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[Field Research]

Studies on Port Development Strategy in Shanghai, China*

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Abstract

Purpose – The purpose of the paper is to examine development strategy that Shanghai port has practiced, and to take out some productive implications to be applied to other port.

Research design, data and methodology - The research methods to be applied is first to look into some development progress in terms of trade volumes, and then to review development strategy that is classified with two different aspects, and finally to identify implications.

Results – Following the change of economic environment that China has joined to WTO, the way of doing business in Chinese economy has transferred to market economy more closely. Trade volume is higher than before and it attracts to build national infrastructure including port. Development strategy has to be needed to take care of newly faced economic situations, within two aspects, hardware and software approach. Both construction and management are answer to competitive port of Shanghai.

Conclusions – From the development strategy of Shanghai port, hardware and software aspects should be emphasized, and it is evident that both trade volume of shipping market and the willingness of port authority have to be getting along with each other in development strategy.

Keywords: Development, Strategy, Port, Shanghai, China.

JEL Classifications: L91, L95, L98, O20, O25.

1. The Shanghai Port in General

The port of Shanghai is the best world port this time and it has some characteristics to be categorized as below (China Ports, 2010).

1.1. Geographical Location

The Port of Shanghai is located at the middle of the 18,000km-long Chinese coast line, where the Yangtze River, so called, “the Golden Waterway”, empties into the sea. The Port is thus at the connection point of the east-west traffic route, i.e., the Yangtze River, and the north-south traffic route, i.e., the sea coast. It is faced with the East China

Sea, is connected with the Yangtze River and its approaches the inland waterways of Jiangsu, Zhejiang and Anhui provinces, and the Taihu Lake, and is also near to the south of Qiantangjiang River. Therefore, it is very advantageous in terms of its geographical location, being the conflux of the sea and inland rivers and backed by huge hinterlands.

1.2. Economic Hinterlands

Shanghai is one of the most developed cities in China economically. As a trade port of China, it has played a roles for the long time. The various commodities (60%) and the foreign trade goods (99%) has been loaded in and out of Shanghai through the its Port. The annual trade volumes for both import and export cargoes through Shanghai, in terms of value, reckons for a quarter of total foreign trade volumes in China (Kim, 2016).

Port of Shanghai handles around 25.7% of international trading volume in China. In 2014, the annual container

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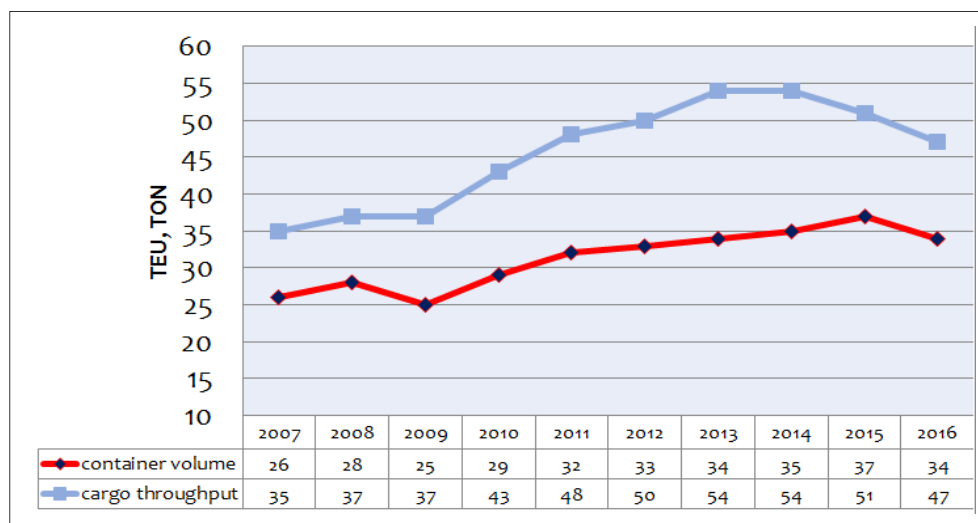
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throughput of Port of Shanghai was confirmed 35,285m TEU, up 4.5% from 33,77m in 2013. Total cargo throughput volume of 539m tons was reported. SIPG (Shanghai International Port (Group) Co., LTD.) has managed to maintain its position as the world's busiest port for the fifth consecutive year.

1.3. Container Liner Services

Most remarkable characteristics shown on Northeast shipping market is that container cargoes in relation to China has been sharply increasing due to open door policy,

which Chinese government has pursued (Oh, 2013). From the port of Shanghai, it has covered all major ports around the world, as far as container liner services are concerned. Every month, more than 2,000 container ships has called out from the Shanghai port, en route to Europe, North America, the Mediterranean, Australia, Persian Gulf, Red Sea, Black Sea, Africa, Southeast Asia, Northeast Asia, and other regions. As seen below <Figure 1>, total trade volumes Shanghai port has been handling with have been steadily increased in both container cargo and general cargo up to this year of 2016.



Source: SIPG (2016).

Note: Capacity: 10,000 TEU/10K TEU, Throughput: 10,000 tons/10K TON Composed by author that in order to have comparative views on the one graphics, container volume divided into 100 times, and cargo throughput divided into 1,000 times. It is also accumulated figures from January to December each year, but year 2016 that is from January to November.

<Figure 1> The Shanghai Port Throughput

2. Throughput Growth in Shanghai Port

2.1. Domestic Aspects in Shanghai Port

Shanghai has witnessed rapid development because of its ideal location and abundant coastal resources over the past decade. Despite the impact of the global financial crisis since 2008, Shanghai has experienced steady growth in its cargo throughput. From 2003 to 2012, it recorded an average 11.06% growth in cargo throughput, with a higher average growth rate in foreign trade cargo (13.64%) than domestic trade cargo. In terms of container throughput, the average annual growth rate was at 14.91%, which is slightly lower than that of other ports in China. This is mainly because of both the large base at Shanghai port that is undergoing steady development, as opposed to the rapid

growth that other smaller ports have been experiencing (Hong et al., 2013), and the joining the membership of WTO that can accelerate growth and opportunities for international trade (TACAW, 2011).

During 2003-2007 Shanghai grew on average by 25% per year, a growth rate lower than that of Lianyungang, Yingkou and Ningbo-Zhoushan, yet higher than that of Taizhou, Qingdao and Shenzhen. From 2008 to 2012, the sluggish global seaborne trade had significantly dragged down the growth of domestic ports and especially of Shanghai. With imports and exports accounting for nearly 50% of its total throughput, Shanghai had an average 5.7% growth in cargo throughput and an average 4.9% growth in container throughput, growth rates that were just slightly better than the other foreign trade-oriented port—Shenzhen <Table 1>.

<Table 1> Average Growth of Major Ports in China (2003-2012)

Port	Cargo Throughput Growth Rate / %			Foreign Trade Cargo throughput Growth Rate / %			Container Throughput / %		
	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012
Shanghai	11.1	16.5	5.7	13.6	19.3	8.0	14.9	25.0	4.9
Ningbo-Zhoushan	14.5	19.5	9.5	19.1	26.1	12.2	25.0	38.1	11.8
Lianyungang	18.3	21.0	15.5	17.6	20.5	14.6	40.4	59.4	21.5
Taizhou	13.1	17.3	8.9	27.4	30.9	23.8	16.7	10.0	23.5
Nanjing	14.0	15.7	12.3	11.0	-1.6	23.5	23.1	28.7	17.5
Suzhou	24.7	30.7	18.7	18.9	19.6	18.3	36.0	46.3	25.8
Qingdao	12.9	16.8	9.0	14.5	18.3	10.8	15.8	22.7	9.0
Yingkou	25.7	31.6	19.9	17.6	11.4	23.9	32.3	35.5	29.2
Shenzhen	11.8	20.6	2.9	15.8	27.3	4.2	12.7	23.0	2.4
Guangzhou	12.8	20.6	4.9	11.3	14.5	8.1	23.0	36.4	9.7

Source: Hong et al. (2013)

2.2. International Aspects in Shanghai Port

China continued to grow at the relatively robust rate of 7.4 percent in 2014. However, this rate is much below the average economic growth of 10.0 percent achieved years earlier and reflects, to a large extent, the slowdown in the industrial production. Growth in industrial production averaged 8.0 percent in 2014, down from 14.0 percent in 2011 and 10 percent in 2012 and 2013. A re-balancing of China's economy can significantly reshape the maritime transport landscape and alter shipping and seaborne trade

patterns. However, as China has generated much of the growth in world seaborne trade since 2009, the challenge for shipping is to ensure that the trade dynamism generated by China's expansion continues and is replicated elsewhere. (UNCTAD, 2015).

Internationally, Shanghai was ranked the first in the world for seven consecutive years from 2005 to 2011 in cargo throughput <Table 2> (Hong et al., 2013), and has been the number one port in terms of, even, container throughput since it surpassed Singapore in 2010 (Hong et al., 2013).

<Table 2> World Ports by Cargo Tonnage

Year 2005						
Rank	Port	Country	Measure	Tons (000s)	+/-from 2004	% Change from 2004
1	Shanghai	China	MT	443,000	64,038	16.90
2	Singapore	Singapore	FT	423,267	29,849	7.59
3	Rotterdam	Netherlands	MT	376,600	24,037	6.82
4	Ningbo	China	MT	272,400	46,550	20.61
5	Tianjin	China	MT	245,100	38,939	18.89
Year 2004						
Rank	Port	Country	Measure	Tons (000s)	+/-from 2003	% Change from 2003
1	Singapore	Singapore	FT	393,418	45,724	13.15
2	Shanghai	China	MT	378,962	62,752	19.85
3	Rotterdam	Netherlands	MT	352,563	25,605	7.83
4	Ningbo	China	MT	225,850	71,870	46.67
5	HongKong	China	MT	220,879	13,267	6.39

MT = Metric Tons, FT = Freight Tons

Source: AAPA (2016).

Accordingly, it is recorded that total throughput of 10 world busiest container ports in 2014 is revealed as 5.3% increase, compared with same period of previous year, which is handling 211.31 million TEU (MOAF, 2015).

Shanghai has sustained the world first port, showing 5.0% increase than last year, then it is followed by port of Singapore, Shenzhen, HongKong, and Ningbo-Zhoushan <Table 3>.

<Table 3> Performance of World Container Port

(2013-14) (unit: 000 TEU, %)

Rank		Port	'13. Dec.	'13.1-Dec.	'14. Dec.	'14.1-Dec.	Year-of-Year	
'14	'13						same month	sum
1	1	Shanghai	2,665	33,617	2,918	35,285	9.5	5.0
2	2	Singapore	2,759	32,579	2,909	33,869	5.4	4.0
3	3	Shenzhen	1,974	23,278	2,156	24,035	9.2	3.3
4	4	HongKong	2,061	22,352	1,816	22,283	-11.9	-0.3
5	6	Ningbo-Zhoushan	1,339	17,327	1,453	19,430	8.5	12.1

Source: MOAF (2015)

3. Strategic Plan and Stress

3.1. General

The Chinese government has implemented the opening up policy more deeply, joining in WTO, which has brought about great influence on the port development and container shipping. A port has been playing very important role more and more in its regional economic development; however, it has made every efforts to participate world economic order and outwards economic development for all-around opening up. At the present time, the industrial development of international logistics area makes all other industries emphasize the establishment of international hub ports, thus the emergence of the internationalization atmosphere of port development (APEC TPT-WG, 1999).

Shanghai has taken an active part in industrial restructuring and vigorous development of advanced manufacturing and modern service industries, therefore it is necessary for Shanghai port to develop their own port with the aim of building the competitive port strategies by means of hub port or network framework in either internationally or domestically. On other hand, in order to make port of Shanghai more competitive or attracted, it should be a port well equipped with better infrastructure and constructed as well. However, it is also asked to be more efficient and effective way of port operation using advanced technological applications, which have provided high quality of service to many port users those who have utilized port facilities.

3.2. Hub Port in Shanghai

3.2.1. International Hub Port

In order to achieve the goal of economic growth as well as productive movement of international container shipping, a layout systems have to be established, and then it is possible for Shanghai port to be international hub port including main and branch port. However, more modernized and automated functions in port must be formed to attract larger container ships.

By doing so, it is possible for Shanghai port to establish itself as an international container hub port in Northeast Asia (Roh et al., 2015). It should be kept in mind that, development strategies for Shanghai port should be based on hub functions to be able to deal with cargoes moving in and out and be international load centre to attract more global shipping companies in the world.

3.2.2. Domestic Hub Port

In order to meet the requirements for regional economic integration, Shanghai will, on the basis of promoting infrastructure construction, integrate port resources in the delta, bring into shape a port layout where various players can clarify the division of labor and draw on each other's competitive advantages, enhance the development and coordination with inland river transport, and give scope to the advantages of the region. This can be achieved by building a comprehensive traffic network serving the Yangtze River Delta.

3.3. Infrastructure and Construction

Shanghai is geographically located just nearby oceanside of East-China sea, but it is center of transportation network in mainland China, which has generated the traffic flow linked to both inland and international system of transportation. Because of that, it is strongly asked to organize port of Shanghai more efficient place to attract and manage all the port users, building its port as hub center.

As far as port is concerned, Shanghai has been constructed as main hub port among many Chinese ports, constructing cargo as well as passenger terminal, and berths for handling energy materials, containers and raw materials, in terms of international hub center and domestic spoke port system. this is also related to intermodal transport network linked to waterway, road, and railway, as well as to improve international system of container shipping more efficiently.

According to government's development scheme as the twelfth five-year plan, the construction of container terminals, especially Waigaoqiao and Yangshan deep-water port areas,

was defined as a key project in Shanghai, with a view to enhancing the international competitiveness of the Shanghai port.

Regarding inland waterway construction, it is emphasized to upgrade the benchmark of navigable channels following the standards of navigation for 1,000 ton vessels (500 ton vessels for some parts of navigable channels). It is also constructed the main channels of the Yangtze River, Xijiang River and Grand Canal (Jining to Hangzhou) together with networks of waterway in the delta sections of the Yangtze and Pearl Rivers.

3.4. Service Improvement

Port should be equipped with hardware and software framework to attract many port user those who has loaded and unloaded cargoes by shipper and shipping companies, and has worked together with port authority dealing with jobs related to port activities.

Service is a level of operation commitments, and it is directly linked with port quality as well (Kim, 2015). To improve service quality is based on port functions that port authority is able to organise, and Shanghai port has established of a comprehensive service functions as test area for international shipping development. It has included modern logistics, trade shows, R&D and processing, bonded delivery of futures and other business so as to attract the procurement, allocation, operation and settlement departments of trans-national companies and international shipping enterprises to move into the port.

At this present times, IT is essential for port industry to manage and operate its facilities more efficiently, which has categorized its port be one step upgraded service provider with more automated and modern port. However, as far as EDI and system set-up of electronic business are concerned, these are being boosted to build management system of the international container shipping. IT development and the EDI system can meet the need of interested parties in international shipping market, and also pursue its technical standard to the unified and normative level, by adopting UN/EDIFACT to transfer the documents of international shipping so as to materialize the computerization of information exchange for container industry in terms of transport and management of container business.

4. Development Strategies

4.1. Three Major Strategies

To become an outstanding global terminal operator is vision of Shanghai port and further developing the home port while expanding to the world is main strategy of Shanghai port.

SIPG will strive to maintain a rapid and healthy development involved in containerization by implementing the Yangtze River strategy, Northeast Asia strategy and Internationalization strategy and focusing on four pillar businesses of cargo handling, port logistics, port services and port commerce (Levy & Fukuyama, 2010), so as to establish and consolidate the status of Port of Shanghai as the pivotal port of international shipping and becoming the world's leading terminal operator and port logistics services provider (SIPG, 2016).

4.1.1. Yangtze River Strategy

As the direct hinterland of Port of Shanghai, the Yangtze River valley is the base of the port and a critical area for its sustainable growth. It's the cornerstone of the development of SIPG now and in future to maintain and increase their share of the containerization market in the valley. The key of the Yangtze River strategy is to lead the direction of goods flow, enhance the port's influence over the river basin, and realize sustainable development of SIPG.

As the hinterland of the group's direct cargo traffic, the Yangtze River Valley lays the foundation for the development of home port and is crucial to its future volume growth. It is vital for SIPG to maintain and increase shares in the Yangtze River Valley container market.

4.1.2. Northeast Asia Strategy

As an indirect hinterland of Shanghai port, Northeast Asia provides room for the growth of the port, and is the key area for Shanghai to be an international shipping centre. In future, it is a critical step in the rapid development of SIPG to ensure its foothold in the container transshipment market in Northeast Asia, based on Yangshan deepwater port. As the hinterland of the group's indirect cargo traffic, Northeast Asia strategy is a drive for SIPG taking a leapfrog development to enhance levels of containerization in Northeast Asia.

4.1.3. Internationalization Strategy

Exploring overseas market is an efficient means to materialize the internationalization strategy. SIPG is likely to create value for shareholders through acquisition of foreign terminals and engaging in business relevant to the port. This strategy, aimed to form a transnational network that covers both domestics and overseas markets with the know-how and expertise in port management and operation and innovative services of financing in port business, will help SIPG to be an international terminal operator rendering service to customers along the whole supply chain.

4.2. Four Strategic Business Units

In order to pursue the three major strategies that have

been implemented to materialize the economic scale and synergies on the course, SIPG has targeted to form four strategic business units, through incorporation of business resources, such as container terminal operation, bulk and break bulk terminal operation, port logistics and harbor services.

4.3. Container Terminals

The container terminals are largely situated in three areas, such as Yangshan deepwater port area, Wusongkou in the lower reaches of Huangpu River, and Waigaoqiao on the southern bank of the Yangtze estuary. By the end of 2005, SIPG owns 32 exclusive container berths on a total quay length of 9,700m, equipped with 103 container gantry cranes, and the terminals have a total container yard area of 3,938,000m².

4.3.1. Wusongkou Container Port Area

Wusong Container Port Area has been developed in the 1980s. At present time, this area mainly accommodates the ships' operation, employing on liner services of short sea. It has 10 container berths specialized in this area, with quay length of 2,281m totally, and the berths has maintained with 20 gantry cranes and container yards with a total area of 550,000m².

4.3.2. Waigaoqiao Container Port Area

The building of Waigaoqiao container port area was begun in 1992, and Phases I to V of the port area have been finished so far, which have a total of 16 container berths. Most of the deep-sea liner services as well as some of the short-sea services has been handled at these terminals. A total quay length of the berths is over 5,600m, and are facilitated with 63 gantry cranes and 2.45 million square meters in container yard.

4.3.3. Yangshan Port Area

Yangshan deepwater port area is the first duty-free port area of the country. In June 2002, port area construction was started, and in December 2005, this area was put into operation officially. The operating Phase I terminal has 5 berths, with a total quay length of 1,600m and quayside water depth of-16m. The terminal has a sea-side area of 3,167,000m², land-side area of 1,340,000m², and container yard area of 860,000m².

5. Implication and Lesson

5.1. Strategic Thought

As China has joined the WTO and takes a membership

of world trade organization, it has many opportunities to exchange with other countries in terms of free trade mechanism, which makes China as one of big world trade countries, at same time they have to be obliged to comply with international economic order. Since the year of 2001 as China becomes WTO membership, the trade volume of export and import cargoes has sharply increased and economic situations has been boosted as well. Following this changes of national economic situations, first of all, it is strongly asked to have national infrastructure to be able to deal with increased trade volumes. Port is gateway of national territory as well as door of international world. Therefore the necessity to equip with competitive port should be emphasized, building and constructing the most attractive port in the region, which has targeted international hub center.

The port of shanghai has focused two points, that is hardware and software aspects of development strategy and this is decisively applied to make its port more competitive port in the world. This kind of strategic thoughts may be possible, based on willingness of port authority to develop and openness that port authority has practiced to adopt new wave of port management.

5.2. Hardware Aspect

From the port of Shanghai that has desperately pursued to make its port very competitive and attractive, some points has been examined from eye of outsiders. Port of Shanghai has its hinterland to be able to supply its own cargoes which secure domestic volumes of trade activities from clear advantage like most other world ports. Also, port construction is inevitable to develop national port anywhere in the world, and Shanghai is not a exception, especially Yangsan port together with other container terminals (Kim, 2007), is geographically well situated at the offshore of Shanghai and it has been successfully operated to handle with loading and unloading shipping cargoes.

As port of Shanghai has been played a role to deal with national cargoes, it is load center which has collected and distributed national cargoes and also make transshipment as a place of intermodal transportation routes. And as far as superstructure of seaport, its efforts to set up handling equipments in port has been carried for port modernization and automation together. Ready to cope with, and to provide better service to all port users is essential for port authority, and this can be done or possible, subject to more efficient and convenient infrastructure be constructed by port authority.

5.3. Software Aspect

To make port more competitive to its users, it should be focused on operational and managerial aspects, such as IT communications like EDI system, port marketing and

internalization policy, etc. to attract potential port users. Seaport has been widely organized in terms of many interested parties as well as group, which their job and activities is closely related to each others. Therefore, the role of port authority is much more important and comprehensive aspects to include different job descriptions. Actually, competitiveness of port in recent times has depended upon software aspects in condition to hardware one, which means port authority has to take care of its customers as their convenience.

The port of Shanghai is now best seaport in the world, making a record top level comparing other world port, and it can be possible only when Shanghai are concerned with better service-mind management to its users, providing high quality of port service improved by port authority. As stated previous chapter, modern logistics, trade shows, R&D and processing, bonded delivery of futures and other business activities. Furthermore, Shanghai has been concerned with open management of port system to attract international investors, and vigorously with international marketing as well.

6. Conclusion

The port of Shanghai is world first class port in this time, and from background of its success, development strategy

that Shanghai has practised should be highlighted in one way or another. Since China has joined at WTO, Chinese economy has transferred to world economic order that is free and is governed by some principles like national treatment, MFN, etc. Increased trade volumes have required national infrastructure work properly, efficiently and effectively, therefore Chinese government should take an action to build new facilities to take care of new requirements.

The measures Chinese government takes are development strategies, in two way, hardware and software aspects. Hardware side has included construction activities to build various infrastructure and superstructure shanghai port has to equip, in particular container terminal in first priority. Software one is connected with operational or managerial section which is closely service improvement to port users. It is essential for port authority to attract port users with most updated technology in terms of port automation and modernization. With these development strategies, port of Shanghai has targeted to achieve international hub port as centre of world shipping market, and this is nearly done by their efforts. From Shanghai port prospect, it can be learned that it is all the time getting along with both trade volume of shipping market and willingness of port authority with development strategy.

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