Research on Inventory Management of Domestic Sports Clothing Based On Supply Chain--- Take Li Ning For Example

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Keyword: Clothing Industry; Inventory Management; Supply Chain

Abstract: As an important index of enterprises, inventory is of great significance for the development of enterprises, especially for clothing brands. Because clothing has the characteristics of fashion and seasonality, once the inventory is overstocked in the current season, it is difficult to sell at the original price. The quality of inventory index has a direct impact on the profitability of garment enterprises. The long-term inventory overstock will even cause the closure of garment enterprises.

This paper takes Li Ning, a domestic sports clothing brand, as the research object, and makes a detailed analysis of its inventory status in recent years. Then a series of plans are put forward for Li Ning to solve the problem of overstock. Finally, the conclusion and prospect are put forward.

The results of this study have reference significance for clothing brands to formulate reasonable inventory management strategies.

Introduction

Research Background

How to control the inventory in a reasonable index is one of the most difficult problems faced by every clothing enterprise. The inventory management level of garment enterprises can reflect their current situation and future development and planning to a certain extent.

For a long time, scholars at home and abroad have put forward many views on the research of inventory: the relationship between inventory and internal control of enterprises, the relationship between inventory level and long-term return on investment, etc.

Li Ning is one of the earliest domestic sports brands in China. Since the 21st century, China's sports clothing brands have sprung up, but Li Ning, as an old brand, has been holding the market advantage. In 2000-2009, Li Ning entered a period of rapid development. Its highest peak accounts for nearly 10% of the domestic sportswear and shoes market, ranking second, surpassing Adidas, second only to Nike, and becoming the leading enterprise of domestic sports brands.

Research significance

Designing an agile supply chain has become an urgent task for China's clothing industry. From the peak to the decline to the present recovery, Li Ning Company is enough to become the representative of China's sports clothing brands. Therefore, this paper chooses Li Ning as the research object, hoping to find out the existing problems in the inventory management of Li Ning, using the thought of supply chain to provide some suggestions for its inventory management, and hoping to provide some reference for the inventory management of other sports brands in China, reduce the waste of resources, and bring positive effects to the clothing industry in China.

Research on inventory at home and abroad

Foreign Research

The earliest inventory management method is ABC classification, which was invented by Pareto in the late 19th century. In short, the inventory is divided into three types of ABC. Class a inventory is
the most important, which needs to be managed with emphasis, class B inventory is the second, class C inventory is the least important, which can be prepared as little as possible or even not.

On the relationship between inventory and productivity, Marvin B Lieberman and Shigeru Asaba (1997) studied the relevant data of the automobile industry in the United States and Japan from 1967 to 1993, and concluded that the less inventory, the higher productivity.[1]

Frank (2006) studied the inventory changes of American enterprises from 1981 to 2004 on the relationship between inventory level and long-term return on investment. The conclusion is that the long-term return on investment of enterprises whose inventory level is lower than the industry average is higher, while the long-term return on investment of enterprises whose inventory level is higher than the industry average is lower. [2]

**Domestic research**

In terms of the definition of inventory, Wang Huailin (2002) has a new view. He believes that inventory is not only the goods in the warehouse, but also the sum of all kinds of goods and resources that are temporarily idle for future needs.

Li Xinna and Ge Shoufen (2003) think that inventory is very important in any enterprise. Inventory occupies a large amount of working capital. If inventory can be effectively used, it will have a positive impact on the financial situation of enterprises. They also believe that the most important thing in inventory management is to reduce the inventory of raw materials, followed by the inventory of products in process and finished products.[3]

Yang Jianhua and sang Li (2003) put forward the concept of supply chain for domestic scholars. They believed that products need the support of related technologies in the process from raw materials to final forming, and supply chain is to process the final products and transport them to different places.[4]

Zhao Zhenjun (2016) classifies clothing products based on ABC classification and product life cycle theory, forecasts demand for different types of clothing products and proposes inventory control strategies.[5]

Lei haoying (2017) thinks that the current clothing industry in China mostly adopts the traditional supply chain inventory management of predictive operation mode, which is the root cause of the high inventory in China's clothing industry.[6]

Wu Zhanjun (2014) shows that enterprises must establish an effective information transmission system. If there is information asymmetry in the cooperation of enterprises in the supply chain, it will lead to the misprediction of the market, which will lead to the increase of inventory.[7]

Based on the theory of system dynamics, Qidong (2014) established corresponding models for joint inventory management and traditional inventory management respectively, and conducted simulation analysis combining with the specific situation of the clothing industry. The conclusion is that the joint inventory management mode can significantly improve the bullwhip effect in the supply chain, reduce the cost and total inventory, which is significantly better than the traditional inventory management mode.[8]

**Inventory Management Status of Li Ning**

**Company Profile**

Li Ning sporting goods company was founded in 1990 in Foshan City, Guangdong Province by Mr. Li Ning, the "Prince of gymnastics". At the 1992 Barcelona Olympic Games, Li Ning was selected as the special equipment for the Chinese sports delegation to receive awards. For the first time in history, Chinese Olympic athletes have put on the award-winning clothes belonging to our national brand at the Olympic Games. In 2002, the slogan of the brand was determined, "everything is possible, Li Ning". In June 2004, Li Ning company was successfully listed on the main board of Hong Kong, becoming the first sporting goods company listed in Hong Kong by the mainland. In November 2007, Li Ning officially announced the acquisition of the world-famous indoor sports equipment brands, such as table tennis and badminton, red double happiness Co., Ltd. In 2009, Li Ning Company
completed 8.387 billion sales revenue, and anti Adidas became the second largest sports brand in China market after Nike.

In 2018, Li Ning won the attention of all walks of life in the world after appearing in the two top fashion categories of New York and Paris. Now, Li Ning has stores in every city in China, and its international sales network has spread to 23 countries and regions around the world.

Analysis of Inventory Status of Li Ning

Total Inventory Analysis

Looking at the financial statements of Li Ning in 2012-2018, we find that its inventory is very large and presents an n-shaped structure. From 2012 to 2014, the total inventory of Li Ning has been rising, and reached a peak of 1.289 billion yuan in 2014. In 2015, Li Ning's total inventory reached a seven-year low of 960 million yuan. But this is just the illusion of Li Ning's wantonly selling clothes, which doesn't mean that Li Ning's inventory has really decreased. But even if it is such a false image, 960 million yuan of inventory in the industry also belongs to high inventory. The illusion of low inventory due to the simple purpose of inventory clearing did not last for long. The total inventory of Li Ning in 2016 was slightly higher than that in 2015, which was RMB 965 million. However, the inventory crisis broke out rapidly in the next two years. In 2017, the total inventory of Li Ning was 1.103 billion yuan, and in 2018, it reached 1.415 billion yuan.[9]

<table>
<thead>
<tr>
<th>Particular year</th>
<th>Total inventory</th>
<th>Accounts receivable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>9.01</td>
<td>23.99</td>
</tr>
<tr>
<td>2013</td>
<td>9.42</td>
<td>19.48</td>
</tr>
<tr>
<td>2014</td>
<td>12.89</td>
<td>18.25</td>
</tr>
<tr>
<td>2015</td>
<td>9.60</td>
<td>18.90</td>
</tr>
<tr>
<td>2016</td>
<td>9.65</td>
<td>17.78</td>
</tr>
<tr>
<td>2017</td>
<td>11.03</td>
<td>15.31</td>
</tr>
<tr>
<td>2018</td>
<td>14.15</td>
<td>17.36</td>
</tr>
</tbody>
</table>

Its total inventory increased by 57.05% from 901 million yuan in 2012 to 1.415 billion yuan in 2018. At the same time, the amount of receivables of Li Ning is also very large. The average amount from 2012 to 2018 is 1.895 billion yuan, far exceeding the domestic brands in the same industry. Generally speaking, as a current asset, accounts receivable should be beneficial to the enterprise, which is conducive to the circulation of funds and the reduction of inventories. But at the same time, we find that the total inventory of Li Ning is very high, which can only show that Li Ning passively sold these products in the attitude of selling inventory, but actually greatly increased the risk of bad debts. Because if the product can be sold smoothly, Li Ning can not have such a high amount of accounts receivable. Li Ning is also very clear that these accounts receivable will not be easily recovered, which can be seen from more and more bad debt reserves withdrawn by Li Ning. In particular, in 2012, Li Ning accrued more than 900 million bad debt reserves at one time. In other words, the products that Li Ning should have been in stock have become accounts receivable. In this case, the actual inventory of Li Ning is actually more than disclosed in the financial statements.

Inventory Reduces Profitability

Inventory also has a great impact on the profits of enterprises. Looking at the financial statements of Li Ning in 2012-2018, we find that Li Ning lost money in 2012-2014, but we find an interesting phenomenon. Although the turnover of Li Ning in 2014 is far more than that in 2013, the loss is more than that in 2013, almost double that in 2013.
According to the table, the turnover of Li Ning in 2014 was 6.728 billion yuan, an increase of 15.52% compared with 5.824 billion yuan in 2013, but the net profit decreased by 385 million yuan. Through careful observation of the financial statements, we found that in 2014, the total inventory of Li Ning was 1.289 billion yuan, while in 2013, the total inventory of Li Ning was only 942 million yuan. Coincidentally, this phenomenon also occurred after Li Ning turned losses into profits in 2015. In 2017, the turnover of Li Ning was 8.874 billion yuan, an increase of 10.72% compared with 8.015 billion yuan in 2016, but the net profit decreased by 186 million yuan. Similarly, Li Ning's total inventory in 2017 was RMB 1.103 billion, far higher than RMB 965 million in 2016. The only two times when the turnover is high and the net profit is reduced are when the inventory suddenly increases in the following year. Because of the sharp increase of inventory, Li Ning had to increase the sales discount to get rid of the products at a price close to or even lower than the cost, in order to clean up the inventory. Therefore, although the turnover of Li Ning in 2017 is more than 800 million yuan than that in 2016, it is actually an unreal profit, which is not difficult to explain why the net profit in 2017 is less than that in 2016.

### Analysis of the Reasons for Li Ning's Inventory Status

Li Ning's supply chain involves raw material suppliers, manufacturers, retailers, So much inventory and every link of the supply chain are inseparable.

#### Weak Cooperation with Supply Chain Enterprises

Since 2005, Li Ning has determined the marketing and R & D of products as the core competitiveness of the company, and has not paid attention to the self-produced raw materials. So in the production preparation stage, Li Ning has to find suppliers to get materials. Compared with other industries, the supply chain of clothing industry is more complex, ranging from button zipper to fabric. Even the material supplier of a garment comes from several different industries. This kind of cross nature makes it a big blow to Li Ning if one of the suppliers has problems.

The relationship between Li Ning and the suppliers is not strong, and the relationship with most of the raw and auxiliary material suppliers is only a short-term cooperation. For the selection of suppliers, Li Ning does not have a complete evaluation system, but only put the price and quality factors first. Li Ning is more concerned about profits. In order to reduce the purchase cost, Li Ning usually purchases a large number of raw materials at one time. It does reduce the cost of purchasing, but putting these raw materials in the warehouse increases the cost of warehousing. Once unsalable, it directly brings the pressure of inventory.

In the production stage, Li Ning always adopts the way of production outsourcing. Li Ning will hand over his orders to the enterprises specializing in garment production. On the surface, these outsourcing companies specialize in the production of clothing, which is very professional, but in fact, the quality is uneven. In order to save costs, outsourcing companies usually hire some people who do not have professional skills, after simple training, they can work.

Li Ning also adopts outsourcing in transportation. Products from raw and auxiliary materials to outsourcing factories, and then into finished products from the factory to the warehouse of Li Ning,
and then by the warehouse unified distribution to franchisees and distributors. These processes are all completed by the third party logistics.

This greatly increases the time for products to be put into the market. It takes more than six months for Li Ning to integrate orders and put products into the market. The tedious and lengthy production and circulation process made Li Ning's cost increased, and had to raise the price to achieve profits, so Li Ning also lost the ability to fight the price war continuously. Due to the seasonal and fashionable characteristics of clothing, these products may not be popular after a long time into the market, so they are faced with the embarrassment that products are destined to become inventory from production.

Suggestions on the optimization of Li Ning's inventory management

To solve the inventory problem, Li Ning must start from two aspects. The first aspect is the product from design to purchase of raw materials to finished products and then put into the market. Li Ning must improve the response speed of the supply chain to avoid overstocking of raw materials or finished products, and at the same time, it should save production costs as much as possible, so that Li Ning has more capital to use a series of measures to reduce inventory. The second aspect is the sales stage of Li Ning's products. The sales stage is directly facing the consumers, and the consumers are the only factor to solve the inventory problem. Even if your supply chain design is lean, the goods can't be sold out, which will still cause a large amount of inventory backlog.[10]

Strengthen Cooperation with Raw Material Suppliers and Outsourcing Factories

Li Ning must strengthen the relationship with the suppliers of raw materials, so as to get the raw materials with good price in the first time, so as to reduce the cost of inventory. In order to achieve this, Li Ning should establish supplier evaluation standards and treat the selection of raw material suppliers with caution. Not only the supplier's supply capacity (including quality, delivery time, price, etc.) but also the supplier's geographical location and competitiveness in the whole industry should be considered. Select fewer and more precise suppliers of raw materials. Once selected, Li Ning will establish a long-term and stable cooperation relationship to ensure that raw materials can be obtained in the fastest time at the lowest price.

In order to strengthen cooperation with suppliers, Li Ning should do three things: 1. Fast data transmission with raw material suppliers using EDI and Internet technology. 2. Visit suppliers frequently. 3. When Li Ning carries out product design and operation plan, let the supplier also participate in it, let the supplier know Li Ning's plan in advance, so as to supply materials at ease.

In order to ensure their dominant position, Li Ning should also establish an appropriate supplier incentive mechanism. Establish a suitable indicator, as long as the completion will be rewarded, the better the completion, the more rewards, so that raw material suppliers compete with each other and serve Li Ning.

Similarly, in terms of production, Li Ning should select fewer and better outsourcing factories as well as select suppliers, and send its own technical backbones to these outsourcing factories for guidance and inspection. Moreover, the location of outsourcing factory is very important, transportation convenience is only the premise, and strategic significance is the key. For example, Nanning can not only radiate Southeast Asian market, but also face the whole South China market and Guangdong Hong Kong Macao Bay area. Not only logistics convenience but also sufficient labor force.

Improve Sales Mode

If the direct cause of high inventory is the downturn of consumer terminals, the underlying factor is the old order meeting mode. The bullwhip effect caused by the order meeting is the root of Li Ning's inventory problem, and the direct sales mode can directly cancel this link of the order meeting. The professional production forecast made by Li Ning can keep the order close to the market demand, and greatly reduce the inventory backlog caused by the bullwhip effect. In the stage of product sale, Li Ning can use the self-service shopping mode of the warehouse supermarket to replace the
traditional shop. Li Ning can put the products in a large hypermarket. Consumers can put their favorite clothes in the basket just as they buy vegetables in the supermarket, and then try them on together. Employees are also committed to creating a relaxed shopping environment for consumers. Unless customers need them, they will never take the initiative to disturb customers. Give the initiative to the customers, which will greatly reduce the burden of the salesmen.

Compared with the previous exclusive store model, Li Ning can hire fewer people to sell, which greatly saves labor costs. In the same way, most of Li Ning's former stores were in the golden zone, with high rental costs. And the warehouse supermarket mode stores are larger and more comprehensive, almost all styles and colors of products can be found here. In the past, the variety of Li Ning specialty store is often incomplete, which leads to the situation that consumers have to run several stores to buy their favorite products. There is no need to worry about it here, So even if the location of the store is remote, consumers are willing to accept it. So Li Ning's warehouse supermarket can be opened in a slightly remote place, greatly reducing the rental cost. By reducing the labor and rental costs, Li Ning can reduce the price, so as to better win the favor of consumers, and naturally reduce the inventory with higher sales volume.

**Article Outlook**

Inventory is the lifeline of clothing enterprises. Excessive inventory will reduce the profitability of clothing enterprises and even make them close down. This paper analyzes the inventory status of Li Ning, a sports clothing brand, and the existing problems in its supply chain, and puts forward some relevant suggestions in the hope that Li Ning can use the supply chain to reduce its high inventory and restore its glory at the beginning of the 21st century.

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