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9B19M010

DALIAN ZHANGZIDAO CHUO COLD LOGISTICS CO., LTD.: VERTICAL INTEGRATION

Yibo Lyu, Shaojie Han, Wei Liu, and Jingqin Su wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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On February 3, 2017, Shengjun Wu, the chief executive officer (CEO) of Dalian Zhangzidao Chuo Cold Logistics Co., Ltd. (Zhangzidao), faced a series of urgent decisions. In 2012, Zhangzidao had been established by three players—Zhangzidao Group, Chuo Gyorui Co., Ltd., and Hohsui Corporation—to specialize in cold chain storage and logistics services for the imported frozen aquatic products (IFAPs) supply chain in Dalian City, Liaoning Province, China. Because of the regional advantage of this location at the largest port in Northeast China, Dalian Port, in addition to the advanced technology of cold storage and logistics, and the company’s standard management system, Zhangzidao’s business volume grew faster than other enterprises in the industry. In 2016, Zhangzidao won the titles “Five-Star Cold Chain Logistics Enterprise” and “Gold Medal Enterprise of China Warehousing Service,” which were known as the highest honours in China’s cold chain storage and logistics industry.

However, although Zhangzidao’s turnover grew rapidly and the company was recognized by its peers, it faced the typical dilemma of enterprises providing cold chain storage and logistics services, which was a lower net profit margin. As a middle link in the IFAP supply chain, Zhangzidao was in fierce competition with upstream suppliers, downstream buyers, and horizontal competitors. In this situation, Wu was considering integrating the upstream suppliers and the downstream buyers vertically to both enhance his company’s competitive advantages and increase profit margins. As the CEO of Zhangzidao, Wu needed to answer some questions. First, was Zhangzidao capable of implementing a vertical integration strategy in the IFAP supply chain to enhance its competitive advantages? Second, which direction should the vertical integration strategy take—forward integration or backward integration? Third, how could Zhangzidao achieve vertical integration under the current circumstances?

Background

The IFAP Supply Chain in China

Frozen aquatic products mainly referred to fish, shrimp, and other aquatic products that were frozen to maintain good quality during storage and transportation.[[1]](#footnote-1) As a result of improvements in Chinese people’s incomes and living standards, the requirement for high-end imported aquatic products was growing year by year.[[2]](#footnote-2) However, because imported aquatic products were sourced far from China, multi-level distribution channels and international transportation were needed to convey products to consumers in China. The result was a multi-level IFAP supply chain that involved foreign aquatic products suppliers, international traders, cold chain storage and logistics service enterprises, Chinese traders, aquatic products processing factories, aquatic products wholesalers, aquatic products retailers, and aquatic products consumers (see Exhibit 1).

The upstream of the supply chain consisted of foreign aquatic products suppliers and international traders. The foreign aquatic products suppliers participated in distant fishing and provided aquatic products. A large number of suppliers that lacked international sales channels relied on international traders to sell aquatic products as soon as possible. The international traders were responsible for collecting these products and then supplying them to China according to Chinese demand. With the advantages of international sales channels, capital, and demand information, the international traders had high bargaining power over the numerous foreign aquatic products suppliers.

The downstream of the supply chain consisted of cold chain storage and logistics service enterprises, Chinese traders, aquatic products processing factories, aquatic products wholesalers, aquatic products retailers, and aquatic products consumers. The cold chain storage and logistics service enterprises were responsible for storing and transporting aquatic products to Chinese traders, which then sent the products to factories for processing. After processing, the products were sold to wholesalers, which, in turn, sold and distributed the products to retailers. The retailers then sold the products directly to the consumers. Because downstream links were numerous and lacked strength, China’s downstream supply chain did not have bargaining power over the international traders.

The Cold Chain Storage and Logistics Service Enterprises in China

Their Function

Cold chain storage and logistics referred to an engineering system in which frozen products were always kept in a specified low-temperature environment in each stage, including production, storage, transportation, and sales, in an attempt to maintain the product quality and reduce the loss of product. For example, a low temperature could slow down the fermentation of fruits and vegetables, and reduce spoilage. For aquatic products, the preservation period was closely related to temperature. For example, when the temperature was reduced by 10 degrees Celsius, the preservation period would be three times longer.[[3]](#footnote-3)

The cold chain storage and logistics enterprises represented the first link in the IFAP supply chain in the Chinese market, which meant that Zhangzidao could obtain the required information regarding the products’ type and batch. Also, the technology level of cold chain storage and logistics was vitally important to maintain product quality. Zhangzidao also acted as a buffer between the upstream and downstream segments of the IFAP supply chain. For the upstream foreign aquatic products suppliers and international traders, distant fishing was seasonal and their outputs of products differed as the season changed. In contrast, the demand from the downstream sector was constant all year around. The upstream supply was always large and the downstream demand was always small. Therefore, the conflicts between the upstream and downstream of this supply chain could be mediated by cold chain storage and logistics service enterprises, which made them one of the most important links in the IFAP supply chain.

The Status Quo in 2017

The cold chain storage and logistics service enterprises played an important role in the IFAP supply chain; however, in China, these organizations lagged behind in terms of their technology and management, as a result of several factors. Firstly, most of the enterprises were still using ammonia or Freon R22 as the freezing medium, which developed countries had not used since the 1980s.[[4]](#footnote-4) Secondly, the infrastructures of cold storage had been inadequately developed, and most of the cold storage units were 15 to 20 years old and lacked advanced refrigeration equipment. Some of the enterprises were still using wooden storage racks or even bamboo matting. Thirdly, the international standards in quality monitoring had large gaps regarding temperature controls, hygienic management, and packaging technology. For example, the storage link, including the preliminary processing and sorting of products, failed to meet international standards in terms of controlled temperatures. Also, in the transportation link, most enterprises used only cotton or plastic waddings to maintain a cryogenic environment. Lastly, advanced information technology had not been applied to the management systems.[[5]](#footnote-5) Although the traditional cold chain storage and logistics service enterprises lagged behind in technology and management, the modern cold chain storage and logistics service enterprises were being established with the introduction of advanced technology and management from Japan. According to the data released by the Global Cold Chain Alliance in 2017, China’s cold storage capacity in 2016 was 107 million cubic metres, 21 per cent more than its 2014 capacity of 76 million cubic metres. The increase of 31 million cubic metres was mostly the result of modern cold chain storage with advanced technology and management.[[6]](#footnote-6)

The Necessity for Further Development

Since 2010, as a result of the economic and social development of China and subsequent improvements in household incomes, people had been increasingly demanding quality fresh food,[[7]](#footnote-7) which also stimulated the development of cold chain storage and logistics service enterprises. According to the statistics of the National Development and Reform Commission, in 2010, the cold chain circulation rates of fruits and vegetables, meats, and aquatic products were 5 per cent, 15 per cent, and 23 per cent, respectively. By 2015, the cold chain circulation rates for these products had reached 20 per cent, 30 per cent, and 36 per cent, respectively (see Exhibit 2).[[8]](#footnote-8) The statistics indicated that the cold chain circulation rates in China had increased significantly since 2010. Therefore, many enterprises in traditional industries such as food manufacturers, logistics suppliers, and refrigeration equipment manufacturers had entered the cold chain storage and logistics service industry. However, compared with the mature and powerful cold chain storage and logistics service enterprises in developed countries, the Chinese cold chain storage and logistics service enterprises still lacked strength in early 2017.

Zhangzidao

Foundation of Zhangzidao

On January 6, 2012, Zhangzidao Group, Chuo Gyorui Co., Ltd., and Hohsui Corporation established Zhangzidao, specializing in cold chain storage and logistics service for the IFAP supply chain in Dalian City, Liaoning Province, China. The business handled aquatic products such as codfish, flatfish, salmon, crab, and squid, and also several kinds of meat.

Zhangzidao owned advanced technology and management in cold chain storage and logistics services. On February 18, 2014, the company invested more than ¥330 million[[9]](#footnote-9) and constructed its first modern cold storage with a capacity of more than 50,000 tons, making it the biggest cold storage in Northeastern China. It was the first cold storage facility in China to adopt the most advanced carbon dioxide pump circulation system, which guaranteed the safety of people and products, and avoided damage from frosting and blast cooling. This cold storage could also maintain the temperature between approximately −20℃ and –25℃, which could realize energy savings, low carbon emissions, and environmental protection. The cold storage was also equipped with automatic shelves on all six floors to meet the packaging requirements of high-end products. The supporting construction of 10,000 square metres of refrigerated container yard could provide effective export packing services for international transit customers.[[10]](#footnote-10) As a result of the advanced management technology and standards in cold chain storage and logistics introduced from Japan, the cold storage used peak-valley electricity, standardized its operation flows, arranged the division of work, and reduced the delivery time. These advantages in technology, equipment, and management improved Zhangzidao’s operational efficiency and decreased its operating costs.

Development of Zhangzidao

Zhangzidao’s business volume had grown rapidly since 2014, as a result of its regional advantage of proximity to Dalian Port, the largest port in Northeast China; its advanced technology in cold storage and logistics; and its standard management system (see Exhibit 3). On March 4, 2014, Zhangzidao received its first 30 tons of product. On May 15, 2014, only three months after starting the business, Zhangzidao made its largest transaction of 500 tons. On June 9, 2014, 6,100 tons of squid were put in storage, and Zhangzidao’s stock size reached 23,000 tons.[[11]](#footnote-11) Since the formal operation began on February 18, 2014, Zhangzidao had taken only four months to complete the storage capacity of 23,000 tons, whereas other enterprises usually needed three years to complete that size of storage.[[12]](#footnote-12)

Zhangzidao has also been recognized by other enterprises and relevant professional organizations. In 2014, Zhangzidao acquired the certification of ISO 9001: 2008 for its international-quality management system, the registration of the imported meat product refrigerated warehouses, and the registration of the imported aquatic product refrigerated warehouses. It was named among the “Top 50 of the Cold Logistics Industry” for two years in a row (2014 and 2015). In 2016, it won the titles of “Five-Star Cold Chain Logistics Enterprise” and “Gold Medal Enterprise of China Warehousing Service,” which were the highest honours for cold chain storage and logistics service enterprises in China.

Zhangzidao’s Dilemma

Zhangzidao’s revenues grew rapidly, which was recognized by its peers. However, Zhangzidao faced the typical dilemma of enterprises in the cold chain storage and logistics service, which was lower net profit margins (see Exhibit 4). As a middle link in the IFAP supply chain, Zhangzidao was in fierce competition with the upstream suppliers, the downstream buyers, and the horizontal competitors.

Multiple links in upstream suppliers and downstream buyers in the IFAP supply chain resulted in low profit margins for Zhangzidao. In China, international traders that had high bargaining power among the upstream suppliers received approximately 50 per cent of the profit in this supply chain, whereas the downstream buyers received much less profit. However, the downstream of this supply chain in China included many links, such as cold chain storage and logistics service enterprises, Chinese traders, factories that processed aquatic products, aquatic products wholesalers, and aquatic products retailers. Therefore, as a single link of the downstream, Zhangzidao could acquire only limited profit.

As a modern cold chain storage and logistics service enterprise, Zhangzidao incurred huge amortized costs for advanced cold storage and equipment, which further lowered its profit margin. To maintain a technology-leading position, Zhangzidao made huge investments in cold chain storage and equipment, which were amortized on the daily operation. The huge investments of ¥330 million would be amortized to cost in an average of 10 years, which meant ¥33 million would be amortized every year. Therefore, the huge amortized cost also increased Zhangzidao’s costs.

Competition was fierce among the cold chain storage and logistics service enterprises. Although traditional cold storage and logistics service enterprises were losing market share, they still held more than 85 per cent of the market in 2016.[[13]](#footnote-13) Due to the backward technology and equipment, the operations cost of traditional enterprises was low. As a result, the traditional enterprises seized the market by lowering prices, which further reduced Zhangzidao’s average profit margin.

options for surviving the dilemMa

On February 3, 2017, the first working day after Chinese New Year, also called Spring Festival, Wu convened a meeting with Zhangzidao’s senior managers to discuss how to enhance competitive advantages over competitors and raise Zhangzidao’s profit margin. Wu and his senior management team began sorting out the advantages of Zhangzidao and the IFAP supply chain.

Zhangzidao had always aimed to be in the leading position among cold chain storage and logistics service enterprises in China. Its infrastructure, technology, and operation management had already captured leading positions in China. The company’s fast-growing business volume (see Exhibit 3) and the national honours it had acquired also reflected its high-quality service. However, despite Zhangzidao being the leading enterprise in the Chinese market, it faced the challenge of its decreasing profit margins (see Exhibit 4). In 2017, the company’s operating costs were nearly 20 per cent lower than those of its competitors. Moreover, Zhangzidao’s turnover efficiency of cold storage had reached the leading level in this industry, which referred to its business volume being four times the volume of its cold storage. Therefore, it was difficult for Zhangzidao to survive the challenge by reducing the cost on the single link in the IFAP supply chain.

In this situation, Wu and his senior management team needed to find their way out from the whole IFAP supply chain. The supply chain was multi-level, consisting of foreign aquatic products suppliers; international traders; cold chain storage and logistics service enterprises; Chinese traders; aquatic products processing factories; aquatic products wholesalers; aquatic products retailers; and aquatic products consumers. The upstream suppliers received 60 per cent of the profit from the supply chain, while limited profit margins were available for downstream links, especially for cold chain storage and logistics service enterprises, such as Zhangzidao. Specifically, foreign aquatic products suppliers could acquire 10 per cent of all profit from the whole IFAP supply chain; international traders, 50 per cent; cold chain storage and logistics service enterprises, 12 per cent; Chinese traders, 10 per cent; aquatic products processing factories, 8 per cent; aquatic products wholesalers, 5 per cent; and aquatic products retailers, 5 per cent. Therefore, it was possible for Zhangzidao to vertically integrate the downstream and upstream segments of the supply chain to increase its profit margin. Meanwhile, the multiple services after integrating the supply chain would help Zhangzidao to remove itself from the fierce competition with competitors.

Vertical integration seemed to be a feasible way to break through the dilemma, but as the CEO, Wu needed to answer some questions. First, as a middle link of this supply chain, was Zhangzidao capable of implementing a vertical integration strategy in the IFAP supply chain to enhance its competitive advantages? Second, which direction should the vertical integration strategy take—forward integration or backward integration? Third, how could Zhangzidao achieve vertical integration under the current circumstances?

Was Zhangzidao Able to Make It?

Zhangzidao was a critical link in the IFAP supply chain. On the one hand, it was able to regulate the conflicts between the massive supply from the upstream suppliers and the low-volume demands from the downstream consumers, and between the seasonal supply from upstream suppliers and the constant demand from the downstream buyers. On the other hand, Zhangzidao’s advanced technology and management seemed encouraging for the implementation of a vertical integration strategy. However, according to the entire supply chain, international traders had stronger control over the supply chain. Depending on the advantages of international sales channels of products, capital, and demand information, the international traders had high bargaining power over both upstream and downstream links. Therefore, the international traders might be more qualified to implement vertical integration.

Forward or Backward?

As a middle link of the supply chain, Zhangzidao had three possible ways to integrate the supply chain: (1) integrating the downstream of the supply chain, although it would be difficult to co-operate with the massive links, which included Chinese traders, factories processing aquatic products, aquatic products wholesalers, and aquatic products retailers; (2) integrating the upstream of the supply chain, although achieving bargaining power over international traders could be problematic; and (3) integrating both upstream and downstream, which would be even more difficult than the two previous options.

How Could Zhangzidao Achieve Its Goals?

Zhangzidao had invested ¥330 million to build advanced cold storage and buy equipment. If Zhangzidao purchased downstream aquatic products traders, processing factories, wholesalers, and retailers, the financial pressure would be difficult. If Zhangzidao co-operated with upstream or downstream links through contracts, it would save a lot of money. It would be great to solve the issue of achieving effective control of the partners; however, Wu was confused by all of the tough choices. How should he decide among all of the options?

EXHIBIT 1: imported frozen aquatic products supply chain In china

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Source: Created by the case authors based on their discussions with Shengjun Wu, chief executive officer, Dalian Zhangzidao Chuo Cold Logistics Co., Ltd., on August 25, 2017.

EXHIBIT 2: China’s Cold chain circulation rates of fruits and vegetables, meats, and Aquatic products, 2010 and 2015

Source: “The Analysis of Downstream Demand of Cold Chain Logistics Industry,” [in Chinese], China Industry Information, December 3, 2015, accessed February 24, 2018, www.chyxx.com/industry/201512/364819.html.

EXHIBIT 3: Dalian zhangzidao chuo cold logistics co., ltd. business volume statistics, 2014–2016 (kiloton)

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **2014** | **2015** | **2016** |
| Business volume | 48.1 | 112.8 | 189.5 |

Note: Although Zhangzidao was established in 2012, it started operating its business in 2014.

Source: Created by authors using data provided by Shengjun Wu, chief executive officer, Dalian Zhangzidao Chuo Cold Logistics Co., Ltd.

EXHIBIT 4: Dalian zhangzidao cuo cold logistics co., ltd. Profit statistics,   
2014–2016 (in ¥ thousands)

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **2014** | **2015** | **2016** |
| Revenue | 10,238.9 | 24,406.6 | 39,123.7 |
| Cost | 37,291.6 | 37,975.6 | 38,502.3 |
| Depreciation of fixed assets | 33,000.0 | 33,000.0 | 33,000.0 |
| Electric charge | 3,855.1 | 4,508.5 | 4,953.3 |
| General and administrative expenses | 287.0 | 314.4 | 386.8 |
| Others | 149.5 | 152.7 | 162.2 |
| Profit | –27,052.7 | –13,569 | 621.4 |

Note: ¥ = CNY = Chinese yuan; US$1 = ¥6.30 on February 27, 2018. Although Dalian Zhangzidao Chuo Cold Logistics Co., Ltd. was established in 2012, it started operating its business in 2014.

Source: Created by authors using data provided by Shengjun Wu, chief executive officer, Dalian Zhangzidao Chuo Cold Logistics Co., Ltd.

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