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WORLD MARITIME UNIVERSITY

Shanghai, China

**STRATEGIC RESEARCH ON THE
CONSTRUCTION OF TIANJIN NORTHERN
INTERNATIONAL SHIPPING CENTER**

By

Li Zongna

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 TRANSPORT AND LOGISTICS)

2007

DECLARATION

I certify that all the material in this dissertation 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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ABSTRACT

Title of Dissertation: **Strategic Research on construction of Tianjin Northern International Shipping Center**

Degree: **Master of Science in International Transport and Logistics**

As the economic globalization is being speeded up, the construction of an international shipping center has become a key for any state or area want to involve in the globalization and to win a leading role in international competition.

Tianjin wants to grow up and become international economic center city, participate in international division and competition on behalf of China. So Tianjin must energetically develop international shipping industry and build the prompt network of traffic and transportation, so that build the international shipping center as soon as possible.

In this dissertation, firstly I introduce the concept of the international shipping center. And then I analyze the necessities for Tianjin to become one of the international shipping centers. Next, I use the IFE/EFE matrix and the AHP method to analyze the possibility and feasibility of constructing international shipping center in Tianjin. Finally I put forward the strategic objectives and the corresponding tactics for constructing Tianjin northern international shipping center.

KEY WORDS: Tianjin port, northern international shipping center

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LIST OF ABBREVIATIONS

GM	Grey Model
AHP	Analytical Hierarchy Process
IFE	Internal Factor Evaluation
EFE	External Factor Evaluation
TEU	Twenty Equivalent Units
LNG	Liquefied Natural Gas
NVOCC	Non-Vessel Operating Common Carrier
EDI	Electronic Data Interchange
GPS	Global Positioning System
CBD	Central Business District
FPZ	Free Trade Zone

CHAPTER 1

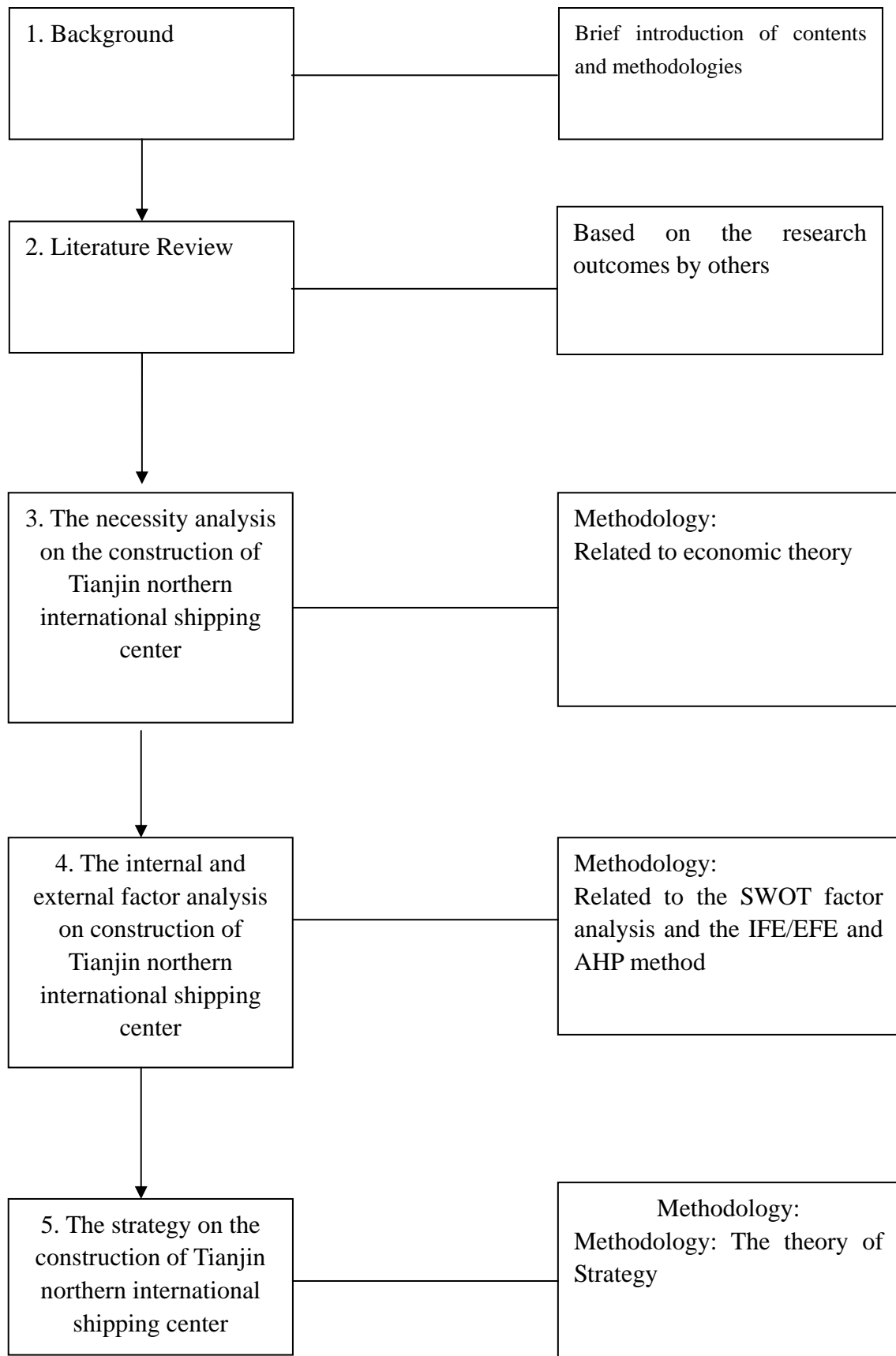
INTRODUCTION

1.1 Objectives and significance

There is significant increase of trade in China recently, especially after entering the WTO and the implementation of West Development Strategy. While, the conditions of the existing ports can not meet the development of the shipping industry. In such circumstance, more attention should be paid on the building of the international shipping center with more integrate functions that can adapt to the enhancement of the competitiveness.

As the most important port in northern China, Tianjin Port has the possibility and necessity to improve itself, and then form the northern international shipping center in Tianjin.

1.2 Contents of the study and the techniques employed



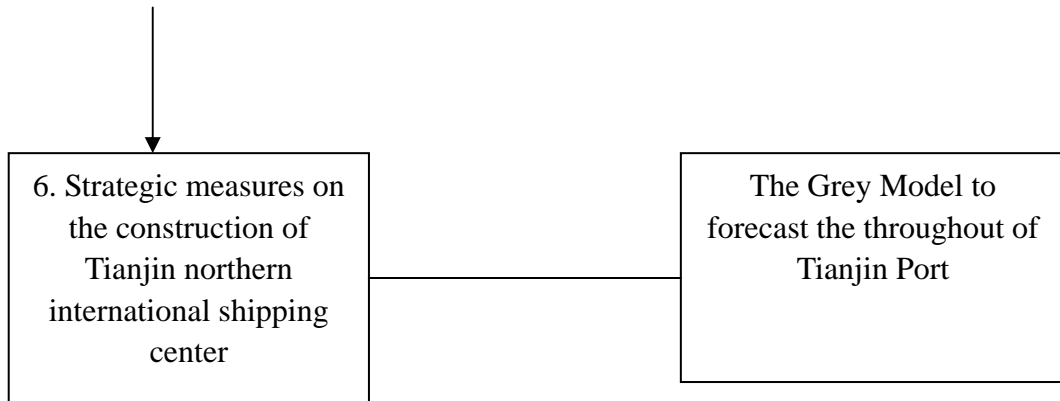


Figure 1.1 Contents of the study and the techniques employed

CHAPTER 2

LITERATURE REVIEW

2.1 The overview of international shipping center

The international shipping center is the objective entity in the process of global economy development. There are not so many international shipping centers in the world, (generally considered, the existing ones are: Hong Kong, Singapore, New York, Rotterdam and so on), but they play a very important driven role in the global economy development and prosperity. The concept of international shipping center is the comprehensive one, it covers all aspects.

2.1.1 The definition of international shipping center

According to the analysis on the international shipping center, it can be concluded that it has three main features: firstly, it is a port or a port cluster; secondly, it owns a kind of city function; and thirdly, it has the essential internal relationship with the regional economy development.

The so-called port or port cluster, firstly, is not the port mainly for the military purpose, such as the Pearl Harbor in the United States. Secondly, it is not the professional port such as the oil port that is specialized in handling for single kind of

cargo. Thirdly, it is not the terminal that the owners dedicated, such as the Bao-Steel material terminal and Jinshan Petrochemical terminal, which provided the production and operation services for single enterprise or enterprise groups. The port or port cluster associated with the international shipping center must be common terminal oriented to social and public services. Indeed, it is a commercial port related to the trade, circulation and direct exchange of commodities which is formed under the conditions of market economy. In modern times, it mainly refers to the container hub port.

Unfortunately, there are not so many commercial ports that can be considered as the international shipping center in the world. One of the most important reasons is that the international shipping center should possess the city function. To sustainable develop the commercial ports; there must be the comprehensive city functional support such as shipping, trade, marketing, finance, information and so on. There is a complementary and mutually reinforcing relationship between port and city; the tremendous development of commercial port, in turn, would lead to the rapid rise of port city.

The achievement of human society contacts and exchanges is mainly finished through the flow of people, goods, information and capital, so since ancient times the ocean shipping is a major way of global transportation, and it accounts for the most volume of world trade. Therefore, there is an inherent link between the international shipping center and the regional economic development. Whether or not, a port city can eventually become an international shipping center, in the final analysis, depends on the regional economic development. And once an international shipping center formed, it often becomes the central city of economy, finance and trading in that region, which is resorted by its strong radiation as a logistics center.

Based on the above three characteristics, it can be defined that: international shipping center is the port city mainly supported by the functions of international shipping, international trade and international finance. It not only has the container hub port with dense routes, the deep water channel, collection-distribution-transport network and other hardware facilities; but also possesses some “soft” functions such as financial, trade, information services for the shipping industry.¹ The core is container hub port, as the important node of international shipping network and the pivot of the international trade; it is the basic carrier of international trading center and the support of international economic center.

2.1.2 The evolvement and development of international shipping center

Since the 18th century, the focus of world economic growth experienced two major shifts: From the Mediterranean Sea to the Atlantic Ocean, and from the Atlantic Ocean to the Pacific Ocean. Correspondingly the international shipping center is formed in Western Europe, North America, East Asia and Southeast Asia in succession. Looking around the world, specifically, the evolution and development of the international shipping center has gone through three stages²:

The first stage

The first generation international shipping center formed in the early 19th century.

At that time, with its geographical location and the region's economic prosperity, the international shipping center became the transportation and distribution hinge of a large number of international cargos. Therefore, the first generation international

¹ Li Jingyu (2005). The Value Argumentation on Origination of International Sea Expo in Dalian. *Ocean Development and Management*, 01.

² Luoping. (2003). The Formation and Development of International Shipping Center and the construction of it in China. *China Economic and Trade Herald*

shipping center is basically the transformation one, and its main function is engaged in international cargo distribution and transition passively, not actively. In such conditions, London and Rotterdam are the forerunners of first generation international shipping centers. Then before the World War II, New York, Hamburg and other new port cities became one of them.

The second stage

The second generation international shipping center formed in the mid-20th Century. From the 1950s to the 1980s, with the economic growth of East Asian and the rise of container shipping, international shipping center reached a new level. The second generation international shipping center is the value-added processing-based one. In addition to its main functions that include effective international transportation, warehousing and distribution of goods, it also offers the processing value-added services. Through the creation or introduction of a free port, free trade zone and processing zone policies, the processing, portfolio, classification, packaging and marketing, initiative distribution and allocation of the goods on the transport can be realized. In this way, the goods operation is not only in line with the trend of the target market needs more easily, but also meets the needs of the economic efficiency of enterprises. New York, Tokyo, Hong Kong, Singapore, Rotterdam are the representatives of this international shipping center.

The third stage

The third generation international shipping center formed in the 1980s and continues to develop and improve.

Since the 1980s, the international shipping center transfer to third generation which is resource-allocation integrated. At the same time of continuing to develop and upgrade the main functions of the second generation, the third international shipping

center started to gather the distributed tangible goods, capital, information and technology, and participated in the international integrated flow and configuration of resource and production elements. Therefore, the city where the third generation international shipping center situated is also bound to be the economic, trading, financial and information center. The third generation international shipping center is an offspring of world economic integration of production operations, technology, information and market. At present, Hong Kong, Singapore, Rotterdam, London, New York, Tokyo are at the forefront of restructuring and developing the third generation international shipping center, however, they still failed to reflect all the innovative functions of that. And some emerging economic hub cities such as Shanghai, Pusan are also struggling to catch up.

2.1.3 The types of international shipping center

Shipping center can be divided into two categories: the international shipping center and the regional shipping center. There are three indicators that distinguish each other. They are: the container throughput, the channel depth and the flight density. Experts find that as the international shipping center, container throughput should be more than 6 million TEU, the channel depth should be deeper than 14 meter, and the monthly international flights should be more than 500 trips; while as the regional shipping center, the container throughput should be more than 4 million TEU, the channel depth should be deeper than 14meter and the monthly international flights should be more than 300 trips. At present, in fact, there are about 1,000 ports related to the maritime transport, but the ports which can be recognized as international shipping center is rare. Among them, the more well-known ones are: Rotterdam, Hamburg London, New York, Singapore, Pusan , Hong Kong and Kaohsiung.

In the process of formation and development of international shipping center, due to its international route location, the scope and level of its hinterland economy, its own port and city conditions and other factors, there are three different development models and types.¹

(1) Transition type:

There are mainly two this type of international shipping centers in the world, Hong Kong and Singapore. Currently the container port throughput of them is more than 10 million TEUs. The development of transition international shipping center mainly relies on its unique geographic conditions and the formation of international container hub port. It is developed by distributing the container from other lateral ports nearby. The rapid growth of Hong Kong's container throughput was mainly due to the transition of international ocean cargoes come from mainland China. The reason can be found: during the 1990s, a large number of ocean-going containers come from major coastal ports access to Hong Kong and transit there. To use its unique geographical advantages, it becomes container transition port for Malaysia, Indonesia, Thailand, Philippines, and other countries. Also, the 70% of container throughput in Singapore derive of the transition from other lateral ports.

(2) Hinterland type

The major hinterland type international shipping centers include New York, Los Angeles, Auckland, Rotterdam, Hamburg and so on. It is formed mainly through its advantages in location, open port policies and efficient inland networks. Such cities located in the United States and major European shores. The development of this kind of ports entirely depends on strong economic hinterland and a complete and

¹ Song Bingliang. (2000). The Conversion on Development Mode and its Revelation of International Shipping Center. *Shanghai Economic Studies*, 01

efficient network of inland transport system. To maintain the large-scale container throughput and attract large container liners to the berthing, then it becomes the hub port. As the hinterland type container hub port, the collection of cargo is mainly through inland improved transport network system to complete. After a few years development, Shanghai and Shenzhen in China has owned some characteristics of hinterland type international shipping center.

(3) Compound type

The compound international shipping center such as Kaohsiung, Pusan, Tokyo, Kobe, its formation and development take on some common characteristics of the transition type and hinterland type. In its early stage of development, compound international shipping center mainly relies on its own port direct economic hinterland, becomes the regional container port. And then on this basis, it becomes the transition port for other lateral ports. This kind of ports situated in East Asia, and with the first starter advantages, in the early 1980s, the container throughput is already considerable. In the process of future development, they will become the liner berthing ports on the three major routes in the world; consequently, become the hub for the Far East. With the continuously economic development of mainland China and the growth of container throughout, these ports have become the container transit ports.

2.1.4 The necessary conditions of international shipping center

Contemporary international shipping center is the port city that in possession of hardware facilities includes the hub port with the dense container routes, deep water channel, collection-distribution-transport network, and other software functions served for shipping industry, which include financial, trade and information services.

So shipping center should have these main conditions¹:

- (1) It has the advantage in location and natural condition. It located on the international trunk line routes, or it is the starting/ ending point on the routes.
- (2) It is the economic-developed port city, import/ export trade center of the nation or the region. It has the widest hinterland and a huge import and export trade volume.
- (3) It has the developed shipping market, intensive flight route. And many shipping companies and shipping agencies are registered in this place.
- (4) The cargo throughput and container throughput are huge, and the supply of containers is adequate.
- (5) It has the good harbor conditions and advanced port facilities. The depth of channels and berths should be deep enough to adapt to modern international transportation. And the port should be the container hub port.
- (6) It has the perfect collection-distribution-transport system condition.
- (7) It has the sound services and management systems, including financial, communications, information, and insurance services. Also there should be a good policy and legislative environment.

2.2 The introduction of the EFE/IFE model

2.2.1 Internal Factor Evaluation Matrix

The IFE is the effective method for the enterprise to analyze the internal strategic conditions; it can help the strategic decision-maker of the enterprise to comprehensively estimate the major strengths and weaknesses in different internal functional departments².

¹ Zhangjie. (2001). New Development Trend of the International Shipping Center. *Urban Planning Forum*, 05

² Tang Yongjun. (2005). *Strategic Management*. Wuhan University of Techonology.

The procedure of the IFE establishment includes 5 steps:

- (1) List the crucial key factors in the process of internal analysis, using 10 to 20 internal factors, including strengths and weaknesses.
- (2) Combined weigh the every factor, the numerical scope from 0.0 (not important) to 1.0 (very important). Whether the key factors are the internal strength or weakness, the factors that can influence the enterprise, should be given the higher combined weight. The total sum of the combined weight is 1.0
- (3) Grade the different factors. By using the grade 1. 2. 3. 4 to respectively represent the major weaknesses, ordinary weaknesses, ordinary strengths and major strengths to the enterprise's operation strategy. The grading is based on the company, and the combined weight is benchmarked by the industry.
- (4) Combined weight of very factor multiply its grade, and then can calculate the grade with the combined weight.
- (5) Sum up the grades with combined weight of all factors.

No matter how many factors the IFE matrix includes, the scope of total grade with combined weight should be from 1.0 to 4.0, and the average grade is 2.5. The enterprise that the total grade with combined weight is lower than 2.5, means the internal condition is in the dry tree. While the enterprise that its grade with combined weight is higher than 2.5, means the internal condition is in the green tree.

2.2.2 External Factor Evaluation Matrix

The EFE analysis mainly demonstrates the industry prospect and the main opportunities and the threats faced by the enterprises within this industry. Is can help the decision makers to comprehensively recognize the external environment, conclude and estimate the information on economy, society, culture, population, politics, legal system, technology and competition. And then it can provide the reliable guideline for making the operational strategy.

The procedure of establishing the EFE is mostly same as the IFE

According to the grading procedure, it can be found that: for any enterprise, the possible highest and the lowest integrated grade with combined weight should be 4.0 and 1.0, and the average one is 2.5. If the grade with combined weight of a company is 4.0, that means that the company situated in the very attractive industry, and faced a lot of market opportunities. While the grade with combined weight is 1.0, that means the company situated in the industry whose future is not promising, and faced a serious external threat.

CHAPTER 3

THE ANALYSIS ON THE NECESSITIES OF CONSTRUCTION OF TIANJIN NORTHERN INTERNATIONAL SHIPPING CENTER

3.1 The general situation of Tainjin Port

Tianjin port is located in Huabei plain, and is the access to the Hai river. It is the biggest artificial port in China and the important external trading port in northern China. The history of Tianjin port can be traced back to the Han dynasty, and it formed to sea port in Tang dynasty. It formally opened in 1860, and is one of the earliest ports that opened to abroad. The new Tanggu port is built in 1939, it recovers to build after 3 years of the establishment of R.P China. It reopened on 17, October, 1952.

The existing land and water area is about 200 square km, among them the land area is 47 square km, and the planning land area will reach 100 square km in 2010. Recently, the 200,000 ton ship can access to the channel of Tianjin port freely, the water depth is -17.4 m. Tianjin port is consist of 4 port regions: Beijiang (in the north of the port), Nanjiang (in the south of the port), Dongjiang (in the east of the port)

and Haihe. There are 76 public berths owned by Tianjin port group. The length of coastline is 15.6 km. Beijiang is specialized in container and general cargo operation; Nanjiang is specialized in the dry cargo and liquid dry cargo operation; Haihe is specialized in catering the vessels under 5000 tons; and in Dongjiang, the new port region is under construction, the planning area is 30 square km.

3.2 The necessities of constructing Tianjin northern international shipping center

“The eleventh five-year planning guild line on development of national economy and society” adopted by The Sixteenth Plenary Session of the Fifth Central Committee of the Communist Party of China indicates that: it should boost the opening and development of Tianjin Binhai new economic area, and drive the regional economic development. The prime minister Wen Jiabao also pointed the importance for building the Tianjin northern international shipping center when he visited Binhai new area. That is the other strategic decision for the economic development of China after the policy put on Shenzhen in Guangdong and Pudong in Shanghai.

3.2.1 The construction of Tianjin northern international shipping center is the need for enhancing the national competitive strength

China is a country with large population and a relative shortage of resources. To realize the goal of China's long-term development, it is a wise strategic choice to use the resources in both domestic and international markets. With the impetus of economic globalization and its sustained and rapid economic growth, the economic and foreign trade development of China is fast. China has become the world's third largest trading nation and is listed No. 6 in the world GDP. The shipping demand for foreign trade of China has reached 1.34 billion tons in 2005, the container

international flights transport capacity was 54.79 million TEU, and the foreign trade demand of shipping imported iron ore was 280 million tons which listed on the top one all over the world; and the imported crude oil was 120 million tons. Also China is the important country demanded for the import of oil. So the “China factor” is the major drive for the international shipping development. While, within the global shipping pattern, the status of China is relatively uncultured. Hongkong as the mature international shipping center with Shenzhen, Guangzhou shoulder the pivot responsibility of the foreign trade in Huanan region. Shanghai international shipping center has built primarily, and plays a role of foreign trade in Huadong region. Recently, there is no mature international shipping center in northern China, which may set off the comparative advantage of the economic development in that region. The construction of Tianjin northern international shipping center will further improve the international shipping efficiency, reduce the integrated cost, improve the foreign trade development and industry upgrade in northern region, and then play the role as the access to the sea of Mongolia and central Asia countries. With these comparative advantages, it can enhance the competitive power and the influence of China.

3.2.2 The construction of Tianjin northern international shipping center is the need for promoting coordinated regional development.

The northern area includes 2 municipalities and 11 provinces. Beijing is the capital of China, and also is the political, cultural and financial center. The northern region accounted for 51.0% of total land area, for 36.6% of the country's total population registered. It accounted for 44.2% of the national economic output, and 23.7% of the national import and export trade. It plays a very important role in the national economic trade. However, there is a large gap within Beijing-Tianjin - Hebei region and between the Beijing-Tianjin - Hebei region and the central and western regions

in economic development. The inter-regional exchange and cooperation is not close, and mutual economic dependence is not perfect. The cities of Beijing and Tianjin has not been given full play the role of stimulating the peripheral areas and forming the central cities. Tianjin is the gateway to the sea of Beijing, Hebei, Shanxi, Inner Mongolia, Henan, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang. To build the Tianjin northern international shipping center, the role of an important gateway to Beijing-Tianjin-Hebei region and central and western regions will be more outstanding. It would give a powerful impetus to economic development and integration of Beijing-Tianjin-Hebei region. Then it can promote the rise of the central region, and drive the development of western region. Through the radiation and leading role of the core area, it can promote interaction between the east and west and achieve the coordinated development between the north and south.

3.2.3 The construction of Tianjin northern international shipping center is the need for enhancing the city strategic position of Tianjin

Tianjin port located in the intersection of Beijing-Tianjin-Hebei and Bohai Bay economic circle, it is one of the municipalities, and the port city that is nearest to Beijing, central and western regions and central Asia. Tianjin port is the biggest comprehensive port in the north part of China, and has the powerful integrated competitive advantage. The throughput is 240 million tons in 2006 that listed on No. 6 all over the world; and the container throughput is 4.8 million TEU listed on No.16. The construction of the northern international shipping center will drive the Tianjin to build the international port city, northern economic center. And then it can further boost up the radiation of Binhai new area and the leading capacity to realize the orientation of providing the service for northeast Asia and around the Bohai Bay, which can improve the strategic status of Tianjin in the regional economy.

3.2.4 The construction of northern international shipping center is the need for evolving the international shipping center pattern

International shipping center is the concept that is keeping developed. The track of its geographic movement and the track of the development transfer emphasis of world economy are basically accordant. And then it formed several “plates” gradually. From the end of 19 century to the early 21 century, the development focus of world economy has experienced transfers three times, namely, from mediterranean sea to Atlantic; from Atlantic to eastern Pacific Ocean; and from eastern Pacific Ocean to Asia-Pacific region. At the same time, the international shipping center also has already finished the progress from “western Europe plate” to “western Europe” + “northern America plate”, and then to the “eastern Asia plate” + “western Europe plate” + “northern America plate”. The construction of Tianjin northern international shipping center is the wise decision to actively adapt to the rising tendency of China factors and “eastern Asia plate”.

3.3 Summary of the chapter

According to the analysis, it can be concluded that there is the necessity to build the Tianjin northern international shipping center. On the one hand, it is the need for regional economic integration and the national open policy. Without the support of shipping industry, the open development of Tianjin and even the whole northern part of China will be restricted. On the other hand, it is the demand for the enhancement of shipping competitive power. Besides Shanghai international shipping center, there should be others by sides of it. Just focusing on the north, the construction of international shipping center in Tianjin will play the important role in building and perfecting the shipping center system and adapt to the fierce competition with other ports in northeastern Asia.

CHAPTER 4

THE INTERNAL AND EXTERNAL FACTORS ANALYSIS ON CONSTRUCTION OF TIANJIN NORTHERN INTERNATIONAL SHIPPING CENTER

To analyze the factors that influence the construction of Tianjin northern international shipping center, it should adopt all kinds of research method. The factors can be classified into two types: the internal ones and the external ones.

4.1 The internal factors analysis

The internal factors include the strength and the weakness. They are the active and the negative factors in the process of development. It is often classified into different categories, such as the management, organizational operation, finance, sales, and human resource. When analyzing these factors, it not only should consider the history and the existing situation, but also the future development.

4.1.1 The strength analysis

(1) Location advantages and excellent port facilities

Tianjin Port is located in the intersection of Beijing-Tianjin city belt and the Bohai

Economic circle, is the maritime gateway to Beijing. The 90% of import and export value in seaborne trade of Beijing goes through the Tianjin Port. It is also the port, whose distance between Northern or Northwest part of China is the shortest around the Bohai Bay, and whose integrated transport costs are the lowest. As China's economy echelon development from the south to the north, Tianjin Port plays an increasingly prominent role in northern China.

Tianjin port has obvious port condition advantages. It is the largest trading port in northern China, and its main channel depth is more than -17 meters. The 150,000 ton ship can access to the port freely, the 200,000 ton ship can influx into the port by tide. The throughput now is more than 200 million tons; the cargo capacity is 154 million tons. And there are 54 deep-water berths that can cater to the 10,000 –ton ship. In recent years, through the strong construction and renovation, the port transport professional level has increased rapidly. Currently, there are 26 professional or semi-professional berths for the over 10,000 ton ship. The capacity is 131 million tons which accounts for 85.1% of the total handling capacity of the port.

Tianjin Port is the largest deep water port built by artificial excavation backfill of muddy shoals. The total area is about 200 square km and the existing land area of port (including bounded zone) is about 22.71 square kilometers, where the yard area is 3.658 million square meters, and the warehouse area is 198,200 square meters. There are 832 handling equipments. Besides the warehousing and transportation facilities, after solving the problem of sillage, it can offer plentiful land reclaimed by shoal to the development of the port and logistics. So there is the land resource advantage in Tianjin Port¹.

¹ The detailed situation can be displayed in Table A-1

(2) Capacious hinterland

Tianjin port is the internal and external open port. The over 70% goods and 55% imports and exports goods of Tianjin port come from the hinterland provinces. The main hinterlands are Beijing, Tianjin and the northern and northwestern regions. It crosses the east, middle and west of China; the land, human and natural resources are abundant. The hinterland area is 483.38 square km, which accounts for the 49.7% of the total area of China; the population of the hinterland is 339 million; which accounts for the 26% of the total population.

The direct economic hinterland include: Beijing, Tianjin, Hebei, Shanxi. Beijing is the political, economic, culture, communication and diplomatic center of China; Tianjin is the important open port, and the center of economy, finance, foreign trade and material intercommunion; Hebei province is the important integrated exploitation base of commodity foodstuff and agriculture, and the industrial base of energy resource, metallurgy, architecture material and textile; Shanxi province is the heavy chemical industry production base specialized on resource exploitation.

The indirect hinterland of Tianjin Port covers the northwestern and northeastern regions that include Shanxi, Gansu, Ningxia, Qinghai, Xinjiang, Inner Mongolia and Tibet province. With the spacious land and the abundant resources, this area is the important production base of farming, coal, oil and lanthanon materials. The hinterland's demands for the foodstuff, fertilizer, production equipments, civil light industry production and other materials are mostly transported by shipping trough Tianjin Port to perform the business. The reservation of the coal in Xinjiang and Ningxia and the petroleum in Xinjiang are abundant, so the future development will be promising.

With the development of economy around the Bohai Bay, the raise of economy in western part, and the promotion of west development, the potential of hinterland economy is very huge, which can offer the good condition to the Tianjin Port.

The table 4.1 and 4.2 estimate the different hinterland's GDP of Tianjin port.

Table 4.1 the estimation on direct hinterland GDP of Tianjin port in 2010

Unit: 100 million RMB

Year		GDP				
		Beijing	Tianjin	Hebei	Shanxi	Total
1995		1395	918	2850	1092	6255
2000		2130	1490	4800	1920	10340
2010		4600	3500	12000	5000	25100

Resource: "The overall planning of Tianjin port" (2004)

Table 4.2 the estimation on indirect hinterland GDP of Tianjin port in 2010

Unit: 100 million RMB

Year		GDP						
		Neimenggu	Shanxi	Gansu	Qinghai	Ningxia	Xinjiang	Total
1995		833	1000	553	165	170	825	3546
2000		1230	1700	810	254	262	1450	5706
2010		2900	4500	1900	660	620	3400	13980

Resource: "The overall planning of Tianjin port" (2004)

Because of the far-flung hinterland and the diversity of generated goods, there is the difference of goods structure between Tianjin and other ports. The goods are more comprehensive, they include containers, bulk dry cargos, bulk liquid cargos and general cargos. Also, Tianjin Port is the largest coke export port, the second large ore import port and the container trunk line port in the north.

(3) Supported by the central cities

From the development experiences of major international shipping center, it can be found that the shipping center and the central economic city are interdependent. Tianjin Port is supported by two central cities, namely, Tianjin and Beijing, and also has the service advantages on trading, finance and information. Besides, Beijing and Tianjin are the technology and culture center of China, where have so many research institutes and institutions of higher learning. And there are a lot of persons with ability of science, technology and management. The quality of the skilled labor force is much higher, which provides the intellect support for the construction of Tianjin northern international shipping center.

The building of Binhai New Area will also support the development of shipping center directly. According to the plan, the Binhai New Area will depend on the advantages of region location, abundant resources, the more improved communication net, the solid industry foundation and the excellent technologic support to further develop the industries of automobile equipment, modern metallurgy, e-information, biologic technology, modern medicine, new energy sources and materials, petroleum and sea chemistry. Then it should build the modern production processing base and the logistics center, and form the world class economic region with collected information, completed functions and advanced

technology to support the development of international shipping center.

(4) The improved collection-distribution-transport system

Recently, Tianjin has already been the biggest port in the north of China. There are 40 international flights and 10 domestic flights.

Tianjin Binhai international airport is the biggest navigate freight center in Huabei area. And it has opened 43 international and domestic flights, plays the role of second international airport for Beijing Capital airport.

For the aspect of highway, there are 12 backbone highways across the Binhai New Area. The total highway length is 410 km. It has formed the fan radiation of the freeway net, which connect the highways around Bohai (coast defence roads) to the different ports. At present, the freeway net connected with Tianjin port mainly includes: Beijing-Tianjin-Tanggu highway that connects the Tianjin with Beijing. Tianjin-Baoding highway, with the Jingshi and Taijiu lines to the west can access to Shanxi province; to the south, it can get to Fujian province trough Jingfu highway; and to the northeast, it can reach Haerbin trough Jingshen highway.

As for the railway, Tianjin Port connects with the countrywide railway net trough Jinpu, Jingshan, Jingbao and Jingjiu lines. Apart from the Jing-Jin-Tang highway, there is also express railway to connect within Beijing and Binhai New Area. The two major railway arteries (Jingha and Jinghu) pass through the New Area, which can make the direct connection between local railway transport system and national railway network. The goods can be transported to all parts of China, and can be transited to Europe through Mongolia.

Furthermore, the gas can be transported by the pipeline that connects to Shanxi; the oil can be transported from Tianjin Port to Dagang oil field by the pipeline. The outstanding communication advantage enhances the radiation and attraction of the New Area in northern part and drive the development of other relative industries.

(5) Good software environment

The constructions of Tianjin international trading and shipping service center and Tianjin e-port will improve the port service conditions, realize the conversion to service modernized port, and enhance the operation efficiency. In the next place, it is advantageous to form the bonded warehousing and distribution center by using the policy of the bonded zone, which can provide the good software environment for the building of shipping center. Furthermore, Tianjin Port is the pioneer that puts into practice of information construction, and has a set of improved EDI system. It has the information and technology base for the construction of northern international shipping center.

4.1.2 Weakness analysis

(1) Deficiency of the port capacity

The overall capacity of Tianjin Port still can not meet the fast-growing demand for capacity development; the actual capacity was less than 70% of the actual throughput in 2000. The contradiction of port productivity structure is prominent; the professional container berths and first-line repository is inadequate, which can not adapt to main trunk transportation development. There is a large gap between the capacity of the professional coal terminal which is put into production and the port throughput. In addition, there is no professional berth with the considerable size and transport capacity that can cater the vessel more than 200,000 ton, which leads to the certain disparity between the development of Tianjin Port and the development of the

oil and ore transportation system around Bohai Bay region.

(2) The unreasonable collection-distribution-transport system structure

At present, the railway distribution-transport capacity in Tianjin is inadequate. The lack of freight special railway line to the western part impacts bulk cargo transport, increases pressure of highway collection-distribution-transport system and postpones the time goods in port. The deficiency of rail capacity makes highway assume too much pressures. The amount of highway collection-distribution-transport was 130 million tons in 2004, which accounts for 63% of the throughput in Tianjin Port. Among them, about over 50% of the coal, 70% of the iron ore and almost all the containers are transported by highway. On the other hand, there are just a few number of external transport channels. The highway hub construction lags behind seriously; the scale of highway station is small; and the layout is scattered. So the connection with other transport modes and other cities is not expedited. The highway network has not been formed, so the highway can not directly access to the port. The congestion within port is serious, which impacts on the transportation efficiency, further increases the difficulty of collecting and distributing, and reduces the radiation of Tianjin Port to the inland.

(3) Singleness of the main business

Currently, the main business of Tianjin Port is relative single, and it still just concentrates on traditional handling and warehousing services, which makes the unfavorable situations of Tianjin Port to gain the benefit relying on the increase of throughput. In fact, in the new market environment, the port industry faces up to the increasingly competitive pressures. It can not maintain or increase market share just relying on providing low-cost and efficient handling service and accelerate the ship operation cycle. In order to enhance the competitive power of enterprises and to

ensure the steady development of enterprises, it should be involved into the modern logistics system as soon as possible. It should expand the original transport and handling customer service to the multifunctional logistics services. By right of the modern logistics, it can create a new economic growth that emphasize on consolidating and enhancing its role and status in the transport chain.

(4) The container transport system is incomplete

Compared with the growth of container throughput, the growth rate of coastal and ocean flights is relatively slow. Ocean flights only account for about 20% of the total flights. The 40% of the ocean carrier box were transited at the foreign ports in 2001. The essential facilities of container land multimodal transport, transport capacity, replacement joints, and transport and port services are all not good enough, which can not meet the need of development of trunk-line port.

(5) Heavy funding pressure

At present, China's port construction lags behind the economic development. The coastal hub port has been overloaded for a long time, and Tianjin Port is no exception. Under the circumstances of port demand expansion and increasingly fierce competition between ports, the port construction is more important. However, the port construction investment is huge. According to the current cost of construction, it may costs 6-8 million RMB to build a large container berth and cost 1 billion RMB to build a large bulk cargo berth. Experts speculate that the total investment to the construction of Tianjin northern international shipping center can reach 10 billion RMB. Undoubtedly, for the Tianjin Port that is under further construction, that is a very heavy pressure.

4.1.3 The IFE analysis on the construction of Tianjin northern international

shipping center

(1) Fix the internal factors

Through the analysis on a series of internal factors, it can list the strengths and weaknesses. And then after inquiring the advice from the experts and relative persons, it can confirm the major ten key internal factors.

Table 4.3 the key internal factors that affect the construction of Tianjin northern international shipping center

Strengths	1. Location advantages and excellent port facilities
	2. Capacious hinterland
	3. Supported by the central cities
	4. The improved collection-distribution-transport system
	5. Good software environment
weaknesses	1. Deficiency of the port capacity
	2. The unreasonable collection-distribution-transport structure
	3. Singleness of the main business
	4. The container transport system is incomplete
	5 Heavy funding pressure

(2) Fix the different factors

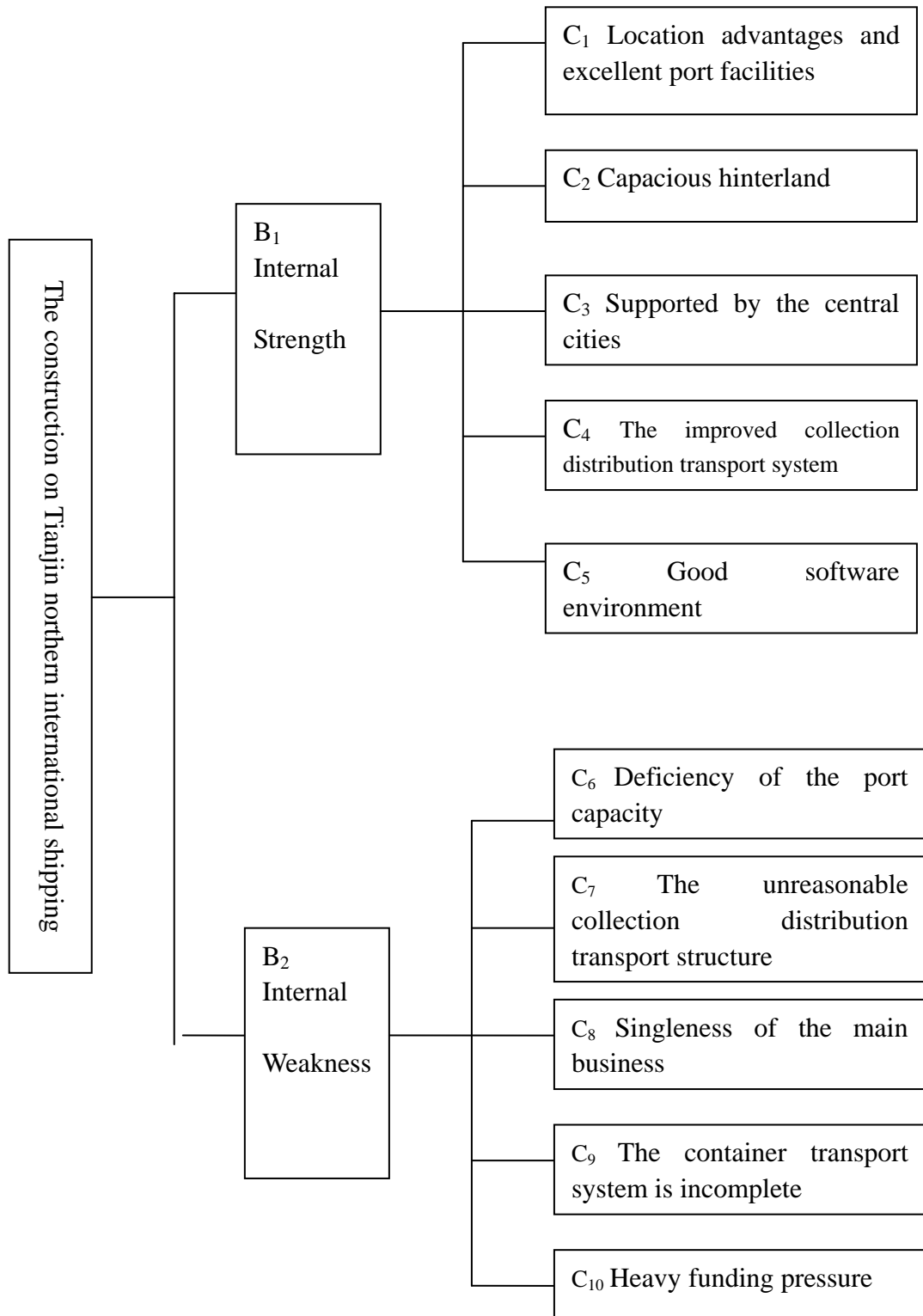
The AHP method is used to fix the combined weight of the different factors in this dissertation:

1) Build the hierarchy structure.

The aim hierarchy of this article is the construction of Tianjin northern international shipping center, the rule hierarchy is its strengths and weaknesses, and the solution

hierarchy is the confirmed key factors. It can be showed as the following table.

Figure 4.1 the hierarchy structure on the construction of Tianjin northern international shipping center



2) Build the internal strength and weakness evaluation matrix.

After analyzing the relative importance of the lower hierarchy to the upper one, the result can be indicated in the matrix. Using 9 grades to show the importance and these 9 grades are demonstrated by 9 integers respectively. And then build the matrix through the grading of experts. To ensure the scientific analysis of this article, I have invited the experts from Tianjin Port, Development and Reform Committee of Tianjin city, Ministry of Communications and other departments to grade the factors respectively. Based on the grading, I average them and get the final result.

Table 4.4 the internal strength and weakness combined weight evaluation matrix

A	B ₁	B ₂	W
B ₁	1	2	0.67
B ₂	1/2	1	0.33

3) Evaluate matrix taxis

Confirm the relative importance of the factors based on the evaluation unitary matrix of AHP. The result can be listed as the following table.

Table 4.5 the internal strength combined weight evaluation matrix

B ₁	C ₁	C ₂	C ₃	C ₄	C ₅	W
C ₁	1	1/3	1/6	1/5	1/4	0.049
C ₂	3	1	1/4	1/3	1/2	0.106
C ₃	6	4	1	2	3	0.421
C ₄	5	3	1/2	1	2	0.215
C ₅	4	2	1/3	1/2	1	0.209

Table 4.6 the internal weakness combined weight evaluation matrix

B ₂	C ₆	C ₇	C ₈	C ₉	C ₁₀	W
C ₆	1	6	2	4	3	0.373
C ₇	1/6	1	1/3	2	1/2	0.083
C ₈	3	4	1	3	2	0.336
C ₉	1/4	1/2	1/2	1	1/3	0.066
C ₁₀	1/3	2	1/2	3	1	0.142

(3) Grade the different factors

The grading of factors and the confirmation of the combined weight can indicate the enterprise which factors should be paid attention to, which can lead to the operational success.

(4) Build the IFE matrix

According the combined weight of factors and the grades, the IFE can be build as the following table.

Table 4.7 the IFE matrix on the construction of Tianjin northern international shipping center

	The key internal factors	Combined Weight	Grade	Grade with combined weight
strengths	1. Location advantages and excellent port facilities	0.033	3	0.099
	2. Capacious hinterland	0.071	4	0.284
	3. Supported by the central cities of Tainjin and Beijing	0.282	4	1.128
	4. The improved collection distribution transport system	0.144	4	0.576
	5. Good software environment	0.140	3	0.420
weaknesses	1. Deficiency of the port capacity	0.123	1	0.123
	2. The unreasonable collection distribution transport structure	0.027	2	0.054
	3. Singleness of the main business	0.111	1	0.111
	4. The container transport system is incomplete	0.022	2	0.044
	5 Heavy funding pressure	0.047	1	0.047
	Total	1.00		2.886

According to the analysis above, it can be included that the internal factors influenced on the construction of Tianjin northern international shipping centers mainly are: location advantages and excellent port facilities, the improved

collection-distribution-transport system, the deficiency of the port capacity, the unreasonable collection-distribution-transport structure, and so on. The total grade with combined weight is 2.886 that is higher than the average, which means the internal status is on a good wicket.

4.2 The external factors analysis

The external factors include the opportunity and the threat; they are the advantaged and disadvantaged factors that directly affect the development. It is often classified into different categories, such as economy, politics, society, population, production, service, technology, market and the competition.

4.2.1 Opportunity analysis

(1) The State's supported policy

During the "11th Five-Year Plan" period, the investment on Tianjin Port will be 36.7 billion RMB, which can further expand its scale, improve the port functional level and then enhance the core competitiveness of Tianjin Port.

The supported policy includes: Firstly, it plans to quicken the construction of port projects and enhance throughput capacity. The emphases are the constructions of 16 container berths, 300,000-ton crude oil terminals, 100,000-ton LNG terminal and the large professional ore and coal berths in Nanjiang. And then the port handling capacity will reach 330 million tons and the container handling capacity will be 12 million TEU in 2010, which can meet the requirement for transporting the domestic and foreign goods.

Secondly, it plans to accelerate public infrastructure projects construction and enhance the port level. The emphases are the constructions of deepwater channel,

breakwater and the collection-distribution-transport system. The channel can accommodate to the 250,000-ton ships will be completed in 2007, and then the channel water will reach -19.5 meters. That means, Tianjin Port can operate the loading and unloading performance to all ships that can enter to Bohai Bay.

Thirdly, it plans to quicken the construction of logistics project and improve the port functions. The 26.8 square km bulk cargo logistics center in Nanjiang will become the largest comprehensive modernized logistics center of dry bulk and liquid bulk cargo and the trade base in China. In addition, the building of 703 square km container logistics center in Beijiang can form another important logistics platform echoed to the bulk cargo logistics center in Nanjiang. It also should operate international trade and shipping service projects to form the shipping CBD which is assembled by port and shipping enterprises. And the ancillary services in this area are perfect.

Fourthly, it plans to develop and construct 30 square km port area in Dongjiang for the future development. The completed port area consists of three zones, namely, terminal operation, logistics processing and comprehensive services, and with five functions of terminal handling, container logistics, business, living and tourism. To build bonded zone in Dongjiang for the development of international transfer, international distribution, international procurement, international entrepot trade and export processing businesses.

(2) The development of container market

Recently, the volume of trade in Greater China zone has increased considerably. It estimated that the increase is over 13% every year. So the mainland China is the locomotive of the container transport development.

Adapting to the foreign trade increase, the increase of container throughput in Greater China will exceed the global average level. Take the increase range of container throughput from 2003 to 2008 (the estimated data) for example, the average increase of the Greater China area (including the mainland China, Hong Kong and Taiwan) is 12% from 2003 to 2008. Among that, the total increase rate of container throughput in mainland China is 16%, for Hong Kong, it is 3%, and for Taiwan, it is 4%. Obviously, the increase in mainland China is second to none. As for the proportion of container throughput in worldwide, Greater China accounts for 20%. It estimated that, the portion will reach 34% in 2008. So the market share of container in Greater China area will also expand continuously.

From the statistical data on the port ranking of top 40 all over world in 2003, Tianjin Port is listed No. 19. While with the unceasing increase of container throughput, it can be concluded that the rank of Tianjin Port will be enhanced.

(3) The market demand of Olympic logistics

Olympic logistics market demands include the logistics market demand directly serviced for the Olympic Game, and related logistics market demands driven by the Olympic Game. This kind of logistics is closely related to time stage of Olympic Game, so Olympic logistics market demand should be divided into three types: the before-game, during-game, and after-game.

Tianjin Port plays an extremely important role in logistics activities before and after the Game because of its unique position that is near to Beijing. Take the delegations freight forwarders market for example, at present, nearly 90% of the import and export of goods pass in and out through Tianjin. Therefore the main mode of

transportation of goods should be shipping, and the main access of before-Olympic logistics should through the Tianjin Port.

The logistics and freight-forwarding procedures of The Organizing Committees of the Olympic Games and delegations are as follows: firstly, most of goods enter into Tianjin Port through international transport; and then the goods are directly transported to Beijing by using cross-customs mode from Tianjin Port; finally, it takes the customs inspection and quarantine procedures in main Olympic logistics warehousing.

After the Game, the majority of the goods especially the export ones, firstly, should be stored at the main Olympic logistics base, and are undergone customs inspection and quarantine procedures. Or the goods are delivered to Tianjin Port directly through land transport according to the specific needs. The goods are taken handling customs and inspection and quarantine procedures in Tianjin Port and then delivered to the destination by sea.

(4) The implementation of western development strategy

The western development strategy will expand the scope of the hinterland of Tianjin Port and boost the hinterland economic development, which can bring more passenger and cargo transportation.

The development of Tianjin and central and western parts of China is interdependent. On the one hand, the development of Tianjin Port needs strong support of the central and western regions; on the other hand, Tianjin should be based on the service and involved in the world economy to strengthen the cooperation with western part by right of the unique location advantage and good logistics infrastructure conditions.

The modern logistics system under construction can connect the east and west parts, and also can lead Tianjin to become the bridge of the western part of China and the world.

(5) The rapid economic development of Tianjin Binhai New Area

As the support of the development of Tianjin Port, the Tianjin Binhai New Area is located in the northeast to the Huabei plain, the west to Bohai Bay and the east to Tianjin city. It consists of three functional zones, (Tianjin Port, Economic and Technological Development Zone and Port Bonded Area) three districts (Tanggu, Hangu and Dagang) and other regions like Dongli and Jinnan. This area is near to Japan, Korea and Mongolia. It is the foreland for China to take the cooperation with other countries.

Recently, the area attracts a lot of investment from Japan and Korea, and the trade between the other regions is more frequent. There are 350 container lines. And there are about 300 ports in 170 countries and regions in the world establish business relation with Tianjin Port. It can attract cargo flowing, human resource flowing, capital flowing and information flowing to the hinterland. So it is possible and feasible to form the northern open window just like Shenzhen and Pudong.

4.2.2 Threat analysis

(1) The fierce competition with other ports

There are so many port cities want to build the important international shipping center within the northwest Asia economy circle, which are the competitors to the Tianjin Port. It includes the Dalian Port and Qingdao Port in China, Fushan in Korea and Kobe in Japan. So the competition among them is very fierce. According to the statistic data, there are nearly 40 deeper berths has been built and under construction.

The construction plan of Fushan Port and Kobe Port is so complicated, and they focus on the supply of goods of China mainland. The major ports in northern China also put forward the developing plan. Dalian wants to build the international shipping center within northeast Asia, and Qingdao also wants to build the northern international shipping center.

(2) The loss of some hinterland supply of goods

The use of Tianjin Port by Beijing and some provinces like Henan is increased.

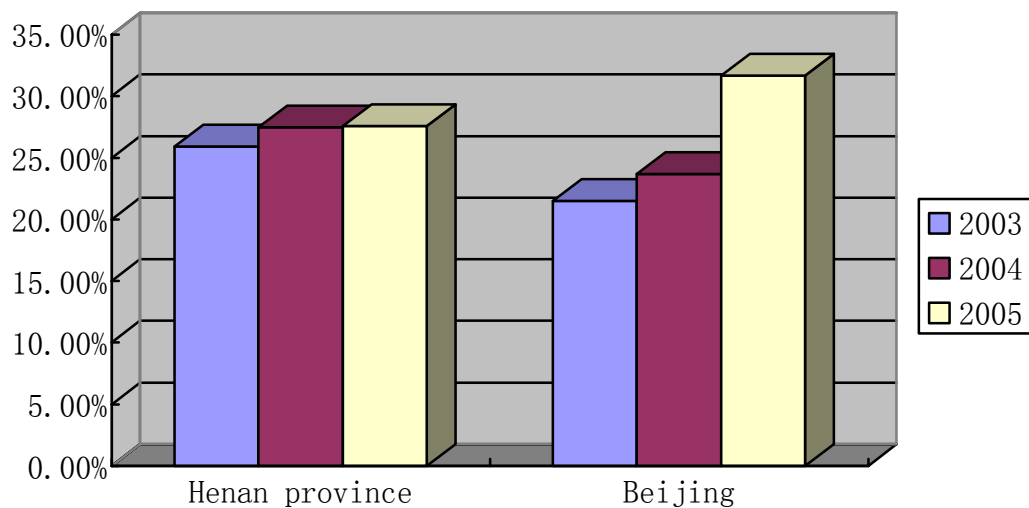


Figure 4.2 the portion of the imports and exports value in Beijing and Henan through Tianjin Port in its total value from 2002 to 2005

Data resource: the data in this chart is based on the attached table A-2

While for other provinces, the situation is not so good. Recently, the dependence of Hebei on the Tianjin Port has decreased.

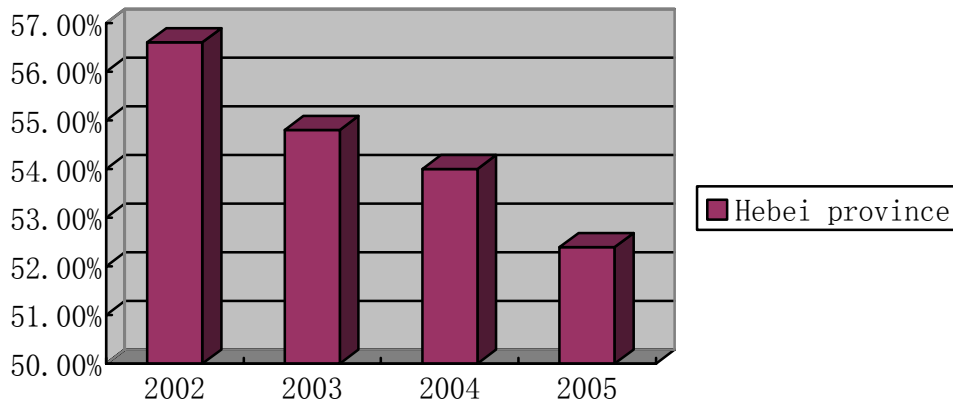


Figure 4.3 the portion of the imports and exports value of Hebei province through Tianjin Port in its total value from 2002 to 2005

Data resource: the data in this chart is based on the attached table A-2

After analyzing the existing situation, the main reason of that is: there have been Qinhuangdao, Jingtang, Huanghua and other ports in Hebei province, the Caofeidian Port is under construction. Caofeidian Port has the good natural condition; it is near to Bohai Bay. From the water channel aspect, the distance to Tianjin Port is 38 sea mile, to Jingtang Port is 33 sea mile, and it located in the main channel of Tianjin Port. The advantage of deeper water channel makes the Caofeidian Port become the most suitable point to build the deeper water port around Bohai Bay. After construction, the main goods categories are the ore, crude oil and coal, which may conflict with Tianjin Port. So, it supposed that the utilization of Tianjin Port for Hebei will decrease; then the partial goods of supply will be distracted.

The imports and exports amount of goods is not so considerable in western provinces in the past, while with the implementation of western development strategy, the tendency will change. For example, from 2003 to 2005, the increase rate of imports

and exports in Gansu province are respectively: 33.5%, 51.4% and 48.5%, which is listed on the top one in China. And the imports and exports total value of Xinjiang in 2005 is 794.2 million RMB, which is increased 40.9% compared with the same period last year. So, the competition on the supply of goods in western hinterland among the ports is more and more fierce.

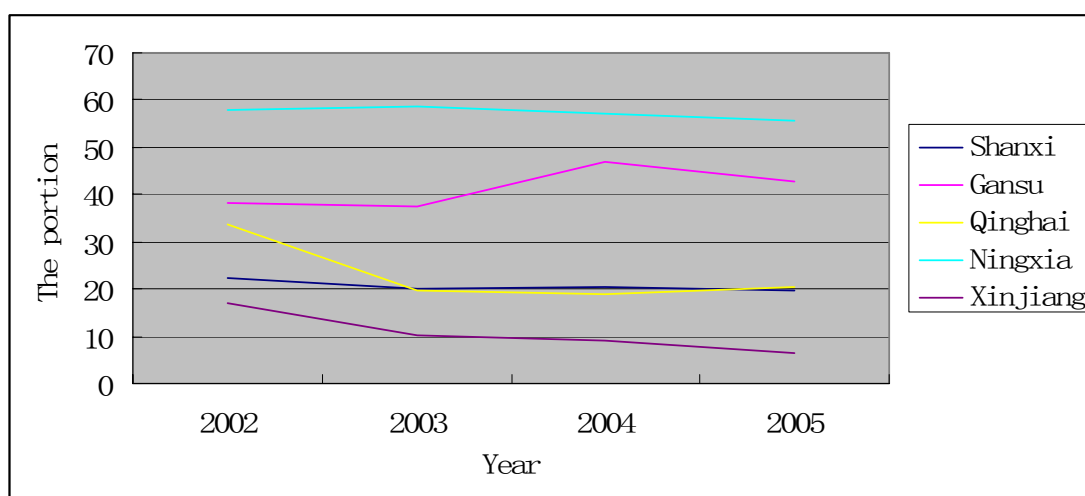


Figure 4.4 the portion of the imports and exports value of the western provinces through Tianjin port in its total value from 2002 to 2005

Data resource: the data in this chart is based on the attached tableA-2

Take the Qingdao Port for example, the city leaders accompany with the personnel come from port enterprise, custom and commercial inspection departments go to Xinjiang, and hold the customer colloquia to promise the derating of the freight and prepare the construction of the dry port. As for Lianyungang Port, the city leader actively negotiate with the government of Henan, Shanxi, Gansu province, to build the new Asia-Europe land bridge, with the hope to attract more supply of goods by the means of solving the transport capacity problem and derating the freight. And the marketing measure is has succeeded. Shanxi commercial office also connects with

the Lianyungang. Furthermore, Gansu province indicates that the Lianyungang Port is the one served for it. From January to June in 2005, the container throughput of Lianyungang Port has already reached 600,000 TEU, compared with the same period last year, it increased 64.8%.

The fierce competition for the supply of goods among coastal ports can lead to the loss of Tianjin Port inevitably.

(3) The faultiness of management and legal system

Because the management level and the legal system of Tianjin Port can not accommodate to the international standard, there are some problems should be solved. Concretely, it is reflected in the aspects of port supervision policies and regulations of custom, frontier defence inspection, hygienic inspection, animal and vegetable inspection, and the port control. It also includes the services of ship repair, salvage, insurance, shipping information and consultation, and the shipping broker and agent.

(4) The emerge of the modern integrated logistics service

The existing port, with the relative single service function of transport pivot can not satisfy the production and trading demand for the hinterland economy. As the global logistics development, it calls for the new expanded port service functions. The role that the port plays in the process of modern integrated logistics has changed a lot. The modernized port will orient to the service-added one, which must lead to the adjustment and re-collocation of existing resources.

While, recently, the logistics service of Tianjin Port still at the initial development stages, it does not have the information network to meet the socialized information

service needs of shipping exchange, goods transaction, information issue, finance balance, data transfer and document transmission. And it is lack of the operation entities with the organizational coordination capability and certain service scale, and is short of the reasonable space that can develop the relative logistics industry. The existing logistics enterprises with the single function and lower-level service, is not capable of the systematic logistics service.

(5) The absence of professionals

The demand of persons with ability has changed, not only because the pressure from domestic and abroad for the port, but also the challenge for in line with international rules. The demand of the personnel converts from the single technologic talents to the all-rounder persons. With the improvement of Tianjin Port, the professionals of strategic decision-making, operation and management, port planning, financial operation, commercial trading, high-technology and information will be demanded.

4.2.3 The EFE analysis on the construction of Tianjin northern international shipping center

By using the same method of IFE, and grading the external factors, the EFE matrix can be showed as following table.

Table 4.8 the EFE matrix on the construction of Tianjin northern international shipping center

	Key external factors	Combined Weight	Grade	Grade with combined weight
opportunity	1. The State's supported policy	0.223	4	0.892
	2. The development of container market	0.043	3	0.129
	3. The market demand of Olympic logistics	0.071	3	0.213223
	4. The implementation of western development strategy	0.166	4	0.664
	5. The rapid economic development of Tianjin Binhai New Area	0.080	3	0.240
threat	1. The fierce competition with other ports	0.179	1	0.179
	2. The loss of some hinterland supply of goods	0.073	2	0.146
	3. The faultiness of management and legal system	0.067	1	0.067
	4. The emerge of the modern integrated logistics service	0.035	2	0.070
	5. The absence of professionals	0.063	1	0.063
	Total	1		2.663

According to the analysis above, it can be included that the external factors influenced on the construction of Tianjin northern international shipping center are: the implementation of western development strategy, the market demand of Olympic logistics, the fierce competition with other ports and the loss of some hinterland supply of goods, and so on. The total grade with combined weight is 2.663 that is higher than the average, which means the opportunities faced is much more than the threats during the construction.

4.3 Summary of the chapter

The strengths, weaknesses, opportunities and treats are respectively listed in this chapter. According to the analysis and the estimation with IFE and EFE matrix by the AHP method, the result can be found that: although there are some disadvantageous internal and external factors, the future for construction of Tianjin northern international shipping center is very promising. So it can be said safely that, there is the possibility and the feasibility for the construction of Tianjin northern international shipping center.

CHAPTER 5

THE STRATEGY ON THE CONSTRUCTION OF TIANJIN NORTHERN INTERNATIONAL SHIPPING CENTER

5.1 The orientation of Tianjin northern international shipping center

The construction of Tianjin northern international shipping center is under the historical background of economic globalization and the national development strategy on Tianjin Binhai New Area. Therefore, the construction of Tianjin northern international shipping center should be based on the need for international container hub port that can cater to the large vessels. And then it can become the a modern shipping logistics center, the multi-function modern port, the shipping exchange market in northeast Asia, and the shipping information center. Also, it should be built in line with the international practice, and then become a free port. It should pay attention to establish the international shipping environment with improved services on shipping market.

The functional orientation of Tianjin northern international shipping center should be the integrated service type international shipping center. It can be reflected in these parts: the coordination of integrated communication and city development; the linkage of the gateway and hinterland; the congregation with rational pattern of

port-centered industry and aviation economy; the synchronization of shipping service, finance service and modern logistics service industry. This kind of shipping center can improve the further development on maritime economy, and improve the development of modern equipment production cluster and the extension of industrial links. It also can be reflected at the port-shipping hardware and software services with high level and high quality that served for the global range. (including the consultant, legal, financial and port services)

As the core carrier of shipping center, the port, not only should develop the container transport, but also should develop the coal, oil, ore, and general cargo transport at the same time. It also can not ignore the aspects of passenger transport, safety, salvage, and environment protection, which can meet the need of trading market for the imports and exports, and meet the demands of loading and unloading, transport, transition, package, distribution, purchasing, warehousing and processing for different shipping companies, logistics companies and trading companies. The construction of specialized deeper water port should be in advance, which can reach the world-class level.

5.2 The development stages of Tianjin northern international shipping center

The development stages of Tianjin northern international shipping center can be estimated as:

In the early and middle stage, according to the regional economic features, it should be emphasized on the container and bulk cargo transport; it should focus on the

construction of container logistics park and the bulk cargo logistics center, and integrate the coal railway transport and highway channels, then form the important export base of energy resources. It also should integrate the port, finance trading resources to form the container shipping center that connected to the shipping market. It should focus on the imported crude oil, iron ore and other bulk cargoes transport for the building of unique world-class liquid dry cargo and dry cargo transition center, which can increase the supply of goods from the internal hinterland and coastal hinterland.

While, in the later stage, with the further industrialisation in the northwest and around Bohai Bay, and with the industry structure reformation and the raw materials processing, the increase of dry cargo transport will be slow, and at that time, it should be emphasized on the container transport.

5.3 The specific objectives for the construction of Tianjin northern international shipping center

According to the developing orientation on the construction of Tianjin northern international shipping center, the specific objectives can be concluded as follow:

(1) The construction of the deeper water channel.

To 2010, the construction of deeper water channel above -19m and the international deeper water berths should be finished, which can cater to the major vessels round-the-clock. And there should be 80 berths that above 10,000 ton; the port registration should be 300,000 ton. Therefore, it can form the biggest comprehensive container pivot port and dry cargo trunk-line port that open to the northeast Asia and radiate to the central and western Asia, and then become the modernized world-class

port.

(2) The construction of port facilities.

It should own the high modernized loading and unloading facilities, the improved information processing system and the improved collection-distribution-transport network. To 2010, the cargo throughput should be over 300 million ton, and the container throughput should be over 10 million TEU; to 2020, the cargo throughput should be over 500 million ton, and the container throughput should be over 30 million TEU.

(3) The improvement of logistics bonded functions.

It should realize the facilities standardization, the transport rationalization, loading and unloading mechanization, solid warehousing, distribution standardization and integration, and the establishment of information management network to gradually build the international comprehensive modern logistics center which is focus on Tianjin , served for the north and opened to all over the world. It should build the big logistics park for the bulk cargo logistics, container logistics and air port logistics to attract the international logistics enterprises. It should establish the logistics infrastructure and logistics information service platforms. It also should build the 30 square meters Dongjiang bonded zone (the first stage is 10 square meters), which can provide the functions of international transition, distribution, procurement, transit trading and export processing, which can lead the bonded zone to become the core functional zone that can adapt to the need of “shipping center and logistics center”, and provide the services for the regional development.

(4) The active shipping market.

To attract the most shipping companies to establish the branch organization in Tianjin,

and to attract the NVOCCs, freight forwarders and shipping agents to situate in Tianjin, which can build the shipping operation and vessel business platform. It should build the shipping exchange that focus on the international bulk cargo, and hold the international logistics exhibition, which can improve the effective collocation of shipping and logistics factors.

(5) The self-contained service system.

It should form the shipping service congregation with the functions of finance insurance, intermediate service, salvage, ship repairing, and maritime arbitration. And then it can connect the platform of port, custom, inspection, shipping, aviation, railway, e-information and the bonded zone to the port public information platform that is focused on the shipping-port information system and the shipping logistics flowing data system, which can improve the development of relative service industry.

(6) The good legal environment.

It should build the port management system that suitable for the international practice, and improve the shipping and logistics policies and regulations that are consistent to the international ones. It should create the sound conditions to regulate the market behaviors, and according to the national and international standard to set up the technology standard and the service quality standard. By using the advanced methods of the EDI system and GPS, it can improve the seamless connection and build the data logistics net node, which can enhance the operational efficiency of the logistics network system.

5.4 Summary of the chapter

Based on the necessity and feasibility analysis, the construction and development

strategy can be drafted. For the purpose of standing out in the competition, the construction of Tianjin northern international shipping center should be with the new train of thought and the clear action. It suggested that, the construction should take two stages to strengthen its power within 10 years. From now on, within the next five years, the port throughput should reach 300 million tons. And the container throughput should get to 10 million TEU. It should form the biggest and strongest port in the north of China. Within the second five-year period, it should further perfect port and city functions, and then get ahead of the ports in Japan and Korea. The building of regional international logistics center and core pivot port should be basically completed. To realize those goals, some specific objectives should be set down. Then the construction will be put into practice according to that.

CHAPTER 6

THE STRATEGIC MEASURES ON THE CONSTRUCTION OF TIANJIN NORTHERN INTERNATIONAL SHIPPING CENTER

6.1 The crucial measures on the construction of Tianjin northern international shipping center

According to the analysis in above chapters, it can be concluded that there are mainly three crucial measures on the construction of Tianjin northern international shipping center. These measures related to the basic building projects of the shipping center, and without them, the shipping center even can not be considered as the shipping center.

6.1.1 Quicken the construction of the Tianjin pivot port

The construction of Tianjin international shipping center pivot port is the demand for the development of international shipping market. As for the container transport, it can attract the liner companies to increase the new routes as long as the container terminal is large enough; and it can attract more supply of containers as long as the container lines are dense enough. Therefore, it should increase the intensity of construction, and build the 300,000-ton deep water channel and the 300,000-ton crude oil terminals, which can make the Tianjin port become the largest bulk trunk

port of China and container hub in Northeast Asia.

While, the huge investment, the high risk and the long cycle are the features of port construction, so it is necessary to estimate the development demand of Tianjin Port, which is considered as the basis of port planning and construction. So, the Grey Model is adopted to estimate the cargo throughout and container throughout of Tianjin port.

The GM (1, n) is the Differential Equation Model which is linear one, and with n variables.

Suppose, there is the initial series: $x^{(0)}(t) = \{x^{(0)}(1), x^{(0)}(2), \dots, x^{(0)}(n)\}$

Cumulate added the $x^{(0)}(t)$ once, and according to the $x^{(1)}(k) = \sum_{i=1}^k x^{(0)}(i)$, it can

create the series: $x^{(1)}(k) = \{x^{(1)}(1), x^{(1)}(2), \dots, x^{(1)}(n)\} \quad (*)$

So, the GM (1, 1) Differential Equation of $x^{(1)}(k)$ is:

$$\frac{dx^{(1)}}{dt} + ax^{(1)} = u \quad (1)$$

The parameter of Equation (1) can be indicated as: $\hat{a} = (a, u)^T$

Estimate the parameter \hat{a} according to the Least Squares

$$\hat{a} = (B^T B)^{-1} B^T Y_n \quad (2)$$

In the Equation (2)

$$B = \begin{bmatrix} -0.5(x^{(1)}(1) + x^{(1)}(2)) & 1 \\ -0.5(x^{(1)}(2) + x^{(1)}(3)) & 1 \\ \Lambda & \Lambda \\ -0.5(x^{(1)}(n-1) + x^{(1)}(n)) & 1 \end{bmatrix}$$

$$Y_n = (x^{(0)}(2), x^{(0)}(3), \Lambda, x^{(0)}(n))^T$$

Taking \hat{a} into the Equation (1), it can get the Time Series Model of the GM (1, 1) model. It is the Specific formula to the GM (1, 1) estimation model.

$$\hat{X}^{(1)}(k+1) = (X^{(0)}(1) - u/a) e^{-ak} + u/a \quad (3)$$

$$\text{and } \hat{X}^{(0)}(k) = \hat{X}^{(1)}(k+1) - \hat{X}^{(1)}(k)$$

According to the Equation above, it can calculate the estimation data of the year k+1
The estimation of the Tianjin port throughout can be indicated:

$$x^{(0)}(t) =$$

[1206,2102,2929,3719,4652,5787,6188,6789,6818,7298,9596,11369,12906,16181,20619,24432]

According to the Equation (*)

$$x^{(1)}(t) =$$

[1206,3307,6236,9955,14607,20394,26582,33371,40189,47487,57083,68452,81358,97539,118158,142590]

According to the MATLAB calculation:

$$u = 1.7714e + 0.03$$

$$a = -0.1648$$

Therefore the model is:

$$\hat{X}^{(0)}(t+1) = (1206 + 1771.4/0.1648) * 1771.4e^{0.1648} + 1771.4/0.1648$$

According to the formula above, the estimation of cargo throughout of Tianjin port can be finished.

Table 6.1 the cargo throughout of Tianjin port

Unit: 1,000 ton

Year	1990	1991	1992	1993	1994	1995	1996	1997
Initial data: $x^{(1)}(t)$	1206	2101	2929	3719	4652	5787	6188	6789
Forecast data: $\hat{x}^{(1)}(k+1)$	1206	2142	2526	2978	3512	4141	4883	5758
Year	1998	1999	2000	2001	2002	2003	2004	2005
Initial data: $x^{(1)}(t)$	6818	7298	9596	11369	11269	16181	20619	24432
Forecast data: $\hat{x}^{(1)}(k+1)$	6789	8006	9440	11132	13126	15478	18252	21522
Year	2006	2007	2008	2009	2010			
Initial data: $x^{(1)}(t)$								
Forecast data: $\hat{x}^{(1)}(k+1)$	25378	29925	35287	41610	49065			

Data resource: the initial data of throughout from 1990 to 2005 come from the “China statistics annual”

According to the MATLAB, it can be calculated that:

$$c=0.2422$$

$$P=1 \quad \text{precision grade is 1 (means good)}$$

So the throughout of Tianjin port in 2007 is 299.25 million tons;

And the throughout of Tianjin port in 2010 is 490.65 million tons.

According to the same principle, the container throughout of Tianjin port can be estimated.

Table 6.2 the container throughout of Tianjin port

Unit: 1,000 TEU

Year	1990	1991	1992	1993	1994	1995	1996	1997
Initial data: $x^{(1)}(t)$	24	31	39	48	63	70.2	82.3	93.6
Forecast data: $\hat{x}^{(1)}(k+1)$	24	23.8	29.1	35.6	43.6	53.3	65.2	79.8
Year	1998	1999	2000	2001	2002	2003	2004	2005
Initial data: $x^{(1)}(t)$	101.8	130.2	170.8	201.1	240.8	301.54	380	482
Forecast data: $\hat{x}^{(1)}(k+1)$	97.6	119.4	146.1	178.8	218.7	267.6	327.4	400.6
Year	2006	2007	2008	2009	2010			
Forecast data: $\hat{x}^{(1)}(k+1)$	490.1	599.7	737.7	897.7	1098.4			

Data resource: the initial data of throughout from 1990 to 2005 come from the “China statistics annual”

According to the MATLAB, it can be calculated that:

$$c=2.2383$$

$$P=1 \quad \text{precision grade is 1 (means good)}$$

So the container throughout of Tianjin port in 2007 is 5.997 million TEU;

And the container throughout of Tianjin port in 2010 is 10.984 million TEU.

The short-term estimation of GM is more precise, but for the long-term, there may be a little deviation. It just can reflect the general trend.

To summarize the estimation above, the cargo throughout and the container

throughout of Tianjin port from 2007 to 2010 can be showed as the following table.

Table 6.3 the estimation of the cargo throughout and the container throughout of Tianjin port from 2007 to 2010

Year	2007	2008	2010
Cargo throughout (1,000 tons)	29925	35287	49065
Container throughout (1,000 TEU)	599.7	737.7	1098.4

Through the analysis of the throughout estimation, it can be found that, it is feasible and possible to build the Tianjin pivot port. And the construction should meet the need for adapting to the development larger-scale trend of the shipping vessels; meet the need for the integrated layout planning of international shipping center in China. The building of the pivot port also should reflect the new tendency of modern port construction.

6.1.2 Build the large-scale logistics hub, and enhance integrated logistics services.

The State "11th Five-Year" plan outline indicates that it is necessary to build the large-scale logistics hub and develop regional logistics center. The Tianjin Binhai New Area is orientated as the northern international shipping center and logistic center. To realize this goal, the key is to increase integrated logistics service quality. Some problems should be paid attention to and finally be figured out.

(1) Construct the Tianjin northern international logistics services system

Apart from the continued increase investment on infrastructure to increase handling capabilities, as the contributor of the construction of Tianjin northern international shipping center, Tianjin Port also should build the huge storage processing facilities,

and speed up the construction of bulk logistics center, container logistics center and sea-rail container logistics center. It should take full advantages as the hub port to develop the professional and socialized logistics center and distribution center, and provide the processing, packaging, sorting, distribution, information and other logistics services. It should change the hub advantage of "port-to-port" or "station to station" to logistical advantages of "door-to-door" and even "point to point", which can increase attractiveness and expand services through the integrated logistics advantages of low cost, high efficiency and good service.

The construction of 12 square kilometers bulk logistics center in Nanjiang is authorized by Tianjin People's government. In the short term, it is not only the supporting facilities for four bulk berths in Nanjiang, but also an important solution of pollution problems in Binhai New Area. In the long run, it will become the distribution center, processing center and trade center within Beijing-Tianjin region, the northwest and the north of China. The building of bulk logistics center can not follow the traditional construction pattern of bulk yard, but should adopt the logistics operational model. Therefore, there must be the operation model coincided to the international one and a set of efficient management mechanism during the process of planning and constructing the bulk center with the sound functions.

With the container transport development, there have been a number of different sizes of container yards in the Beijiang. These container yards have played an important role in the process of Tianjin Port container development. However, to become the international container hub port, Tianjin Port should build a certain scale container logistics center which can connect the national railway and highway network conveniently. This container logistics center not only possesses the functions of container disassembling and transporting, most importantly, it should

have the processing and allocation functions. For example, it should have large-capacity refrigerators for the carriage of goods in the low-temperature distribution and allocation; it should have the package processing center to make up or repackage the non-packaged goods and then delivery them to supermarkets or factories directly; it should have the large storage facilities that can adapt to the different needs of customers to use them for cargo storage, and deliver the goods to other places timely according to the market and customer needs. This will completely change the characteristic of current port facilities which are just for temporary storage of transit, and then make the substantial growth of requirements for storage facilities and the further improvement of its function.

To adapt to the need of construction of northern container logistics center in Beijiang, and according to the process of “moving the coal from the north to the south”, it should plan and arrange the land within port. And then it should build the more functional integrated container yard by concentrating the pieces of land. The next step, it could be assumed that it is a wise decision to build the large container logistics center in the place within Bejiang area which is north to the highway prolongation and south to the coast defence road. This region is adjacent to the expressway and Yangbei highway, just because the highway transport condition is very good. As for the railway, it can connect the national railway transport network. The construction of container logistics center can adapt to the demand of Tianjin port container throughput in 2010 which will reach 10 million TEU.

(2) Reinforce the strength of logistics enterprises

Logistics enterprises are the principal part in the logistics industry, and they play a key role in the construction of Tianjin northern international logistics center. So it is

necessary to develop the specialized third-party logistics enterprises. At present, there are more than 20,000 logistics and related logistics enterprises in Tianjin, and there are more than 500 logistics enterprises in Tianjin Port Bonded Area which include more than 50 multinational ones. Logistics hub city must be the agglomeration of logistics enterprises, especially the large ones with competitive advantages in the international competitions. But overall, the logistics enterprises in Tianjin are mostly smaller and weaker, and there are not so many third-party logistics enterprises which can provide integrated⁴ services. Also there are just a few major international logistics enterprises settled headquarters in Tianjin, and some local logistics enterprises even relocate the headquarters in other places. Therefore, it should create environment which is propitious to the development of logistics enterprises, and encourage mergers and reorganizations of existing state-owned logistics enterprises. Also it should encourage large enterprises to be bigger and stronger, support the development of small and middle sized ones, actively support private enterprises, and foster logistics services brand. To enhance service level and competitiveness of Tianjin northern international logistics center, it is important to further open its logistics market for attracting large-scale logistics enterprise groups to settle down and allow them to set up their headquarters or regional operating centers.

The development of the logistics industry is inseparable from capacity enhancement of logistics enterprises, and it also depends on changes of manufacturing logistics operation. To promote modern logistics management for internal logistics socialization, and to realize the series operation of production structure, procurement of raw materials and product sales, it should break up the old operation mode of "large and all-embracing" and "integration of production and marketing". The construction of northern international logistics center, provides supported platform

for the transformation of manufacturing logistics operational mode, it also makes for the separation and congregation of logistics activities and then improve supply chain management. To turn the Tianjin Binhai New Area to the high-level research and manufacturing base, it must attach importance to the logistics model innovation. It should promote modern logistics management and change the traditional mode of operation within the original manufacturing enterprises; for the new creating industry projects, if it is possible, should encourage to use of the third-party logistics which is more specialized. The construction of Tianjin northern international logistics center must be based on the reality. According to the situation of a country with scarce land resources and relatively abundant labor resources, it should adopt advanced facilities, equipment and technology, integrate and use the existing resources.

6.1.3 The construction of the collection-distribution-transport system

The collection-distribution-transport network system in Tianjin Port includes two fans: the first one is the marine collection-distribution-transport fan composed by the ocean main stems, and near ocean and coastal laterals; the second one is the rear collection-distribution-transport fan composed by rail, road, pipelines and other means of transports. The network would continue to attract leading shipping companies in the world to set up transit base in Tianjin Port and then Tianjin Port can be consider as the basic port or the port of call. So it should increase routes, densify the scheduled flights, expand and broaden the sea radius, promote and perfect the route and capacity structure which are combined of trunk and lateral, and rational layout. Apart from that, the building of inland port rear collection-distribution-transport system is also important. There are two categories: the major external thoroughfare and the internal channel, as for the whole construction it should focus on the latter one.

To build the port collection-distribution-transport net, besides the channel construction opening to the hinterland vertically, it also should expand the hinterland scope and focus on the communication connection with the coastal economic developed areas, namely, emphasize on and strengthen the construction and development of north-south highways, especially the highway connected with Beijing. It should pay attention to the railway building because of the lengthways communication with the hinterland.

Apart from strengthening the external channel construction, it should establish the connection with the inland provinces and cities, even more with the countrywide integrated transport net. To promote the further spread to inland areas, it should attach importance to the connection of external transport net between different port areas and the Tianjin Port. And then it can eliminate the bottleneck of the collection-distribution-transport within the city, and form the integration with comprehensive transport net, which can attract more supply of goods to go out and transit from Tianjin Port.

Therefore, some problems should be considered during the improvement of Tianjin northern international shipping center collection-distribution-transport system.

(1) Plan and construct Jinshi through transport channel

As for the aspect of interaction of Beijing-Tianjin-Shijiazhuang, the direct transport link between Tianjin and Shijiazhuang is the weakest part. The railroading of Jinshi line not only imposes the great significance on the Tianjin Binhai New Area and on the effect exertion of Tianjin Port as the economic center around Bohai Bay, but also has a direct impact on formation of direct passenger and cargo access between the east and middle part of Hebei. So it should plan "Tianjin --

Tangshan -- Qinhuangdao" inter-city rail line express and the "Tianjin -- Shijiazhuang" fast track line. And these 2 lines should converge in the Binhai New Area, and then form the main axis of "Shijiazhuang -- Tianjin -- Tangshan -- Qinhuangdao" inter-city rail express. After that, it can take 1 hour to traverse between Tianjin and Shijiazhuang by the direct inter-city channel, and take 2 hours to traverse between Shijiazhuang and Qinhuangdao.

As the situation existed between Beijing and Tianjin, it is possible to form 3 highways accesses between Tianjin and the south area of Hebei, especially Shijiazhuang. After the construction of high-speed transport link of "Beijing-Shijiazhuang, Tianjin-Baoding, and Tianjin-Shanxi", recently, it should accelerate the construction of the Tianjin - Shantou expressway and open up the second port transport channel that is south to the Haihe River, namely Shihuang, Jinshan, Tangjin and Jinjin express. At the same time, it should open the third direct channel which is given priority to western continuation of Tangjin expressway, i.e. the highway of "Shijiazhuang -Renqiu – Tianjin". Based on that, it can form the southern axis of Beijing-Tianjin - Hebei region, and then can shape the traffic axis of "southwest Hebei-southern Tianjin –east Hebei" which is concentrated on the Tangjin express. If the constructions above finished, it can drive the development of southwestern Hebei and southern Tianjin region.

(2) Quicken the construction of Jinbao railway main stem

It is expected that with the planning and construction of Beijing-Tianjin special railway line, the passengers and cargoes through the Jingshan part could be distributed, and then transport capacity of Fengsha railway can be improved. The implementation of railway line "Tianjin-Baoding-Datong" is impossible. Because the space distance between Tianjin and Baoding is 178 km while the railway distance

between them is 283 km, and the operation time is 3 hours and 18 minutes. So it is recommended that build the railway line “Baoding-Bazhou”. The length of the completed Jinbao line is 148 km, the operation time is 50-minute with the 200 mph. So the Jinbao trunk railway can take the mission of the city express transport between Baoding and Tianjin, and also can partake the mission of Jingguang line.

(3) Plan and construct the Bohai Bay international airport in long-term

It should plan and construct the international airport in the area along the coast of Bohai Bay that near to or on the sea, and this airport can serve coastal areas of Tianjin, Tangshan and Cangzhou. The airport located on the sea, is far from aviation noise interference, and can guarantee the airport all-weather operation. It is not only suitable for servicing city group around Bohai Bay, but also can launch sea-air transport of passenger and cargo. The airport site can extend reclaim land of Tianjin Port Dongjiang area. It should comprehensively build luxury sea tanker terminal and the passenger transport center. The aim of the construction of on-sea airport is to realize the sea-air multi-modal transport without shift of international cargoes and passengers, which can make Tianjin Port become the home port of international oil tankers, and the international terminal that radiated the west; and then lay the foundation for the formation hinterland type airport and the international multi-transportation center.

(4) Expand the passenger and cargo channels around Bohai Bay

To strengthen the horizontal linkage between the ports around Bohai Bay, it should strengthen the channel construction. The highways around Bohai Bay have already been built. As for the railway, the railway channel of Bohai Bay and Shandong peninsula is composed of the Huangda line that is under construction, the Dalailong line, Longyan line, and Huangwan line. In addition, it should further build the

“Tianjin-Hangu-Nanbao-Tangshan” railway contact line, which can enhance the net flexibility, improve the land-sea multimodal transportation, and connect the railway net from the east to the west. Thus, the connection among Liaodong peninsula, Shandong peninsula and Tianjin-Beijing-Tangshan region will be more convenient, which lead to the formation of communication net around the Bohai economic circle.

6.2 The other measures on the construction of Tianjin northern international shipping center

It should be realized that, apart from the construction that directly related to the basic facilities and the infrastructure, others which can make the development of shipping center better also should be paid attention to. They are always considered as the “software construction”. By comprehensively researching, the items that listed following are more important.

6.2.1 Build the Dojiang Port Free Trade Zone

Compared with other FTZs, Tianjin Dongjiang FTZ is the biggest one in China. The planning area is about 30 square km. To meet the needs for construction of modern container terminal cluster in Tianjin and the development of modern logistics, the FTZ can be divided into two main regions: the terminal operation region and the logistics processing region; the latter one can father be divided into commercial trade area, warehouse processing area and display area. Actually, this kind of division is in line with the functions of FTZ include loading and unloading, international transition, international trading, export light processing and modern logistics.

The operational mode of the Dongjiang FPZ should be accordance with the principle of “managed by government, exploited by enterprises, and invested diversity.” The

Tianjin Port Group should play the principal role in the construction, and organize to build the channels, sea bank, road system and other infrastructure effectively and efficiently.

It estimates that, to the end of 2007, the building of 13 square km land area and the 2.3 square km container terminal will be mostly completed; and the logistics processing region nearly 2 square km will be put into practice. To 2010, the construction of Dongjiang FPZ will be finished.

For the future, the Dongjiang FPZ will integrate the functions of port, export processing, import bonded and export drawback. According to the practice and operational mode of the international pivot port, free port and free trade zone, it will carry out a series of favorable policies that can reduce the enterprises' operational cost. The entering bonded for the foreign goods and the entering drawback for the domestic goods can reduce the capital occupation and accelerate the capital turnover. And then the enterprises can perform the operations of goods deposition, re-package, processing and production. Because there is no value added tax for the goods processed in port; and no value added tax and excise for the goods freely circulated within port, it can strengthen the competitiveness of the enterprises in the FPZ, and can help them to involve into the international supply chains. At the same time, it will practise more open management mode and put the policies on the taxation, finance, ships and crew.

6.2.2 Promote the interaction between port and bonded zone

The so-called "interaction between port and bonded zone" means that it should carry out the bonded zone policy in the area (not including the terminal berth) next to the bonded zone which is specially lined out for the development of warehousing

logistics industry. And then through the bonded logistics park that connects the bonded zone and the port, it may take the policy advantage and the location advantage, which can further simplify document procedure, accelerate the goods circulation, promote the shipping-port industry, warehousing industry and logistics industry, and then drive the linked development.

The site of Tianjin international bonded logistics park drafted to build is selected in the part of existing bonded zone and port area, and it is near to the container terminal. The management mode should borrow ideas from the other countries' experience and practice on the free trade zone, and then effectively integrate the functions of logistics transfer, warehousing, distribution and transportation, which can form the advanced comprehensive service system of shipping and modern logistics. Furthermore, it should gradually improve the functions of port area integrated logistics, international trade and resources added, and then depend on the favorable policy to build the largest free trade zone in northern China.

6.2.3 Create the international shipping exchange

The shipping exchange is an important symbol of the construction of international shipping center, while, it should be based on the developed shipping market. So the shipping exchange should be established in Tianjin timely.

To establish Tianjin shipping exchange, it should actively learn from the experience of other countries, and improve the internal management mechanism, market conduct supervision and information dissemination system. It is suggested that emphasize on the shipping companies, shipping generation owners, port, freight forwarding companies in Tianjin, Qingdao and Dalian will be the service targets. It also should define the new function of shipping exchange to enhance the quality of services, and

then contribute to development of the Chinese shipping market.

The establishment of Tianjin shipping exchange should be followed by the "fair, just and open" principle, and it should guarantee the trades which the participants involved are open and fair, also it must ensure the performance of the contract. The exchange has other important functions that can provide the service to members: to strengthen freight market management, improve and perfect the formation of the concentrated trading mechanism, publish shipping information, research shipping policy, and organize implementation tariffs report and coordinate tariff. If these tasks can be finished perfectly, it could play the positive roles of regulating the shipping market and safeguarding shipping trade order, and promoting healthy development of shipping market.

6.2.4 Realize the diversification of investment on Tianjin Port

There should be the adequate funding and support for the construction of Tianjin northern international shipping center, and to realize the port investment diversification, it should expand financing channels gradually. It also should attract multiple investment entities such as domestic and foreign ship companies, consignors and groups to involve in port construction. For example, it can attract the entities which are in hinterland such as Beijing, Hebei, Shanxi to invest and construct the port terminal, and then impart special policy on taxation and the use of the coastline. In addition, it should enhance financing capacity of port enterprises inside and outside, and expand the size of the existing listed company of Tianjin Port Group to improve efficiency and financing capacity.

6.2.5 Train the shipping talents

The training of personnel plays a pivotal role in building of the Tianjin northern

international shipping center. Therefore, it should consolidate the existing maritime education and training resources in Tianjin, appropriately expand the scale of the professional personnel training served for the international shipping center. So it is wise to emphasize on enhancing the training quality of professionals in fields of port and waterway engineering, marine technology and marine engineering, international maritime economic, management and admiralty law, and then can meet the demand for all professionals in the construction of international shipping center. Maybe it can actively strive for the support of Ministry of Education and the Ministry of Communications to develop the maritime education in Tianjin, and establish the Tianjin Maritime University timely. The international shipping talent in Tianjin is listed on the plan of talents shortage. According to this situation, there should be the preferential policies for the senior professionals to come to Tianjin. And then it should actively develop vocational training and job skills training to improve the proficiency level of operations.

6.2.6 Further improve the integrated environment of shipping center

The important works of the construction of Tianjin northern international shipping center include financial services, shipping management, shipping services, customs clearance services, policy and legal service; also include commodity distribution function, bonded warehousing functions, processing function, offshore financial function and information service function. The building of international shipping center is impossible without the good software environment. To this end, some measures should be taken: firstly, to introduce the implementation advice for promoting the construction; secondly, to plan macro port development, according to the principle of “one city, one port” and then determine the overall arrangement of port , carry out scientific port planning, foster regional development concept and strengthen regional coordination and cooperation; thirdly, to strengthen maritime

transport services and the legal system; fourthly, to form a perfect port environment and develop the sea-railway multi-transport; fifthly, to speed up e-port construction to achieve customs service; and finally, to create environment for modern financial and business services, improve the modern logistics and transportation industry, vigorously develop the trade exhibition industry, actively carry out the financial and insurance industries, promote the development of information services continuously and cultivate intermediary services increasingly.

6.3 Summary of the chapter

The construction of international shipping center is the comprehensive systematical process. It involves the different aspects such as the social economy, management system, and legal problems and so on. It needs the corporate efforts of building the hardware and software environment made by the city and the economic region. It also should actively fix the development planning and the relative policies, organize the system and attract the invest entities from all parts of China. So some strategic measures should be taken, which can establish the foundation for the construction of Tianjin northern international shipping center.

CONCLUSTION OF THE DISSERTATION

Under the circumstance of the global and regional economic integration, as the node of modern integrated transport system, port play the outstanding role in the process of development on trade and regional economy. To adapt the demanded tendency, different countries and regions take the action to strengthen the port construction for the purpose of leading its port to become the international or regional shipping center. After considering and analyzing all aspects, it can be concluded that, it is possible, and necessary to build the northern international shipping center in Tianjin. Of course, there are some problems must be solved, so according to the strategy and the development orientation, the measures that is proposed should be taken.

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APPENDIX

Table A-1 the planning guideline for the main port areas in Tianjin Port

	Total area (km ²)	Shoreline length (km)	The number of berths	Note
In total	141.92	64.32	200-220	
Beijiang Area	36.8	22	75-80	Excluding the future port zone (30km ²)
Nanjiang Area	14.7	11.6	17-21	Excluding the bulk cargo logistics center (12km ²)
Haihe Area	11.4	18.5	100-120	
Beitang Area	0.02	0.22		
Industrial Area near to Port	79	12		

Table A-2 the portion of the imports and exports value of different hinterland through Tianjin port in its total value from 2001 to 2005

Unit: 100 million RMB

The hinterland	2001			2002			2003			2004			2005		
	A	B	C %	A	B	C %	A	B	C %	A	B	C %	A	B	C %
Beijing	267.1	63.6	23.0	267.0	64.0	24.0	313.3	67.4	21.5	428.2	101.6	23.7	403.2	127.7	31.7
Hebei	57.4	31.6	55.0	66.7	37.7	56.6	89.8	49.2	54.8	135.3	73.0	54.0	160.7	84.3	52.4
Shanxi	19.4	10.9	56.1	23.1	11.3	48.7	30.8	16.8	54.5	53.8	34.1	63.4	55.5	29.4	52.9
Inter Mongolia	20.4	4.5	22.3	24.3	5.6	23.0	28.3	7.6	27.0	37.2	12.3	33.1	48.7	14.1	28.9
Henan	27.8	7.2	25.9	32.0	9.4	29.2	47.1	12.2	25.9	66.2	18.2	27.5	77.3	21.3	27.6
Shanxi	20.6	4.7	22.6	22.2	5.0	22.5	27.8	5.6	20.0	36.4	7.5	20.5	45.8	9.0	19.7
Gansu	7.8	3.1	39.8	8.8	3.4	38.4	13.3	5.0	37.4	17.7	8.3	47.0	26.3	11.2	42.7
Qinghai	2.1	0.6	28.3	2.0	0.7	33.5	3.4	0.7	19.5	5.8	1.1	19.1	4.1	0.8	20.3
Ningxia	5.3	2.2	41.5	4.4	2.6	57.8	6.5	3.8	58.8	9.1	5.2	57.3	9.6	5.3	55.6
Xinjiang	17.7	3.0	17.1	26.9	4.6	17.2	47.7	4.8	10.1	56.4	5.0	8.9	79.4	5.0	6.3

Resource: The imports and exports value of different hinterland through Tianjin port is provided by Tianjin Custom.

The total imports and exports value of different provinces from 2001 to 2006 is based on the data provided by National Statistics Bureau.

And in this table, A stands for the total imports and exports value of different provinces every year.

B stands for the value through Tianjin port

C stands for the portion of the imports and exports value of different hinterland through Tianjin port in its total value.