

The Analysis of Dalian Port Container Transportation Competitiveness

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Abstract—With the continuous development of global economy and trade and maturity and improvement of container transportation technology, international cargo containerization has become an irresistible trend of development. The current competition of container terminal is no longer limited to the size of the port and its natural conditions, but making every effort to reduce operating costs, improve working efficiency and strengthen the construction of soft environment in the face of the same conditions such as advanced facilities, enhancing the overall level of port operation, and improving the competitiveness through the above factors as the important tools.

Keywords—Dalian Port, container transportation, competitiveness, AHP (Analytic Hierarchy Process)

I. INTRODUCTION

Since the 21st century, with the rapid development of export-oriented economy in Liaoning province, the handling capacity of container in the port shows an exciting developing trend as well as the container accumulation. International cargo containerization has become an unstoppable trend of development and the port container transport is the leading representative of its further development.

Dalian is the leading city of open strategy in northeast China, with numerous ports, relatively developed transportation system, more comprehensive functions of the coastal cities, and above all, it has good basic conditions for the building of northeast Asia international shipping center. Dalian port is the second-largest domestic port in the early 1990s; however, it's far from the inland, and lack of perfect and effective industry management mechanism as well as irrational economic structure of inland, for example, overlapping inlands with Qingdao port and Tianjin port lead to partial distribution of the supply of goods. In the face of strong challenges of providing poor public infrastructure facilities and the rise of new ports represented by Yingkou port, as well as the factors that Dalian port construction is relatively backward and the service concept has not been able to be fully understood, which constitute the obstacles of the further development of Dalian port. According to the above analysis, we can find that the comprehensive competitiveness of Dalian port container transport has obviously fallen behind the adjacent ports.

II. RESEARCH STATUS OF CONTAINER TRANSPORT COMPETITIVENESS OF DALIAN PORT

In recent years, thanks to the rapid development of port container, the research literature has increased at a significant rate.

For now, the container transportation is in the booming stage both at home and abroad. In addition to the continuous development of the degree of containerization, container shipping and container transport organization, the international container still develops so fast. The physical indicators of container shipping have become more and more big. For example, the vessels operated by MSK (Maersk) at sea have the length of 347 meters, and the width of 42.8 meters, namely the tonnage of 17, with full load of 6600TEU, and draft of 14.5 meters. Therefore, other big shipping companies order large vessels with load of more than 8000-10000 TEU in succession, so as to maximize its capacity and to reduce the cost of per TEU to a minimum

The flexible application of information technology also promotes the development of shipping industry while the constant improvement of equipment. Internet, GPS and RFID technologies, as well as container operation management system has been widely accepted. For example, the owner may find out the location of the goods at any time through the network. Moreover, shipping documents and the government approval documents can also be transmitted by electronic means.

III. RESEARCH CONTENTS OF CONTAINER TRANSPORT COMPETITIVENESS OF DALIAN PORT

The aim of this paper is to make every effort to find existing problems of container transport in the Dalian port and its solutions, thereby upgrade the development goals that fit Dalian port, based on the analysis of competitiveness of Dalian port within the scope of the coastal ports in Liaoning province. In the process of research, we also refer to the data of Tianjin port and Qingdao port in order to guarantee the comprehensiveness of the study. Compared with the theoretical exploration, this paper pays more attention to the data analysis of the reality. Therefore, the research content mainly concludes the following aspects:

Introduce the present situation of the port's container transportation, including Dalian port, Dandong port and Yingkou port;

Select evaluation index system according to the existing materials;

Evaluate competitiveness using models and analyze the evaluation results combining the current situation of Dalian port;

Analyze the defects exposed in the development of Dalian port, and seek development countermeasures;

Summarize the analysis results and make a conclusion.

IV. CONTAINER DEVELOPMENT OVERVIEW IN DALIAN PORT AND MAIN COMPETITORS

A. Modern container port development and trend in our country

Entering the new century, with the deepening of globalization and rapid development of economy and trade, container transport shows strong momentum of development. According to the data from China port network, the analysis of container terminal throughput in domestic trade from 2003 to 2011 is shown below:

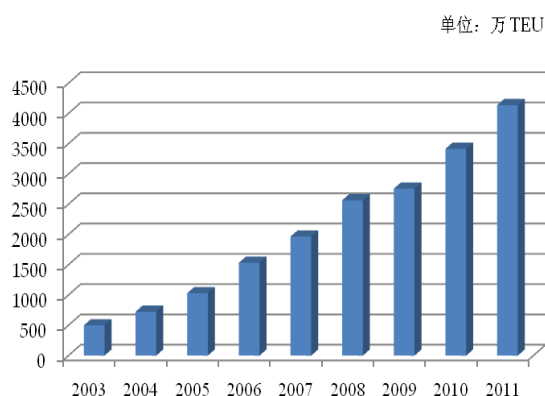


Figure 1.: trend chart of container throughput in domestic trade from 2003 to 2011 (Unit: ten thousand TEU)

According to Figure 1, container terminal throughput in domestic trade had been on the rise from 2003 to 2011, so China's port container transportation showed a strong momentum of development. However, with the perfection of international container transportation market and take-off of our country's economy, the growth of inland supply is slowing down, also the growth of the port container throughput. As a result, China's port container transportation development co-exists with challenge. The development direction mainly includes the following four aspects:

1) Strengthen port cognition and collaborate each port.

The continuous development of port and expansion of transportation scale promote the improvement of overall transportation structure, while the port container throughput cannot ensure the long-term stable growth effectively. Therefore, further strengthen the understanding of the development direction of port container transport, make overall arrangements, optimizes the allocation of infrastructure while giving consideration to the quality and efficiency. Strengthen the collaboration of each port further and pursue high efficiency rather than blind competition.

2) Synergy of railway transportation and promotion of container multimodal transport

The share of railway in China's coastal port transportation system is less than 1% on average, which has great negative impact on port transport efficiency, and even restricts the development of the whole container transport. Therefore, actively promoting railway and sea transport while focusing on comprehensive development is not only the requirement of the port container transport but also necessary condition to promote the development of railway container, which will strengthen the cooperation of railway and port, and actively play the role of railway.

3) Strengthen the independent innovation ability

Innovation is the soul of a nation's progress, and the inexhaustible driving force for the prosperity of a country. With the rapid development of science and technology at present, to strengthen the independent innovation is particularly important. Accelerating technological innovation ability can naturally improve the port container transport capacity and promote its continuous development, which is the inevitable choice of the port. In the future, new technologies and new facilities are to be constantly developed; the overall system is to be optimized, so as to promote the level of construction, management and intelligence.

4) Insist on sustainable development and strengthen the supervision

Full implementation of the scientific outlook on development and building a resource-conserving and environmentally friendly way of development are to promote comprehensive, balanced and sustainable development of port container transport. Moreover, strengthen the safety supervision on the port's work, perfect the emergency system, and conduct a comprehensive coordination to make the whole system available and function best.

B. Status of container transport in Dalian port

Dalian port is in the center of the northwest Pacific, and the center of new northeast Asian economic circle, being one of the sea portals going into the Pacific Ocean and global in the region. Broad estuaries, deep water, non-silting and ice-free are all its characteristics. Natural condition is superior, being one of the most convenient accesses for goods to Far East, South Asia, North America, and Europe. The free waters of port are 346 square kilometers and more than 10 square kilometers of land area; current railway sidings in the port are more than 150 kilometers, warehouse area of more than 300,000 square meters, cargo storage area of 1.8 million square meters and more than one thousand all kinds of loading and unloading machines; the port has more than 80 modern professional berths, such as container, crude oil, refined oil, grain, coal, mining, chemical products and others, of which more than 40 berths can hold up more than 10,000-ton class vessels.

Convenient traffic also brings a lot of benefits to Dalian port. At present, the longest Shenyang - Dalian highway roads in China connects to the national highway network in northeast of China. Dalian port can also connect to Russia and North Korea by the northeast railway and highway network, and become the starting point of the Eurasia land bridge through the Siberian land bridge.

In addition, Dalian port established friendship with port of Vancouver in Canada, Kitakyushu port, Yokohama port,

and Fushiki Toyamashinko in Japan, Oakland port and Houston port in US, which laid a solid foundation for the development of Dalian port with inestimable prospects.

According to the survey chart of national ports container terminal throughput structure from China ports network, in 2011, the maximum proportion of imported empty containers of the container terminal throughput in Dalian port is 22.3%, followed by exported empty containers with a proportion of 30.39%. Overall, it's developing with a sound momentum and good prospects.

As can be seen from the above figure the transport capabilities of Dalian port. The economic inland is the mainstay that supports Dalian port's continuous development, which can go deep at home into Heilongjiang, Jilin, and the eastern part of Inner Mongolia autonomous region such as Hulunbeir League, Jirem League, Chifeng and so on. The economic inland can also extend to South Korea, Japan, the United States and Europe and other major developed regions.

By 2010, annual throughput of the port is up to 200 million tons and the handling capacity of container is 8 million TEU. To construct a comprehensive, multi-functional, modern international port is the pursuit of all-round development of the Dalian port. With the strategy of "international operation, logistics service and digital management", Dalian port will do whatever it takes to build a world-class container port.

V. COUNTERMEASURES OF CONTAINER TRANSPORT COMPETITIVENESS OF DALIAN PORT

A. *Development strategies of Dalian port participating in port competition in Liaoning province*

Actively participating in the province's urbanization, promoting the construction of port scale, effectively enhancing the industrial development along Dalian port, further getting close to the market and closely linking up the port with the customer, thus provide better service to Liaoning coastal economic circle and the revitalization of northeast old industrial base.

Dalian port aims to build an international hub port, and then it should expand regional cooperation with Yingkou port, Dandong port and Jinzhou port, expand inland resources, meanwhile, reduce supply distribution from Qingdao port, Yingkou port, Tianjin port, and try to build itself into the transfer station of supply for Tianjin port and Qingdao port.

In order to further implement the development strategy of Liaoning coastal economic belt, Dalian port can build itself into a transfer port with speed so as to strengthen the radiation ability of Dalian port to the surrounding ports, and cooperate in the aspect of investment with enterprises in the economic belt surrounding Bohai Sea.

In conclusion, the paper puts forward the following development strategy:

- (1) To further improve the port container transport service level
- (2) To strengthen the information construction of port container transport
- (3) Improve the collection and distribution system of port

B. *Three pieces of advice to promote the container transport of Dalian port*

In recent years, container transport of Dalian port develops to a certain extent, but there is a certain gap compared with the surrounding Qingdao port and Tianjin port. The competitive road to build itself into a hub port in our country is still full of thorns. Therefore, for the sake of the future development prospects of Dalian port and Dalian city, the corresponding advice in view of the exposed problems is put forward as:

1) *The Dalian port should develop container supply*

Supplies of goods are the basic condition for port survival. Actively expand the market in order to find more sourcing channels. In order to solve the condition of container supplies gradually encroached by Yingkou port, establish an effective information platform and make market surveys according to different customers; strengthen propaganda and actively strive for other regional sourcing while stabilizing the existing supply of goods.

2) *Dalian municipal government's positive support and continuous effective management measures*

The government shall establish unified management institute for port container transport; the organization should have a certain authority, and coordinate the ports.

In the same way, the Dalian port container transport development cannot leave the support of the government. Dalian port is one of the basic industries in Dalian; the government should actively respond to the call of developing port container transport, and put forward concrete and effective measures to promote the development.

3) *Actively improve the port environment, and establish the concept of supervision and service*

"Port economy" is not only confined to the economy of port enterprises in coastal areas, but also includes science and technology, culture and so on. As a special international logistics node, Dalian port should pay more attention to the overall development possibilities including transfer station, etc. Do the research, understand the development mode around the port cities, take in everything and constantly promote the development.

Actively respond to port environment construction, improve the mechanism, establish the watchdog, serve the market efficiently, and improve the competitiveness of the port, so the port can be better developed.

VI. CONCLUSION

On the whole, the existing advantage and competitiveness of Dalian port can't do without the Dalian port's unique geographical advantage and economic condition to be the regional transfer station. By comparing with the Yingkou port, Qingdao port, Dandong port, and Tianjin port, Dalian port can construct itself into a international hub port through unremitting efforts by deducing costs, actively improving the competitiveness of port operations, and breaking the traditional transport disadvantages.

In the competition and cooperation with ports in the province represented by Yingkou port, Dalian port is to optimize strategic decision, strengthen port transport capacity, give full play to the core competitive advantage

on local conditions, and improve the comprehensive competitiveness practically.

Through the port cooperation mechanism in Liaoning province, Dalian port should actively respond to the call of scale effect, and create economic benefits according to their own competitive advantage along with moderate cooperation with other ports in the province. It's believed that Dalian port will take a huge lead in the future ports competition of Liaoning province, and then build itself the regional transfer station in north China.

In the course of this study, the evaluation index of container transport competitiveness in Dalian port is obtained through resourcing and statistical survey data, and the paper gives the development planning and some advice to Dalian port. What's more, the paper comprehensively compares the competition indicators of Yingkou port and Dalian Port, such as the geographical conditions, the inland resources, the hardware and software facilities, the working efficiency and port charges, accordingly, find the path of development of Dalian port. This paper is an attempt in various aspects. Due to the limited time and energy, and inadequate experience, this paper still has many shortcomings, and all of these remain to be improved in the future study.

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