

World Maritime University

The Maritime Commons: Digital Repository of the World Maritime University

World Maritime University Dissertations

Dissertations

2006

The analysis of large Chinese liner companies' strategy to develop logistics services

Biyun. Wang

World Maritime University

Follow this and additional works at: https://commons.wmu.se/all_dissertations

Part of the [Strategic Management Policy Commons](#)
Digital Commons

Network Recommended Citation

Wang, Biyun., "The analysis of large Chinese liner companies' strategy to develop logistics services" (2006). *World Maritime University Dissertations*. 167.
https://commons.wmu.se/all_dissertations/167

This Dissertation is brought to you courtesy of Maritime Commons. Open Access items may be downloaded for non-commercial, fair use academic purposes. No items may be hosted on another server or web site without express written permission from the World Maritime University. For more information, please contact library@wmu.se.



WORLD MARITIME UNIVERSITY

Shanghai, China

**The Analysis of Large Chinese Liner Companies’
Strategy to Develop Logistics Services**

By

Wang, Biyun

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

In

International Transportation and Logistics

2006

DECLARATION

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

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

(Signature):

(Date):

Supervised by:

Prof. Zong Beihua
Shanghai Maritime University

Assessor:

Prof. Peter Marlow
University of Cardiff, UK

Co-assessor:

Prof. Liu Wei
Shanghai Maritime University

ACKNOWLEDGEMENT

I am thankful to World Maritime University and Shanghai Maritime University providing me with the precious opportunity to study in this program.

I want to thank the whole faculty, especially to Mr. Ma Shuo, Mr. Shi Xin, Mr. Xu Dazhen, Ms. Zhou Yingchun, and Ms Qu Shanshan, who have made great effort to ensure the superior quality of the program. I am also grateful to all the overseas professors who traveled a long way to China to share with us their profound knowledge and creative ideas.

I want to give my wholehearted gratefulness to my supervisor, Prof. Zong, Beihua, who has kindly guided and supported me to complete the dissertation, and has given constructive advice on the research topic. I am thankful to all those who have kindly supported my inquiry and have given me their opinions.

Finally, sincerely thanks to my family and my friends who have been supporting and encouraging me over the past two years.

ABSTRACT

Title of Dissertation: **The Analysis of Large Chinese Liner Companies' Strategy to Develop Logistics Services**

Degree: **MSC**

Nowadays, in the open Chinese shipping and logistics market, the large Chinese liner companies are faced with unprecedented competition and market chance. They have to take certain measure to deal with the situation. Besides, it is the global trend for the international shipping companies to carry its service from ocean transport toward logistics. The large Chinese liner companies should be aware of the fundamental change in development and take the initiative in the competition so as to survive and grow in the market.

This dissertation is the analysis of large Chinese liner companies' strategy to develop logistics services. It consists of 5 chapters. Chapter One introduces the objectives of the topic, the main content, the research methodologies, and the literature review. Main body of the paper is from Chapter Two to Chapter Five. Chapter Two introduces the current state and problems in the companies' operation, and then draws the necessity for the companies to develop logistics services. Chapter Three analyzes the external environment for the companies' strategic development, which includes opportunities and threats. Chapter Four analyzes the internal conditions of the development, containing their advantages and disadvantages. Chapter Five discusses the issues relating to the logistics developing strategies, including strategic goals, market positioning and the implementation of the strategies.

The paper suggests the proper strategies for large Chinese liner companies' transition into modern logistics service provider. The strategies should be based on their strength in liner service and in local logistics market. Thus, they would gain their own competitive advantages in providing logistics service.

Key Words: Large Chinese liner companies, Logistics, Strategy

TABLE OF CONTENTS

Delaration	ii
Acknowledgement	iii
Abstract	iv
Table of contents	vi
List of tables	ix
List of figures	x
List of abbreviations	xi
1 Introduction	1
1.1 The objectives of the topic	1
1.2 Main contents and methodologies	2
1.3 Literature review	3
1.3.1. Discussion on logistics market development in China	3
1.3.2. Preview of the developing trend of container transport in China	4
1.3.3. Discussion on the future of the liner industry	4
1.3.4. Estimation of the new situation Sino liner companies faced with	5
1.3.5. Issues relating to the liner companies' developing strategies	5
1.3.6. Summary of the strategic analysis and selection methodologies	6
2 Necessity for large Chinese liner companies to develop logistics service	8
2.1 Current operation of large Chinese liner companies	8
2.1.1. Scale of the companies	8
2.1.2. Ranking of the world's top liner companies	9
2.2 Existing issues in the operation and their causes	11
2.2.1. Single transport mode is hard to meet the customers' demand	11
2.2.2. The liner industry would undergo hard times and the profitability would shrink	12
2.2.3. Homogeneous service product results in lack of core competence	14
2.3 The reasons for the liner companies to develop logistics service	14

2.3.1. The liner companies play an important role in logistics service	14
2.3.2. It fits the trend of logistics development	15
2.3.3. The service satisfies the increasing customers' demand	16
2.3.4. The liner companies need to enhance competitiveness	17
Summary of the chapter	18
3 Analysis of external environment of Chinese liner companies' logistics service development	19
3.1 The opportunities to develop logistics service	19
3.1.1. The favorable macro-economic environment	19
3.1.2. The maturing domestic logistics market	20
3.1.3. Great profit potential in domestic logistics market	21
3.1.4. The massive construction of domestic transport infrastructures	22
3.1.5. Introduction of advanced overseas logistics experience	24
3.2 Analysis of competitors in the logistics market	24
3.2.1. Overseas logistics companies try to grab Chinese market	24
3.2.2. Analysis of the advantages of the competitors	26
3.2.3. Analysis of the disadvantages of the competitors	27
3.3 Index model of the liner company's competitiveness to develop logistics service	28
3.4 Case study-Maersk vs. COSCO	30
3.3.1. Brief introduction of the companies	30
3.3.2. Comparison in information management	31
3.3.3. Competition in logistics market	31
3.3.4. Application of the index model	33
Summary of the chapter	34
4 Analysis of internal conditions for Chinese liner companies' logistics service development	35
4.1 Developing advantages	35
4.1.1. Advantage in domestic transport network	35
4.1.2. Good reputation in local market	35
4.1.3. Stable customer base and partnership	36
4.1.4. Strong capital resource	36
4.2 Obstacle factors	36
4.2.1. Insufficient understanding of modern logistics	36
4.2.2. Current facilities and management in need of improvement	37

4.2.3. Immature logistics information management	37
4.2.4. Personnel lacking in proficiency providing logistics service	38
4.3 Case study-COSCO's strengths and weaknesses in logistics service development	38
4.3.1. COSCO's strengths in developing logistics service	38
4.3.2. COSCO's weaknesses in developing logistics service	39
Summary of the chapter	41
5 The liner companies' strategies to develop logistics service and their implementation	42
5.1 Brief review of the liner companies' SWOT analysis	42
5.2 Strategic goal and market positioning	43
5.2.1. Basis of setting the strategies	43
5.2.2. Strategic goal and market positioning	44
5.3 Implementation of the strategies	47
5.3.1. Strengthen the strategic cooperation with the forward and backward enterprises in logistics procedure	47
5.3.2. Establish win-win cooperation with world-famous logistics companies	47
5.3.3. Set up comprehensive logistics service network	48
5.3.4. Develop advanced logistics information management system	48
5.3.5. Enhance training of specialized personnel	49
5.4 Case study-the logistics developing strategies of COSCO and China Shipping	49
5.4.1. The cooperation strategies of the two companies	49
5.4.2. Sustained development is ensured	51
5.4.3. The scale of logistics operation increases	51
5.4.4. Sharing and integration of logistics resource is promoted	52
5.4.5. Specialization of logistics service is being intensified	53
Summary of the chapter	54
Conclusion	56
References	59
Appendix 1 Calculation of factor weightings in the index model	63
Appendix 2 Evaluation of competitiveness of Maersk and COSCO	67

LIST OF TABLES

Table 2-1 Ranking of the world's top 10 liner companies (May, 1st, 2005)	10
Table 2-2 Ranking of the world's top 10 liner companies (Sep, 29th, 2005)	10
Table 3-1 The proportion of logistics cost to GDP in some developed countries and China	21
Table 3-2 The structure of investment in logistics infrastructures in China (2004, 2005)	23
Table 3-3 Index system of liner company's competitiveness to develop logistics service	29
Table 3-4 The relative and global weights of the elements in the index	30
Table 3-5 Comparisons between Maersk and COSCO	33
Table 4-1 COSCO's strengths and weaknesses in developing logistics service	40
Table 5-1 SWOT analysis of large Chinese liner companies' logistics service Development	42
Table 5-2 The major service scopes and clients of China Shipping Logistics	50

LIST OF FIGURES

Figure 2-1 Prediction of cellular fleet and capacity 2006-2010	13
Figure 2-2 Cellular capacity Projections for each ship size 2006-2010	13
Figure 3-1 The structure of domestic logistics cost (first season of 2006)	22
Figure 3-2 The structure of investment in logistics infrastructures in China (2005)	23

LIST OF ABBREVIATIONS

AHP	Analytic Hierarchy Process model
CKD	Completely Knocked Down
COSCO	China Ocean Shipping (Group) Company
COSCON	COSCO Container Lines Co., Ltd.
CSCL	China Shipping Container Lines Company Limited
EDI	Electronic Data Interchange
GDP	Gross Domestic Product
MIS	Management Information System
NVOCC	Non-Vessel Operating Common Carrier
OOCL	Orient Overseas Container Lines Ltd.
SWOT	Strength, Weakness, Opportunity and Threat
TCL	TCL Corporation (one of the biggest consumer electronic group in China)
TEU	Twenty-foot Equivalent Unit

1 Introduction

1.1 The objectives of the topic

With the Reform and Opening up, China's national economy boasts a steady and rapid development. Besides, due to the eastward movement of the world manufacture, China has become the manufacturing and processing center of Asia-Pacific region and the world, which ensures sufficient cargo source for the container transport in China. Many shipping magnates have been attracted by huge shipping demand and have triggered fierce market competition. After China's entry into the WTO and with the removal of the admittance restrictions of Sino shipping and inland logistics market, the foreign players are bound to be more aggressive. There would be a new competition focus, that is, the penetration and seizure of Chinese logistics market. The foreign shipping companies have abundant capital, flexible operation, advanced technologies, and experienced management. However, Chinese liner companies are weak in such aspects as logistics ideas, system design, and service level. It would be hard to survive the competition if Sino liner companies didn't expedite developing logistics services. Thus, it is obvious that developing logistics services is closely linked with the companies' survival and growth.

Facing such situation, Sino liner companies should adjust the competition strategies to enhance logistics service and find new profit source so as to escape the disordered competition on depreciating liner freight. They should cultivate logistics service

capability to seize and enlarge share in that booming market so as to gain core competence and strengthen competitive advantages.

What's worth mentioning is whether a liner company, which is capital-intensive, is suitable to develop logistics service. In my opinion, due to the unique situation in China, the market is proved to have such demand. The paper would give the analysis. Besides, the companies' maritime-based nature should be taken into consideration in the process of market positioning.

1.2 Main contents and methodologies

The dissertation analyzes the large Chinese liner companies' strategies to develop logistics service. The necessity of development is concluded from the analysis of the companies' current operation. The companies' strategic goals, market positioning and their implementation suggestions are based on the analysis of the companies' external environment and internal conditions.

The first part of the main body analyzes the current operation of large Sino liner companies, and gets the reasons to develop logistics service. The second part focuses on the external environment of the companies, including their opportunities and competitors, in which the Analytic Hierarchy Process (AHP) model is applied to set up a model evaluating the liner companies' competitiveness to develop logistics service. The third part discusses the strength and weakness of the companies' internal conditions. The fourth part is about the issues relevant to the companies' strategies and their implementations, such as strategic goals and market positioning. The SWOT analysis is applied in the second and third parts.

1.3 Literature review

1.3.1. Discussion on logistics market development in China

After China's entry into the WTO, most of the logistics market has been completely open. Ding Junfa, a Chinese logistics expert, forecasted five trends in the Chinese logistics industry. First, the industry would undergo rapid development. Second, government and enterprises would function well in a harmonious way. Third, stated-owned companies, private companies, Sino-foreign joint venture, and foreign companies would occupy the market. Fourth, the industry's contribution to GDP would increase steadily. Fifth, the industry development would rely on supply chain theories, investment in modern technologies and human resource¹.

There is a large gap between China and developed countries in logistics industry. First, the Sino companies are generally weak and loose in operation. Second, the companies are too small to satisfy the increasing demand. Third, the third-party logistics develops slowly and is not specialized².

Multinational enterprises' entry has brought about both opportunities and challenges. They drive the development by creating additional logistics demand, upgrading logistics service with their capital and technologies. They would be the role models for local logistics companies. Yet, their entry causes intensive competition as well. Competing in the completely open Chinese market, the multinationals would fully utilize significant financial, technological, and human resource, which would put Chinese companies under greater pressure³.

¹ *The Specialists' opinion of China's logistics development*. Water Transportation Digest, 2005(2/3)

² *The five features of the development of Chinese logistics enterprises*. Water Transportation Digest, 2005(11)

³ *What has international logistics brought to China since China's entry into WTO*. Water Transportation Digest,

1.3.2. Preview of the developing trend of container transport in China

Due to the booming national economy and foreign trade, the container transport in China grows healthily. The healthy and steady growth would continue due to economic, foreign trade, and port development. It would also be driven by government support, logistics development and international competition⁴.

When China has become the “world manufacturing center”, domestic trade is boosted. The developing trends of the container transport market in China are as follows: containerization and intermodalisation would be enhanced; the market would be regulated; efficient container transport system between major terminals and inland routes would be set up; the transport equipments would be applied with modern technologies; advanced management would reduce cost and improve service level; sustainable development strategy would lead to fewer energy consumption and lower cost. In a word, the container transport development in China is optimistic and full of potential⁵.

1.3.3. Discussion on the future of the liner industry

According to the economists’ forecast, the land-based express companies who are exploring the range of service are likely to surpass the traditional ocean carriers and replace the ocean carriers to contact with the major clients.

2005(2/3)

⁴ Fan, Y. *Factor analysis of container transportation development in the future of China*. World Shipping, 2005(4)

⁵ Sun, J. *Considering about some policies on the development of container transportation*. World Shipping, 2005(3)

John. F, a British container market analyzer, indicates in a report on “international container”(2005, 10) that the times of acquisition within the liner industry has begun. The driving forces include reducing cost through economy of scale, expanding the scope of routes, and seizing a share in the logistics market. Therefore, the urgent task for the ocean carriers is to reduce cost by formalizing their operation through standardized and integrated management, and to adjust their service to meet customers’ demand. They should be aware of the risk and allocate the resources in a long-term economically beneficial way⁶.

1.3.4. Estimation of the new situation Sino liner companies faced with

A fierce competition in liner industry is going on in China. The rapid and sustainable growth in economy and foreign trade lead to the booming container transport in China, which has caught the attention of overseas liner companies. Thus, Chinese shipping industry should attach importance to enhancing competitiveness and setting long-term marketing strategies⁷.

Many shipping companies have realized that logistics is a new profit source. Logistics and shipping are indispensable. The range of logistics covers ocean transport. In the current fierce competition, the shipping companies need to explore logistics service to strengthen its competitiveness⁸.

1.3.5. Issues relating to the liner companies’ developing strategies

In current situation, the Chinese liner companies should grasp the opportunities to

⁶ Shan, M. *The changing period of global liner industry*. Transport Business China, 2005(12)

⁷ Chen, D. *The review and the forecast of International container shipping market*. World Shipping, 2005(1)

⁸How can Sino shipping companies providing logistics services. Water Transportation Digest, 2006(1)

start logistics service at a higher level. The companies should research the market and make effective decisions, explore service based on transportation, set up and expand the logistics service network, develop logistics information system and cultivate professional personnel⁹.

When developing logistics service, Sino liner companies should adopt essential strategies according to practical conditions. They should set up the customers' demand-oriented idea, develop multiple service products to meet various demands, enhance information management capability, seize the logistics market quickly through acquisition, consolidation and alliance, and cultivate personnel to strengthen the capability of providing value-added service¹⁰.

1.3.6. Summary of the strategic analysis and selection methodologies

Nowadays, "SWOT" analysis is widely used in the process of strategic planning. "SWOT" analysis would analyze the strengths, weaknesses, opportunities and threats of the company. It is a methodology to summarize the internal and external factors influencing a company's business. The analysis of strength and weakness focuses on the conditions of the company compared to its rival, while the analysis of opportunities and threats concentrates on the changing external environment which might have an effect on the company's operation. "SWOT" analysis enables the company to know its own resources and capabilities so as to take proper measures to keep its competitive advantages¹¹.

⁹How can Sino shipping companies providing logistics services. Water Transportation Digest, 2006(1)

¹⁰The logistics market developing strategies for Sino shipping companies under the new situation. Water Transportation Digest, 2005(12)

¹¹Plunkett, W Attner, R. *Management*. South-Western College Publishing(1997)

“Core competitiveness” is also a commonly used theory. It is the basis of a company’s competitiveness. It is a fundamental capability of a business, a product out of business development to a certain stage, which competitors cannot totally imitate, not to mention fully trade; it is a result of collective learning while doing. The cultivating of core competitiveness needs the effective allocation and use of the resources.¹²

The Analytic Hierarchy Process (AHP) model, a relative fuzzy evaluating mathematical method, can also be applied in the comparison of competitiveness and in the selection of strategies. The weighting of the factors in various layers are set down through plus-weighting analytic comprehensive assessment method and Level analytic approach. With relevant information, the specialists are inquired to score the factors according to judgment matrix. Then, the target index value can be obtained. The method could make the qualitative and quantitative analysis synthetically so that a comprehensive evaluation of competitiveness can be made¹³

Besides, the six principles of business exploration put by Andrew Campbell, the director of Ashridge Strategic Management Centre are worth referring to. They are: keeping invest in core business; finding opportunity and not being tempted by the market; only investing in few new business which the company has competitive advantage; not being over confident of current techniques; finding potential personnel; and being practical with the goal. These principles help to make the right kind of decisions¹⁴.

¹²prahalad Gary, H. “*Core competence of the Corporation*”(1990)

¹³Hu, D. *The competitiveness of enterprise*. Economic Management Publishing

¹⁴ Fang,J. *How to seek the opportunity of growth wisely*. Modern Weekly, 2006(1.21)

2 Necessity for large Chinese liner companies to develop logistics service

2.1 Current operation of large Chinese liner companies

2.1.1. Scale of the companies

The two largest Chinese liner companies are COSCO Container Lines Co., Ltd. (“COSCON”) and China Shipping Container Lines Company Limited (“CSCL”). They are both world-famous Chinese liner companies.

COSCON had 127 modern container vessels totaling over 320,000 TEUs as at the end of 2005. In the next two years, the fleet capacity will be up to 450,000 TEUs, which will involve European and American trunk services deployed with 5400 to 8200 TEU vessels and subsidiary services with 4800 to 5200 TEU vessels. In 2010, COSCON is expected to reach total capacity of about 800,000 TEUs. COSCON operates over 70 international shipping routes and dozens of domestic services connecting over 100 principal ports in over 30 countries and regions across the world. The schedule accuracy has consistently been 95% or higher since 1998. In particular, the US trade and Australia trade have maintained 100% schedule accuracy, becoming key features of their trading services. As the best container liner at home, COSCON has set up over 300 freight organizations in Shanghai, Shenzhen, Hong Kong, Xiamen, Qingdao, Guangzhou, Dalian, Tianjin, Wuhan, Beijing and other

coastal & inland cities. Besides, it has more than 400 agencies beyond China¹⁵.

As at May 2006, CSCL had a young and modern fleet that comprises 145 vessels with a total operating capacity of 361,171TEU, among which over 54 of them had capacities of over 4,000 TEU. The average age of vessels with capacity of more than 4,000 TEU is 2.25 years which occupied 75.8% of the whole operating capacity. CSCL is now operating dozens of domestic coastal routes and international container liner services from China to Japan, Korea, Southeast Asia, Australia, Europe, Mediterranean, America, West Africa and Persian Gulf. With 16 vessels in operation, China Shipping's Far East-North America lines cover 8 base ports and over 40 inland points of North America. The company has formed a network covering the main ports of China, Japan, Korea, and Southeast Asia. Its Far East-Europe/Mediterranean line is now serving almost all china base ports. With big capacity as compared with other carriers, it is also a dominant player in China with a share of over 50% in a significant number of domestic ports. Its domestic market share in certain ports is as high as 80%-90%¹⁶.

As is revealed by the information above, COSCON and CSCL are close in scale. They boast strong capital power, have dense domestic service network, and cover global service range. Of course, for a capital-intensive company providing liner service, having large scale is necessary, because it is a prerequisite to survive in this market.

2.1.2. Ranking of the world's top liner companies

¹⁵COSCO Container Lines <http://www.coscon.com>

¹⁶China Shipping Container Lines Co., Ltd <http://www.cscl.com.cn>

Table 2-1 and Table 2-2 show the ranking of the world's top 10 liner companies in May 2005 and in September 2005 respectively.

Table 2-1 Ranking of the world's top 10 liner companies (May,1st,2005)

Company	Ranking	Market Share (%)	TEU	container vessels
Maersk Sealand	1	12.3	1036582	387
MSC	2	8.1	681334	257
P&O Nedlloyd	3	5.5	460203	162
Evergreen	4	5.2	439538	153
CMA	5	4.9	412007	185
APL	6	3.7	315879	99
Hanjin	7	3.5	298173	80
CSCL	8	3.4	290089	111
COSCON	9	3.4	289883	118
K line	10	3.3	281722	105

Source: Jctrans.com Corporation <http://www.jctrans.com>

Table 2-2 Ranking of the world's top 10 liner companies (Sep,29th,2005)

Company	Ranking	TEU	Container vessels
Maersk Sealand	1	1614225	575
MSC	2	727169	266
CMA	3	485844	243
Evergreen	4	460487	152
CSCL	5	330087	119
APL	6	326926	103
COSCON	7	311644	125
Hanjin	8	307653	81
K line	9	301573	188
OOCL	10	236787	67

Source: Transport Business China,2005.11

The tables reflect the important positions the two large Sino liner companies hold in the global market. It can be concluded from the statistics that the market share and

the fleet capacity are closely related. Thus, fleet capacity is the most convincing proof of a liner company's power. Recently, COSCON and CSCL have focused on enhancing ocean transport competence by enlarging container fleets so as to maintain the market share. Table 2-2 shows that the number of CSCL's container vessels reached 119 and the total TEU was over 330,000, which positioned the company within the first five global liners.

The statistics should raise our attention as well. After the No.1 shipping magnate AP Moller-Maersk Group's acquisition of P&O Nedlloyd, its capacity is unreachable, which enables the company to allocate the vessels on a larger scale and extent, cover wider route range, shorten the delivery period, and better utilize the ship space. Scale is a decisive factor of a liner company's competitiveness, which, however, cannot be caught up easily. It remains a doubt whether enlarging fleet capacity is the only way to grow. Finding new competitive advantages and profit source might be the key to a liner company's survival and growth.

2.2 Existing issues in the operation and their causes

2.2.1. Single transport mode is hard to meet the customers' demand

The transport mode Sino liner companies operate is exclusive, which cannot meet the increasing demand. The liner companies provide simple sea-port transport service. With diversification of trade delivery modes, the transport mode tends to diversify as well. For a significant client, the mode is no longer restricted to sea transport and port delivery is far from satisfactory. Modes such as air and road transport are also required. Due to the diversity of customers' demand, sea transport has to transit into intermodal transport so as to provide door-to-door service. Besides,

time of delivery and quality of service should be supervised effectively. The core of service business is to satisfy customers' demand. Thus, it is a key issue how to adjust and expand the range of service according to the market demand.

2.2.2. The liner industry would undergo hard times and the profitability would shrink

As the industry competition intensifies, the profitability would decrease. Since 1990, booming world trade has aroused rapid development in international transportation. Yet, the increase in fleet capacity had well surpassed the growth in trade volume. The hard situation of supply exceeding demand in liner market resulted in vicious price competition. Facing the increase in capacity, the decrease in freight rate and the negative influence of financial crisis and depressed global economy, the liner companies managed to reduce cost by means such as alliance, acquisition and sharing vessel space. However, this couldn't turn back the drop of profitability. The shipping companies are threatened with slim profit, and even deficit. Recent years, the liner industry has recovered. However, the effect of its periodical change on the companies' operation is inevitable.

Figure 2-1 illustrates the trend in world cellular fleet and capacity from 2006 to 2010. We can see that the capacity will cease to escalate from 2006 to 2008. Seeing Figure 2-2, we can see an obvious increase in capacity for vessels sized over 5000 TEU. However, the increase in cargo volume doesn't seem to be optimistic during that period. According to International Monetary Fund's prediction, the world economy would have a 4.3% increase in 2006. However, the China Effect, the force pushing container shipping to peak, might change. Since 2002, China's foreign trade has sustained a 4-year rapid growth. The increase rates for 2003 and 2004 both exceeded 35%, which were the largest. Though China's foreign trade is hopeful to keep

booming, the growth obviously slowed down in 2005. Ministry of Commerce of China predicted that the 2006 foreign trade is expected to exceed 1,600 billion USD, which would be a 15% increase and obviously lower than that of the years before. The industry people indicated that there would be a surplus in vessel capacity in 3 years, which might decrease freight rate. In such case, it would be tough for the liner companies to survive the fierce competition by relying on ocean transport service. They have to find a new way to win in the market.

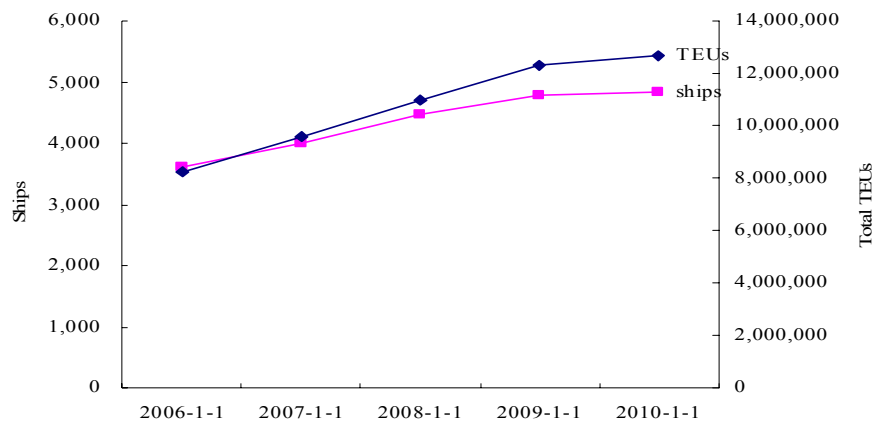


Figure 2-1 Prediction of cellular fleet and capacity 2006-2010

Source: Obtained according to the statistics reported by BRS-Alphaliner

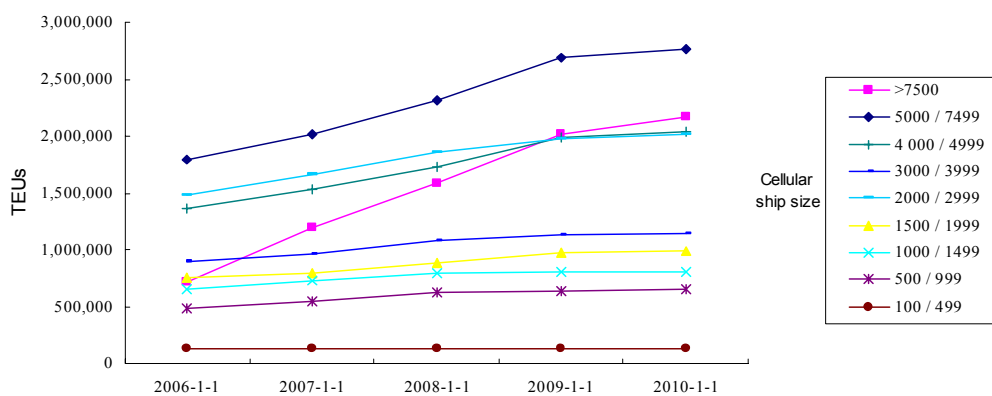


Figure 2-2 Cellular capacity Projections for each ship size 2006-2010

Source: Obtained according to the statistics reported by BRS-Alphaliner

2.2.3. Homogeneous service product results in lack of core competence

For a liner company, the proof of its core competence is the ability to grasp customers' need. Due to the alike traditional ocean transport service provided by Sino liner companies, they couldn't reveal their core competence and failed to obtain their competitive advantages. Owing to the low customers' perception of the difference between service products, the price competition was bound to be triggered. To escape such situation, the companies have to adjust their business strategies so as to cultivate their own core competence.

The debut and development of integrated logistics has caught the eye of liner companies. They have realized through practice that competitive advantages can be obtained by satisfying higher customers' demand and by enhancing the service level of shipper-oriented door-to-door transport. Based on such understanding, some world-famous shipping companies started their logistics service, which has brought new business opportunity and rich profit. Moreover, the competitive advantages of their ocean transport service have been well strengthened. Thus, it is a global trend for the international shipping companies to develop logistics service.

2.3 The reasons for the liner companies to develop logistics service

2.3.1. The liner companies play an important role in logistics service

Sea transport plays a key role in modern logistics system. Transportation is the fundamental function of modern logistics system. Its proper functioning is the guarantee and prerequisite for other functions to take effect. In China, 90% of the

cargo is by sea transport. Besides, the ocean freight is a main portion of total logistics cost, so the good control over it is decisive to reduce the overall cost.

The logistics industry in China is in its early stage. Most domestic players are weak, small, and lacking in specialization. However, the large liner companies have great transport capacities, the management experience to operate logistics service, the service network, and settled transport facilities, all of which are favorable to start logistics service. Compared to other Chinese companies, the large liner companies are more qualified to provide high-standard logistics service.

2.3.2. It fits the trend of logistics development

Seeing the logistics development in some developed countries, the logistics service development of many transportation companies has become a great driving force of the industry development. In many countries, the liner companies gradually form a few large groups through merging and acquisition so as to provide integrated logistics service of high quality and to spread the risk of operation.

The globalization of world economy and the application of hi-tech information technologies have boosted world economy and increased imports and exports, so the transport industry is faced with higher requirements. The differentiated and advanced demand and the intensified market competition have led to the transform of transport mode. The simple port delivery demand has evolved into demand for integrated and customized supply chain service. Overseas large transportation companies transited into logistics service providers by means such as reforming, merging and acquisition. Actually, many logistics companies grew through acquisition, for instance, the well-known Deutsche Post and Schenker Logistics.

Chinese liner companies have started logistics service as well. The COSCO group set up the specialized logistics company, COSCO Logistics. It gets integrated by altering the contents and means of service. The China Shipping group founded China Shipping Logistics. These companies take advantage of their capital, facilities, management, network and technologies to lead in the market. They aim to provide customized supply chain service of superior quality according to individual demand. This shows that the logistics development is apt to speed up both at home and abroad. The companies must seize the opportunity to transit into logistics service provider. Otherwise, they may lose competitiveness and be kicked out of the market.

2.3.3. The service satisfies the increasing customers' demand

As a service provider, the company must meet the customers' demand. In global market competition, the manufacturers and vendors have to gain competitiveness from low logistics cost and quick reaction to the market, which requires an efficient and swift logistics service. The liner companies should respond to the changing demand and take measures to develop logistics service.

During recent years, the trade growth in China is mainly from intra-industry trade of multinational companies. Those multinationals and outstanding domestic companies have good operation and create high logistics demand. For the liner companies, providing service for these famous companies would enrich their management experience in logistics operation, enable them to gain good reputations, and create chances for future business. The liner companies should set up the market-oriented operation and customer service system through close cooperation with famous logistics and processing companies. They should also establish stable and

comprehensive cooperation with leading domestic manufactures. Furthermore, they can found strategic alliance with distinguished logistics companies and learn the advanced managing experience so that they would meet the customer demand and meanwhile grow into a competitive global logistics service provider.

2.3.4. The liner companies need to enhance competitiveness

Nowadays, the competition in the shipping industry becomes increasingly fierce and the profitability in traditional transport service shrinks. Thus, the liner companies must open up new range of service based on the strengthened advantages in traditional service. As an extension of the liner service, logistics has become the first choice to enlarge service range. The integrated logistics service would reduce total cost by adding value to traditional transport service with the application of various facilities and technologies. The advanced shipping technologies have eliminated the differentiation of ocean transport. Yet, by providing value-added service, the liner companies could avoid such situation and establish core competence of their service.

Now the foreign and domestic logistics market is taking shape. The increasing domestic companies' logistics demand would be a profit source for Chinese liner companies and an opportunity for them to enhance their own competitive advantages by providing individualized and differentiated service product for their customers.

These are the main reasons for the liner companies to develop logistics service. The liner companies should not only operate ocean transport, but also open up the logistics market. It's for their survival and for their growth as well. It is an inevitable trend for the liner companies to develop logistics service.

Summary of the chapter

This chapter focuses on the necessity for the large Chinese liner companies to develop logistics service. First, the current operation of large Chinese liner companies is introduced, and the concept that the competitiveness of liner companies is decided by the carrying capacity is mentioned. Then, the issues resulted from single transport mode and service product, gloomy industry situation, which would be the threat to survival and the neck-bottle of growth, are explained. Thus, the companies have to adjust their strategies. In the following part, the reasons for developing logistics service are concluded: it would strengthen the companies' position in the logistics system, fit the trend of logistics development, enable the companies to meet customers' demand and cultivate their own competitiveness.

3 Analysis of external environment of Chinese liner companies' logistics service development

3.1 The opportunities to develop logistics service

3.1.1. The favorable macro-economic environment

According to the national eleventh Five-Year plan (2006-2010), 30 modern logistics distribution centers will be set up. About 10 large specialized logistics companies with nationwide network will be cultivated on this basis¹⁷. With the government's policy to develop logistics industry, various regions have worked out their own developing plans and have listed them on schedule. The logistics park construction projects in Beijing, Shanghai, and other cities like Tianjin, Shenzhen, Qindao, Wuhan and Chengdu, indicate that logistics development is regarded as an important stimulation to the city development. According to the prediction of relevant government department, 100 logistics parks and 7 major trading centers are to be built in China in the next 10 years¹⁸. Thus, the prospect of logistics development in China is expansive.

Meanwhile, the government has constituted relevant laws and regulations to promote logistics development. In March 2003, after six ministries and committees jointly

¹⁷ *How can Sino shipping companies providing logistics services*. Water Transportation Digest, 2006(1)

¹⁸ Eastday news. <http://news.eastday.com>

issued “Several Suggestions on Speeding Up China’s Logistics Development”, the relevant ministries and committees issued several policies and regulations respectively, such as “Several Suggestions on Promoting Transport Enterprises to Develop Logistics Service”, “Regulations on Foreign Investment in Road Transport”, “Regulations on Foreign Investment in International Freight Forwarding Agent Companies”, “Regulations of The People's Republic of China on International Ocean Shipping”, and “Regulations on International Civil Aviation Transport”¹⁹. In 2005, nine government ministries and committees jointly published “Strategies to Promote Modern Logistics Development”, which provide favorable conditions for the companies. With various policies and government support, the logistics development in China is in order. In short, the macro-environment is becoming favorable.

3.1.2. The maturing domestic logistics market

The prosperous Chinese economy creates the good conditions for logistics development. The demand created by overseas multinationals, domestic state-owned and private enterprises should arouse the attention of Chinese liner companies.

According to the statistics, 80% of the world’s top 500 enterprises have entered domestic market²⁰. Their entry has brought about modern logistics concepts and advanced operations. Besides, they expect their operation to be guaranteed by the logistics system in China. The fashion of the multinationals is to outsource and integrate logistics operation, which has fetched great demand as well as challenging task. To meet such demand, transport, forwarding agent, and storage companies start providing logistics service. The shaping of domestic logistics market provides

¹⁹ Commercial Times. 2006, No.12 <http://www.ectime.com.cn>

²⁰ Ministry of Commerce of the People’s Republic of China.. www.mofcom.gov.cn/

developing opportunities for the liner companies.

3.1.3. Great profit potential in domestic logistics market

With the intensifying competition, the control over cost has turned to logistics, “the third profit source”. According to the World Bank, the logistics cost accounts for 16.9% of GDP in China, while only about 10% in some European and American countries. We can see in Table 3-1.

Table 3-1 The proportion of logistics cost to GDP in some developed counties and China

Country	Proportion of logistics cost to GDP (2005)
Germany	11%
France	About 11%
Britain	10.63%
USA	9.50%
Japan	11.40%
China	16.90%

source: Shanghai Logistics Net (www.sh56.cn)

We can see that the logistics cost is much higher in China than that in the developed countries. Based on the 2005 GDP (18,232.1 billion RMB) basis, if the logistics cost was reduced by 1%, a net profit of 182.3 billion would be gained, which indicates a great potential for cost reducing and profitability.

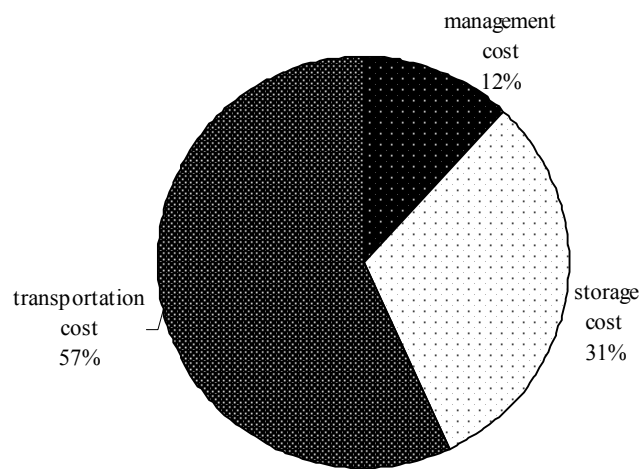


Figure 3-1 The structure of domestic logistics cost (first season of 2006)

Source: National Development and Reform Committee <http://yxj.ndrc.gov.cn>

Figure 3-1 illustrate the structure of domestic logistics cost for in the first season of 2006. We can see that the transportation cost take up a majority in the total cost. This also indicates there's a large potential to increase profit margin by improving the transport process. The logistics service development would be a chance for the Chinese liner companies to increase profit margin.

3.1.4. *The massive construction of domestic transport infrastructures*

Nowadays, domestic transport infrastructures have been greatly improved by construction on a massive scale.

Table 3-2 shows the structure of investment in logistics infrastructures in China for the year 2004 and 2005. We can see an increase in investment in 2005 over the year before. Furthermore, looking ate Figure 3-2, we can see that the investment in transportation infrastructure take an overwhelming part of the total investment.

Table 3-2 The structure of investment in logistics infrastructures in China (2004, 2005)

Year		2004	2005
Investment in (billion RMB)	Transportation infrastructure	229.56	285.80
	Warehousing infrastructure	11.83	15.90
	Trade infrastructure	29.04	40.60
	Distribution & processing infrastructure	1.48	1.80
	Postal infrastructure	0.80	0.65
Total investment		272.71	344.75

Source: Business Transport China (2005.10)

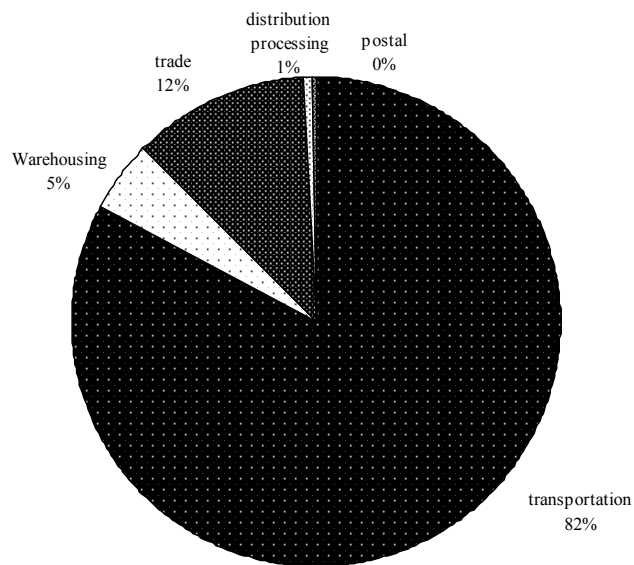


Figure 3-2 The structure of investment in logistics infrastructures in China (2005)

Source: Obtained according to the statistics in Table 3-2

According to the Ministry of Communications, as at the end of 2005, total road mileage reached 1.9 million kilometers, while the highway is about 40,000 kilometers. In the tenth Five-Year period, 24,000-kilometer highway was built, and the highway mileage in China ranked second in the world. The nation-wide road

traffic network has taken shape. There were 141 civil airports over the county, achieving 5.16-ton kilometer cargo turnover per annum and having 1176 aerial liners, including 1015 domestic lines reaching 130 cities and 161 international lines to 66 cities in 33 countries. The airborne transport has been strengthened. There were 33,450 coastal and inland water berths, including 882 deep-water berths. The container throughput was over 27 million TEUS, and the cargo throughput 2.68 billion tons. There were 7 ports whose throughput is over 100 million tons²¹.

The statistics indicates the great improvement in traffic infrastructures. For liner companies, the deep-water berths and updated loading and unloading facilities ensure smooth transportation. The freight facilities in ports, airports and inland hubs would enhance service capabilities. These depots are in good contact with regional enterprises, which provide a good opportunity to develop logistics service.

3.1.5. Introduction of advanced overseas logistics experience

After 1970s, overseas shipping companies initially started logistics service. It has been proved that logistics service is well fit to ocean transport operation. Meanwhile the foreign logistics magnates entered the market, their advantages in service structure and operation mode are worth analyzing and referring. It would be helpful for the companies to combine those with their own practice.

3.2 Analysis of competitors in the logistics market

3.2.1. Overseas logistics companies try to grab Chinese market

²¹ Ministry of Communications of People's Republic of China. www.moc.gov.cn

The world-famous shipping companies such as Maersk and NYK Line were aware of the industry's trend and opened up the logistics service successfully. After steady growth for over two decades, they operate logistics service on a significant scale and have distinct advantages in network, IT, management, and personnel. What's worth mentioning is that these forth-goers have aimed booming logistics market in China and are taking steps to penetrate the market rapidly. They have also formed alliances with overseas and joint venture manufacturers.

Many foreign logistics companies such as Maersk Logistics and APL Logistics are the foreign NVOCC authorized with Class A License to operate shipping service in China. They have similar developing steps: setting up branches in cities like Guangzhou, Shenzhen, Xiamen, Nanjing, Qindao and Beijing, providing ocean-related service including forwarding, customs clearance, road transport, rail transport, barge transport, inland distribution, labeling, etc.

The foreign magnates are planning further development in China. Maersk set up proprietary distribution center in Shanghai to provide specialized supply chain service. It means to build another 10 in the future. APL provides freight forwarding service according to the regulation of Chinese government, including booking, loading, storage, issuing receipt, cargo receiving, etc, which promote the business of APL Liner in China. APL Logistics is in cooperation with two large transport companies in Shanghai and Shenyang to take a share in Chinese logistics market. The company estimated the annual market increase rate over 27%, much higher than 10% in US and Canada, and 9% in Western Europe. It has set up 7 branches in the southeast coastal cities like Shanghai, Dalian, Qindao, Xiamen, Shenzhen and Nanjing, and plans to expand its range. OOCL has set up its China's headquarter in Shanghai and over 20 offices over the nation. The service range covers each

province and major trade center, providing services like multimodal transport, storage, barge transport. Its liner service connects the major ports in China with America, Europe, Australia and other places all over the world. It provides quick transshipment service between the mainland and Taiwan. Besides, its inland transport service in China is outstanding. With barge, truck and railway, OOCL has form an integrated traffic system in China.

The government's policy on logistics is attractive to foreign companies. Thus, it's obvious that the major competitors of the large Chinese liner companies are the overseas logistics magnates mentioned above.

3.2.2. Analysis of the advantages of the competitors

The foreign shipping and logistics companies have the following advantages in developing logistics service in China:

(1) They have a good reputation in the industry and win by their brand names. Many international logistics companies are multinationals that have a global fame. Some have even cooperated with domestic transport companies and are well-known to local clients. Once they entered the Chinese market, their brand names would be an advantage in the competition.

(2) They have rich experience and a global customer base. These companies provided logistics service of different features to meet various customers' demand during their expansion. Such experience will greatly help them to open up Chinese logistic market. Besides, they have already established close cooperation with the foreign multinationals, which contribute a lot to the development of Chinese

economy, and together entered the market. Their logistics services in China are mostly within the range of their global logistics service contacts with the multinationals.

(3) They have integrated information management systems. The quality of logistics service is guaranteed by timely and exact transfer of business information. The large foreign logistics companies have established a set of management systems and development a series of software to enhance their service. This is one of their most distinct advantages compared to the Chinese counterparts.

(4) They have strong capital and personnel. The foreign logistics companies are rich in capital, which is a favorable factor for their development in China. Moreover, they have teams of experienced management personnel, who are capable of satisfying customers' demand. This would also accelerate their business development in China.

3.2.3. Analysis of the disadvantages of the competitors

Though the foreign logistics companies boast many advantages, they have their weakness in the Chinese market due to the practical situation. Their disadvantages include:

(1) The Chinese logistics market has distinct difference with international market. Thus, their experience might not be applicable and they have to start all over. Besides, the local logistics market is not fully mature, and the customers' understanding of logistics is limited. It would take a long time to catch up with the developed countries in this aspect.

(2) They haven't form the logistics network of scale within the country. Because it hasn't been long since their entry, the logistics network covering wide scope can't be set up in such a short period of time.

(3) Due to complicated reasons, domestic logistics market is not in perfect order. Thus, the foreign companies might not adapt to the new business environment.

After their entry into the Chinese market, the foreign companies might take advantage of their capital, technologies and personnel to expand service network and increase market share. Yet, due to the previous factors, it would take time for them to develop logistics service on a large scale, which provides the Chinese liner companies with the precious time to catch up.

3.3 Index model of the liner company's competitiveness to develop logistics service

Facing the impact of economic globalization and the challenges of overseas logistics companies, evaluation and cultivation of competitiveness are of strategic importance for the Chinese liner companies. The set-up of index system is crucial to the evaluation, which would affect feasibility and rationality. After referring to a number of academic researches and according to the practical conditions, the Analytic Hierarchy Process (AHP) model is applied to set up the index system of the liner company's competitiveness to develop logistics service, which might be useful to competitiveness evaluation.

The set-up of the evaluation index hierarchy is based on the company's business. The evaluation is from operational and managerial aspects. First, the competitive

advantages mainly focus on market competition, logistics technologies, service flexibility, etc. Thus, operational aspect including such criteria is crucial in evaluation. Secondly, management is decisive to the functioning of a company and has a direct effect on the competitiveness.

The index system of liner company's competitiveness to develop logistics service is shown in Table 3-3.

Table 3-3 Index system of liner company's competitiveness to develop logistics service

Target layer	Criteria layer	Sub-criteria layer	Factor layer
Liner company's competitiveness to develop logistics service (T)	Operation assessment (a)	Control over market and customers (a ₁)	Market share(a ₁₁)
			Market developing capability(a ₁₂)
			Customers' loyalty(a ₁₃)
		Logistics facilities (a ₂)	Fleet capacity(a ₂₁)
			Traffic network(a ₂₂)
			Information technologies(a ₂₃)
		Depth of logistics service (a ₃)	Transport and storage(a ₃₁)
			Special service(a ₃₂)
			E-business(a ₃₃)
	Management assessment(b)	Human resource (b ₁)	Education level(b ₁₁)
			Communication capability(b ₁₂)
			Managerial team(b ₁₃)
		Company culture (b ₂)	Adaptability(b ₂₁)
Adaptability(b ₂₂)			
Learning organization(b ₂₃)			

By inquiring several specialists, the weighting of the factors in various layers are set down through plus-weighting analytic comprehensive assessment method. (See Appendix 1) The result of the calculation is shown in Table 3-4.

Table 3-4 The relative and global weights of the elements in the index.

Target	relative weights	criteria	relative weights	sub-criteria	relative weights	Factor	global weights
T	0.6	(a)	0.528	(a ₁)	0.455	(a ₁₁)	0.1440
					0.199	(a ₁₂)	0.0629
					0.347	(a ₁₃)	0.1099
			0.333	(a ₂)	0.429	(a ₂₁)	0.0855
					0.286	(a ₂₂)	0.0570
					0.286	(a ₂₃)	0.0570
			0.140	(a ₃)	0.464	(a ₃₁)	0.0389
					0.255	(a ₃₂)	0.0214
					0.281	(a ₃₃)	0.0235
	0.4	(b)	0.667	(b ₁)	0.217	(b ₁₁)	0.0580
					0.285	(b ₁₂)	0.0760
					0.498	(b ₁₃)	0.1327
			0.333	(b ₂)	0.151	(b ₂₁)	0.0202
					0.218	(b ₂₂)	0.0291
					0.630	(b ₂₃)	0.0840

This index system could provide a research method to evaluate the liner company's competitiveness to develop logistics service, and has some theoretical and practical meanings.

3.4 Case study-Maersk vs. COSCO

3.3.1. Brief introduction of the companies

Maersk has several hundred branches in over 100 countries. It has over 60,000 employees providing services all over the world. It is the world's biggest container carrier. Its solid and wide customer base and rich experience in freight transport enables its forth going into logistics. It set up the integrated logistics service based on ocean transport. Maersk entered the Chinese market in 1998 and has 11 branches

and wide service coverage. It has established logistics cooperation with ports, rails, roads, warehouses, and agent companies.

COSCO is a well-known Chinese shipping company. It has distinct advantages in local market and the overseas service covers 8 region including Japan, Korea, Singapore, North America, Europe, Australia, and Southern and Western Africa. The routes connect over 1300 ports in more than 160 countries and regions.

3.3.2. Comparison in information management

Flow of information is crucial for modern logistics. Information management is the basis of integrated management and service. Maersk is the role model in this aspect. It has a worldwide and integrated logistics communication network system, which increases efficiency and reduces cost. Its new supply chain solution mode “Spective” has integrated the information of all its partnership and enabled the two-way information exchange with its clients. Maersk can track and trace the freight all day long, and have a comprehensive view of its business so as to make effective forecast. It has also improved the resource utility and communication between departments and promoted the integration and diversification of service.

Yet, information management is the weakness of COSCO, which would be an obstacle for its transition into logistics service provider. The company is making effort. The IRIS2 system is globally applied, consisting of logistics subsystem such as MIS and EDI, and at present, is basically meet the requirement for development. However, there is still a long way to go.

3.3.3. Competition in logistics market

COSCO has strengthened its financial power by issuing stock and allocated the capital in the construction of distribution centers, inland depot, and information systems. It has taken measures to integrate the container transport and logistics service so as to establish comprehensive logistics network consisted of sea, rail, road and air transport.

Maersk's experienced logistics operation is attractive to Chinese clients. Its strategies show its ambition. Besides its original customer base, Maersk enhances its cooperation with Sino enterprises and has cooperated with Shanghai Wicresoft to develop an information system tailored for Chinese market. It has a 3-year cooperation agreement with China International Marine Containers Company, enables it to expand the port range and reduce transportation cost.

Maersk and COSCO are the representatives of foreign and domestic large liners. Their features are summarized in Table 3-5. We can see that it basically accords with the previous analysis of the advantages and disadvantages of the foreign competitors. The Chinese companies should be aware of the situation in order to make strategic plan.

Table 3-5 Comparisons between Maersk and COSCO

Company	Market share in shipping market(2006.1) ²²	Advantages	Disadvantages
Maersk	18.2%	Experienced operation; Mature management; Global service range; Large customer base	Lacking experience in Chinese market
COSCO	3.5%	Excellent in Chinese and Asian shipping market	Inexperienced in logistics; Narrow customer base; Weak in global service

3.3.4. Application of the index model

After inquiring several specialists, the factors are scored according to the judgment matrix, $P=[\text{excellent, good, normal, bad, too bad}]$. Its plus-weighting coefficient matrix is $F=(9, 7, 5, 3, 1)^T$. According to the previous weighting of the factors and Level analytic approach, the target index can be obtained. (As for the calculation see in Appendix-2)

$$X_{\text{cosco}}=6.542$$

$$X_{\text{maersk}}=7.665$$

We can conclude from the result that there's a big gap between Maersk and COSCO. Thus, it would be more important for the Chinese liner companies to position in the suitable market so as to make up for its lack of overall competitiveness.

²²JCtrans.com Corporation. <http://www.jctrans.com>

Summary of the chapter

The chapter analyzes the external environment of Chinese liner companies' logistics service development. The favorable macro-economic environment, maturing domestic market, great potential profit, transport infrastructure construction, and experience of overseas counterparts are the opportunities for the Chinese liner companies. The following part, which is necessary to be aware of, is the analysis of their competitors. Then, the index model of the liner company's competitiveness to develop logistics service is set up, which provide a method to evaluate the competitiveness. After that, the comparison between Maersk and COSCO illustrate the current situation.

4 Analysis of internal conditions for Chinese liner companies' logistics service development

4.1 Developing advantages

4.1.1. Advantage in domestic transport network

During a number of year's development at home, the Chinese liner companies have gain advantages in domestic traffic network. They have mature agent network in coastal, and inland cities, and land infrastructures such as ports, warehouse and container depots, which provided them with the hardware conditions to develop logistics service.

Taking COSCO for example, the company has a logistics network including over 300 spots covering 29 provinces. It has 1222 trucks, in which 850 are container trucks, and 6 fixed exclusive container railway lines.

4.1.2. Good reputation in local market

Meanwhile making contribution to the national economy, the large Chinese liner companies establish its fame in the domestic and even foreign market. The good reputation will help to find long-term logistics partners.

What's worth mentioning is that the business of many foreign logistic magnates are geographically-intensive, especially in their home countries. This gives an indication to the Chinese liner companies. The companies should make good use of this strength.

4.1.3. Stable customer base and partnership

The companies have comparatively stable customer base and market share in the market, especially in domestic market. They have a long-term and stable partnership with some significant clients so as to gain their trust to provide integrated logistics service. The cooperation with land transport and warehousing companies also supports their development.

4.1.4. Strong capital resource

Compared to other domestic logistics service provider, the Chinese liner companies have solid capital power. It is an important condition to enlarge the service scope and update technological facilities. Logistics rely on economy of scale. Thus, strong capital is favorable to seize the market share.

4.2 Obstacle factors

4.2.1. Insufficient understanding of modern logistics

The Chinese liner companies' perception of modern logistics needs to be enhanced. It takes time for such large companies to change the concept and idea. They are accustomed to the traditional operation pattern, which would decrease

competitiveness and baffle the development of logistics service.

4.2.2. Current facilities and management in need of improvement

The unadvanced depot and transport facilities and management might be the adverse factors to further logistics service development. Recently, the quantity of storage and transport facilities has increased. Yet, these facilities lack multiple functions and are not efficiently managed, which is due to the industry's historical reasons. Thus, further investment are required in the network construction so as to provide superior logistics service. During these years, the companies have invested hard in reconstruction and the situation has been improved. Yet, effort still need to be made in the years to come.

4.2.3. Immature logistics information management

The problem is relatively-speaking. Most domestic logistics companies, who are still in the research stage of establishing modern logistics information system, are weak in information management. Compared with them, the large Chinese liner companies such as COSCO and China Shipping have good information management systems. Yet, when compared with their major competitors, the foreign logistics magnates, the information management capability turns out to be their weakness. For instance, some analysis points out that weak information management has frustrated the development of COSCON. The problems include separate functioning of the systems, poor data- sharing and low degree of online service. The opening-up of the logistics market put the large Chinese liner companies in front of great challenges, and lagging in information management will gloom the prospect of the companies' development. The information management capability is an indicator of a logistics

company's service and management standard. The large Chinese liner companies still have a long way to go.

4.2.4. Personnel lacking in proficiency providing logistics service

The large Sino liner companies have a number of skilled personnel providing transport service. They have also cultivated crews of managers and technicians in the fierce market competition. They master management and marketing skills and enterprising, so they are regarded as the hard core of the companies' development. However, the domestic logistics is still in its early stage and the logistics service the liner companies provide are limited due to insufficient technological facilities, improper management, and moreover, lack of personnel specialized in logistics. This will be an obstacle for the logistics service development. Thus, it is a necessary to enhance the overall personnel and foster them into a team capable of providing logistics service.

4.3 Case study-COSCO's strengths and weaknesses in logistics service development

4.3.1. COSCO's strengths in developing logistics service

(1) It has a basis for global service. COSCO has a 40-year history of overseas operation and possess experience in communicating with foreign partners. Its brand name is well-known to some extent and the company is provided with a global basis.

(2) It has a good domestic service network. COSCO have over 400 logistics branches and storage and transport resource all over the country, which guarantees

the company's engaging in logistics service and qualification to meet customers' demand.

(3) It has some modern logistics techniques. COSCO has accumulated some experience and techniques during the operation in these years. These techniques are mainly related to stock management and information management. Moreover, it provides specialized service for the large domestic manufacturers, including contracted and outsourcing logistics service. It has formed a basis for the company's cooperation with foreign logistics companies.

(4) It enhances its personnel standard by human resource cultivation. COSCO has domestic and overseas personnel exchange every four years. It also introduces foreign personnel into the company. Besides, it has its own programs in universities and colleges to provide specialized training, which would prepare itself for further development.

(5) It has a good customer base. COSCO has a group of international clients, including domestic clients. Except for ocean transport, logistics service is also the demand of these clients. This offers an opportunity for the company's development. Meanwhile, the domestic enterprises, represented by TCL, have begun their overseas acquisition activities. This lays a good foundation of the company's entry into the global market and enables the company to grow together with these enterprises in the global market.

4.3.2. COSCO's weaknesses in developing logistics service

(1) It is not highly globalized. Compared with the foreign logistics companies,

COSCO is weak in obtaining large overseas clients. These clients had already been in close cooperation with the foreign logistics magnate before they entered the Chinese market. Thus, COSCO is hindered from taking seizure of that share in the market.

(2) Its information technology needs to be improved. COSCO's current information system has basically met the requirement of its service transit from traditional sea transport into logistics service. Yet, it would be long before it catches up with the international standard. The company has to make unremitting effort to improve information management.

(3) The logistics concepts and ideas need to be well perceived. As a leading company in domestic logistics development, the change of concept and idea is of great significance. To fully transit into a global logistics service provider, the concept and idea of providing customer-oriented integrated logistics service based on its advantage in ocean transport need to be borne in mind throughout daily operation.

To sum up, COSCO's strength and weakness in developing logistics service are concluded in Table 4-1.

Table 4-1 COSCO's strengths and weaknesses in developing logistics service

strength	basis for global service
	good domestic service network
	possession of some modern logistics techniques
	enhanced personnel standard
	good customer base
weakness	not highly globalized
	uncompetitive information technology
	superficial perception of logistics concepts and ideas

Recognizing the company's strength and weakness is essential to the strategic planning. It would be the basis of establishing effective developing strategies.

Summary of the chapter

This chapter analyzes the internal conditions for the large Chinese companies to develop logistics service. Their strengths in development include: (1) provided with good domestic transport network; (2) gaining a good reputation; (3) boasting a sound customer base and partnership; (4) having rich capital resource. However, their weaknesses consist of: (1) insufficient understanding of modern logistics; (2) unadvanced facilities and management; (3) immature information management; (4) personnel lacking in proficiency providing logistics service.

Only when a company has known itself well can it work out suitable developing strategies. In the next chapter, the analysis of the companies' strategies will be made based on the previous analysis.

5 The liner companies' strategies to develop logistics service and their implementation

5.1 Brief review of the liner companies' SWOT analysis

The conclusion of the analysis of the external environment of and the internal conditions for the large Chinese liner companies' logistics service development in the previous Chapters is summarized in Table 5-1.

Table 5-1 SWOT analysis of large Chinese liner companies' logistics service development

Internal conditions	Strengths	Advantages in domestic transport network Having a reputation to some extent Stable customer base and partnership Strong capital resource
	Weaknesses	Insufficient understanding of modern logistics Unadvanced logistics facilities and management Immature logistics information management Personnel lacking in proficiency providing logistics service
External environment	Opportunities	Favorable macro-economic environment Maturing domestic logistics market Great potential profit in local market Updating domestic transport infrastructures Experience of overseas logistics companies
	Threats	Overseas logistics companies' entry Remarkable global reputations of the competitors Rich experience and sound global customer base of the competitors The competitors' advantages in capital and personnel

The conclusion above provides the foundation of strategic planning and implementation.

5.2 Strategic goal and market positioning

5.2.1. Basis of setting the strategies

It can be concluded from the previous analysis that the large Chinese liner companies have competitive advantages in the local market which is full of potential. Thus, the companies should seize the opportunity to expand its logistics service.

The domestic container transport is boosted by economic globalization, transfer of manufacture center and booming global procurement. In 2004, the container terminal throughput of in China reached 61.8 million TEU, accounting for 20% of the world's total container terminal throughput which was 0.309 million. Moreover, it had kept an increasing rate over 30% for several consecutive years.

The relatively slow development of domestic road container transportation provides the market chance for the companies to develop container transport supply chain. Compared to the sustained development in ocean container transport, the development of road container transport is lagged behind. Nowadays, the road container carrying capacity is only about 10% of the total container terminal throughput in China. Most containers are dispatched in coastal ports and the cargos are transported in bulk. The proportion of door-to-door service is low. The advantage of container transport hasn't fully emerged, and the full container transport supply chain has not taken shape.

Moreover, the Chinese market lacks large domestic road transport companies who are provided with sufficient container and cargo source, which creates a great opportunity for the large Sino liner companies, who possess capital and infrastructure resources, to initially grab the market. It would be of great importance for the companies' further development if they could develop in domestic road container transport based on their resources.

Nowadays, the competition in the liner industry has gradually switched from water transport to land transport, and will finally turn into the competition on the whole supply chain.

5.2.2. Strategic goal and market positioning

According to previous conclusions, the strategic goal of the large Chinese liner companies' logistics service development is as follow: oriented by the market, based on ocean transport, dependent on service network, advanced by modern communication, and focusing on logistics parks, the companies should acquire at least a 5% market share in domestic logistics market in 5 years, and transit into a specialized global logistics service provider in 10 to 15 years.

It is a huge and challenging task for the liner companies to transit into global logistics service provider. Thus, the gradual development strategies ought to be divided into several stages.

(1) The company should develop domestic trade logistics service to complement foreign trade logistics service and lay a foundation for the supply chain logistics service. With the deepened opening-up, the demand for domestic trade logistics

service surges rapidly. It is a broad market for the liner companies. Moreover, domestic trade is less influenced by international conditions, which would provide a buffer for the negative effect caused by gloom in foreign trade. The large liner companies have the advantages in developing domestic trade logistics service. If they could make good use of their resources, they would gain a lot by taking initiative in the domestic trade logistics market.

(2) They should set up regional logistic centers by enhancing logistics service at regional distribution centers. When the domestic trade logistics has developed into scale, the regional logistics centers can be set up at distribution centers or inland transport nodes to reduce cost by economy of scale and to enhance service by providing value-added service.

(3) They should establish cooperation with large and medium enterprises at home and abroad. The healthy development of a logistics company is ensured by stable cargo source. Thus, when the logistics service has developed into suitable stage, the companies have to establish logistics alliance with large and medium enterprises for further development.

(4) They should set up a complete and dense nationwide logistics service network. It is the ultimate goal of domestic trade logistics to set up a comprehensive service network all over the country and to provide safe, swift, economic and complete logistics service for their customers.

(5) They should develop foreign trade logistics service to increase cargo source so as to enhance their main business in ocean transport. Facing the challenges of foreign liner companies, the Chinese liner companies have to solidify their existing cargo

source and open up market on that basis so as to ensure their operation and development.

(6) They should work on the establishment of global logistics service network so as to provide global logistics service for their customers. After the completion of domestic service network, the companies can combine domestic and overseas service network together, and turn them into a global logistic service network. They can also cooperate with overseas logistics companies to open up international logistics market.

It should be emphasized that developing logistics service is not only a hardware construction process, but also a process of information network perfection and a process of logistics management enhancement. Thus, during each steps above, importance should be attached to the development of information management software, accumulation of management experience and cultivation of personnel, especially the information system which would be key to the development of logistics service. It is the lead in technologies that will enable the companies to fully transit into the logistics service provider and win in the market.

When pursuing the strategic goal, the large Chinese liner companies should keep focusing on the development of ocean transport operation. The liner industry has its periodical features and has depressed times. Yet, the companies must insist on the development of their main business and avoid the situation of diversifying business blindly. Developing the liner-related service to enhance their main business is key to success.

At present, the large Chinese liner companies are influential in the home market.

Their information systems, which enable track and trace of cargos and containers, basically meet the requirement of modern logistics. The previous strategies are tailored according to the strengths and weaknesses as above. The liner companies are different from other specialized logistics companies. Thus, they aim to gain their competitive advantages in the market segment based on container transportation by providing series of value-added service throughout their land-water container transport chain.

5.3 Implementation of the strategies

5.3.1. Strengthen the strategic cooperation with the forward and backward enterprises in logistics procedure

The companies should take advantage of their domestic service network and current customer resource to set up logistics service system by joint cooperation with domestic manufacture companies. By this, they can maintain a stable source of business meanwhile accumulating experience in providing customized service. The close cooperation will also promote the integration of logistics resources with the partners. What's worth mentioning is that the companies should be serious in opening up the market, since the current important customers' satisfaction should not be sacrificed due to the companies' customer base development.

5.3.2. Establish win-win cooperation with world-famous logistics companies

The cooperation should not only be established in vertical dimension, but sometimes with the competitors as well, once it proves out to be beneficial for the companies' development. Looking into the development of world shipping and logistics industry,

there exist various forms of cooperation such as alliance, association, and merging. By this, the operational cost would be reduced, the utility of space would increase, and the delivery of freight would quicken up, which leads to more timely service and create value for the customers. Moreover, the advanced experience and technologies might be introduced through strategic alliance with remarkable logistics companies, which would promote the logistics service development of the companies.

5.3.3. Set up comprehensive logistics service network

When opening up the logistics market, it is necessary to perfect facilities, expand service range, and improve service level. The companies should initially rebuild the current container yards and warehouses within major port and inland hub regions into logistics centers and set up logistics service knots through cooperation to enlarge service scale and enhance the regional service level. Then, they should further improve the warehousing facilities according to practical situation so as to meet various storage demands. Such reconstructions are needed to meet the requirement for logistics service development. Moreover, as an important part of logistics, the distribution requires trucks of various types and tonnages. With the development of their logistics service, the allocation would need adjustments in a nationwide range to meet the customers' demand. This will enhance their position in domestic land container transport market.

5.3.4. Develop advanced logistics information management system

With the booming of e-business, the level of information management system has become an indicator of the company's competitiveness. Moreover, the flow of information is crucial to logistics service. Thus, it is requisite to develop series of

information management systems applied with modern logistics concepts for the Chinese liner companies' logistics service development.

5.3.5. Enhance training of specialized personnel

Nowadays, the companies attach importance to personnel training. They have cultivated groups of specialized logistics human resource by various means and beyond normal speed, but the companies still require more. They still have to continue their training programs to gain enterprising working teams equipped with operational and technical skills. It is an important and urgent task to be accomplished for developing modern logistics service.

5.4 Case study-the logistics developing strategies of COSCO and China Shipping

5.4.1. The cooperation strategies of the two companies

The major customers of COSCO Logistics are large domestic manufacturers. The strategic alliances with these companies enable COSCO to profit, grow and open up overseas market together with the partners. They help COSCO to achieve sustained development and expand of logistics service scale. The effective resource integration with these partners has reduced logistics operational cost and enhanced the specialization of the service.

China Shipping Logistics is forging its advantages through close cooperation with the customers as well. It focus on exploring the project logistics market and has successful logistics practice in the field such as family electric appliance, fast

moving consumer goods, and automobile. Table 5-2 summarizes some representative clients of the company's.

Table 5-2 The major service scopes and clients of China Shipping Logistics

Service scopes	Representative clients	Service cooperation
Fast moving consumer goods	Robust	Nationwide transport and storage service
	Bright Dairy	Chilled distribution within Shanghai and from Shanghai to Eastern-China
	B&Q	Storage and distribution service within Fuzhou and Nanjing regions; Trunk transport from pointed manufacturers to domestic coastal regions
Automobile	Shaanxi Automobile	Stock management; Series of specialized value-added service
	Faw-Volkswagen CKD	Entire container transport from Europe to the manufacturing factory in Changchun
Family electric appliance	Hisense, TCL, and Panda	Storage and distribution within Shandong, Eastern and Northeast China region; Trunk transport from manufacturing factories to distribution centers
	Yongle and Tkec chain market	Regional storage and distribution service
Chilled product	Mengniu Group, Bright Dairy and Yili Group	Transportation and distribution of frozen food
Chemical product	Chevron Chemical	Sea transport from Zhangjiagang to Southern China; Storage service within Southern and Eastern China region of polystyrene product
	Rhodia	Storage and distribution based in Guangzhou and Shanghai
	Secco Chemical	Container transport from Shanghai to Northern and Southern China

Source: Transport Business China 2005.11

Series of successful operations in large projects promotes the maturity of China Shipping's domestic logistics service. Bearing in mind the customer-oriented

concept, the company has begun to open up overseas market and find new partners.

5.4.2. Sustained development is ensured

When developing logistics service, the companies gain stable business source by long-term cooperation with large domestic manufacturers, which ensure the companies' long-term steady growth.

During the strategic cooperation, the companies provide superior and efficient service so as to strengthen the relationship between their key customers. COSCO Logistics even provides its customers with logistics solutions, developing strategies and service resource at their disposal, and the manufacturers are now dependent on the company's logistics service to achieve the strategic goal.

As a way to open up new market, the companies choose to jointly develop with their partners. They gradually open up the overseas market with the expansion of customers' business. For instance, COSCO Logistics has entered the family electric logistics market in America, Europe and Australia due to TCL's market expansion, and has entered the market in Middle and Southeast Asia with China National Nuclear Corporation and Dongfang Electric Corporation. By this, the company manages to increase its service range and market share.

5.4.3. The scale of logistics operation increases

The alliances allow the companies to begin the construction of nationwide infrastructure and set up modern logistics network system based on the partner's stable freight quantity. It qualified the companies with hardware support to procure

rapid expansion in their service.

COSCO Logistics have two logistics centers for family electric appliance in northern and southern China, providing a platform for transport, warehousing, and distribution service. It has also built a logistics center for liquid chemical product in Shanghai. The company is making effort to establish a functional logistics service network system.

The proper allocation of infrastructure resource over various regions would enable COSCO to minimize its operational cost on a broader network coverage, and provide more efficient logistics service. The company's superior service to its partners has won many business opportunities, enabling them to increase operation scale and gain from economy of scale.

5.4.4. Sharing and integration of logistics resource is promoted

The establishment of alliances has accomplished the sharing of logistics resources and information. COSCO Logistics are utilizing partners' exclusive warehouses, information systems and special transport facilities to carry out service. By this, the logistics network has been expanded, while a remarkable amount of capital could be saved. Such integration would tighten the relationship with the partners. The company would provide more fine and efficient service and react more quickly to the partners' logistics demand.

Thus, it proves that the effective integration of resource would optimize the logistics procedure and enhance customer satisfaction. The total logistics cost is reduced by higher utility of warehousing, saving in labor cost, etc. Such win-win situation is

based on strategic cooperation.

5.4.5. Specialization of logistics service is being intensified

Manufacturers differ from each other in procurement, manufacturing, and distribution, which requires the companies to offer specialized logistics service. COSCO and China Shipping are now paying more attention to providing customized logistics service. They aim to gain advantages in specialized logistics service and try to enhance the productivity of its clients on that basis, so as to achieve integrated benefit.

They get to know the logistics demand and technique requirement in different trades and are developing customized service product, which has increased the specialization of their logistics service and enhanced their competence. According to the customers' demand, COSCO Logistics is now providing specialized value-added service including packaging/repackaging, labeling, stock control management, cargo tracing, logistics network design, procurement management, consulting service, etc. These services promote the productivity and operational efficiency of the clients, and thus, strengthen the strategic relationship.

Meanwhile, COSCO and China Shipping are making effort to develop new logistics technologies and advanced logistics information system to promote service specialization.

While the manufacturers appreciate the cooperation with COSCO and China Shipping, COSCO and China Shipping should also be aware that it is the close cooperation with those partners that ensure the companies' long-term steady

development. Thus, it is a win-win situation that enables joint development with the partners in this case.

It should be emphasized that the success of these companies is owing to the proper logistics development strategies which are set on the basis of the companies' characteristics. With the idea of supply chain competition, the companies should well recognize their advantageous positions in the whole chain, since all companies have their own strengths and core business. For a liner company, ocean container transport is the core business, and the development of logistics service aims to increase market share and strengthen the competitiveness of its core business.

Summary of the chapter

This chapter discusses about the large Chinese liner companies' logistics developing strategies and their implementation. Based on the analysis in the previous chapters, the strategic goals and market positioning are got according to the companies' strength and weakness. The companies should be oriented by the market, based on ocean transport and dependent on their service network and advanced modern communication to gradually accomplish their transit into specialized logistics service providers. Strengthening the strategic cooperation with the forward and backward enterprises in logistics procedure, establishing win-win cooperation with world-famous logistics companies, setting up comprehensive logistics service network, developing advanced logistics information management system, and enhancing training of specialized personnel are the essential tasks for the companies to achieve the strategic goals.

The case study illustrates the current large Chinese liner companies' logistics

development by citing COSCO and China Shipping, whose cooperation strategies conduct the modern logistics concepts.

Conclusion

The large Chinese liner companies need to develop logistics service. It's not only because of the requirement from their external business environment, but the requirement for their own survival and growth as well. It is a global trend for the large liners to transit from traditional ocean carriers into logistics service provider.

Homogeneous service product in the liner industry led to competition on ocean freight, and this has greatly threatened the liner companies' survival and growth. Developing logistics service would bring new business opportunities and profit source for the traditional liner companies, and thus strengthen their core competence in ocean transport.

The favorable macro-economic environment, maturing domestic market, great potential profit, massive construction of transport infrastructure, and experience of overseas counterparts are the good opportunities for the large Chinese liner companies to develop logistics service. Yet, the entry of overseas logistics magnates is a great threat to the large Chinese liner companies. Those companies boast remarkable reputations, rich experience, global customer bases, integrated information management systems, and strong capital and personnel resource. Facing such competitors, the large Chinese liner companies should be aware of situation and make suitable developing strategies.

We get through analysis that the large Chinese liner companies have their strengths in logistics development, including having a good domestic transport network, having good reputations at home, boasting a sound customer base and partnership, and having rich capital resource. However, there are weaknesses as well, such as insufficient understanding of modern logistics, unadvanced facilities and management, immature information management, and personnel lacking in proficiency providing logistics service.

The large Chinese liner companies should make logistics service development strategies according to the external environment and internal conditions. Based on the analysis, the ultimate strategic goal for the Chinese liner companies is to gradually accomplish their transit into specialized logistics service providers. It is a huge and challenging task for the liner companies. Thus, the development ought to be divided into several stages, including developing domestic trade logistics service to complement foreign trade logistics service and lay a foundation for the supply chain logistics service, setting up regional logistic centers by enhancing logistics service at regional distribution centers, establishing cooperation with large and medium enterprises at home and abroad, setting up a complete and dense nationwide logistics service network, developing foreign trade logistics service to increase cargo source so as to enhance their main business in ocean transport, and working on the establishment of global logistics service network so as to provide global logistics service for their customers.

Strengthening the strategic cooperation with the forward and backward enterprises in logistics procedure, establishing win-win cooperation with world-famous logistics companies, setting up comprehensive logistics service network, developing advanced logistics information management system, and enhancing training of

specialized personnel are the essential tasks for the companies to achieve strategic goals.

It is an opportunity as well as a challenge for the large Chinese liner companies to develop logistics service and transit from traditional ocean carriers into logistics service providers. It's a grand task for them and there is a long way to go. Great effort needs to be made. Yet, once the task is accomplished, the competitiveness of the Chinese liner companies will be greatly enhanced, and they will be more competent in the global market.

References

Analysis of Chinese container transport development. 2005(9). *Water Transport Digest*.

Bin Jian and E Prater. (2002). 'Distribution and logistics development in China. *International Journal of Physical Distribution and Logistics Management*. Vol 32 (9), p783-798

Chen, D. 2005(1). The review and the forecast of International container shipping market. *World Shipping*.

China Shipping Logistics searching for third profit resource(2002, Apr 19). Retrieved from the World Wide Web: <http://www.bis.net.cn/news/readnews.asp?id=3019>

Chinese Logistics industry calls for local "logistics oligopolies". 2005(2/3). *Water Transportation Digest*.

Christopher M. (1998). *Logistics and supply chain management*, Pitman

Discussion on the integration of modern shipping logistics systems. 2005(1). *Water Transportation Digest*.

Ellram L M & Cooper M C. (1990). Supply Chain Management, Partnerships and the Shipper-Third-Party Relationship. *The International Journal of Logistics Management*. Vol 1(2) pp 1-10

Fan, Y. 2005(4). Factor analysis of container transportation development in the future of China. *World Shipping*.

Fang, J. 2006(1.21). How to seek the opportunity of growth wisely. *Modern Weekly*. How can Sino shipping companies providing logistics services. 2006(1). *Water Transportation Digest*.

Guan, W, Gan, Y. 2005(3). IRIS2, COSCON's global agent system. *World Shipping*.

Hill C.W., Jones G.R. (1995). *Strategic Management: An Integrated Approach*. Houghton Mifflin Company, Boston, US

- Hu, D. (2001). *The competitiveness of enterprise*. Economic Management Publishing
- Liu, B, Li, J. 2006(2). China's effect on the world economy. *World Shipping*
- Liu, B, Lin, H 2005(10). Great acquisition, great impact-Maersk's acquisition of P&O Nedlloyd. *World Shipping*
- Lovelock, C. (2001). *Services Marketing(4th edition)*. Prentice Hall
- M Goh, C Ling. (2003). Logistics Development in China. *International Journal of Physical Distribution and Logistics Management* Vol 33 (10), p886-917
- Plunkett, W Attner, R. (1997). *Management*. South-Western College Publishing
- Positioning and operation of third-party logistics. (2005, May 10). Retrieved from the World Wide Web: <http://www.sh56.cn/dsflw/ShowArticle.asp?ArticleID=7192>
- Samuelson, P Mordhaus, W. (2002). *Economics(16th edition)*. McGraw-Hill
- Shan, M. 2005(12). The changing period of global liner industry. *Transport Business China*.
- Shu. J. 2005(3). Logistics development in domestic road transport. *Transport Business China*.
- Shuo, M. (2005). *Maritime Economics*. Class handouts. World Maritime University
- Song, M. 2005(4). Brief discussion on China's policies to develop logistics industry. *World Shipping*.
- Stopford, M. (2005). *Maritime Economics(2nd edition)*. Routledge
- Successful experience of the world's top 10 logistics companies. 2005(2/3). *Water Transportation Digest*.
- Sun, J. 2005(3). Considering about some policies on the development of container transportation. *World Shipping*.
- TD Heaver. (2002). The evolving roles of shipping lines in international logistics.

International Journal of Maritime Economics. Vol 4, p210-230.

The analysis of overseas shipping companies integration strategies in China. (2004, Oct 12). Retrieved from the World Wide Web: <http://www.njfiw.gov.cn/article.html?id=2545>

The five features of the development of Chinese logistics enterprises. 2005(11). *Water Transportation Digest*.

The logistics development of water transport on Yangtze River. 2005(9). *Water transportation Digest*.

The logistics market developing strategies for Sino shipping companies under the new situation. 2005(12). *Water Transportation Digest*.

The Specialists' opinion of China's logistics development. 2005(2/3). *Water Transportation Digest*.

Wang J, Wei J. 2005(6). The strategies for the integration of shipping and logistics market. *World Shipping*.

What has international logistics brought to China since China's entry into WTO. 2005(2/3). *Water Transportation Digest*.

Who would be the winner in Chinese logistics market. (2006, Feb 28). Retrieved from the World Wide Web: http://www.jjxj.com.cn/news_detail.jsp?keyno=9245

Xiong, M. 2005(11). China Shipping Logistics' container transport strategies. *Transport Business China*.

Yao, Q Zhang, S. 2005(6). Choice of the development strategy of COSCO logistic system. *World Shipping*.

Ye Weilong: the development blueprint for COSCO logistics. (2005, March 21). Retrieved from the World Wide Web: <http://cn.biz.yahoo.com/050321/16/8law.html>

Zhao. G. (1996). *International shipping management*. Shanghai Maritime University

Zhao, Y. 2005(11). The "Acquisition" Times of the Logistics Industry. *Transport Business China*.

The following web sites give information and statistics on courses

BRS-Alphaliner website. (www.alphaliner.com)

China Shipping Container Lines Co., Ltd. (<http://www.cscl.com.cn>)

Commercial Times. (<http://www.ectime.com.cn>)

COSCO Container. Lines (<http://www.coscon.com>)

Eastday News. (<http://news.eastday.com>)

JCtrans.com Corporation. (<http://www.jctrans.com>)

Ministry of Commerce of the People's Republic of China. (www.mofcom.gov.cn)

Ministry of Communications of the People's Republic of China. (www.moc.gov.cn)

National Development and Reform Committee (<http://yxxj.ndrc.gov.cn>)

Appendix 1 Calculation of weightings in the index model

As the hierarchy has been structured (in section 3.3), the next step is to determine the priorities of elements at each level. A set of comparison matrices of all elements in a level of the hierarchy with respect to an element of the immediately higher level are constructed so as to prioritize and convert individual comparative judgments into ratio scale measurements. The preferences are quantified by using a nine-point scale. The meaning of each scale measurement is explained in Table A-1. The pair-wise comparisons are given in terms of how much element A is more important than element B. As the AHP approach is a fuzzy methodology, in this case, the priority weights of elements is obtained from inquiring a group of specialists.

Table A-1 Scale of preference between two elements

Preference weights	Definition
1	Equally preferred
3	Moderately preferred
5	Strongly preferred
7	Very strongly preferred
9	Extremely preferred
2,4,6,8	intermediates values
Reciprocals	Reciprocals for inverse comparison

The pair-wise comparisons generate a matrix of relative rankings for each level of the hierarchy. The λ_{\max} value is an important validating parameter in AHP. It is used as a reference index to screen information by calculating the consistency ratio CR of the estimated vector in order to validate whether the pair-wise comparison matrix provides a completely consistent evaluation. The consistency ratio is calculated as per the following steps:

Calculate the relative weights and λ_{\max} for each matrix of order n

Compute the consistency index for each matrix of order n by the formulae:

$$CI = (\lambda_{\max} - n)/(n-1) \quad (A-1)$$

The consistency ratio is then calculated using the formulae:

$$CR = CI/RI \quad (A-2)$$

Following is the Calculation for the comparison matrixes.

Table A-2 a_{1n}-a₁ level

sub-criteria a ₁	a ₁₁	a ₁₂	a ₁₃	W	CI=0.009, CR=0.016<0.1
a ₁₁	1.00	2.00	1.50	0.455	
a ₁₂	0.50	1.00	0.50	0.199	
a ₁₃	0.67	2.00	1.00	0.347	

Table A-3 a_{2n}-a₂ level

sub-criteria a ₂	a ₂₁	a ₂₂	a ₂₃	W	CI=0. CR=0<0.1
a ₂₁	1.00	1.50	1.50	0.429	
a ₂₂	0.67	1.00	1.00	0.286	
a ₂₃	0.67	1.00	1.00	0.286	

Table A-4 a_{3n}-a₃ level

sub-criteria a ₃	a ₃₁	a ₃₂	a ₃₃	W	CI=0.018, CR=0.032<0.1
a ₃₁	1.00	1.50	2.00	0.464	
a ₃₂	0.67	1.00	0.75	0.255	
a ₃₃	0.50	1.33	1.00	0.281	

Table A-5 b_{1n}-b₁ level

sub-criteria b ₁	b ₁₁	b ₁₂	b ₁₃	W	CI=0.009, CR=0.016<0.1
b ₁₁	1.00	0.67	0.50	0.217	
b ₁₂	1.50	1.00	0.50	0.285	
b ₁₃	2.00	2.00	1.00	0.498	

Table A-6 b_{2n} - b_2 level

sub-criteria b_2	b_{21}	b_{22}	b_{23}	W	CI=0.001, C=0.13<0.1
b_{21}	1.00	0.67	0.25	0.151	
b_{22}	1.50	1.00	0.33	0.218	
b_{23}	4.00	3.00	1.00	0.630	

Table A-7 a_n -a level

criteria a	a_1	a_2	a_3	W	CI=0.028, CR=0.046<0.1
a_1	1.00	2.00	3.00	0.528	
a_2	0.50	1.00	3.00	0.333	
a_3	0.33	0.33	1.00	0.140	

Table A-8 b_n -b level

criteria b	b1	b2	W
b1	1.00	2.00	0.667
b2	0.50	1.00	0.333

Table A-9 T level

Target T	a	b	W
a	1.00	1.50	0.6
b	0.67	1.00	0.400

Provided with the relative weights, we can calculate the global weights for each factor. See Table A-10.

Table A-10 The relative weights and global weights for the elements

Target	relative weights	criteria	relative weights	sub-criteria	relative weights	Factor	global weights
T	0.6	(a)	0.528	(a ₁)	0.455	(a ₁₁)	0.1440
					0.199	(a ₁₂)	0.0629
					0.347	(a ₁₃)	0.1099
			0.333	(a ₂)	0.429	(a ₂₁)	0.0855
					0.286	(a ₂₂)	0.0570
					0.286	(a ₂₃)	0.0570
			0.140	(a ₃)	0.464	(a ₃₁)	0.0389
					0.255	(a ₃₂)	0.0214
					0.281	(a ₃₃)	0.0235
	0.4	(b)	0.667	(b ₁)	0.217	(b ₁₁)	0.0580
					0.285	(b ₁₂)	0.0760
					0.498	(b ₁₃)	0.1327
			0.333	(b ₂)	0.151	(b ₂₁)	0.0202
					0.218	(b ₂₂)	0.0291
					0.630	(b ₂₃)	0.0840

Appendix 2 Evaluation of competitiveness of Maersk and COSCO

Six experts and people related to the field are inquired to score the factors according to the judgment matrix, $P=[\text{excellent, good, normal, bad, too bad}]$, whose plus-weighting coefficient matrix is $F=(9, 7, 5, 3, 1)^T$. The target index can be obtained by applying plus-weighting analytic comprehensive assessment method.

Table A-11 is the evaluation of Maersk, and Table A-12 is the evaluation of COSCO.

Table A-11 The evaluation of Maersk's competitiveness

Target	relative weights	criteria	relative weights	sub-criteria	relative weights	Factor	global weights	9	7	5	3	1	average score for each factor
T	0.6	(a)	0.528	(a ₁)	0.455	(a ₁₁)	0.1440	5	1				8.67
					0.199	(a ₁₂)	0.0629	4	1			7.17	
					0.347	(a ₁₃)	0.1099	4	1	1		8.00	
			0.333	(a ₂)	0.429	(a ₂₁)	0.0855	5	1			8.67	
					0.286	(a ₂₂)	0.0570	4	2			8.33	
					0.286	(a ₂₃)	0.0570	3	3			8.00	
			0.140	(a ₃)	0.464	(a ₃₁)	0.0389	2	4			7.67	
					0.255	(a ₃₂)	0.0214	1	4	1		7.00	
					0.281	(a ₃₃)	0.0235	4	2			8.33	
	0.4	(b)	0.667	(b ₁)	0.217	(b ₁₁)	0.0580	1	5				7.33
					0.285	(b ₁₂)	0.0760	1	4	1		7.00	
					0.498	(b ₁₃)	0.1327	1	4	1		7.00	
			0.333	(b ₂)	0.151	(b ₂₁)	0.0202	1	4	1		7.00	
					0.218	(b ₂₂)	0.0291		4	2		6.33	
					0.630	(b ₂₃)	0.0840		5	1		6.67	

The final result can be drawn by multiplying the global weights matrix with the matrix of average score for each factor. Thus, we get that the evaluation result of Maersk's competitiveness is 7.665.

Table A-12 The evaluation of COSCO's competitiveness

Target	relative weights	criteria	relative weights	sub-criteria	relative weights	Factor	global weights	9	7	5	3	1	average score for each factor
T	0.6	(a)	0.528	(a ₁)	0.455	(a ₁₁)	0.1440		6				7.00
					0.199	(a ₁₂)	0.0629		4	2			6.33
					0.347	(a ₁₃)	0.1099		4	2			6.33
			0.333	(a ₂)	0.429	(a ₂₁)	0.0855	1	5				7.33
					0.286	(a ₂₂)	0.0570		4	2			6.33
					0.286	(a ₂₃)	0.0570		4	2			6.33
			0.140	(a ₃)	0.464	(a ₃₁)	0.0389		3	3			6.00
					0.255	(a ₃₂)	0.0214		1	5			5.33
					0.281	(a ₃₃)	0.0235		2	5			6.50
	0.4	(b)	0.667	(b ₁)	0.217	(b ₁₁)	0.0580	1	5				7.33
					0.285	(b ₁₂)	0.0760		4	2			6.33
					0.498	(b ₁₃)	0.1327		4	2			6.33
			0.333	(b ₂)	0.151	(b ₂₁)	0.0202		4	2			6.33
					0.218	(b ₂₂)	0.0291		4	2			6.33
					0.630	(b ₂₃)	0.0840		4	2			6.33

By the same method, we can get that the result for COSCO is 6.542.