurately analyze shipment history, achieving optimal solutions for category and quantity orders, meeting customer needs, improving inventory turnover efficiency, and gaining an advantage in market competition.

6. Analysis of Problems in Cold Chain Logistics for H New Retail Enterprises

6.1 High Product Loss Rate during Logistics Process

The cold chain logistics market in our country started late, with outdated equipment and many problems. Due to a lack of cold chain knowledge and inadequate refrigeration facilities, about 20% of grain is wasted, and the loss rate of fresh agricultural products such as fruits reaches 25% -30%. In the cold chain logistics process, the loss rates of fruits and vegetables, meat, and aquatic products are 15%, 8%, and 10%, respectively, which are much higher than the 5% in developed countries (see Figure 3). H New Retail Enterprise adopts a warehouse integration self operated distribution model, with meat, fruit and vegetable, and aquatic product loss rates

of 3%, 6%, and 4% respectively, and a total loss rate of about 10% for fresh products (see Figure 4). Although lower than the domestic average, it is still relatively high compared to developed country enterprises. H New Retail Enterprise aims to improve consumers' offline experience, and the issue of product loss urgently needs to be taken seriously to further enhance competitiveness.

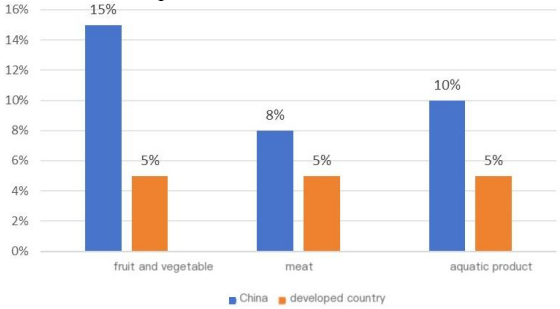

Figure 3. Comparison of Loss Rates between China and Developed Countries

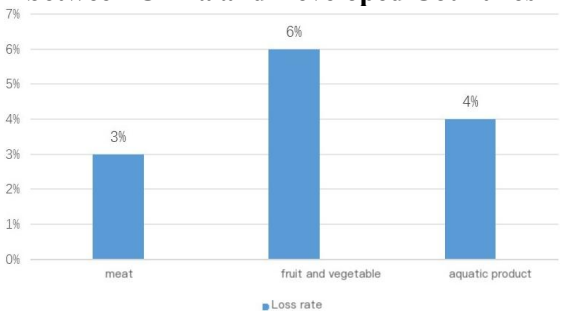

Figure 4. Product Loss Rate of H New Retail Enterprises

Data source: "Report on the Development of China's Agricultural Product Circulation Industry" Prospective Industry Research Institute website

6.2 Inadequate Transportation Supervision

In the normal management process, equipment is prone to malfunction and lag. The cold chain transportation of fresh produce is interdependent, and there is a possibility of chain breakage during loading, unloading, and handling, resulting in product exposure and quality changes; Due to technical or human factors during transportation, vehicles are unable to provide a suitable environment, which damages product quality and not only infringes on customer interests but also damages the image of H New Retail Enterprise. There are shortcomings in the supervision of fresh agricultural product production in China, with limited regulatory personnel and a focus on final product testing, making it difficult for e-commerce platforms to monitor farmers' production throughout the entire process. Some farmers illegally use pesticides, fertilizers, etc., and substitute standard products for inspection. The above issues pose significant challenges to the procurement management of Hema Fresh [10]. Moreover, the cold chain logistics transportation infrastructure of H new retail enterprises is not perfect, and monitoring is difficult to achieve. There are blank supervision periods, which can easily damage products. During the cold chain transportation of fresh agricultural products, there are often situations where temperature control is not effective and the temperature inside the carriage rises, resulting in damage to the quality of the transported items. The respiration of agricultural products continues to emit heat, causing the carriage temperature to rise [11].

6.3 High Investment in Cold Chain Funds

The cold chain logistics cost of fresh products is more than twice as high as that of general products, accounting for a relatively large share of sales. Customers of new retail enterprises have high requirements for freshness of goods, and fresh product logistics require full cold chain transportation. Although this ensures quality, it significantly increases cold chain investment and costs. Its logistics costs are more than 1-2 times higher than ordinary goods, accounting for 20%-40% of sales share[2]. The self built cold chain logistics system of H new retail enterprises ensures freshness, but it results in a large proportion of cold chain logistics investment in the early stage, and high cold chain logistics costs in the short term.

6.4 Lack of Professional Talents

The cold chain logistics industry in China is developing rapidly, but there is a shortage of professional talents and outdated social logistics concepts. Due to the late start and imperfect management system of China's logistics industry, there is a lack of theory and practice in logistics talent training, and there are few qualified cold chain logistics talents[12]. In terms of logistics talent cultivation, the education and training system and model of universities, enterprises and other organizations have not been established yet, and there is insufficient cooperation between schools and enterprises. The concept

of continuous learning for logistics talents has not been established[13]. There are many employees in cold chain logistics who lack knowledge, have low education, and have strong mobility. Some of them work without training, making it difficult for them to adapt to the development of cold chain smart logistics. Improper operation can easily harm the rights and interests of products and consumers. For example, in 2022, H Enterprise platform unreasonably refused consumer beef orders and forcibly cancelled compensation; In November 2021, H New Retail Enterprise was punished for failing to register its special equipment according to regulations, highlighting the negative impact of a lack of professional talent.

6.5 Incomplete Delivery Planning

H new retail enterprises adopt self operated logistics, online ordering, and offline store delivery models, but there are problems with incomplete delivery planning. Customers' orders are not fixed, and there are few orders. Delivery personnel are idle, resulting in a waste of human resources; If there are too many orders, there will be a shortage of delivery personnel, making it impossible to deliver on time. Delivery that focuses on timeliness will reduce the quality of fresh products once the time is extended. In addition, the company's focus on "3-kilometer delivery" has resulted in customers who are slightly farther away being unable to enjoy services, indirectly causing the company to lose some customer sources.

7. Suggestions for the Development of Cold Chain Logistics in H New Retail Enterprises

7.1 Innovative Cold Chain Logistics Technology

New retail enterprises should innovate cold chain logistics technology, learn from advanced experiences of developed countries, and apply them in combination with their own situations. Vigorously promote modern information technology, apply cold chain facilities to various modes such as multimodal transportation and trailer transportation, and establish a comprehensive cold chain monitoring, informatization, and traceability system. In the construction of cold chain facilities and equipment, we should grasp the direction of industry development, shift the focus of production and operation, introduce cutting-edge technologies, in order to reduce product loss rates, minimize unnecessary costs, and maintain the freshness of fresh products. Promote the application of standardized cold storage and refrigerated trucks, and explore and apply various measures such as the use of new energy refrigerated trucks and new energy cold storage, as well as multimodal transport, multi temperature co distribution, trailer transport, contactless distribution and other modes to improve logistics efficiency [14].

7.2 Enterprises Strengthen Their Awareness of Cold Chain Transportation and Increase Monitoring of the Transportation Process

The "Internet plus" technology is applied to the link of logistics and transportation, and the monitoring data can be uploaded to the cloud server in a timely manner to realize remote storage and sharing of data. Through cloud computing and big data technology, monitoring personnel can access cloud data at any time, real-time understand the status of goods and environmental parameters, and promptly identify problems and take measures[15]. New retail enterprises should strengthen their awareness of internal cold chain transportation and provide training to relevant personnel. Strengthen the monitoring of cold chain transportation to ensure uninterrupted supply throughout the entire process. It can also combine the Internet with artificial intelligence, rely on artificial intelligence to analyze data, realize automatic and controllable whole process detection, reduce human intervention, reduce costs, and ensure controllable transportation costs and stable transportation system.

7.3 Optimize the Cold Chain Link and Improve the Utilization Rate of Various Indicators

Each link of cold chain logistics should be open to sharing information, and real-time information can be obtained through technologies such as RFID to achieve effective collection of real-time information. Further analyze the collected data. By managing production processes and configuring equipment, we ensure that raw materials are stored and processed within an appropriate

temperature range from entering the factory to finished products. Secondly, it is necessary to establish a good cold chain system, which can automatically provide different temperature freezing and refrigeration environments based on the different attributes of the goods, clearly record the inventory data in the cold storage, and strictly manage the goods[15]. At the same time, reducing the vacancy rate of cold chain transportation equipment, adopting green packaging and transportation, simplifying warehouse layout, and promoting the recycling and reuse of logistics resources. Reduce empty loads in the transportation process and increase loading rates to improve efficiency; The delivery process utilizes big data and artificial intelligence to plan the optimal route and delivery volume, achieving maximum delivery efficiency.

7.4 Emphasize Talent Cultivation and Hire Professional Talents

Insufficient talent cultivation hinders the development of cold chain logistics in China. For H new retail enterprises, cultivating professional talents is the key to achieving high-quality development of cold chain logistics. Enterprises should actively introduce cold chain professionals, strengthen training for logistics staff, and enhance overall awareness. In terms of school enterprise cooperation, the platform construction and implementation are driven by experienced faculty members. The training objectives are clearly defined at the beginning of the cooperation, and both parties attach great importance to it. The assessment focuses on internship, practical training and job rotation, discovering talents, solving practical problems, creating a knowledge atmosphere of cold chain logistics, improving the knowledge level and business ability of enterprise cold chain logistics, and laying a foundation for long-term development. The favorable policies for talent introduction and training in Dongguan City will help H new retail enterprises introduce professional cold chain logistics talents, provide policy support for enterprise talent cultivation, not only help enterprises solve fresh cold chain logistics problems, accelerate transformation and upgrading, but also promote the development of the entire cold chain logistics industry, and change the current situation of backward cold chain technology and talent shortage in China[9].

7.5 Enterprises Establish the Optimal Logistics Route based on Their Own System Construction

H New Retail Enterprise establishes its own logistics system, which can quickly grasp logistics information and efficiently integrate online and offline resources. By utilizing technologies such as big data, we can plan the optimal logistics routes, reduce redundant routes, improve circulation efficiency, lower costs, and achieve controllable logistics processes. The improvement of the supply chain system built by enterprises primarily addresses the issue of product procurement control, ensuring product quality and achieving cost control. Digital supply chain is a key advantage of H cold chain logistics.

8. Conclusion

With the rapid development of cold chain logistics and the application of high-tech, it is becoming increasingly advanced. The combination of stores and modern technology facilitates consumers and improves their living standards. The Chinese logistics industry is promoting the development of the cold chain industry, with continuous progress in cold chain facilities and preservation technology, and enormous potential for the future. H New Retail Enterprise has provided effective solutions to domestic cold chain logistics problems, such as source docking, self built cold chain logistics systems, establishment of B2B2C models, construction of multi temperature layer warehouses, and creation of DC temperature control processing and testing centers, which are of great significance. However, enterprises have also exposed problems such as high product loss rates, insufficient transportation monitoring, large capital investment, and a shortage of professional talents in their development.

Based on this, the article analyzes these issues and proposes measures such as building the optimal logistics route, strengthening awareness and monitoring of cold chain transportation, optimizing cold chain links, and emphasizing talent cultivation, hoping to provide ideas for the development of H new retail enterprises. This article takes H New Retail Enterprise in Dongguan as the research

object, considering the differences in business operation and management in different regions, hoping to use it as an example to provide successful cases for other regions and promote the healthy development of China's cold chain logistics industry.

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