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Analysis on the interactive development of qinzhou port logistics and port industries

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ABSTRACT

The port logistics industry can provide effective support for the development of regional industry, taking Qinzhou port as an example, use of correlation analysis, make the empirical analysis of the collaborative relationship between Qinzhou port logistics and port industry, and the results show that between Qinzhou port logistics and port industry,there are relatively high degree of association, but there are also many imperfections in the coordinated development between the two. According to the results of the analysis, put forward countermeasures and suggestions for the coordinated development between Qinzhou port logistics and port industry.

KEYWORDS

Port logistics; Port industry; Coordinated development.

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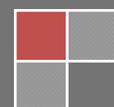
INTRODUCTION

In recent years, the pot logistics has developed rapidly. The development of port-centered industry, especially the port industrial area becomes an unstoppable trend. Qinzhou port lies in the Beibu Gulf of China southern coast, which is the center hub location of Nan(ning)Bei(hai)Qin(zhou)Fang(chenggang) costal economic zone in Guangxi. Qinzhou port back against the vast southwest in China, facing southeast Asia, lies at the intersection of two big economic corridor. It is one of the most convenient sea route from China's vast southwestern aera, western Hunan and wstern Hubei region to the southeast Asia. Therefore, Qinzhou port becomes the southern ocean and rail transport hub of oceanside industrial belt which axised by Nanning and Qinzhou in the Guanxi planning and development. Qinzhou port occupies an important position in port logistics development of Guangxi Beibu Gulf. In May 2008, the officially approved establishment of Qinzhou bonded port area has taken more convenient conditions for the development of port logistics. Guangxi Qinzhou bonded port area is the exclusive one of west coast in our country, and is also the nearest one from China to ASEAN. It locates in the forefront of China - ASEAN international thoroughfare and going to sea from southwest China, which is the core platform and strong engine of opening and development in Guangxi Beibu Gulf economic area. With the constant improvement of port infrastructure in Qinzhou port, port industry has gained rapid development. There have been a lot of large projects settled in Qinzhou port, such as Petrochemical, Metallurgical, Energy, Paper Making, etc. China's accession to the WTO, the establishment of China - ASEAN Free Trade Area, the implementation of the Western Development Strategy and the all-rounded propulsion of regional economic cooperation in extensive Pearl River Delta, these achievements will greatly promote the Qinzhou port construction and port industrial development. Qinzhou port will enter world 100 million tons grand port ranks, form a benign and interactive development pattern of big port, big industry, big logistics and big tourism. Then it will pullulate into a modern comprehensive port that the industry, ecology, tourism and habitation all develop coordinately and harmoniously.

RELATIONSHIP ANALYSIS OF THE COORDINATED DEVELOPMENT BETWEEN PORT LOGISTICS AND PORT INDUSTRY

"Port logistics is refers to the center of the port city of using its own port advantage, based on its advanced software and hardware environment, strengthen its radiation ability of the port logistics activities, extrude the specialities of port goods collection, inventory, distribution. On the basis of port industry, with the support of information technology, catch the target of optimizing the port resource integration, to develop a port comprehensive service system, which contains all the link characteristics in logistics industry chain." (Li Mi, Prov.) If we had efficient, convenient, cheap port logistics condition, it would play a vital role in port industrial development.

Qinzhou port was founded in 1992, the berth was put into using in January 1994. As the Guangxi coastal industrial port, it develops port industry in coastal areas of Qinzhou port, which based on the port. Port Industrial Park in Qinzhou port has begun to take shape now, supporting facilities also have been increasingly perfect. Qinzhou port with its advantages of the policy, economy, geography, continues to attract capital, technology, population and other factors of production to the port, expected to further enhance the industry scale, form industrial scale of synergies, enlarges the economic aggregate of Qinzhou.

To choose some data as statistical indicators, for example, the volume of freight that can reflect transportation production results, the cargo handling capacity that can embody port scale, and the Gross value of industrial output over the scale that can reflax the size of the industrial development level in Qinzhou, analyze correlation index and its relativity between the Qinzhou port logistics and port industry by using correlation analysis.

Selection of characteristic quantity

For the purpose of this paper is to research the relationship between Qinzhou port logistics and port industrial development, so the writer plans to choose freight volume and port cargo throughput, the two indicators as characteristic quantity of Qinzhou port logistics development, also select Gross value of industrial output over the scale as the characteristic quantity of port industrial development. Because in the economic development, port logistics play an important role, and the port logistics are mainly composed of water transportation, mainly presented as the value of cargo quantity and cargo handling capacity. The development level of port industry mainly manifests as the Gross value of industrial output over the scale, expresses in currency.

The establishment of the mathematical model and correlation analysis

Correlation analysis mainly researches the correlation degree between the variables and the variables, and the selected variables must be able to reflect the characteristics quantity of research object and the reference object. It will have some significance for analytical investigation, if the two variables had certain correlation. If the two variables were not related, it explains that there is no link of development between the two, then there is no necessity of analyzing. In general, we use correlation coefficient r to measure correlation degree between the two variables. Under normal circumstances, the value range of correlation coefficient r is [-1, +1], the greater the absolute value of r get, the higher correlation between two variables have, on the contrary is smaller. When r = 1, indicates that two variables have completely positive correlation, and in the plane coordinate chart shows that all the points fall on the linear regression line. When r =-1, indicates that two variables have completely negative correlation, and in the plane coordinate chart shows that all the points fall on the linear

regression line. When r = 0, indicates that two variables have no correlation. When r > 0, indicates that the two variables have positive correlation. When r < 0, indicates that a two variables have negative correlation. when we inspect the absolute value of r, when $0.8 \leq |r| < 1$, considers that there has high correlation between two variables. When $0.5 \leq |r| < 0.8$, considers that there has significant correlation between two variables. When $0.3 \leq |r| < 0.5$, considers that there has low correlation between two variables. When $0 < |r| \leq 0.5$, considers that there has micro correlation between two variables.

The correlation coefficient calculation formula is shown below:

$$\Upsilon = \frac{\sum_{i=1}^{n}(x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \overline{x})^2 \cdot \sum_{i=1}^{n}(y_i - \overline{y})^2}}$$

$$= \frac{n\sum_{i=1}^{n}x_i y_i - \sum_{i=1}^{n}x_i \cdot \sum_{i=1}^{n}y_i}{\sqrt{n\sum_{i=1}^{n}x_i^2 - (\sum_{i=1}^{n}x_i)^2} \cdot \sqrt{n\sum_{i=1}^{n}y_i^2 - (\sum_{i=1}^{n}y_i)^2}}$$

After looking, analyzing, and investigating data, get basic data of port logistics and correlation analysis of the industrial output over the scale of Qinzhou city in 2006-2011. As shown in TABLE 1, by using SPSS18.0 statistical analysis software to make fitting calculation about the data in TABLE 1, then work out the correlation coefficient between the research variables. The correlation coefficient between the gross value of industrial output over the scale and volume of freight is r＝0.942. The correlation coefficient between the gross value of industrial output over the scale port and cargo throughput is r＝0.969. By fitting calculation, on the whole the possibility that there was no significant linear correlation is less than 0.1. The specific calculation results as shown in TABLE 2 and TABLE 3.

TABLE 1 : Basic data of correlation analysis between port logistics and industrial output over the scale of qinzhou city in 2006-2011.

Year	Gross Value of Industrial Output over the Scale (Miljarder Tons) X	Volume of Freight--Waterway (Myriad Tons) Y1	Coastal Port Cargo Throughput (Myriad Tons) Y2
2006	56.43	355	751.8
2007	71.62	329	1206.3
2008	92.27	668.2	1508
2009	96.05	756.1	2014
2010	483.31	1058.56	3022
2011	930	1537.91	4716

Data Sources: National economy and statistical bulletin social development in Qinzhou city (2006-2011), Statistical bureau in Qinzhou city (2006-2011).

TABLE 2 : Fitting model collection of gross value of industrial output over the scale--freight volume

Model	R	R2	Adjusted R2	the Standard Estimate Error
1	0.942a	0.888	0.860	132.55780

Note: Prediction variables: (constant), freight volume

TABLE 3 : Fitting model collection of gross value of industrial output over the scale--port cargo throughput

Model	R	R^2	Adjusted R^2	the Standard Estimate Error
1	0.969a	0.940	0.925	97.17061

Note: The prediction variables: (constant), the port cargo throughput

Through the above by using the mathematical model and SPSS18.0 statistical analysis software to calculate and analysis the result can be shown in the following two conclusions: First, correlation coefficient between the gross value of industrial output over the scale and the freight volume is 0.942, close to 1, and both two have highly positive correlation. It indicates that there is a strong correlation between the port industry development and port logistics development. Second, correlation coefficient between the gross value of industrial output over the scale and the port cargo throughput is 0.942, close to 1, and both two have highly positive correlation. It provides a further proof that there is a strong correlation between the port industry development and port logistics development.

Growth variation trend analysis between the variables

The purpose of analyzing the growth variation trend between the variables is mainly to research their long-term stable relationship. Some variables show as the data which based on time series, and they can keep a long-term stable relationship, show out by a specific linear combination equation. Between the variables who have this relationship, can be called cointegration relationship. But some between the variables, as the change of time, can't keep long-term and stable relationship. For the characteristics quantity, Freight volume and port cargo throughput, gross value of industrial output over the scale, which selected by this article, all shown as some data based on time series. If you want to study the long-term developing cooperative relationship between port logistics and port industry of Qinzhou, you need to research long-term development relationship between them. Based on above analysis and research data, plans to use Excel to draw Slash Figure about above two groups characteristics quantity.

It can be seen from the Figure 1 and Figure 2 that there have roughly same growth and change trend between freight volume and gross value of industrial output over the scale, also between port cargo throughput and gross value of industrial output over the scale.

Therefore, some information we can get from the above correlation analysis and growth trend analysis between the variables is that, there is a strong correlation between Qinzhou port logistics development and port industrial development, and has an interconnect and interact collaborative relationship for each other. On the one hand, the rapid development of port logistics provides a good service platform for the port industrial goods transportation and storage. On the other hand, the port industrial development promotes the Qinzhou port logistics development of automation, informationization and standardization in turn.

PROBLEMS OCCUR IN THE COORDINATED DEVELOPMENT BETWEEN QINZHOU PORT LOGISTICS AND PORT INDUSTRY

"Collaborative development refers to the various factors in the development process could have a common development, which is on the basis of mutual adaptation and restriction, then to promote the stable development process of the integrated system. From the system analysis of the integrated features, collaborative development involves various factors, requires a common development between various factors. It includes two aspects of meaning: first is the industry of port logistics and port industry coordinated development between itself and the industry; Second, is the coordinated development that from business inside and B to B of the port logistics and port industry."(Yan Yang, Prov.) The port economic system is constituted by the development of port logistics and port industry. Therefore, the various elements between the port logistics and port industry have to adapt to each other and cooperate with each other. Only like that it will promote the system development between the two. This requests that there should be a series of hardware and software conditions to matching with it, and needs a reasonable structure layout, intensive production logistics activity and scientific development planning.

In the coordinated development mechanism between port logistics and port industry, exists a coordinated development model for two types, one type is for the logistics industry itself and the other type is between the logistics industry and port industry, except those two types, there exists a common development pattern, also. Several collaborative models run for each itself and cross for each other, and constitute a whole network system that every model impacts and restricts for each other. And this paper devotes to mainly analyzing the coordinated development relationship between the port logistics and port industry, it have been proved by correlation analysis and regression calculation before. So, from the point of industrial chain, it's not only a process of realizing the coordinated development of each industry and get the optimum and maximum benefits, solving the constantly appeared and faced problems of the coordinated development between the port logistics and port industry.

And the problems exist in the development process of the Qinzhou port logistics and port industry can be summed up as followed:

i. The shortcoming of Qinzhou port logistics can integrate some enterprises who have logistics resources advantage, and all reflect on the hard and soft environment. "On the one hand, Qinzhou enterprise have some common problems, such as, overall knowledge level is not high enough, innovative business philosophy is lacking, the use of information technology level has no big breakthrough." (Bo Kun, Li Yongjie, Prov.) On the other hand, the supporting infrastructure environment of Qinzhou port is not sound, and roads, docks and circulation facilities need to be further improved. The logistics facilities occur a series of problems, for example, messy management, scattered layout, and weak horizontal integration, and so on. These problems restrict the Qinzhou big logistics development which is based on the big port, and weaken the advantages of port industry development.

ii. Qinzhou port industry is dominated by large industrial development. But due to its weak foundation, insufficient supporting capacity, and uncomprehensive assisting engineering, the port industry is hard to form scale economy.

iii. The relevance is rather noticeable, which mainly refelcts in the common development between Qinzhou port logistics and its port industry. If we can fully grasp the coordination, it must produce synergies, realize win-win between industries. But the port's comprehensive ability is low, the specialization level of logistics industry and industry is not high, and the standardization construction is defective (Huang Jianzhu, Prov.), so the communicated collaboration between the two industries will be blocked. Especially like the behindhand construction of professional container terminal, this will make the shipping industry behind the international level, and hard to be in line with international standards.

THE COUNTERMEASURES AND SUGGESTIONS FOR COORDINATED DEVELOPMENT BETWEEN QINZHOU PORT LOGISTICS AND PORT INDUSTRY

To accelerate the building process of qinzhou port logistics modernization

To construct public service platform of logistics. By establishing the logistics information platform, using professional talents to compile softwares, then can realize automated trading, unified release of logistics supply and demand information, and sharing of information resource. So as to realize the automation, informationization, standardization of logistics level. This not only increase the efficiency of information, but also reduces the cost of logistics information. To provide safeguard for Qinzhou port's goal that building regional international shipping logistics center.

To strengthen the cooperation of logistics enterprises, integrate logistics resources advantages. To improve the cognitive level of Qinzhou port logistics enterprise, innovate management idea, and break through the applicated level of logistics information technology. To strengthen the transverse joint between logistics enterprises, integrate logistics resources advantage, complete various hardware auxiliary facilities, such as the traffic network system and so on, on the basis of existing convenient transportation conditions.

To create the training center of port logistics talent training. The development of modern port logistics should be supported by professional logistics personnel. Cultivating innovative and professional talents resources, and encourage them come to Qinzhou port for employment and entrepreneurship, all these actions will be helpful to promote the rapid development of Qinzhou port logistics. Qinzhou port is located in Qinzhou city, in order to meet the needs of the development of port logistics and port industries, Qinzhou port should actively cooperate with Qinzhou College, train corresponding specialists. Training some talents from different majors, such as international logistics, customs clearance, international freight forwarders, port logistics information system and so on, in order to meet the rapid development of Qinzhou and even the whole Beibu Gulf Economic Area.

To develop the qinzhou port industry energetically

To make a goal of building an international port, improve the port industry system. The development of Qinzhou port industry has had a series of advantages, such as, policy, location and so on, So it can gather its maximum advantage, extend industrial chain, strengthen the alliance, establish and improve the whole port industry system. Except that it also can form industrial zone, processing base, commercial districts, development zones, etc, to enhance international standard.

"To complete the port industry infrastructure, provide supporting services. The assistant development of Qinzhou port industry is depended on facilities. accelerate the construction. So the construction of key basis infrastructures and various key projects, such as the container terminal, etc, must be pushed acceleratedly. On the one hand, we should make full use of abundant resources and policies of port, in order to form clear ecological layout and modern industry base. On the other hand, in order to improve the overall competitiveness of industries, we should increase the intensity of chinese-foreign cooperation, introduce foreign capital and advanced technology, effectively implement the planning of logistics industry, industrial, etc, extend and refine the industry chain and market." (Qin Shusheng, Prov.)

To improve the validity of the port layout planning, and optimize the structure of port industry. The heavy chemical industry of Qinzhou port industry has large capacity, high energy consumption, wide land occupation, and broad economic hinterland. The heavy chemical industry not only brings economic benefits to the port industry, but also produces many negative effects. Thus, on the industry layout, we must do more scientific research through some point of views, such as industry foundation, market prospect and environmental carrying capacity. On the preconditions that selection principle of Qinzhou leading industry, to combine with the related industrial policy to optimize the industrial structure, then strive to do case by case.

To strengthen the interconnection and interaction effect between port logistics and the port industry

"There are likely to have a different degree of correlation in industry within the enterprise and between different industries. If you ignored the contacts and made respective development, it should be likely to cause the resources waste, make an intangible increase of production cost, miss an opportunity of win-win, then weaken its market competitiveness at last. However, if companies can deeply excavate their relevance, find the point of cooperation, expand cooperation space, get a share of resource utilization, such as the information, etc, So it will create synergies for the whole industry chain and promote the industrial agglomeration preferably." (Wang Jinrong, Prov.) Qinzhou port logistics industry itself and port industry are also like that, some industry correlation are relatively high, some are still low. In terms of logistics and port

industry, their correlation degree is relatively high, so it is necessary to strengthen the communication and collaboration between port logistics and port industry, and there exist large cooperation space and potential market.

To make government supervise, and fully play the role of unification and harmonization

Only under the government's unified coordination, playing the role of the Port Authority, increasing the integrating force of port logistics and its involved port industry, then it will reasonably guide the way to establish the profession association and cooperative management, Strengthen the communication and coordination, establish interests community, standardize the order of market competition. So these measures may promote the continuous expansion of the port economy, even can produce synergies between the industries.

ACKNOWLEDGEMENT

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