

Logistics Distribution Mode Based on Supply Chain Strategy

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Abstract: At present, most companies focus on how to optimize the distribution system, improve the distribution performance, and better compete with rival companies in terms of distribution time and cost. The purpose of this paper is to study the logistics distribution model based on supply chain strategy. Starting from the characteristics of supply chain management, the logistics distribution mode based on supply chain strategy is discussed. This paper explains the current situation of supply chain management and logistics distribution in the food industry, and by comparing the influence of different supply chain strategies on the distribution model, it is proved that the supply chain strategy that matches the product characteristics can produce a more effective distribution model and better distribution performance. Finally, the integrated product line and differentiated supply chain strategy and outsourcing strategy are discussed using the best practice cases found in the actual research. Since the soybean and soybean protein meal businesses each account for about 1/2 of all sales, an efficient supply chain strategy is used. Continuous improvement of operational excellence is the key to turning the right distribution model into competitive distribution performance.

1. Introduction

Supply chain management emphasizes the establishment of a strategic partnerships between key enterprises and the best enterprises, entrusting these enterprises to complete some business projects and collect energy and various resources by themselves [1-2]. It will not only significantly improve the competitiveness of enterprises, but also benefit other enterprises in the supply chain. Although the question of supply chain management is not long, it has already attracted widespread attention. Building a competitive supply chain has become an important factor in the rise and fall of enterprises. The selection of upstream and downstream partners in the supply chain, the location of logistics centers, and the optimization of transportation routes can reduce transportation costs, shape competitive prices, and improve supply chain competitiveness. Important decision problems [3-4].

The courier unloads other items before the loading process, which increases the likelihood of item damage, longer loading/unloading times, and higher lo/lo costs because items move quickly[5]. Budi S.S proposes an algorithm to solve this problem by creating a hybrid routing and packing algorithm to sequentially find solutions to the routing and packing problems using

meta-heuristics. The proposed method calculates the cost by summing the routing procedure and item movement during each loading and unloading process. Based on an experiment on 25 cases, the algorithm generates 59.64% of container zero cargo repacking [6]. Dybchuk LV determined that the essence of a business' approach to managing marketing logistics combines marketing mix and logistics mix involving the delivery of the right product to the right place at the right time, at the right price, to the right competitor. The changes in the structure of wholesale turnover in the Ukrainian market over time were analyzed, revealing the country's high self-sufficiency rate in the main types of food resources [7]. By discussing how to allocate logistics according to supply chain objectives, technical advice and practical success questions can be provided for businesses to follow [8].

This paper studies the logistics management model and strategy of food enterprises' commercial and supermarket channels, designs an inventory optimization model, and applies the model to the enterprise. The relationship between them is an important means for food companies to improve their overall market competitiveness as a support for the proposed integrated product line and differentiated supply chain strategy and outsourcing strategy.

2. Research on Logistics Distribution Mode Based on Supply Chain Strategy

2.1 Supply Chain

The supply chain is centered on the business core, through the control of information flow, logistics, and capital flow, from the procurement of raw materials, the production of intermediate products, and final products to the final delivery of products to consumers through the network. Suppliers and manufacturers, distributors, retailers, and end users are all integrated into a complete network chain structure model. It is a broader business structure model that includes all companies in a joint node, starting from the supply of raw materials, through the production, assembly, distribution, etc. processes of different companies in the chain, to the end user [9-10].

2.2 Inventory Control Strategy

In inventory theory, people generally divide inventory into single-cycle inventory and multicycle inventory according to the degree of recurrence of item demand. A cycle of demand is also called a one-time order [11-12]. This demand is characterized by the urgency and short life cycle of items, so there are few recurring orders, such as the demand for newspapers and the demand for Mid-Autumn Mooncakes. Periodic demand is long-term demand. Iteratively, inventory must be continuously replenished [13]. In real life, this need is more common. Multi-period demand is divided into independent demand stock and relative demand stock. The so-called independent demand means that the change of demand has nothing to do with people's subjective control ability, so its quantity and occurrence probability are random and uncertain [14].

2.3 The Relationship between Supply Chain and Logistics Distribution Strategy

We use a decision chain diagram to summarize the relationship between supply chain and logistics distribution strategies in business, as shown in Figure 1.

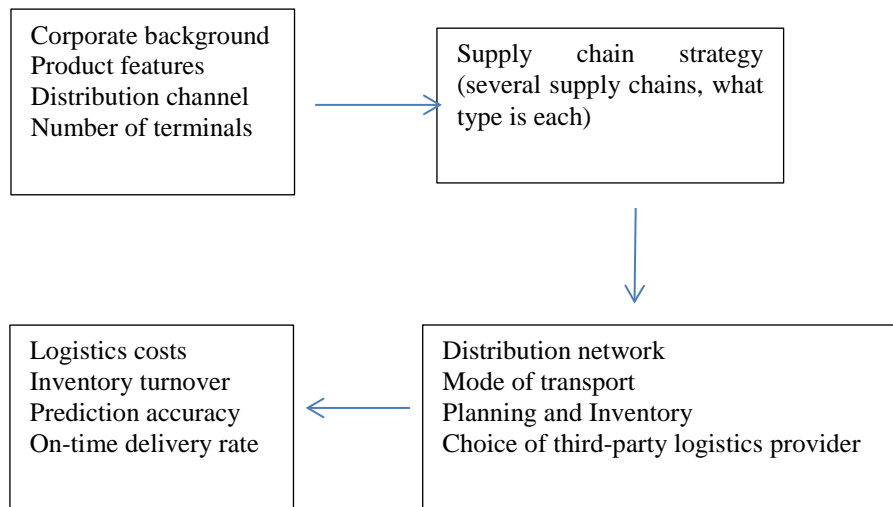


Figure 1: Enterprise Supply Chain and Distribution Model Decision Chain

Make supply chain and distribution decisions according to the actual situation of the company's own business, distribution channels, number of terminals, etc., determine the type and number of the company's supply chain, and implement appropriate distribution strategies, which can often bring better performance than peers [15-16]. It should be noted that if an enterprise adopts the strategy of two supply chains, it does not mean that the two supply chains are independent [17]. In fact, they may share a production line (or part), a warehouse, a sales channel, or even an adjacent counter. Although the physical distribution network may be the same, the moving paths, frequencies, and methods of different products in this network are different. Sharing the network does not mean that the same logistics node or the same transportation method must be used. Different supply chain management methods have been formed [18].

3. Investigation and Research on Logistics Distribution Mode Based on Supply Chain Strategy

3.1 Company Profile

Soybean Products Co., Ltd., mainly produces and sells soybean products. The company mainly relies on the scientific and technological advantages and industrial chain of Science and Technology Industry (Group) Co., Ltd., and takes soybean intensive processing as the key development direction, and takes dried tofu production as the starting point to cut into the field of soybean intensive processing.

In the face of more intense market competition in an open market environment, enterprises need to build an efficient logistics distribution system to maintain a competitive advantage and use information technology to strengthen the management and monitoring of logistics distribution. There are many limitations in the initial manual management of the company's logistics distribution system, which cannot meet the company's need for information management in the new market environment.

3.2 Inventory Optimization Model

In the distribution logistics management model of food enterprises, to better meet the needs of

the market, food enterprises formulate production plans according to the overall sales situation of the market and the forecast of market demand, and then allocate products to regional distribution according to the regional supply and demand situation. Regional distributors share inventory information with food companies. When the regional distributor's inventory falls below a certain level, the food company transfers goods to the regional distributor. This inventory strategy can be achieved through a total demand allocation and allocation model, which will be studied below.

(1) Total demand model

For food companies, within a certain expectation, the total demand for a product can be determined by the following formula.

$$D = \mu + Z_{\rho}\sigma - I \tag{1}$$

D represents the expected total demand of food enterprises; I represents the existing inventory of food enterprises;

(2) Distribution model of food enterprise, warehouse, and regional warehouse

After determining the total expected demand of food enterprises, they need to be allocated and allocated to food enterprise warehouses and regional warehouses. Suppose there are m regional warehouses and n food enterprise warehouses in total. For regional warehouse i, the amount to be allocated for a certain product in the current period is:

$$D_i^R = \mu_i + Z_{\rho i}\sigma_i - I_i^R \tag{2}$$

DiR represents the allocated quantity of the regional warehouse; IiR represents the existing inventory of the regional warehouse.

4. Analysis and Research on Logistics Distribution Mode Based on Supply Chain Strategy

4.1 Integrated Product Line and Differentiated Supply Chain Strategy

The company has four types of products, soybeans, soybean protein powder, fresh soybean milk, and corn. The soybean and soybean protein powder businesses each account for about 1/2 of the total sales, and fresh soybean milk and corn together account for about 1/2 of the total sales. Soybeans are sold through three channels: chains, department stores, and distributors, of which chain and department stores are the main channels. Soy and soy protein powder have more than 500 retail outlets across the country as shown in Figure 2. Fresh soybean milk and corn are mainly sold through distributors, with dozens of retail terminals across the country. The characteristics of various products are shown in Table 1.

Table 1: Enterprise product categories and characteristics

product	profit margins	sales terminal	category
soybean	13	120	5
soy protein powder	26	120	10
fresh soy milk	20	10	4
corn	15	50	2

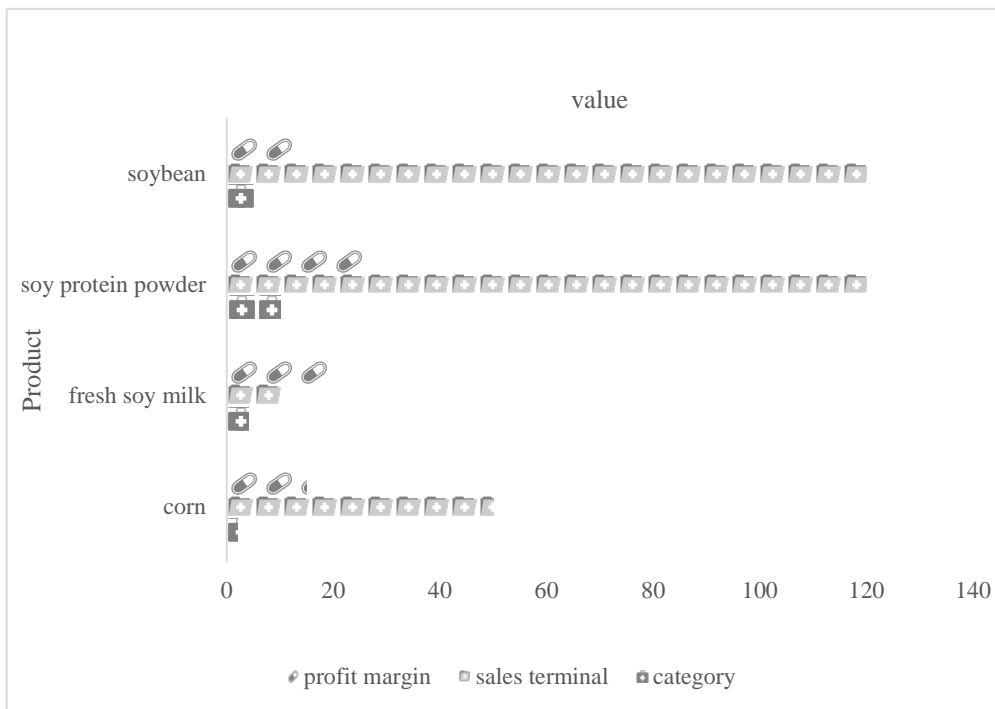


Figure 2: Enterprise product types

In terms of supply, due to the stable production process of the product, the company decided to focus on the market demand in the supply chain. Finally, combined with the sales network of each product line, the company has adopted two types of supply chains - high-efficiency and quick response.

For soybeans and some soy protein powders, companies have adopted an efficient supply chain strategy due to the steady growth in overall demand. The products are concentrated in a city in the east, and the distribution center is just outside the factory. The products are sent to 10 regional distribution centers by the distribution center according to the demand forecast and safety stock level. More than 100 points of sale. This is a system designed by the company through network planning and calculation of node traffic.

For a series of soy protein powder products, two supply chains are used according to their respective characteristics. Products with relatively definite demand enter an efficient distribution network with soybeans, while products with relatively uncertain demand and mainly sold by distributors adopt a rapid-response distribution model.

Since fresh soy milk has a short life cycle and is only sold through 10 distributors across the country, the distribution network is relatively simple. Products are only stored in national distribution centers, and dealers place orders in advance and then deliver the entire vehicle to the terminal.

Corn is a typical edible product with stable demand, long life cycle, and slow depreciation. The company also employs an efficient supply chain management strategy for this type of product, although the network setup is similar to that of the monitor distribution network: distribution from nationwide distribution centers to terminals.

4.2 Analysis of Outsourcing Strategy

Due to the limited market area of the company as a whole, the logistics outsourcing units involved in the region have not formed a large-scale and absolute industry leader. Therefore, there

are different options for outsourcing in three aspects: raw materials, packaging; transportation; distribution and distribution.

All raw materials should be outsourced. For all kinds of raw materials and packaging, from procurement, warehousing, and transportation, more powerful suppliers are responsible for using their resource advantages in the industry to achieve the best quality and lowest cost performance. Through stable long-term cooperation and information management, we will give full play to the resource advantages of the company in the region and maximize the share of resources shared with third-party logistics.

Through comparison and decision, especially the information accounting of transportation costs, part of transportation business outsourcing method should be adopted to minimize the cost. And consider increasing the transportation function of the distribution link to reduce the repeated waste of capacity in outsourcing transportation and distribution transportation.

Integrate transportation costs and distribution and distribution unit sales costs, reposition the operating costs of distribution centers, adjust product prices and sales profits within the scope permitted by the normal sales pricing of marketing methods, expand the functions and logistics capabilities of distribution and distribution enterprises, and increase the transport function. Because its own logistics center has more professional management and hardware configuration for food storage and transportation, it can also better ensure the product quality and service level of the enterprise and reduce the service problems and resource constraints that occur in simple transportation outsourcing units.

5. Conclusions

With the great changes in the market and competition and the deepening of supply chain management theory and applications, people have begun to pay attention to expanding the market and improving customer service from the perspective of the entire supply chain. This paper aims to meet the diversified demands of the market and respond quickly to the final customer and constructs the logistics operation mode of the manufacturing enterprise reasonably according to the different operation modes and characteristics in the supply chain environment. This paper has made some efforts in the research of supply chain logistics distribution and construction of logistics model, but there is still a lot of work to be done. Specifically: the construction of the logistics model of the supply chain is a multifactor problem, which requires not only management knowledge, but also various technologies, and even related to policy factors.

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