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WORLD MARITIME UNIVERSITY

Shanghai, China

ITL - 2009

**STUDY THE CHIO CHEMICAL LOGISTICS BUSINESS DEVELOPMENT
STRATEGY BASE ON THE GLOBAL FIANCIAL CRISIS**

By

XIA SHANG

China

A research paper submitted to the World Maritime University in partial
Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

INTERNATIONAL TRANSPORTATION AND LOGISTICS

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DECLARATION

I certify that all the material in this paper that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me,

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ACKNOWLEDGMENT

First of all, I am thankful to the World Maritime University and Shanghai Maritime University to give me this chance to study international transportation and logistics.

Second, I would like to thank my supervisor, Professor Xu Dazhen. He kindly gives me lots of guidance; support and encouragement for my dissertation writing. Without his suggestions, this dissertation would not have been completed.

Third, I am thankful to Ms. Zhou Yingchun, Ms. Hu Fangfang and all the others who work in the administration office. They give me a lot of help. I am also grateful to all the professors who teach us during these two years and give us the excellent class.

Fourth, I would like to thank my classmates, especially Mr. Yao, Mr. Yang, Mr. Mao and my roommates whoever give me so much help and care during the two years.

Last but not least, I am profoundly grateful to my beloved parents, Ms. Hao and Mr. Xia who have supported and encouraged me over the past two years. I am fortunate to have their deepest love and encouragement as I go forward in my future job and life.

ABSTRACT

Title of Dissertation: **Study the CHIO Chemical Logistics Business Development Strategy base on the Global Financial Crisis**

Degree: **MSc**

It brought a lot of opportunities and challenges to China's logistics after China enter the WTO. With the practice of logistics development, the theoretical study of China's logistics have developed rapidly. However, most of theoretical studies focused on the logistics process, function, and general logistics business. They just analyze the normal logistics market and less analyze or research the chemical logistics business. In view of this reason, the author will focus on the dangerous chemical logistics to analyze and research the market.

The current financial crisis has affected our country much more than the government has expected. And the logistics industry is a "barometer" of modern industrial economy. Every logistics companies try to break out this market and look for a new growth point.

Currently, there are two problems to show the effect of chemical logistics in global financial crises. Firstly, it is a sharp decrease in the volume of business, and it causes the cost of logistics increase. Secondly, the return of money is harder than before and it causes the financial chain have some problems.

The dissertation mainly deals with the existing problems, and it researches the three

chemical logistics business by one specific company and gives some advices and strategy to the company. Including, firstly, restructure the business in the chemical logistics market and seek a new growth points. Secondly, the company can plan to integrate the business for improving the competitiveness. Last, the company will provide the services which are more professional and sophisticated to catch the target custom.

KEY WORDS: CHIO Company, Chemical Logistics, Global Financial Crisis, Developing Strategy, SWOT Analysis

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LIST OF ABBREVIATIONS

SWOT	Strength, Weakness, Opportunity and Threat
DWT	Dead Weight Ton
IMO	International Maritime Organization
ISO	International Organization for Standardization
TEU	Twenty Equivalent Units
COA	Contract of Affreightment
LCL	Less Than Container Load

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Chapter 1 Introduction

1.1 Background

Recently, the national economy has maintained a sustained, rapid and sound development. The modernization of production and life reach up to a new level. Therefore, the demand of chemical transportation has a steady growth year by year. According to statistics, the volume of chemical transportation has over 200 million tons per year in China. The oil productions have over 100 million tons per year. The liquid and dangerous logistics has been formulated. Chemical companies went through a series of mega-mergers from 2007 to 2008 but credit crisis loomed. In 2009, US house prices collapsed, many industries needed bailout, a lot of chemical companies bankrupt, and many chemical consumers closed operations

Presently, there are over 300 companies handling chemical product transportation in Shanghai where chemical logistics business is highly developed. The third-party chemical logistics companies like CHIO, Xintianyuan, S&W international chemical logistic Ltd. etc providing proper door-to-door service emerge one after another, which have formed the fundamental system of Shanghai's chemical logistics. Meanwhile, some large-scale logistic enterprises stand out and are leading the way in the logistic industry development. The biggest enterprise of oil transport——China Shipping Development Co, Ltd now owns 77 oil tankers of various models, including those of the tonnage of 300 thousand. It can run the shipping business over 60 million tons per year.

CHIO Corporation, which the businesses refer to fertilizer, plastics, chemical products & logistics and transportation operations, was founded in Shanghai. The

chemical logistics business is their most important business which involve in the range of world. In 2003, the company has achieved the “Top 5 the best chemical logistics company in China”. Under the current economy situation, CHIO are facing a huge challenges and opportunities and how to formulate a development strategy for CHIO chemical logistics business makes much more important.

1.2 Research Objectives

According to statistics by government department: currently, in China, there are over 4,700 chemical ships of about 9 million DWT in total special for the transportation of product including crude oil, product oil, liquefied gas etc. China has about 400 ports which have throughput of over 500 million tons in total for loading and unloading chemical products as crude oil, product oil, liquefied gas and bulk chemicals, which take up 35% of the total berth number of major coastal ports and 1/6 of the total throughput. More than 150 thousand vehicles are offered to deliver chemical products. The transportation volume of crude oil, product oil, liquefied gas, chemicals and other solid dangerous products has reached 500 million tons. CHIO possesses 19 large ships for the transportation of chemical product, the biggest one of which has a tonnage of 140 thousand and its annual shipping capability is up to 1.5 million tons, which wins the first place in China.

Nowadays, the current global financial crisis influence CHIO greatly: Firstly, downward tendency of employment rate in chemical corporations. Secondly, the demand of logistic service had a rapid decrease, and the demand of CHIO logistics' target market which will slow down significantly. Thirdly, the increasing of market competition brought about the market price decline. The situations bring a lot of challenges to CHIO Logistics business.

The objects of the dissertation are:

Realize the effect of global financial crises on China chemical logistics business.

Study the high-end chemical logistics service providers in China

Study and prospect the CHIO development strategy of extending to chemical logistics services upstream and downstream;

The need of continuous advancement ever parts in CHIO chemical logistics business to adapt to the current economy situation.

1.3 Literature Review

Steven (2008) analyze the reason why the economic crisis happen, the possible result and solution in his thesis <trap of post-bubble era>.He deem "three-stage" of economic recession. The first stage is credit crisis; the second stage is the impact of American real economy by credit and housing market; the third stage is the effect extending to the world. He believes the financial crisis will be continuance, this market environment will be maintained in 2009 and maybe extend to 2010.He point out the financial crisis affect American economy from the root. However in China, economy condition is different from America. The potential of domestic demand is still large. Zhou Xiao-chuan(2009) has a similar idea, he believe the direct impact from the U.S. subprime mortgage crisis on China's economy was limited since the proportion of China's subprime mortgage investment was rather small. On the other hand, he said "There will be further indirect impact from the U.S. subprime mortgage crisis on China's economy in the future. It cannot be underestimated since what lies ahead is far beyond previous experiences,"

ZhangLing (2009) indicated that the impact of financial crisis for business have positive and negative. It is good for the industry reconstruction and also creative some opportunities for enterprise development. Therefore he point out we need to use dialectical view to consider the impact of financial crisis. First, he believes that market weakness affect national finance. Second, the decreasing of customer income causes the decreasing of product demand. Third, world economic growth stagnated.

He also point out the opportunities of Chinese enterprises in the global financial crisis.

1. The potential international market opportunities to enhance the relative competitiveness.
2. International companies will be face up to money problem and it will be delay to enter the Chinese market that is a good opportunity to Chinese enterprises.
3. Industry mergers and acquisitions increased

Following the ZHANG JING (2009) viewpoint, JE, C, S (2009) deems the impact of financial crisis bring opportunity and challenge to Chinese logistics enterprises. He point out

1. Some domestic small logistics enterprises face to swallow up by giant corporations or go breakup.
2. Cargo volume reduction brought about some vicious competition.
3. Logistics enterprises bear the high cost by levy fuel tax.

JE, C, S gives some suggestions to domestic's logistics enterprises about

1. improve the management
2. Honest operation
3. improve the quality of services
4. avoid risk
5. develop the potential customer and market

In general, He deems the logistics enterprises need to integrate the resource and adopt diversified development strategy. Then, they need to save and control cost, reduce expenses and improve logistics integrated enterprise management capabilities.

According to survey report of XINHUA (2009), it indicated that domestic enterprises operating conditions decline distinctly under the global financial crisis. The managers who believe the operation condition is "good" accounted for 19.3 percent, think "general" accounting for 48.3 percent, think "poor" account for 32.4 percent. The result is near the lowest level in five years.

The report deems the market environment in middle and western area of China is better than eastern China which has a lot of Import & Export Enterprises. It point out subprime mortgage crisis resulted in cascades and ripple effects that it affects the world economy generally and decreases the volume of Chinese export. At last, the crisis leads to a lot of enterprises breakup or restructure their business.

According to the investment report by XINHUA, many analysts and managers have their own forecasts. There are 29.2% experts believe the operation condition will be "better", experts believe "no change" accounted for 55.9 percent, experts think "deterioration" in the accounting for 14.9 percent. The percentage of experts who believe the economic environment will be improvement is over 14.3percentage point to the people who think the economic environment will be deterioration. Compare this number to the number in 2007; it lower than 2007 and has a 16.8 percentage point's difference. At last, XINHUA forecast the corporations need to scrimp on new-product development and business enlarge by data survey and analysis.

There are several methods to analyze the current condition of logistics enterprises and broached the development strategy. In SUN Hai-Jiao's thesis(2006),he analyze the present situation of large scale logistics enterprises, including the aspect of service classification, competition environment analysis and restriction factor analysis studies and so on, and studied enterprise's competition localization and the strategic target using the SWOT analysis method. At last, he provides three strategies such as the logistics enterprise scale- strategy, strengthens the measure organized cooperatives strategy and the enterprise internationalization strategy and so on.

At present the global economy decreases suddenly and some tradition al strategies may not solute the problems for companies. So HUGH G.COURTNEY, JANE K, and PATRICK VIGUERIE (2008) provide a strategy of how to face the uncertain market. They give us four classifications of uncertainty.1.clear future 2 possible future 3.the futures in range 4.Uncertain future. They analyze and forecast the future market by

the four classifications.

1.4 Structure and Content of this Dissertation

In the dissertation, it analyses the current global financial crisis and the situation of China's chemical logistics market. Then, the author chooses CHIO chemical logistics business to analyze and forecast the development of the company in the global financial crisis. In the comparative analysis, the dissertation introduces the three main businesses in CHIO chemical logistics business department, which include shipping business, ISO tank business and dangerous goods port logistics business. At last, the dissertation uses SOWT Analyze and DATA Analyze as the benchmark to formulate market strategy and forecast the development trend of CHIO chemical business in the global financial crises.

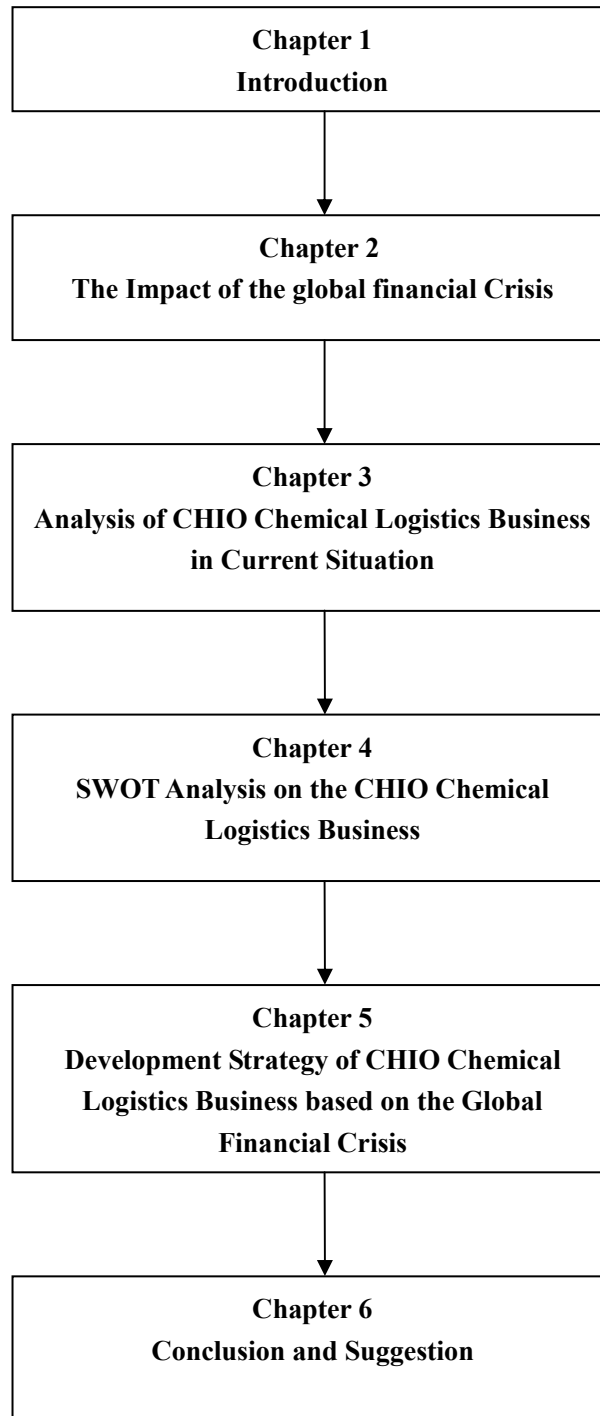


Figure 1-1 Structure of the dissertation

Chapter 2 The Impact of the Global Financial Crisis

2.1 Introduction Current Global Financial Crisis

“The financial crisis began in July 2007 when a loss of confidence by investors in the value of securitized mortgages in the United States resulted in a liquidity crisis that prompted a substantial injection of capital into financial markets by the United States Federal Reserve, Bank of England and the European Central Bank. The TED spread, an indicator of perceived credit risk in the general economy, spiked up in July 2007, remained volatile for a year, then spiked even higher in September 2008, reaching a record 4.65% on October 10, 2008. In September 2008, the crisis deepened, as stock markets worldwide crashed and entered a period of high volatility, and a considerable number of banks, mortgage lenders and insurance companies failed in the following weeks. As a result, the United States financial storm is changed to the global financial crisis.” (www.wikipedia.com 2009)

2.2 Financial Crisis Impacts on the Global Economy

Wall Street’s financial storm dragged down the global economy greatly. Firstly, it caused tremendous losses. According to the statistics, the global economy suffered losses of \$965 billion, including American’s \$654.1 billion, European’s \$270.9 billion and Asian’s \$30 billion. IMF estimated that the final losses will climb to \$1.4055 trillion which includes \$980 billion losses from debt and \$425 billion losses from loan. In the estimation of Bank of England, the number of losses will reach 1.8 trillion pounds.

Secondly, it triggered severe negative wealth effect. American's financial upheaval rapidly escalated into a confidence crisis sweeping the whole world. The herding behavior effect clouded the global stock market which sank into the most severe bear market for the last 30 years. According to the data collected by Economist, the global market plummeted 44.7% till to Dec 29th, 2008. Emerging market suffered a slide of 55.2% while the number for the developed market was 43.7%. The wealth of 29.1 trillion dollars, half of the global GDP, has evaporated. The central banks of various countries slashed the interest rate frequently, which pumped in a liquidation of \$11 trillion. But the investors still lacked enough confidence in the market.

Thirdly, it deteriorated the economy environment. The worries for the deflation quickly replaced the ones for inflation, which forced the government, adopt more expansive economy policy.

At last, it strangled the investment and consumption. The crisis swept a variety of industries and caused a tremendous bankruptcy of financial institutions. The manufacturing industry, especially the car industry faced an existence crisis. The contraction of international trade and investment was a main reason for the high unemployment rate, which aggravated the poverty problem. According to the statistics from the UN, the crisis will deprive 20 million jobs, and the total unemployment will reach 210 million. The poverty population will climb to 500 million from the previous 400 million.

Table 2.1 2006——2008 Growth trend of world economy and international trade

				%
	2006	2007	2008	2009
World Economy	5.1	5	3.7	2.2
Developed Country	3	2.6	1.4	-0.3
US	2.8	2	1.4	-0.7
EURO Area	2.8	2.6	1.2	-0.5

Japan	2.4	2.1	0.5	-0.2
Developing Country	7.9	8	6.6	5.1
Volume of International Trade	9.4	7.2	4.6	2.1

Note: The predictive trade for 2008 and 2009

Source: IMF <World Economic Outlook> 2008/11/6

2.3 Financial Crisis Impacts on the China Economy

The rampant of the financial crisis affected the confidence of global consumers greatly, which has led to a slowdown of the world economy. The shrink of external demand stressed the export tremendously in the long term. Decline of export, appreciation of RMB and the soaring price of resources and energy led to a rapid rise of raw material cost and labor cost. Moreover, the government reduced the export rebate on a large scale or even canceled such preferential policy. All these factors contributed to an unprecedented stress on the traditional low value-added and labor-intensive industry in Jiangsu, Zhejiang and Guangdong. Bankruptcy prevailed in lots of labor-intensive enterprises. What's more, under the background of economic regression, the trade protectionism surfaced again in those developed countries and trade friction occurred frequently between China and Europe and between China and America.

The latest report from General Administration of Customs reveals that the growth rate of foreign trade declined greatly especially from Sep, 2008. During the previous 11 months, the volume of China-American bilateral trade reached \$307.82 billion, 11.6% increase over the previous year. Particularly, the export to America increased by 9.6%, 5.6% lower than the previous period and also lower than the 9.7 percent of GDP growth rate during the same period.

2.4 The Analysis of Economic Prospect in China

In 2008, there are 3 tendencies of assessing situation in China:

Firstly, it is a lack of understanding the international financial crisis. The seriousness of the financial crisis and its effect to the global economy and to China are underestimated.

Secondly, it attributes the degradation of economy in China to the financial crisis completely and neglects the Bubble Economy in domestic market. In fact, the break of bubble started before the financial crisis. By the end of 2007, prices began to fall on the stock market, till now, 2/3 has gone; in 2008, real estate price in some places was coming down. The degradation of economy led to the sharp shrink of demand.

Thirdly, it attributes the degradation of economy in China to the macro-control. Macro-control itself was correct, but the way of it was traditional, which was carried out slowly so that negative effects appeared.

There are several viewpoints about the Chinese policy orientation in 2009:

Firstly, they suggest industrial restructuring. People of this point of view hold that only when there is a slowdown in economy there could be real restructuring, so they insist on taking intensive measures on restructuring.

Secondly, they suggest expand domestic demand to prevent the over-slowdown of economy.

Thirdly, combine the above two together.

About the tendency of the economy development of China, there are 3 possibilities: First, there is a “V” (prices rebound). Under the policy of investing 4000 billion Yuan to expand domestic demand, Chinese economy will take a turn for the better. Second, the “L” tendency (Prices remain low for along time before recovering). The break of the bubble leads to a long period of adjustment. Japan spent 10 years to recover from the break but it was in vain; China may need more time in this situation. Third, it is “W” tendency (false start before a full recovery). Under the influence of China’s investment, its economy may rebound in a short time. But if the government does not

have a series of reform measures following, China's economy will run down again.

Chapter 3 Analysis of CHIO Chemical Logistics

Business in Current Situation

3.1 Overview of CHIO

3.1.1 Introduction of CHIO Corporation

“In 1996, CHIO Corporation, which focused on chemical fertilizer, plastic, chemical product & logistics and transportation operations, was founded in Shanghai. For these years, the company has been pursuing the development strategies of extending to industrial ever part; also, the company endeavors on its transformation from international trade agent company to an integrated solution supplier with sound marketing capability and stable benefits. With the continuous advancement of the chemical logistics, the company has customers over 100 countries and regions in the world, and the sales revenue has reached 1.1 billion USD. ” (CHIO Report 2007)

CHIO is always dedicated to the establishment of standardized corporate governance system, which takes the domestic lead in entrusting the most prestigious Standard & Poor’s to conduct corporate governance rating. CHIO was placed medium high level in an international standard. (CHIO 2007)

Core competitive edges:

Through the consolidation of Chemical Logistics Business, CHIO has built an integrated industry value chain of resource control, technical brand as well as sales

& marketing service that domestically boast a unique competitive advantage in the industry.

3.1.2 Functions and Status of CHIO Chemical Logistics Business

Introduction of CHIO chemical logistics business, CHIO has the obvious competitiveness advantages in this market: for several years development, the service capacity and other relevant capacities of CHIO chemical logistics department have been improved quickly, with the actual tonnage of shipping achieved 1, 259, 000 tons and more than 390, 000 tons come from the domestics high-end customers. Long-term orders has been conducted with the important of superior customers, such as BASF, Daguhua, Shell and Saike etc., with its market share increased year by year, which reached over 20% in the high-end market of internal trade shipping transportation. CHIO has 19 chemical vessels, with shipping capacity more than 100,000 tons, and occupancy the top position in China chemical logistics market. With the promotion of fleet management, the competitiveness advantages have begun to form. On the lorry and rail logistics services, CHIO land freight system has been already formed. However, the ISO-tank transport system did not complete, which need to be formed in the future. The very important dangerous chemical logistics port project of Tianjin storage dock that are invested by CHIO, make good progress in the Infrastructure Construction and Information System Construction; at the same time, some other storage dock or center projects are carried out. (CHIO Annual Report 2008)

3.1.3 Market Position of CHIO

Table 3.1 Summary of different chemical logistics services

Basis logistics service	value-added logistics service	Lead logistics service	high-end logistics service
--------------------------------	--------------------------------------	-------------------------------	-----------------------------------

Storage; Transportation; Distribution; Loading and unloading;	Order handling; Re-packaging and processing cargo; Cargo insurance; Cargo reclamation and replacement; Cargo acceptance; Quality control/ Product testing; After-sale service;	Logistics management; Contract Management; Technology integration in different logistics service providers; Link in the supply chain nodes	Design, implementation and control Logistics and supply chain ; Operation sand management of Logistics and supply chain; Consulting services of Logistics and supply chain management; World Web services; Advanced information network service; Aspects of supply chain integration services
---	---	--	--

The CHIO is a high-end logistics service provider refers to the supplier which has solid financial strength; completed global logistics service network, rich experiences and strong integrated ability. It can supply integrated information services such as the service of logistics management consulting, the design of supply chain solution, implementation and improvement and management of large logistics projects besides the basic logistics service and integrated logistics service in the whole supply chain even the supply chain network; even supply the services of supply chain management, integration and planning.

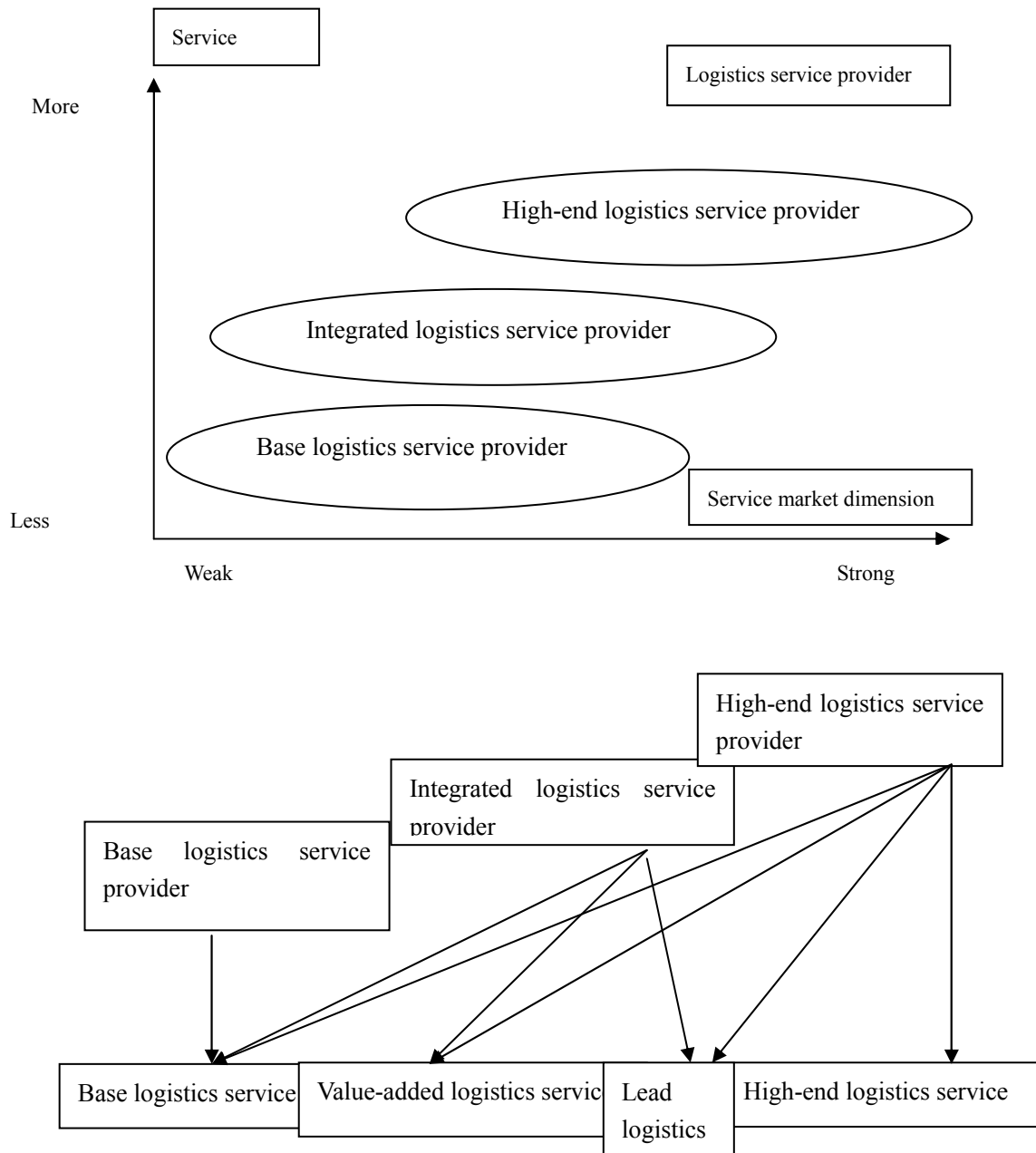


Figure 3-1 Relationship mode of level subdivision and supplied logistics service of logistics service providers

3.1.4 Present State of CHIO Chemical Logistics Business

In a several years developing, CHIO has reach to a leading position in the domestic shipping market and ISO tank market. The fleets become to operate in Middle East and North-East Asia route, but network node of ISO tank has not been established.

Shipping business:

CHIO has more than 15 IMO II /III bulk liquid chemical vessels, which is the one of China's important, professional chemical shipping entities with carrying capacities of 1,000 tons to 1, 4000 tons. The vessels can transport the chemical goods in domestic coastal routes and international routes. CHIO carries many kinds of chemicals including, high dangerous chemicals, acids, oil products, edible oil, and other special chemicals. It is the ship-owner qualified for shipping highly dangerous liquid chemicals including PO (propylene oxide) and TDI (diisocyanate). (CHIO Annual Report 2008)

Then, CHIO has established a complete "shipping safety management system" and cooperation with some famous companies that continues to achieves high performance in the quality, efficiency and safety of the fleet operation. CHIO manage more than 10 special liquid chemicals vessels of model 3600DWT, 9000DWT, 13000DWT and IMO II /III and which has a professional team to handle them.

The leader in domestic routes:

Capacity: 12 ships (3-8KT)

The main routes: Tianjin, Shanghai, Huizhou, Nanjing and other major ports.

Participants in the Northeast Asian routes:

Capacity: 4 ships (3-13KT)

The main routes: Taiwan – China, South-East Asia - North-East Asia

New entrant in the Middle East routes:

Capacity: 3 ships (13-17KT)

The main routes: Indonesia – West, India / Pakistan and Iran – the West Indies / South-East Asia / Far East. Share with 0.3%.

ISO-tank logistics:

“The ISO tank is a stainless steel pressure container installed within the fixed outside framework. The inside of the ISO tank is made of stainless steel and the outside frame is the standard 20-inch container size (20X8X8.6), which is suitable for highroad, railway, waterway and multimode transport at home and abroad. All the ISO tanks are equipped with steam cooling facilities and heat-insulation layer and are therefore suitable for transport of food and chemicals. Available types of ISO tanks include T4, T11 and T14; and their volume includes 14 M³, 24 M³, 25 M³; 26M³.” (ISO Tank standard 2006).

CHIO has more than 2000 ISO tanks which is the largest professional ISO tank supplier in domestics and it is also a professional chemical logistics provider and servicer. CHIO’s professional management team supports their customers in variety countries and regions.

|

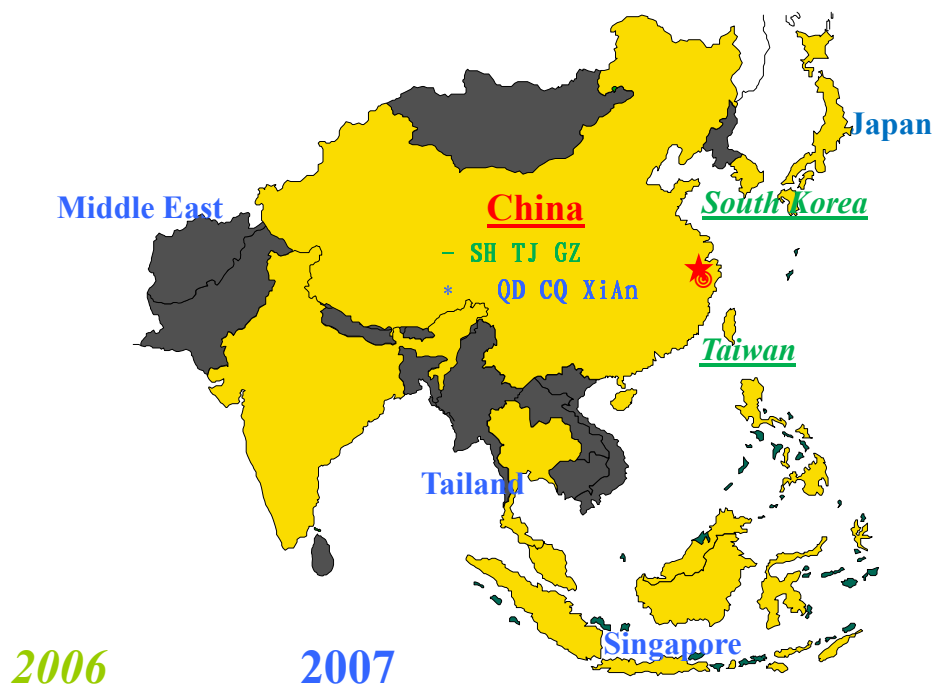
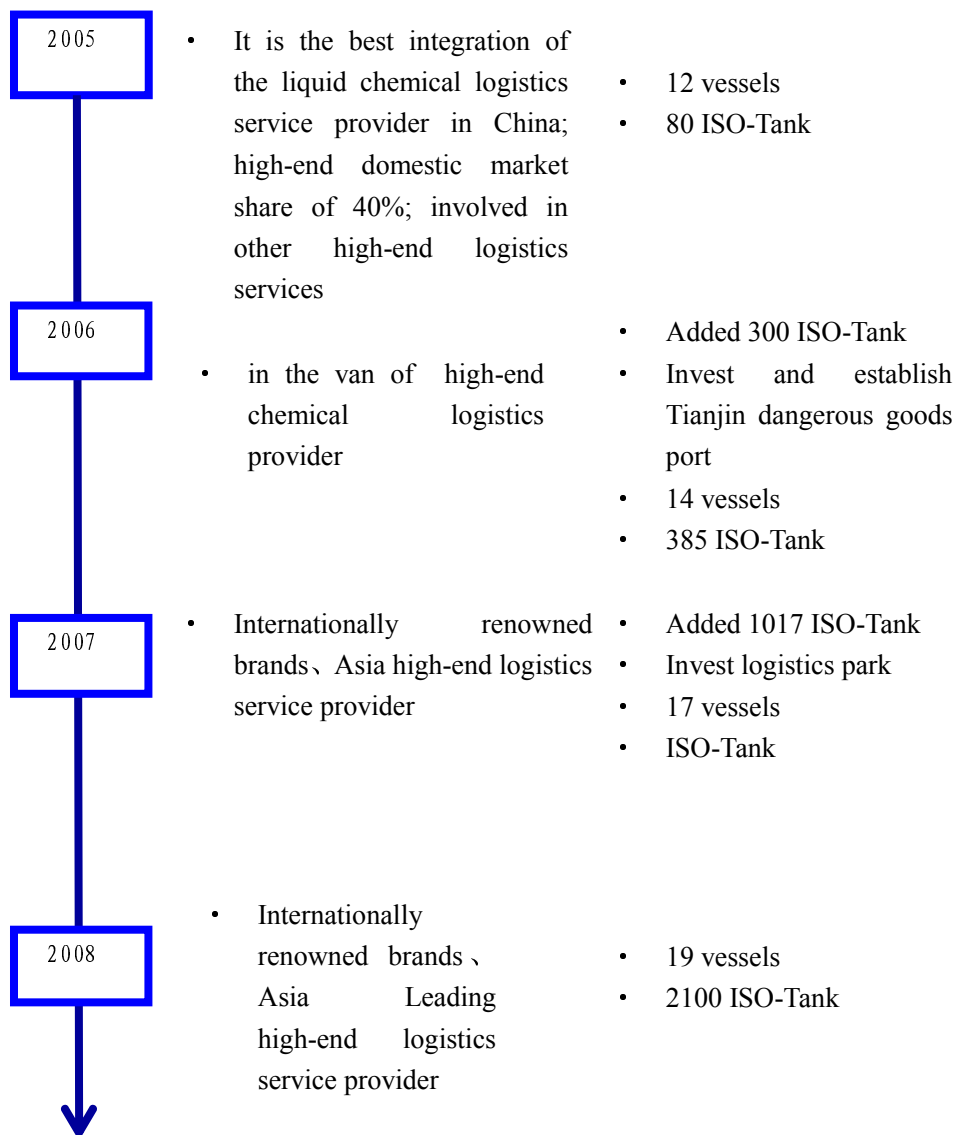


Figure 3.2 ISO tank business network

Port Logistics and storage dock:

CHIO cooperate with Tianjin port and involve an investment of more than 500million Yuan. The company has a dangerous container goods distribution and sub-distribution center for Bohai Sea rim area providing comprehensive logistics services on hazardous cargo for customers.

This is the timeline of CHIO events from 2005 to 2008



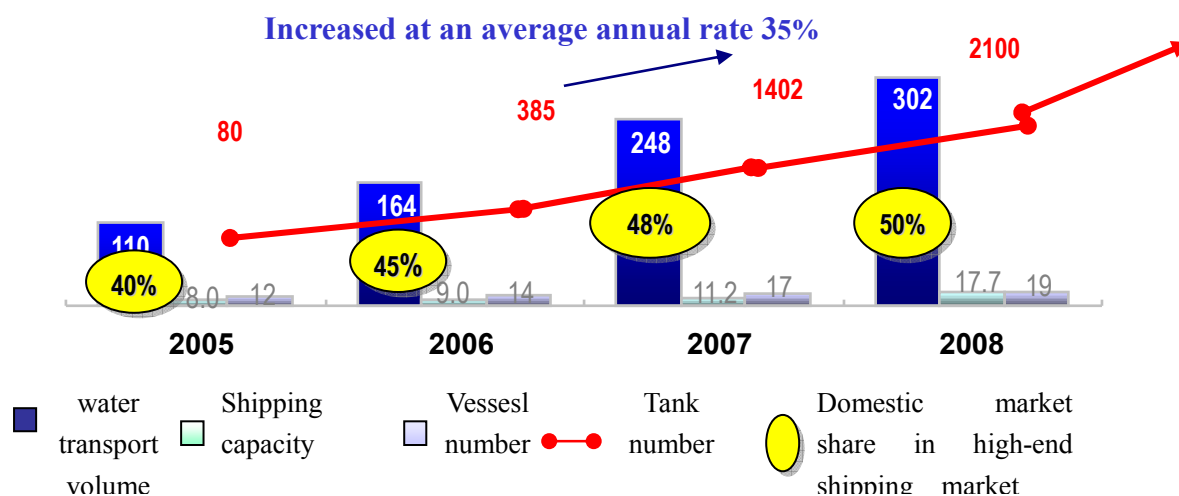


Figure 3.3 CHIO chemical logistics business development

3.1.5 Analysis of CHIO in the Global Financial Crises

Because of the global Financial Crisis in 2009, many chemical enterprises are operating under their productive capacity, and logistics demand is shrinking sharply. CHIO target market demand will shrink significantly. More intensified market competition leads to falling prices. Water transportation market demand is slowing down, while strength of transportation is concentrated. Supply in regional lines has exceeded demand so that competition became more and more fierce. The price of Middle East line is expected to decline over 10%. The decline of fuel price led to the fuel cost of stock of boats reduces 3%. The ISO tank container market will end the unilateral rising. In some regions, the supply of tank containers will exceed the demand. Production of ISO tank container will shrink greatly. The competitors will enhance their competition on Asia-Pacific, India-the Middle East and South America lines. Then the price goes down, and at the same time, cost of shipping by sea decreases, while the market scale is still developing. New industrial parks construction is slowing down, in which chemical enterprises productivity will slow down as well. The growth of container throughput in ports all over the country will turn from high-speed to steady. Dangerous articles containers market in target ports is of large scale and maintains the growing speed. The volume developing of storage tank will slow down and the industry profit rate is decreasing, because the supply

meets the demand, competition becomes fiercer while opportunities for integration appear.

The income of CHIO in 2008 was 700 million Yuan, which was less than the target. So, in the coming year, the company must enhance the control of cost and efficiency through lean management, but as the great increase of the price of fuel and crew cost, the raw profit margin of the fleet dropped significantly. In 2008, 3 business nodes (Shanxi, Zhejiang, and Jiangsu) had been added, the number of domestic business node was up to 7, and its overseas agencies reached 9. The company need to refine its sales network and agencies further, improve the technical services content, set up SWAP tanks, gas tanks, and railway tanks, and enhance the seasonal KPI assessment of yards.

The main causes of less income is the slowing down growth of macro economy and the snow disaster in China; from the third quarter on, the business environment is sharply deteriorating, the competition is intensified, the market volume, freight and number of tanks is dropping, the cost is increasing, its operation efficiency and turnover rate is declined; 2 out of 4 newly controlled ships has been disposed.

Under the current economic environment, in 2009, CHIO shipping business will continue weak. So, the company should reinforce the ship operation management and control administrative delay days; enhance cost control, lower the fuel cost, keep gross profit margin stable and increase the asset operation efficiency. Many ways are to be adopted to guarantee the crew supply and the possibility of investing of crew companies is to be studied. The implementation of the joint venture project with Shokuyo is to be ensured.

The ISO tank business is also weak in 2009, it estimate that 785 new ISO tanks will be used in the whole year, which were less than the target of 2008. New business nodes in Shanxi, Zhejiang and Jiangsu will be set up. So, in 2009, the company should enhance the marketing service in the whole country., reinforce the management of overseas agencies, develop new tank style catering to Chinese customers, emphasize the multimodal transport in China and near-sea transportation, try business of railway

and Yangtze River Line, and improve the integrated operation ability.

In 2009, the CHIO port logistics business is to guarantee the construction of Tianjin Logistics Center for Dangerous goods in high quality, which will be put into operation by July on schedule. Tianjin Dangerous goods Logistics Company will be set up and constructed.

3.2 CHIO Chemical Logistics Business Market Segment

3.2.1 The Long-term Trend of China Chemical Logistics

According to the prediction of CMAI, the global GDP growth rate will decrease from average GDP 3.4% of past five years to 1.2%-2.8% in year 2008-2011; the demand of global base chemicals will be slow in year 2009 and it will be gone up until year 2010, but the Chinese market is considered as the most growth prospects market.

With the rapid development of chemical industry in the world, the increasing demand for transportation of chemical products puts forward more advanced requirements to shipping transportation, which is one of the transportation.

Recently the domestic demand increases in a high speed, and the product capacity increases rapidly in the center districts. In the past few years, the growing up of Chinese economy had driven the high-speed development of chemical industry; the logistics market of chemical industry focusing on shipping, ISO tank and storage tanks presented a high-speed development. In the next period of time, the economy's slowdown may suppress the logistics service demand of chemical industry, but from the long-term trend, the logistics business of chemical industry will still have a more development spaces.

- The districts of Yangtze River delta, around Bohai Sea and Pearl River delta

have gathered more than 60% capacity of chemical industry, including 70% capacity of ethylene, 55% capacity of benzene.

- According to the statistics of 19 large chemical projects in process, it is predicted that the increased capacity of chemical industry in Yangtze River delta, around Bohai Sea and Pearl River delta will occupy about 70% out of the whole China in the next five years.
- There are several large projects of chemical industry will be built up successively in the parts of west district such as Xinjiang, Chuanyu, Lanzhou, which will create the demand of chemical industry logistics.
- By analyzing the driving factors of import and domestic demand of the logistics market of Chinese chemical industry, Chinese capacity of chemical industry boosts steadily, 30% capacity of chemical industry need trans-region logistics service of chemical industry.
- The logistics market of Chinese chemical industry will maintain around 10% increase.
- The import amount of chemical products focused on liquid chemicals increases rapidly, around 60% imported liquid chemicals need to be transferred by storage tanks, and 30% need to be distributed in domestic trading by water transportation.

Unit: 100 million U.S. dollars

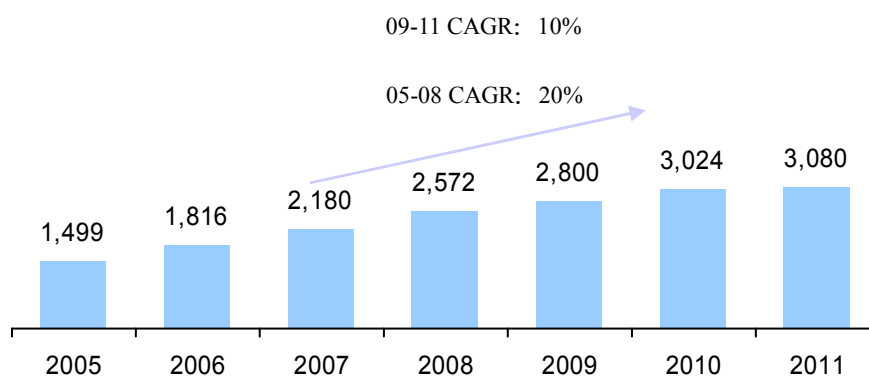


Figure 3.4 The amount of China's imports of chemical products

(Source: China Customs Report)

3.2.2 ISO Tank Market

A huge market with big potential and wide prospect

- The market of China ISO tank kept a rapid increase over 30% in the past three years.
- The contradiction between supply and demand of ISO tank in internal trading becomes obvious in year 2005-2008, and the ISO tank is put into the market rapidly.
- Influenced by the economy's slowdown in the next 2-3 years, the domestic market of ISO tank may run to balance between supply and demand gradually.

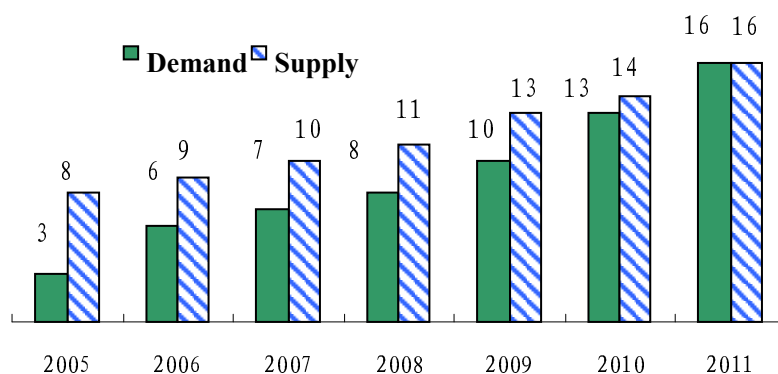


Figure 3.5 The amount of China's ISO tank market prospect

(Source: CMRC Report)

3.2.3 Shipping Market

The increase of shipping business on global liquid chemicals still maintains around 6%. Influenced by financial crisis, the increase speed will become slow in year 2009-2011. The stainless steel ships still have a better market prospect in shipping supply, and the whole industry faces the trouble of high operation cost.

Shipping quantity and flow direction

Because the demand of biochemical fuels increases rapidly, it is predicted that the shipping transportation demand of global chemicals will boost steadily with around 6% growth rate.

Before Middle East growing up, the chemicals are mainly transported from North America to Far East. Now Middle East becomes the largest chemicals supplier of Far East.

Certain chemicals capacity will be over-abundance in China in the future, which increases the export possibility.

Shipping supply

The orders focus on the shipping over 15000 ton, and the ship size tends to be large-scale. Influenced by economic recession and the vanishing of single-hull ships from arena of history, ship scrapping volume will be increased. The demand of biochemical fuels cause the increase of long-distance shipping, and the demand of ships over 10000 ton is increasing. In general, the supply of chemical ships is more than demand, but the supply of stainless steel ships is less than demand in the future.

Operation cost

High cost (fuel, crew, insurance etc.) is squeezing the profit of ship owners. Crew labor market is unbalance of supply and demand, and the global crew officer faces shortage seriously in year 2005-2010.

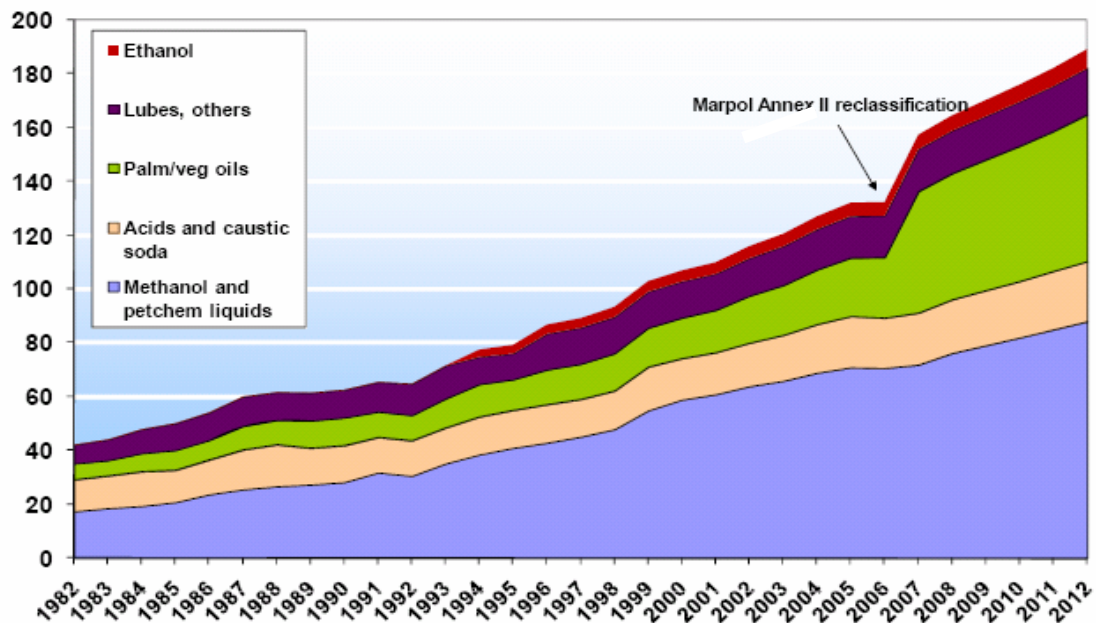


Figure 3.6 The development of global liquid chemical shipping business
(Source: Inge Steensland AS)

Table 3.2 Trend of chemicals shipping market

	Overall trend	Advantages	Disadvantages
2007	Increase rapidly	Revised Marpol convention, shortage of IMO2 type vessels , Middle East capacity released, strict limitation on vessel's age and vessel's check	New order increased rapidly, vessels expanded over fast, Especially 10000-17000 ton level
2008	Trend changed, fell down at the beginning of the second half year	Middle East capacity released; Demands of biochemical fuels go up.	Bunch of product oil/chemicals vessels were put into service, subprime crisis effects global economy.

2009 - 2010	Fell down to the lowest in year 2009, be lingered at the bottom in year 2010	Single-hull ships will face to eliminate in year 2010. Fleet aging causes scrapping volume increase. Middle East capacity releases. Asset bubble bursts, cost is hoping for lower.	Global economy recession Order of shipping factory has arranged to year 2012. New vessels are still on delivery.
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Domestic market:

The demand of liquid chemicals transportation continually increases, but the amplitude is slow down. The investment of high-standard transportation ability is relatively concentrated in year 2008-2009, and the competition becomes severe.

In the next three years, Chinese GDP will finish the increase of double digits, and will maintain around 8% in the estimate. Chinese petrochemical will still be developing rapidly, but the amplitude will be slow down. Domestic shipping demand will still keep increasing around 10%.

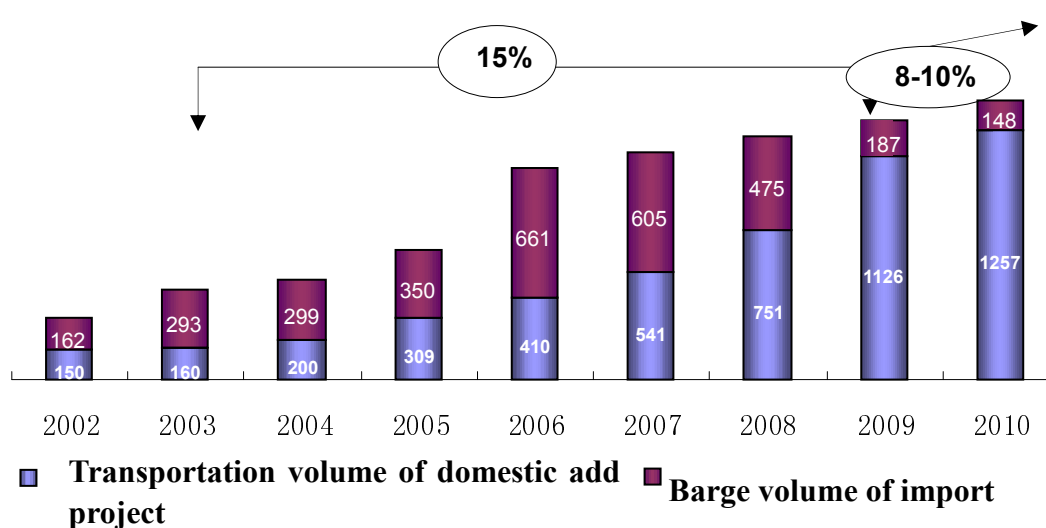


Figure 3.7 Domestic shipping transportation development trends

Source: Shanghai Shipping Exchange <liquid chemical shipping analysis report>

Northeast Asia shipping market

The demand amount of shipping transportation in Northeast Asia market is relatively steady, and the total amount is about 11.5million ton/year, but the supply is over demand and the investment scale of transportation is larger which causes the price gliding.

Mainland-Taiwan direct shipping restricts the shipping enterprises of Japan and Korea, which will bring an opportunity for the shipping enterprises of the Mainland, Taiwan and Hong Kong.

Middle East Market:

In general, market prospect of Middle East trends to be good, but the competition is heating up, CHIO are just the branching market participates.

Even though some projects of Middle East has postponed by economy recession, total amount of water transportation still increases rapidly, but the surplus of other markets will flow over into the market, which causes the market price gliding;

The forecast that the Middle East chemicals capacity grows rapidly fast in year 2009-2011; 70-80% products will be exported; Asian is the main consuming place; It faces global capacity surplus which maybe occur, and the cost advantage of Middle East is good for the steadier of its products export.

3.2.4 Tianjin Dangerous Goods Port Market

With the coming of the era of National and Tianjin heavy chemical industry, the logistics demand of dangerous chemicals of the Tianjin Port will grow rapidly in the future. In the first half year of 2008, Tianjin Port accumulatively totaled containers of 4.5 million TEUs with an increase of 28%. The throughput of dangerous goods tank is increasing with the overall throughput of containers, at the same time, the percentage

is increasing year by year, but the global economic crisis triggered by American sub-loan crisis will slow the future economic growth down.

Table 3.3 Throughput of container and dangerous goods in Tianjin port

Containers and Dangerous Cargos, Tianjin port Throughput	2006	2007	First half of 2008
The container totals of port entry and exit (ten thousand TEU)	5,950,000	7,000,000	4,500,000
Average growth rate of containers amount	24%	18%	28%
The proportion of dangerous goods in the total volume	1.77%	1.23%	1.40%
The total of dangerous goods (ten thousand TEU)	9.5	9.7	6.5

(Source: Tianjin Port Report)

3.3 Competitive Analysis of CHIO and some Famous Chemical Logistics Companies

The global third-party chemical logistics companies focused on shipping, storage tank and ISO tank markets; they maintain the growth rate of 6 percent every year and they have already completed the global configuration except China market. So, CHIO need to study the international famous companies' development strategy in order to compete with them in China market.

Table 3.4 Some famous chemical logistics companies businesses

Main Business	Typical company	Main service	Market value(USD)	Growth rate
Chemical transportation	Od fjell, Stolt	Shipping transportation,, storage tanks, ISO tank	10billion	6%
Storage dock	Vopak,	Dock , storage tank	9.2billion	6%

	OILTANKING			
Market segment & services	Exsif, Eurotaner	ISO tank, transport, packaging, consulting	4billion	8%
Integrated logistics service	Alfred Talke	Storage and transportation, ISO tank, packaging and other value-added services	none	10%

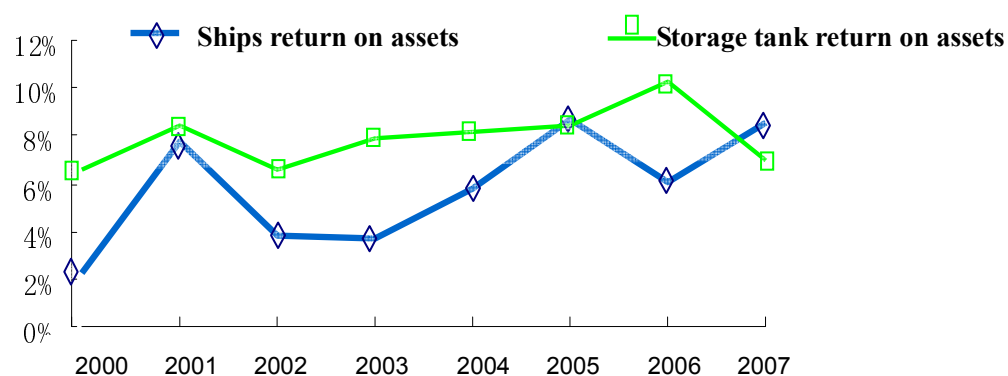
3.3.1 Odfjell Company

“Odfjell is a leading company in the global market for transportation and storage of chemicals and other speciality bulk liquids. Odfjell’s specialized fleet consists of 92 ships and 18 new buildings with a total capacity of about 3.2 million dwt. A turnover of USD 1 063 million was generated in 2007.”(Odfjell Website)

Business model

Focus on the shipping business (19 percent global market share), tank yard support to its own shipping network.

Figure 3.8 Odfjell Company financial analysis



(Source: Odfjell Financial Report)

3.3.2 Royal Vopak

“Vopak is the world’s largest provider of conditioned storage facilities for bulk liquids. (liquid and gaseous chemicals, oil products, petrochemicals, biofuels, vegetable oils or Liquefied Natural Gas (LNG)) .Vopak offer complete storage and transshipment solutions at 80 terminals in 32 countries, covering and connecting the world’s major shipping lanes. It offers more storage capacity than any other independent tank terminal operator in the world. ” (Royal Vopak Website)

Business Model

Focus on the wharf storage business, develop the distribution of global chemical business, and build a strategic partnership with large scale companies.

Strategy measure: 2001-expand and optimize the storage tank wharf business; 2002-split its chemical distribution business; 2004 shipping business was completely sold.

3.3.3 Stolt-Nielsen S.A.

“Stolt-Nielsen S.A. is a global company with significant operations within various maritime related industries. The operating companies all have in common that they are technically complex with a focus on quality and sustainability, and a drive for innovation and growth. Stolt-Nielsen, through its wholly owned subsidiaries Stolt Tankers & Terminals and Stolt Tank Containers, is one of the world's leading providers of globally integrated transportation services for bulk liquid chemicals, edible oils, acids, and other specialty liquids. The company employs more than 4,700 staff in 23 offices around the world.” (Stolt-Nielsen S.A. Website)

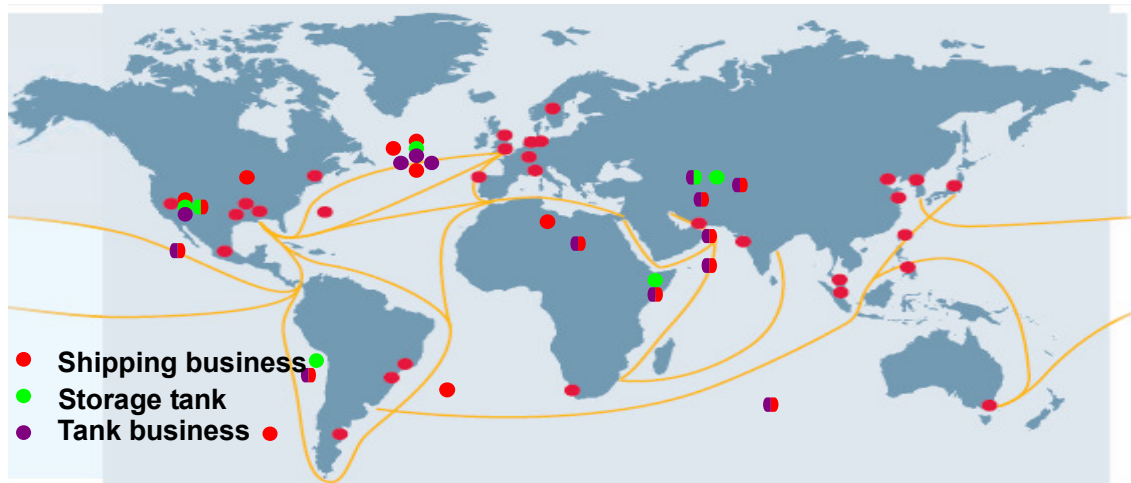


Figure 3.9 Stolt-Nielsen S.A international business network

(Source: Stolt-Nielsen S.A market report)

Business Model

ISO tank: top place in the world (12% share), liquid chemical vessel: the second place in the world (up 13,000tons 17.7% share), COA ratio (70%).in 2007, the total ROA is 9%.

- 21 century, Stolt is committed to integrate business lines and provide integrated logistics services to customers
- Stolt has built a global network system to provide high effective, security and environment friendly service for customer and reduce customer cost.
- In recently, Stolt has been working to develop new COA customs and formation of strong competitive in the high-quality goods market.

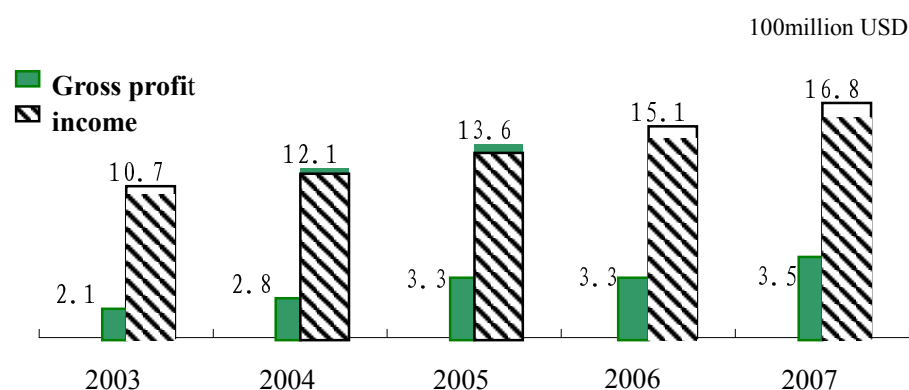


Figure 3.10 Stolt-Nielsen S.A 2003-2007 income

(Source: Stolt-Nielsen S.A market report)

3.3.4 Analysis and comparison of CHIO and other chemical logistics companies

Table 3.5 Comparative analysis of CHIO and foreign high-end logistics service providers

Compare content	Foreign companies	CHIO
Basic logistics service capacity	Integrated, comprehensive	Excellent, but mainly in labor-intensive
Supply chain and logistics service planning, design and implementation capacity	diversification;	Less service domain, lack of experience, business relationships don't span the globe.
Integrate resources capacity	good	normal
Chemical logistics and supply chain managerial personnel.	have a well-developed staff development program	Staff hasn't enough international communication skills and their development plan isn't very clear
Logistics and supply chain management capacity	Excellent	Focus on operation, international marketing and management capacity are weak
Network coverage capacity and information technology capacity	Global Network High-end information system	Global network in shipping business, but lack of international logistics network, lack of high-end customer information system, need to raise the utilization rate of information system

Chapter 4 SWOT Analysis on the CHIO Chemical Logistics

Business

4.1 Strength

4.1.1 Common Advantages

The national economy has maintained a sustained, rapid and sound development and the implementation of national macroeconomic regulation and control policy have brought positive affection to logistics industry. On one hand, the continued growth of economic aggregate has pushed the logistics market development. On the other hand, the adjustment of industry structure has provided a new space for logistics development. The government gives certain supportive policies to chemicals logistics enterprises especially large-scale chemicals logistics enterprises, and the foreign enterprises just value the good relationship between local enterprises and the government.

CHIO is relatively familiar with chemicals logistics policy of China, as a large-scale logistics enterprise, and relatively familiar with the purpose of customers' enterprises, culture background and language communication etc. in face of domestic demand market.

CHIO scale and strength is relatively strong, and they are familiar with domestic market. Their logistics network is relatively mature, and they have certain fixed customers.

4.1.2 Customer Advantages

The core customers of CHIO are mainly 500 strongest multinational chemical industry enterprises and domestic large-scale base chemical industry enterprises. The demand growth potential of this part of customers is large; the capacity of logistics cost control is higher than other enterprises; their core demands are high standard EHS, high efficient and savings of integrated logistics cost. In year 2008, the first six customers occupy 24% shipping incomes and in year 2009 it is estimated to 32%, and sea transportation occupies average 60% customers' shares.

Distribution of district customers' income:

Eastern China 40% , Southern China, Hong Kong and Taiwan 22% Northeastern Asia 20%, Around Bohai Sea 10%, Middle East 8%

Table 4.1 CHIO customer share in three districts

Eastern China	Customer share	Southern China, (Hong Kong Taiwan)	Customer share	Bohai Sea Region	Customer share
SECCO	66%	CNOOC-Shell	52%	Dagu Tianjing	80%
Celanese	30%	Petrochemical HK	43%	Cangzhou	45%
BASF Shanghai	50%	LEADER	32%		
YBASF	52%				
DowZJG	40%				

(Source: CHIO Market Report)

4.1.3. Shipping Advantages

CHIO occupies China high-end market, and has obvious advantages on the capacity tonnage of stainless steel ships and the operation capacity of delicate cargos in the line of business; its fleet scale is leading; it keeps over 40% shares of high-end target

market in domestic trading, 10% total market shares, gets the leading market position of domestic multi-transportation and international offshore business; as well achieves essentially boost in Yangtze River business, its railway business starts to operation officially which opens up the transport lines of Europe and America; its product differentiation and safety service quality are leading in the nation, and its return rate is high.

Table 4.2 CHIO shipping business in China

Competitors	Vessel scale	Market share
Nanjing Tanker	9	27%
SH Dingheng	4	8.40%
WZ Tongzou	5	10.20%
CHIO	12	44.30%
others	6	9.1%

(Source: Domestic chemical logistics market research)

4.1.4 ISO Tank Advantages

The domestic ISO tank market belongs to the new market. It has obvious advantages on the market exploitation. The import and export business focused on China has advantages. It has established the leading position in domestic market, sets up and amplifies domestic network, educates talented persons, gathers experiences.

Market shares 24%, development of “door-to-door” service and multimodal transportation capacity.

Table 4.3 CHIO ISO tank business in China

Competitors	Numbers	Market share
STOLT	100	12%
SUTTONS	280	19%
CHIO	340	24%

(Source: Domestic chemical logistics market research)

4.1.5 Tianjin Dangerous Goods Port Advantages

- Completed port infrastructure, supporting facilities and added service, system security
- Good customer resources, port dominance of cargo tank company
- Having a certain degree of chemical logistics and port operation experience
- Cooperation with CHIO improve the competitiveness of port

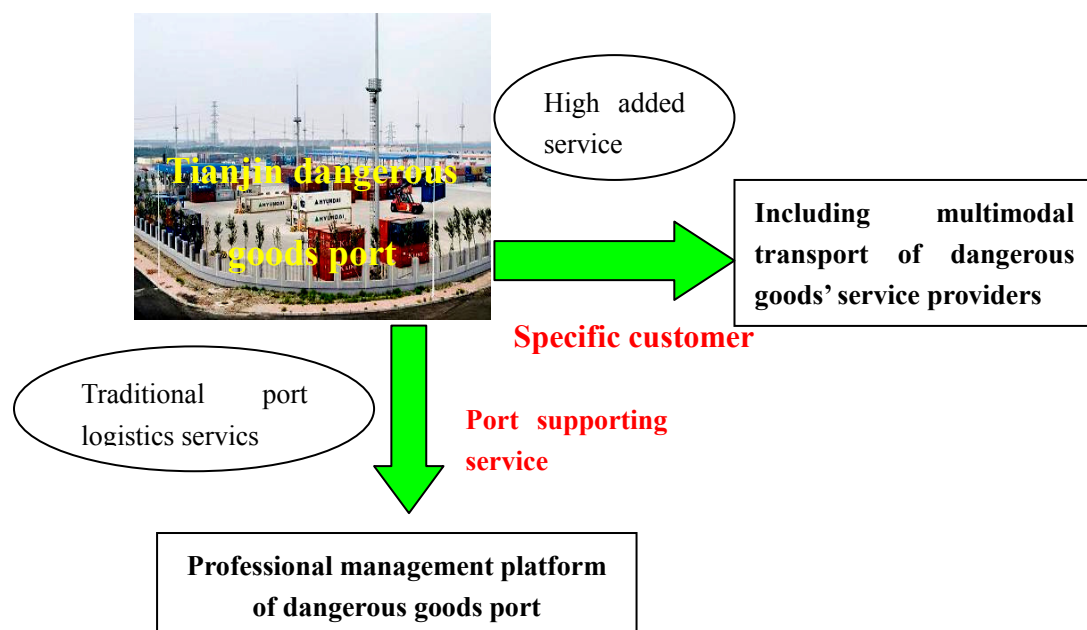


Figure 4.1 Tianjin dangerous goods port service

4.2 Weakness

4.2.1. Common Disadvantages

Compared with domestic foreign logistics enterprises, CHIO has a huge gap in technology, logistics equipments, modern information system and oversea service network etc.

The company lack modern experiences of logistic management, especially the logistic operation experiences of globalization, integration, just in time. Management system is relatively backward, lack the advanced logistics theory, operation modes and management regulations. It lacks the senior talented persons who have multi-national management experiences and the modern logistics theory.

4.2.2 Shipping Disadvantages

Transportation lines of Middle East/ Far East are international market. CHIO is just beginner. Korean ship-owners are our main competitors.

CHIO just has small ships to operate in this market and it doesn't participate in the main line.

Table 4.4 Shipping market in Middle East/Far East

Competitors	Vessel scale	Market share
HANJIN	18	2.60%
SUNWOO	18	2.30%
STX	7	0.40%
CHIO	4	0.20%

(Source: CHIO market report)

Table 4.5 Middle East shipping market

ship owner	capacity		Added capacity			Other Market(COA) in Middle East	Remark
			year	number	DWT		
Iino	34	1,021,469	2009	4	123,500	SABIC / OMC Chevron-Philips / Dow / Mitsui	Asia's second-largest chemicals shipowners, Large ship

							stainless steel
Aurora	16	718,890				Pecten / Dow / CPC	Ship type IMO2/3 MR
BLT	22	707,001	2009	3	59,600	SABIC / Equate / OMC	Acquisition Chembulk 2007
MISC	7	193,725	2009	8	304,000	Exxon (red sea)	Increase the chemical vessels
Hanjin	9	94,914				SABIC / Exxon / RIL	Korea's largest container shipowner
Sunwoo	19	179,811	2009	4	37,800	RIL	Handymax and small chemical vessels(5-10k tons)
Samho	19	112,558	2009	4	76,100	RIL	Korean shipyard background, , original businessin the North-East Asia
Tatsumi	15	152,353				RIL	stainless steel6-15k tons
NHLD	11	44,371	2009	4	43,400	RIL	The original business in the Northeast Asian market
Hyundai	3	39,7300	2009	2	39,000		Korea's largest tanker owner, diversified business.
STX	8	124,549	2009	,	39,000		Business activities in the palm oil market. Recent years involved in chemicals
Heung-A	19	79,871					The original business in the Northeast Asian market

(Source: Global chemical logistics market research)

4.2.3 ISO Tank Disadvantages

The whole ISO tank market was carved up by some foreign giants: Stolt Nielsen, Hoyer, Bulkhaul and so on. CHIO is just a new enter.

Table 4.6 International ISO tank business market share

Competitors	Number	Market share
STOLT	1200	20%
BULTHAUL	1000	15%
HOYER	600	10%
CHIO	400	5%

The flow direction of international transportation is unbalance, and the operation efficiency is low; the cost control of shipping suppliers is weaker than the competitor; foreign sales and operation basically rely on the representatives, and the earning ability is weaker than main competitors; new employees covers a great proportion, and their professional abilities are weak.

Table 4.7 Comparative analysis of CHIO ISO tank business

Competitors	Tank number	Distribution node	Service quality	Facilities	Marketing Capabilities	information systems
Stolt	5	5	5	5	5	5
Bulkhaul	5	4	4	5	4	5
Hoyer	5	4	4	4	3	5
Interbulk	5	4	4	4	4	5
Votg	3	3	3	3	3	4
Suttons	4	3	3	3	3	4

Taby	4	4	3	4	4	4
CHIO	2	3	3	2	4	2
Exsif	5	3	3	4	4	5
Eurotainer	4	4	3	4	4	4

Capacity: 5-best 4-better 3-good 2-less

4.2.4 Tianjin Dangerous Goods Port Disadvantage

- Direct competitors still exist and they hold a high market share
- CHIO lack enough port logistics professionals and the operating team needs cement
- The ability of integrated logistics services has yet not formed
- The market awareness is not enough.

Pinhai Logistics Company is the major competitor for CHIO, which has more than 40 years experience in storage management and regional business of dangerous logistics. The yard has 130,000square meters plus 16 warehouses (28,500 square meters) and the container yard has100, 000 square meters and only 1.2kilometers close to the terminal. The warehouse area has two specific railway lines. Its market share more than 35%.

4.3 Opportunity

4.3.1 Common Opportunity

The opportunity is from foreign enterprises. The foreign chemicals logistic enterprises bring the advanced theory, management modes and excellent talented people and lots of capitals, which boost reconstruction, upgrade and restructure of chemicals logistics enterprises in our nation.

The entrance of foreign enterprises brings more logistics demands and boosts the marketization process of logistics industry.

To adapt the demands of industry structure adjustment and the national macroeconomic regulation and control policy, the working plan of the government proposes “to invigorate large enterprises while relaxing control over small ones” and calls enterprises for “go out” as principles, which forms a favorable situation for large-scale enterprises.

Chinese political environment and economic environment are steady, logistics demand becomes higher and higher; logistics industry will have a huge developing space, and will become one of the most potential new sources of economic growth.

4.3.2 Customer Opportunity

Among the new customers of year 2009, the product capacity is enlarging gradually and special/delicate cargos increase in the proportion, which provide the opportunity of integrated logistics service for customers.

- Most new customers of logistics in year 2009-2010 are from multi-national enterprises and domestic large-scale enterprises of base chemical industry and chemical industry districts. Middle East market product capacity will expand in the next three years, and the special demand will increase.
- The high value-added cargo volume of domestic shipping customers shows a growing trend, Middle East customers shipping demand inclines to upsizing transportation capacity.
- The ISO tank demand is increasing. The integrated logistics service demand is obviously appearing.
- The logistics demand of fleets, ISO tank, storage docks, and warehouse are increasing every year for some big customers, which gradually appears the opportunity of supply integrated logistics service for customers.

Table 4.8 Main customers demand in the near future

Customer	Products and production capacity	Logistics demand	Logistics volume (million tons) during the next three years	Time
BAYACO	acetic acid	Shipping, ISO tank	10-15	09-10
CARGIL	80,000tons/year marshmallows	Shipping	10-15	09
Huntsman	70,000tons/year MDI	Shipping, ISO tank	8	09
Sinopec TJ	800,000tons/year ethylene	shipping	15-30	09-10
YT Chemical	20,000tons/year epoxy resin	ISO tank	5	09
Lutianhua	70,000tons/year BDO	ISO tank and others	7	09
Shell	140,000tons/year Lubricating oil	ISO tank	10	09

(Source: global chemical logistics market research)

4.3.3 Shipping Opportunity

Mainland-Taiwan direct shipping is the historical opportunity, the market will reshuffle; the capacity expansion of Middle East district has supplied the market opportunity, and have attracted more ship owners to join in the competition.

Firstly, Mainland-Taiwan direct shipping restricts foreign ship owners, which will change the competition pattern:

- China is the main place of consuming chemicals; Northern China is the main import place of Japan/Korea/Taiwan.
- The growing up of Chinese ship owners put the market competition into white-hot.
- Taiwan chemicals serve for the mainland.
- Taiwan is the highly desirable place. Return cargos of Korean and Japanese ship owners mainly rely on Taiwan.
- The fleet scale of Taiwan itself is small.

- Around 20% Japanese chemicals export to China.
- Japanese customers sign with ship owners directly.
- Squeezed by low cost from Korean ship owners, parts Japanese ship owners develop the transportation line to the ocean.
- Over 60% Korean chemicals export to China. In 1990s, lots of Korean ship owners accessed to the market, goods of long-term contract were controlled by Korean ship owners.

Table 4.9 Shipping market in Northeast Asia

Competitors	Number (vessels)	Market share
GOLD-RIDGEHK	9	12.52%
WOOLIM	14	6.26%
HEUNG-A	12	6.10%
CHIO	5	9.20%

Secondly, the production capacity has increased rapidly in Iran, which is good news for CHIO to develop the chemical logistics business in Middle East

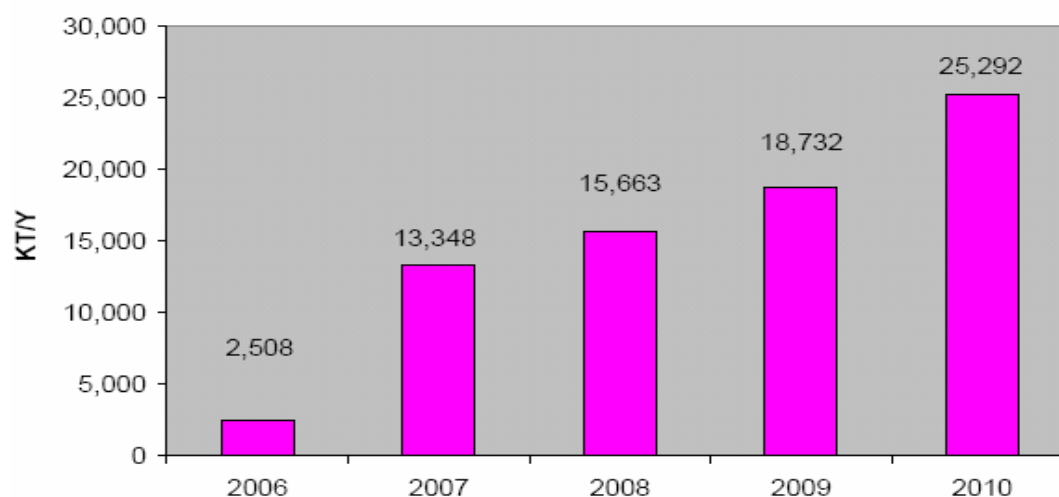


Figure 4.2 Total production capacities 2006-2010 in Iran

(Source: NPC report)

4.3.4 ISO Tank Business Opportunity

The global market of ISO tank is boosting steadily in a decade, whose average growth speed is higher than the growth rate of chemical industry; the supply of domestic trading market of ISO tank is lower than demand in year 2005-2008, the obvious contradiction between supply and demand causes ISO tank investment speeding up; In the next three years, global chemical industry market will keep steady development, drive the demand of global ISO tank to boost steadily, and domestic market will run to supply and demand balance gradually.

Domestic chemical industry increases rapidly, and large projects are put into investment gradually in the chemical industrial park. The country strengthens the chemical industry management on safety, environment protection, health and pushes the sustained growth of ISO tank market demand.

Shipping industry enters a recession period, faces the adjustment period at least for three years, the operation cost of ISO tank logistics will decrease.

The flow of talented people becomes severe, which is helpful for receiving international talented people.

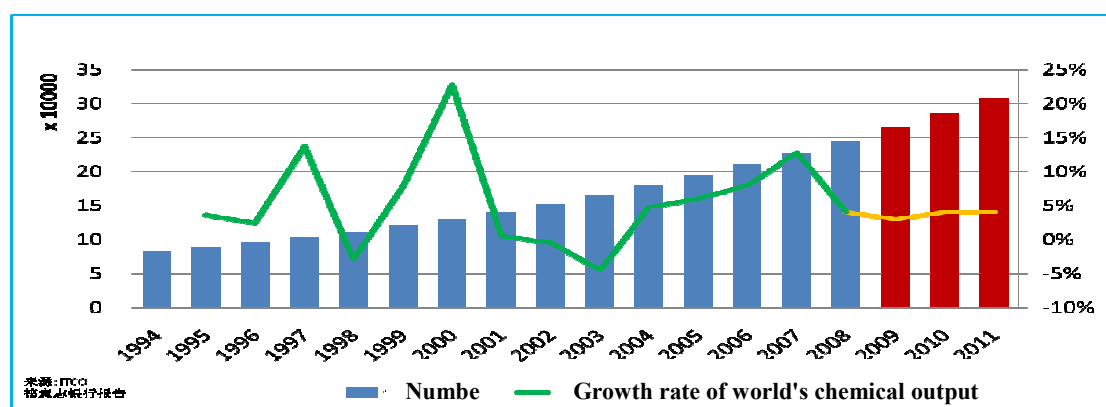


Figure 4.3 Growth Trend of World's Chemical Industry and ISO Tank

(Source: ITCO & Deutsche Bank report)

4.3.5 Tianjin Dangerous Goods Port Opportunity

- Development and opening up of Tianjin Binhai New Area continued to heat up.
- Rapid development of regional economy
- Rapid growth of dangerous chemicals logistics demand
- The state's intensifying management of dangerous chemicals
- Rapid development of the professional third-party dangerous goods logistics

4.4 Threat

4.4.1 Common Threat

Foreign chemicals logistics enterprises have many advantages. After entering Chinese market, they will occupy the domestic logistic market, especially high-end chemical logistics market.

Foreign enterprises contest with Chinese chemicals logistic enterprises for high-end logistics talented people by offering high salary, which causes the pressure for CHIO.

The competition of domestic chemicals logistics market is severe. The competition situation will be lasting among foreign logistics enterprises, new private logistics enterprises and traditional medium-size logistics enterprises.

4.4.2 Customer Threat

In general, the demand of domestic market customer boosts steadily. Most volumes come from minority middle and high-end customers. Influenced by financial crisis,

transportation conditions, district share etc., in the next three years, the part of customers demand has decreased.

Table 4.10 Customers demand prospect

	2004	2005	2006	2007	2008	2009	2010
CSPC	3	3.37	78	91	95	81	79
SECCO	3	52.16	54	42	57	54	52
BASF-YPC	3	47	52	55	60	43	45
Dagu			0.6	1	2.7	2.2	4
Celanese				42	46	43	47
Lidong				40	67	65	68
Lusaite			15	20	20	17	20
BAYACO						12	13
BASF(H)						3	1
Leander						5	10
SABIC Tianjin						10	21
EXXON						10	12

(Source: CHIO annual report 2008)

4.4.3 Shipping Threat

Domestic market faces the chase of competitors, which has enhanced the share competition of middle and high-end market.

Now domestic main 26 ship owners have 107 vessels which are in accordance with middle and high-end transportation requirements, with total transportation capacity of 354,000 DWT. Among them 13 ship owners can be checked by Major and they control 53 vessels (total 234,000 DWT). Supply is less than demand in high-end market.

Table 4.11 Main chemical shipping companies in domestics market

	07	08	09	10	11	Remark
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Nanjing Tanker Corporation	11	11	15	15	15	Main ship: 3-10kt; the biggest competitor, NH416-420 mainly involved in foreign trade; four new stainless steel vessel of 5,000 tons; target Bayaco. To participate in the Taiwan market.
SH Dingheng	8	10	10	12	12	Main ship:2000dwt;fleet scale has developed rapidly; increasing the capital pressure
WZ Tongzhou	10	10	10	10	10	One ship with 3000dwt, two time charter ships with 2000dwt others are all below 1500dwt. Business in Zhujiang River Basin
Dongzhan-ODFJELL	2	2	4	5	5	Main ship 3500-7800dwt; none internal trade Contract ; to sit on the fence; they want to put the vessels into the foreign trade market
COSL	4	4	4	4	4	Two ships with2000-3000dwt; two ships with 1200dwt; Chinese shareholder of CNOOC&Shell; aim of organizational goods
DOSC-Shokuyo	2	3	4	4	4	Main ship 2000-3000dwt, the market is not its core business, non-development planning; ships are over age

(Source: China chemical logistics report)

Northeastern Asia market; at the beginning of year 2008, the transportation capacity oversupply in Northeastern Asia market continues to worsen plus upsurge cost, there are already three Korean ship owners bankrupted.

Table 4.12 Main chemical shipping companies in northeast Asia market

	Voyage/month	Number of ship	Main ship	Remark
Gold bridge HK	8	9	3000-10000	Northeast Asia market is their main market. They deliver all kinds of goods.
Heung-A Shipping	3	17	3000	Return goods, BTX / Lubs, in 2011, 7 new building ships 6500-12000dwt, began to expand in East Asia and the Middle East.
WoolimShipping	5		3000	Return goods, BTX / SM, began to replace vessels.
KSS Line	3	7	3000	Return goods, Cumene / BTX / MEG, and has a closely relation to Japanese traders
SunwooShippi	2-3	8	7000-9000	LCL, main route Indonesia –

ng				Korea, BTX long contract
Su Navigation	2-3	10	7000-8000	LCL
Sambu Shipping	2-3	7	3000	Return goods, ACN / BTX, the largest ACN fleet in Far East
Kaisei Tsusho	2	6	3000	Return goods, MEG/Ethanol/Lubs, a good relation to Japanese shipyard, building new ship every year
NHDL	2-3	11	3000	Return goods, BTX/SM; began to develop in the Middle East.
Shokuyu	3	12	1000-3000	Return goods, trading Japanese goods

(Source: Chemical logistics market report)

4.4.4 ISO Tank Business Threat

Financial crisis has influenced the real economy. American economy will fall into recession. The situation is very chaotic. It is can not make a long-term trend judgment; the demand is sharply shrinking. The single uprising market of ISO tank logistics will be ended;

The pattern of global trade is changed. The trading pattern of international flow in ISO tank has changed a lot. The international competition becomes severe. Business strategy on Internationalization faces more challenges;

The declined trend of market prices is obvious, which affects annual incomes and profits;

International giant will strengthen the development on China market, and CHIO leading position of ISO tank business in China market will be faced with challenges.

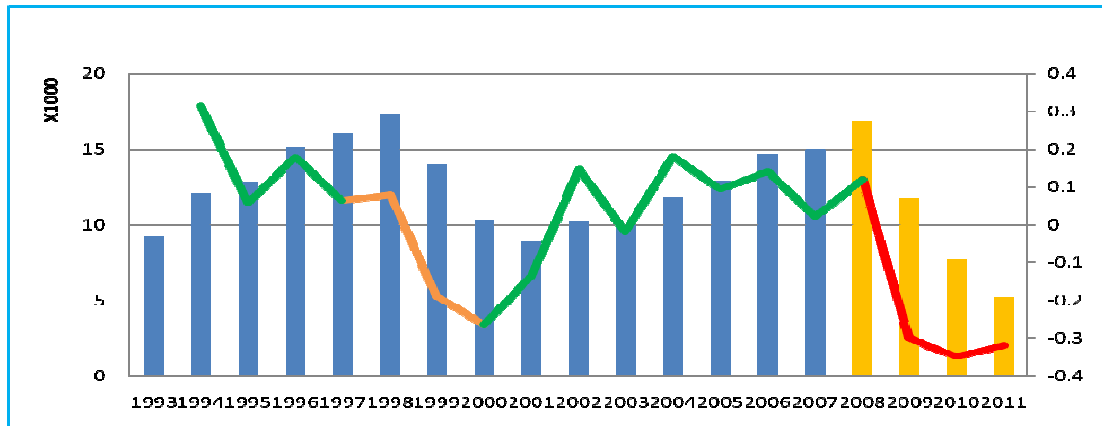


Figure 4.4 World annual output of ISO tank

(Source: dangerous review)

4.4.5 Tianjin Dangerous Goods Port Threat

- Regional prices are significantly lower, and there is chaos in the market, reserve price and malicious competition are in the prevalence
- The competitor has formed a certain predominance
- Clients require a higher quality control and HSE standard about the service of warehousing and transportation of dangerous goods
-

4.5 Conclusion

After SWOT analysis, the author acquires a clear market position about CHIO business in the current chemical logistics market. So, the author believes that it is not hard to identify a future development strategy for CHIO in the financial crisis and help them become a leader of high-end integrated chemical logistics service provider in the world.

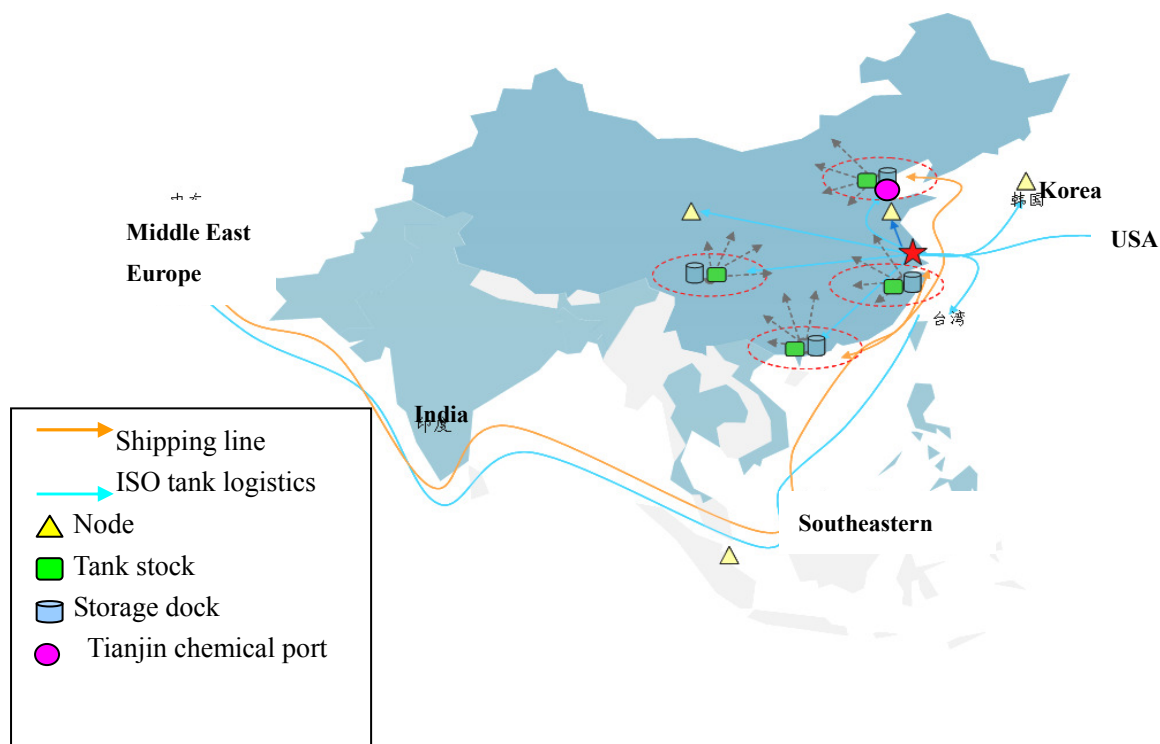


Figure 4.5 CHIO chemical logistics development prospect

- Focusing on customer needs to develop three core businesses include shipping business, ISO tank business and dangerous chemical port business. Providing high-end logistics services to provide customers with comprehensive logistics solutions.
- Gradually form a wide market network, create value to customer
- The establishment of a comprehensive information system to support CHIO core businesses

This is just a general strategy for CHIO chemical logistics business future development. Next chapter the author will study CHIO specific development strategy under the current financial crisis.

Chapter 5 Development Strategy of CHIO Chemical Logistics

Business based on the Global Financial Crisis

5.1 Strategic Choice under Current Uncertain Conditions

The core of traditional strategy formulating method is: supposing through a series of functional analyzing tools, the company could forecast the business prospect accurately, and then choose the specific strategic direction. But if the future is hard to predict, the strategy's effect will be trifling. So, under the circumstance of the Financial Crisis, to accurately analyze the uncertain risk that the enterprise's developing strategy is facing and take flexible measures is surely the best way for an enterprise to cope with changes.

During the whole process, the various uncertain risks exist can be divided into several types:

Risk from External Events Uncertainty

This kind of risk is the objective existence, which is independent of the manager's will and could not be predicted accurately, such as "September 11" etc. This kind of risk is the influential difficult point in strategy taking for all the enterprises.

Risk from the Market Uncertainty

The uncertainty of market means too much to enterprise's strategy analysis. There are 4 types in the rough: first, the future of market is clear that the management can get related information. Uncertainty is turned into certainty. The future is accurately forecasted and proper strategy is proposed. Second, there are several possibilities of the future, so the possible results are clear but discrete. The third is that there is range for change. In this situation, people can only forecast the change roughly. Forth, the

future is unclear. Facing different situations, enterprises can take different strategies like saving strength or guiding market, etc.

Risk from the Uncertainty of Industry Development

A single enterprise can not reduce this kind of risk effectively. The management is required to pay close attention to the risks and increase the enterprise's influence, judgment and aggregation.

Risk from Developing Technology

The update of technology will influence enterprises greatly. Updates from products or service to the whole process all belong to this kind of risk. So, a good enterprise will constantly increase the input in research and development, ensuring their creativity.

Risk from the Implementation

In the process of implementing and controlling strategies, various risks exist. First of all, the external environment is ever-changing. Then, there are differences between decision and implementation. What's more, unforeseeable events are everywhere. So decision-makers are required to analyze the situation deeply when making plans, trying to understand it, have powerful measures, pre-proposals and be flexible.

Risk from the Limitation of Methods Used

Any strategy has its limitations. No tool can be the best but proper.

The Choice of Strategy:

Flexible Strategic Planning: Making sure that it is a right choice to take the risk.

It is a time of uncertainty. Being flexible does not mean discussing the strategy in the future but for the future, i.e. what should an enterprise do to prepare for the uncertainty in the future.

Flexible Strategic Choice: Seizing the opportunities in risks prospectively

Facing the Financial Crisis, an enterprise should know how to seek the opportunities in risks and insight into the risks together with opportunities, and then make the right choice.

Flexible Strategic Implementation:

In a time of ever-changing market, if an enterprise cannot efficiently make proper decision adapting to changing circumstances, it will not survive even with abundant fund. In a word, fast reaction and flexible implementation are the keys to the time.

5.2 The Strategy of CHIO Chemical Logistics Development

5.2.1 Push Merger and Restructuring and Optimize Industrial Structure

Over the years, enjoying a fast economic growth and relative free and easy environment, CHIO has no sense of urgency about shift in mode of economic growth and realization of restructuring assets. Now, the chemical logistics market is weak. CHIO does not have a remarkable core business but uses lots of resources on non-core. Blind diversification became a heavy burden. Enterprises are long in the vicious competition between same products. To boost the company and the industry's competitiveness, a process of merger and restructuring are required to weed out the unqualified, and promote degree of industrial concentration.

When economic developing slows down, contradiction manifested itself in every business section of CHIO chemical logistics. At this time, to consolidate resources, which means sell the unprofitable or of no future sections and focus the sources on the best competitive business, is not only necessary for staying afloat, but also important for enhance the competitiveness.

At the present time, "survival of the fittest" drives the enterprises and the industry to restructure. The social acceptability is relatively stronger, which contributes to assets integration. It is the time to expand in low cost and optimize the business structure.

Association allowed by the antimonopoly law is good for forming competitive enterprise. Through merger, efficient resources run to strong enterprises. It will make the strong ones stronger and save money for the investors. Enterprises are connected to each other but distinctive at the same time. Merger and restructuring will activate the reserved assets.

Large merger and acquisition are the most risky decisions, which should cope with the company's long-range strategy. Synergistic effect can make a structure of balanced soft and hard power. When making decision, the safety of financial structure after merger, culture integration, and arrangement of management team and the change of market position should be fully considered to avoid "merger traps".

5.2.2 Development of Lean Management

The implementation of lean management model has a great significance for the CHIO to face up to the financial crisis. First of all, Lean management is conducive to achieve the two fundamental changes. On the one hand, the starting point of lean management is to emphasize the customers' determination of the value, and the needs of users is a fundamental driving force of the market economy; on the other hand, the most essential difference between extensive and intensive economy is whether they minimize all forms of waste or not, and if they make rational use of social resources to enhance the overall effectiveness of the national economy. Secondly, lean management benefits the reform of enterprise operating model. Under the condition of the previous economy, serious waste phenomena would appear in some enterprises. Product development cycle is long, and the success rate is low. The stock is too large during the production process and the backlog of goods results in precipitation of funds. In the global financial crisis, using the lean management methods will contribute to reform the original operation mode of enterprise, eliminating the waste and make it run. Thirdly, the CHIO Lean management is conducive to the strategy implementation, in financial crisis, how to develop and consolidate the CHIO logistics business is becoming more and more important. If using the lean management can enable the cooperative relationship between each business become more harmonious and closer, and can make each business reduce their stock so as to improve the capital efficiency. Thus the waste of social resources will be significantly reduced.

Table 5.1 The three object of lean management

Efficiency	COST	Customer
1.Improving the operating efficiency 2.Shortening the overseas settlement time	1. Ameliorating the management of ship stock 2.Reducing the acting	1.Improving customer satisfaction 2.Expanding the value added services such as

3.Shortening the time of decision-making 4.Reducing the file transmission time 5.Improving the effectiveness and controllability of internal and external coordination	cost of port 3.Reducing fuel consumption 4.Controlling the power consumption of the machinery equipments 5. Reducing inventory	differentiation and alliance 3. Accelerating the business growth through the effective structure of customer 4. Developing target clients actively
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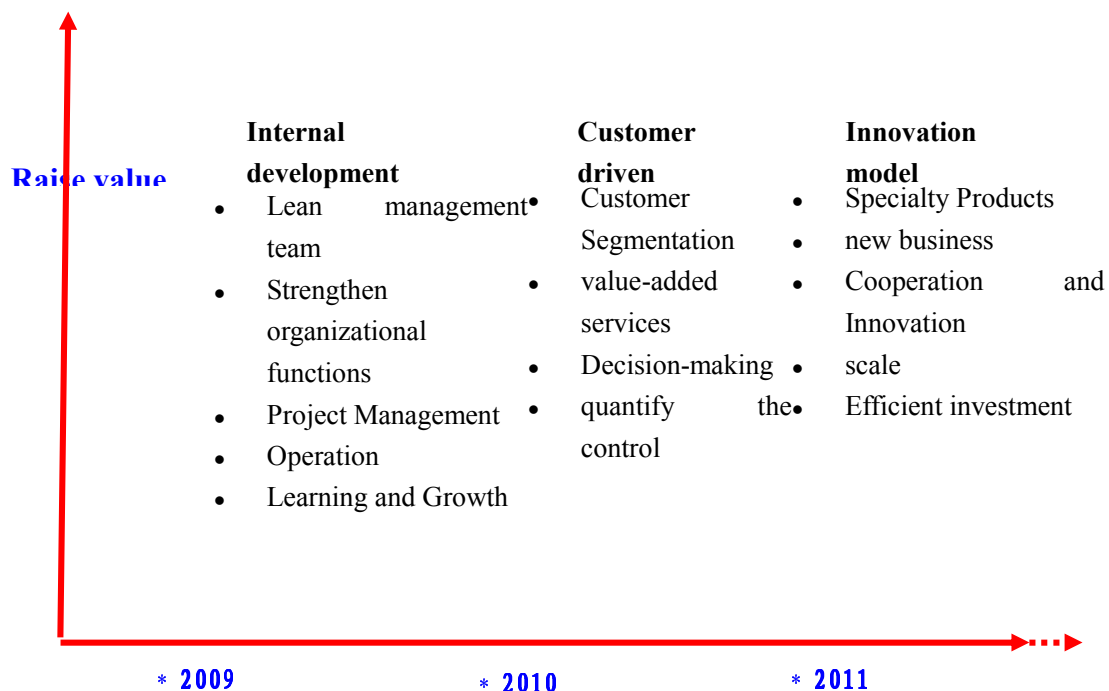


Figure 5.1 The implementation of lean management in near future

5.2.3 Brand Strategy

During the Financial Crisis, because of the unclear global economy, the customers lost faith in unknown chemical logistics companies, so the latter is influenced most greatly. The reason is: as the production develops, the services from different companies are more and more similar. Although every company is advertising its own market concept, most of customers could not tell the differences. So brand plays an important role in choice making. Unfortunately, most of China chemical logistics companies' dim brand consciousness caused the lack of self-owned brands, so that they are less

competitive.

CHIO need to realize the brand is the market. As a chemical logistics company, having a brand in leading place means the monopoly of the market. In competition, chemical logistics brand is the core resource that costs the least but gains the most. Chemical logistics brand is the enterprise's core competitiveness in the future while the added value of the brand is the main source of profits. During globalization, a chemical logistics brand can reflect the enterprise's profitability in the world.

And, the brand equity can make great fortune. A great chemical logistics brand can build up marketing channels, promote sales and maintain high profit margin. It can promote the enterprise's image in people's eyes (in customers, clients, talents etc.), which is good for the competitiveness. As is known to everyone, products and services can be copied or even surpassed, but the brand is unique. A really lasting competitive advantage comes from a powerful brand; he who has it has the priority in future market.

What's more, brand lifecycle is infinite. The lifecycle of any product is finite, but that of brand is not. Many world-famous brands have centuries of history and are still developing.

So, CHIO must understand the importance and urgency of brand building. It should fully implement its brand strategy, push brand management and build up a self-owned brand with international competitiveness to survive and grow in the Financial Crisis.

5.3 The Core Businesses of CHIO Chemical Logistics Businesses Development and Prospect

5.3.1 Shipping Business Strategy

Against the backdrop of the global economic recession, CHIO goal is to lock core customers, to pursue the stability in order to tide over the difficulties, and to become a

famous chemical logistics company which can provide comprehensive, efficient and integrated logistics solutions for key customers.

According to the customer demand, The company should focus on the development of main shipping and the configuration of interim storage tank, enhance the capability of comprehensive service for the Middle East and the domestic key customers. And the company are committed to become a professional chemicals transport service provider which is strong at home and known in Asia on the basis of domestic trade and the sea route chemical products transportation of Northeastern Asia and the Middle East as its segment markets.

Table 5.2 Analysis of target market

	Advantage	Disadvantage
Domestic trade in high-end	<ul style="list-style-type: none"> • Market leader (product and scale) • High standard fleet / management to satisfy customer demand • new projects development 	<ul style="list-style-type: none"> • Competitors catch-up • Economy weak and demand reduced • low-end customers change into high-end customers need more time
Northeastern Asia (including Taiwan)	<ul style="list-style-type: none"> • Mainland-Taiwan direct shipping, restricts foreign ship owners • Domestic trade and northeast Asia trade are complementary to each other 	<ul style="list-style-type: none"> • Shipping capacity oversupply, especially South Korea and Japan market • Region shipping capacity decrease
Middle East - Far East)	Release of production capacity in the middle east American shipowner cannot participate in IPCC's COA	Small ship, weak competition in long distance transport 13000dwt new building vessels

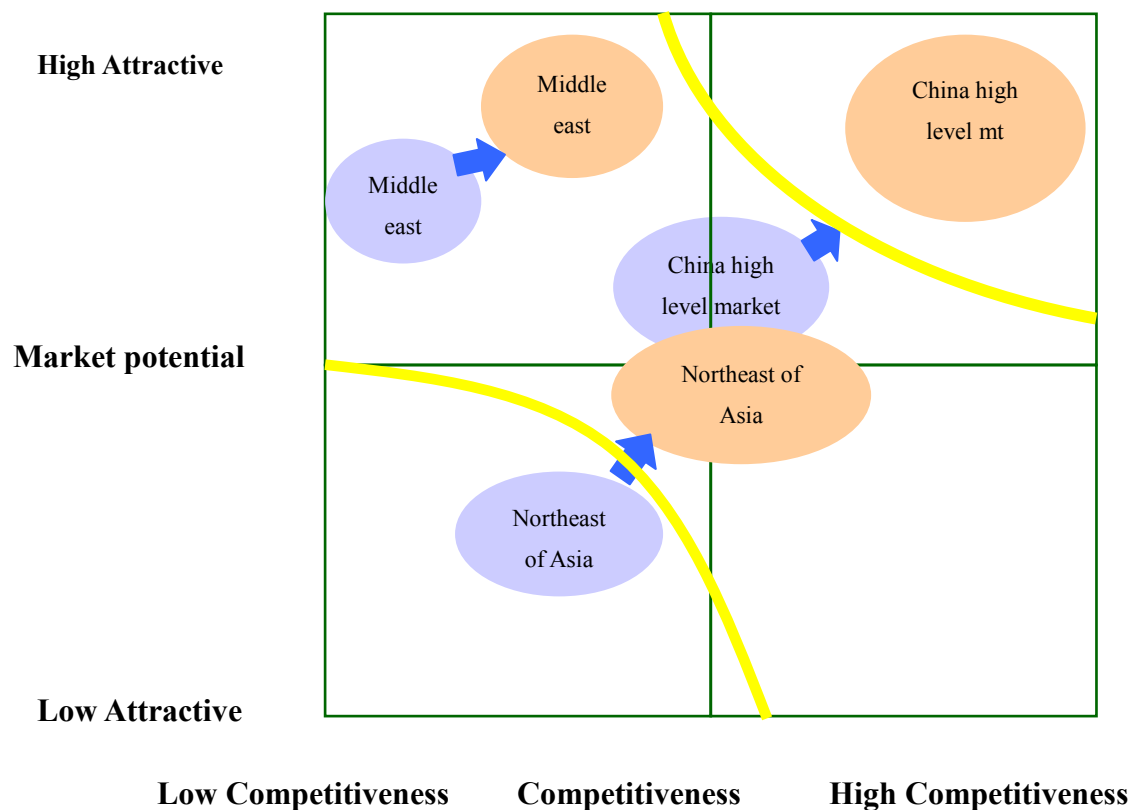


Figure 5.2 CHIO shipping business development direction in the future

To firm the high-end markets in domestic trade: Raise industry standards, price strengthening the cooperation and striving to raise the COA price up to 70% and raise the percentage of delicate cargo to 35%. And the high-end market share should be maintained at 50%. The company should promote the establishment of chemicals Ship-owners Association, improve the industry-standard and stabilize the freight. And a good opportunity ought to be chosen to purchase or build new chemical carriers, control 6000-8000 tons of stainless steel vessels.

To develop the Northeastern Asia market: seizing the opportunity of direct navigating of cross-strait, adding operating ships on Taiwan sea route, enlarging the Share of operation and cooperating with other Ship-owners to enhance CHIO market share. If it can not achieve the expected earnings in the future, the CHIO should adjust market strategy from Northeastern Asian to Southeastern Asia.

To enter the Middle East - the Far East market carefully: Entering the market to service a small number of well-known enterprises and the chemical distributions.

CHIO market development efforts should be further enhanced and large-scale ships should be increased gradually. The company should not only rent out part of the transportation capacity to ensure the stability of earnings but also improve the fleet operating efficiency and enhance productivity

5.3.2 ISO Tank Businesses Strategy

CHIO should establish a chemical industry enterprise which has healthy and safe nationwide networks to strengthen process management and the first-class fast services. Then the company also needs to establish a brand which can service the whole China. The capability of logistics service is to be strengthened to make a domestic leading ISO tank container multimodal combined transport service provider; new products and new areas of business are to be developed to strengthen market position. The company will expand the international market network and pioneer the ISO tank business in Asia, Europe and the United States to provide logistics services for Chinese enterprises to develop market in Asia, Europe and the United States.

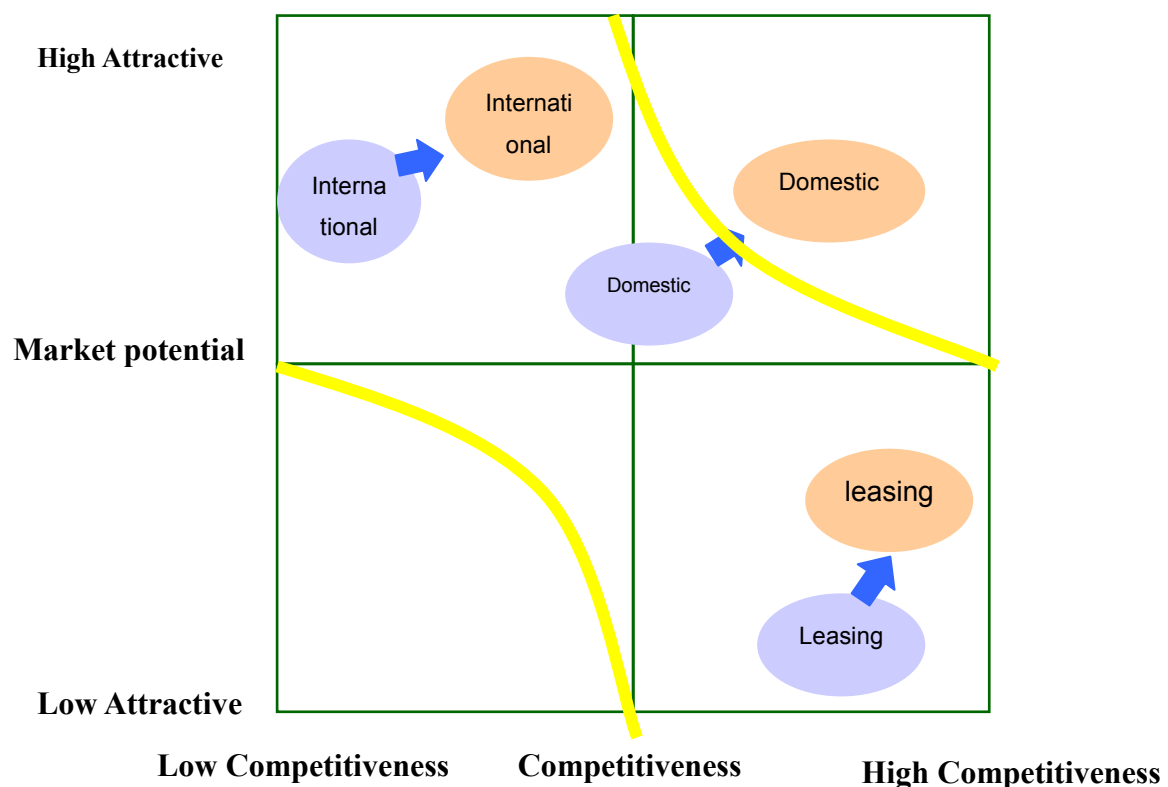


Figure 5.3 CHIO ISO tank business development direction in the future

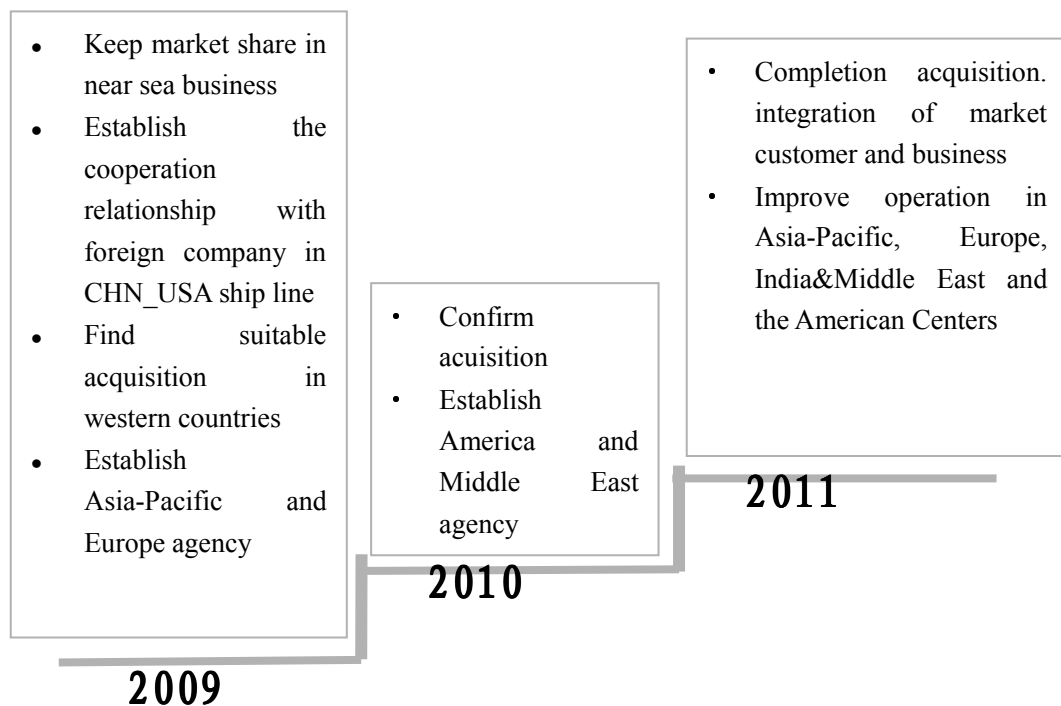


Figure 5.4 CHIO ISO tank business development strategy in near future

Leasing product strategy:

It is necessary to optimize the customer structure, to adhere to the end-user-oriented factories, to take the initiative to phase out the low-end customers, and provide the target customers with the leasing needs for special tanks, such as SWAP, gas tanks, etc.

Land-carriage product strategy:

CHIO should provide key customers with door-to-door rapid response services, and provide the northwestern rail customers with regional services.

It should develop the land-carriage business positively and improve the standard of services continuously to meet the demanding high-end management of customer requirements and to establish the influence of brand.

Domestic multimodal transport strategy:

The Yangtze River line ought to be developed vigorously in order to re-establish its dominant business status. And it is necessary to continue to consolidate the Northern-Southern route, to establish the water carriage purchasing system and to

optimize the procurement cost. And the Northern-Southern rail route will be developed to establish its dominant position.

International business strategy:

The CHIO need to focus on the domestic exports, balance the ISO tank volume of regional routes. The sales network management will be strengthened in South Korea, Japan, Thailand and India and the agent sale management system will be improved. The Sino-US line cooperation with International Company will be started up and the management capacity of international business operating should be enhanced. Foreign self-operating spot should be established and overseas direct selling market should be accessed.

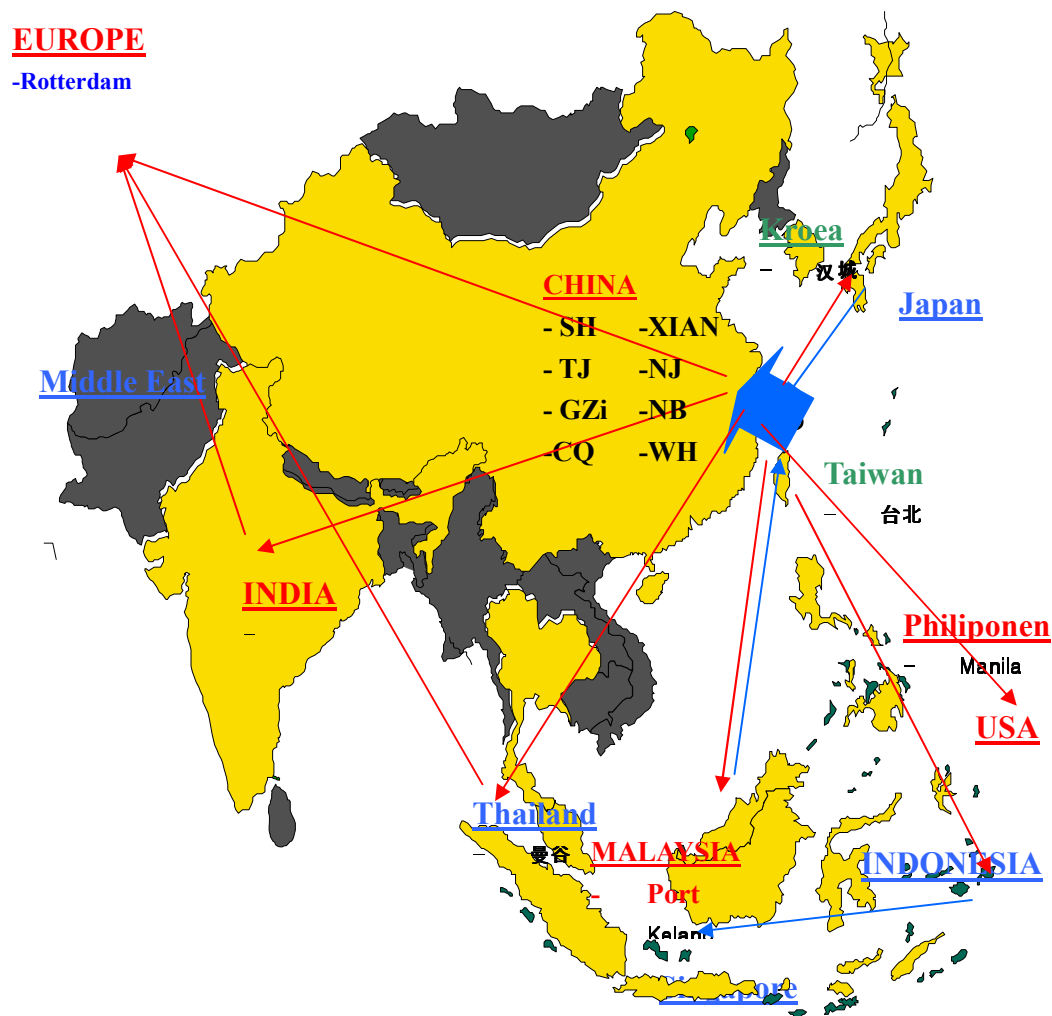


Figure 5.5 CHIO ISO tank business network

5.3.3 Dangerous Goods Port Development Strategy

In order to improve efficiency, it is necessary to maintain the good cooperative relationship with each port and the competent authority. And it is also necessary to enhance the cooperation with the Customs, Marine Bureau and Inspection Bureau and to strengthen the policy support and system security. The company commits itself to cooperate with the business division of ISO tank container and the chemical division to develop the business. And it will reinforce the value added service on the basis of the port function which fulfils centralized management of the importation and exportation of dangerous goods, fostering the multiple inter-modal comprehensive service capacity, providing the integration solutions and striving for a greater share of high-end market. Meanwhile, the collaboration with the high-end customers is to be expanded vigorously. The company should exert the its business synergies in view of the customer's trading, distribution and logistics and provide customers with complete one-stop logistics service of hazardous chemicals such as the transportation of goods, warehousing, freight forwarding, bond, allocation, distribution and packaging, finance and inspection, including value-added services. And the company should integrate the management of supply chain which involves the management of information flow, management of goods flow, management of capital flow and the whole system. The assets scale is to be enlarged to strengthen its competitive edge, and it should be expanded by organic expansion or by expansion forms of purchase, mergers and acquisitions, alliances and cooperation. Its own small-sized team of dangerous goods container lorry is to be set up to strengthen the strategic cooperation with good outsourcing container lorry team and lorry team of bulk dangerous goods.

Enlarge the advantage

Assisting the government competent authority to establish the standards for dangerous goods in logistics industry, coordinating the development of port, establishing the platform for centralized and standardized management of dangerous goods

Seizing Tianjin's tide of economic development and resorting to the policy support of the shareholders and customer resources to become a regional provider of professional services

Forming the system security and competitive edge by exclusive dealing and professional standardized management

Becoming the industry standards maker and price controller, raising the threshold of competition

Attracting the excellent clients by high standard and integrative services

Reduce the gap

- Lean management, promoting the connotation of operation
- fostering the integrated logistics service capability of dangerous goods at the port
- controlling scarce port land and logistics resources
- actively introducing professional management talents to create a professional logistics management and marketing team of dangerous goods
- strategic alliances
- acquisitions, mergers and acquisitions of competitors

Chapter 6 Conclusion and Suggestion

6.1 Conclusion

Against the backdrop of the domestic sustained economic growth and the great development of petrochemical industry, the target market of CHIO will maintain steady growth in the next few years. With the continuous improvement of state's security environmental quality requirements, the market increases the demand for high-end chemical logistics services and the gradual clear logistics strategy over the past few years has complied with the development direction of the market.

However, affected by the global financial storm triggered by U.S. sub-prime mortgage crisis, many enterprises have had to close down, the economy is deteriorating, the chemical industry is also suffering much from the impact, and the global economy is entering a bleak winter. In 2008, financial crisis makes demand of our chemical industry shrink rapidly. The conflict of supply and demand has led to unusual influence: overcapacity and demand reduction; price margin shrink and profitability drop.

The paper study the CHIO development strategy base on the current financial crisis and through analysis of the impact of global financial crisis in the chemical logistics, analysis of CHIO chemical logistics business internal market and external market, comparative analysis and SOWT analysis to formulate a clear development strategy in order to seek greater development in the uncertain economic outlook.

The paper believes that macroeconomic situation will be severe and the market will be uncertain in the future. However, the logistics will still develop steady in the next three years in China. So, CHIO need to adapt with the integration demands of customers, enhance operational efficiency and market competitiveness, and what's

more, it should stick to the lean management as paramount to expand its market share, improve the content of technologies and services and steady the leading position of the industry through innovation, integration, and collaboration means.

Because of limitation of author's capacity, time and data information, the author is hard to see clearly about the future trend of chemical logistics market under the financial crisis. So, the development strategy for CHIO chemical logistics business is not perfect.

Following by the financial crisis going deep into economic every part, the side effects of the financial core problem have yet to cycle. In the near future, the CHIO development strategy needs to readjust following by the changing market. In this paper, the author just wants to provide a preliminary development strategy to help CHIO and other China high-end chemical logistics companies to survive and develop under the current financial crisis.

6.2 Suggestions

In order to ensure implementation of CHIO chemical logistics business strategy development, CHIO need to improve their own capacities in the future, including the logistics implementation capacity, management consulting capacity, staff management capacity and information technique capacity.

6.2.1 Logistics Implementation Capacity

The logistics implementation capacity includes: business process management; business process operation; the experiences of logistics operation; global network and network supporting. It should be explained that: even though the high-end logistics enterprise, which has extremely strong resources and capacities, is impossible to satisfy all the demands of customers. Therefore, CHIO must cooperate with other integrated logistics enterprises. So the relationship management and the ability of coordination and organization of multi-suppliers become more important.

6.2.2 Management Consulting Capacity

The high-end logistics service provider which has management consulting capacity can integrate on the resources, capacities and technology of multi-middle and small providers of logistics service, and can be the contact center of customers and all the providers of integrated logistics service, so it doesn't need to invest large-scale logistics assets and has the comprehensive capacity of logistics implementation and operation. The planning, consulting capacities include business process recreation, organization innovation and logistics management network, logistics information system and the construction of marketing team. Therefore, the capacity of management principle innovation, supply chain process recreation, organization revolution management etc. is very important.

6.2.3 Staff Management Capacity

The transportation business of chemicals is a special industry. The personnel of chemicals transportation must master the relevant professional knowledge and skills. Under the conditions of Financial Crisis, it is more necessary for CHIO to have an effective management of the personnel of chemical logistics business, and to make appropriate plans to deal with all problems faced in the financial crisis.

Effective cost control

Effective measurement and analysis tools are to be adapted to measure and calculate the labor costs accurately. Open and effective communication can make the staff have a better understanding of the relationship between "relevant policies and the long-term strategic development of logistics headquarters ". Improvement methods are to be searched to enhance the functional efficiency of human resources. Organizational structure of each business unit of logistics is to be planned reasonably so as to meet the long-term development of the CHIO in future.

Retention of key employees and establishment of Staff education and training system

To define and assess the key employees of the logistics headquarters, and to explore programs actively to retain them, then it implement tailored retention plan for the core staff and encourage them to go to school for a further education to create a healthy

and stable working environment which can help the CHIO to implement the development strategy effectively.

Discrepant management for the personnel performance

The performance goals of the staff in each logistics business unit should be carded, and it is necessary to assist each unit to establish their "Indicators Database". And the company should study and discuss the challenging reward systems of performance, developing the management skills training to help the line manager to master the skills of performance management. And the process of performance management should be monitored by time. Ensure the staff working efficiency and improve organizational performance.

6.2.4 Information System Management Capacity

The logistics information system management capacity is a powerful tool for assisting the core business management and the support for the strategic development of CHIO chemical logistics business, which is helpful to the improvement of management and business.

At present, China's chemical logistics has low information level. Poor communication results in large inventory and the waste of capacity. Therefore, CHIO should fully use information technology and make "information flow" lead "goods flow", and then achieve the exact configuration of "logistics". The flow of materials should be the most purposeful and economic, and the inventory during the production and circulation process should be reduced to a minimum.

In the Financial Crisis, CHIO is demanded to make use of the modern logistics technologies such as radio frequency technology (RFID), global positioning system (GPS) and geographic information systems (GIS). These technologies provide the technical support for tracking, monitoring and managing of the logistics process of dangerous goods. And they also provide emergency management with technical protection after accidents.

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