

# Comparative Analysis of Shanghai Port, Singapore Port and Hongkong Port

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**Abstract:** The development of marine transportation has aggravated the competition of the ports all over the world, and many ports are actively probing the methods to integrate the port sources in order to improve the software and hardware facilities and enhance the ability of cargo handling and the ability of loading and unloading bulk cargo and containers. Shanghai, Hong Kong, and Singapore have come out into front because of their unique advantages and they provide other ports with the direction of development. Through the analysis of the throughput, port types, traffic conditions and facilities conditions of the three ports, this paper hopes to propose the strategy of sustainable development for Shanghai Port and other same type port. This paper considers that the development of Shanghai Port should choose the type of cargo based on the port type and the conditions of economic hinterland. Meanwhile, Shanghai Port should enhance the cooperation with the transportation of railway and highway, promote the construction of facilities conditions and consummate the collection and distribution system. In terms of port facilities, Shanghai port should actively cooperate with peripheral port for complementary advantages and mutual benefit.

**Keywords:** Port types; Throughput; Port facilities; Container

## 1. Introduction

As the extending of the port function, the ports are no longer the places of loading and unloading cargo. The ports are becoming the collection centers of the flow of goods, funds, personnel, technology and information and the competition of the port logistics is also becoming more complex. The connotation of port logistics is constantly enriching and each port should comprehend the influence factor of the competition of port logistics and analyze the development of different ports. While benefiting from the development experience of other ports, each port should formulate the proper strategy based on its actual situation and own strengths in order to develop better and stimulate the economic development of surrounding cities. Shanghai Port has ranked first in the world in terms of throughput for several years. However, because of the lack of deep channel for large vessel, the ability of cargo handling is tending to be saturated and the using of the port sources is reaching the limit. Through the comparative analysis of Shanghai Port, Singapore Port and Hongkong Port, this paper hopes to provide suggestions for the development of Shanghai Port.

## 2. Comparative Analysis of the Three Ports

### 2.1. Port Throughput

As the fast development of global economy, the development of each port has obtains great progress. The hardware and software facilities are developing into specialization, modernization, informatization and large

scale. Meanwhile, each port are enhancing the ability of cargo handling and the ability of loading and unloading bulk cargo and containers. Next this paper will analyze the change of cargo throughput of three ports through the data from 2010 to 2014. The Table 1 presents the cargo throughput of three ports.

**Table 1. The cargo throughput of each ports from 2011 to 2014**

Cargo throughput (million tons)	Year	2011	2012	2013	2014
	Shanghai Port	7.28	7.36	7.76	7.55
Singapore Port	5.36	5.38	5.58	5.8	
Hongkong Port	2.77	2.69	2.76	2.98	

Through the Table 1, we can find that the cargo throughput of Shanghai Port has ranked first all the time and it obtained continuous growth except year 2014 in which the cargo throughput decrease by 2.67%. The cargo throughput of Singapore Port was also obtaining continuous growth and the increase range was larger than Shanghai Port. The increase ranges of 2012,2013 and 2014 respectively achieved 1.3%,3.7% and 3.79%. Hongkong Port obtained a small scale of growth and the reason might be the intense competition leading to the slow growth of cargo business. The situation that the three ports could be the global top three illustrates that the three ports have their own unique advantages comparing with the other ports in the world[1].

## 2.2. Port Type

Shanghai Port locates the intersection of the coastline of our country and the Yangtze River which is called the golden watercourse and it is the hub port of the coastal areas. Shanghai Port has convenient canalage traffic, land traffic and air transportation. Its transportation network can cover the whole country and connect with the global marine lanes. Meanwhile, it has strong transportation capacity and it is the biggest hinterland port in our country for now[2]. Shanghai Port has developed into a multi-functional, modern and comprehensive port because of its advanced facilities, efficient management, safety and environmental protection. Shanghai Port mainly offers the services of loading, unloading and storing the bulk cargo and containers and port logistics. The types of goods include containers, coals, steels, machines and so on.

Singapore Port locates the southeast of the Strait of Malacca and the north of the Singapore Strait and it is a natural deep-water port because of no existence of disastrous weather such as typhoon and earthquake. Singapore Port is also a port which locates the important shipping routes connecting the Pacific Ocean and the Indian Ocean. Singapore Port offers the services of transportation and storage and the types of goods include machines, chemical products, chemical fertilizer, concretes, oil, food, groceries and so on. It has been the global shipping center, the biggest transshipment port in the Asia Pacific Region and one of the biggest container port in the world. Hongkong Port is a port in good conditions circled by water on three sides, and it is deep and wide with no disastrous weather. In view of the particularity of the historical background of Hongkong, it is a free port[3]. Hongkong Port mainly offers the services of loading and unloading bulk cargo and containers.

The location of port decides the port type and correspondingly influences the types and sources of the goods. The types of goods of three ports are partly same, and there are also exiting some different types. The types of Shanghai Port include containers, coals, steels and machines, and the types of Singapore Port mainly include chemical products, raw materials and agriculture products. Therefore, Shanghai Port should extend the range of goods type based on its advantages of economic hinterland.

## 2.3. Traffic Situation

Shanghai Port has a large scale of areas. The acreage of port reaches 3618 square kilometers, and the length of the coastline of port reaches 280 kilometers. Shanghai Port has basically formed a integrated transport network including railway, highway, canalage traffic and air transportation. The railway lines include Beijing-Shanghai railway and Shanghai-Hangzhou railway, and the road lines include two highways and four national

roads. The canalage traffic includes the Yangtze River and the Grand Canal from Beijing to Hangzhou, and the air transportation can reach many countries and cities.

Singapore Port is the busiest port in the world which is called the highest utilization port all over the world. There are over 250 marine lanes connecting with the world, and there are many different vessels of about 130 shipping companies from 80 countries and areas entering and leaving the port day and night. Meanwhile, there are over 200 flights from about 30 national airline companies taking off and landing at Singapore Airport frequently.

Hongkong Port is a free port and there are about 20 marine lanes reaching 120 countries and areas and about 1000 ports.

Different port type decides the difference of traffic situation of port, and the traffic facilities of three ports have their own emphases. Singapore Port is a transshipment port and it mainly involves the canalage traffic. Hongkong Port is a hinterland port which mainly relies on the land traffic and canalage traffic. Shanghai Port has a integrated transport network, but it mainly focuses on the land traffic and canalage traffic. The transport network of Shanghai Port is large, but its transportation mode is single. Because the container port areas have no railways, the transportation of containers mainly relies on roads instead of railways[4]. The transportation mode of Shanghai Port which relies on roads continuously influence the later development of port.

## 2.4. Condition of Port Facilities

The water depth of Shanghai Port is less than 16 meters. Shanghai Port has 1202 berths of different kinds and there are 42 exclusive container berths and 171 berths which are over ten thousand tons. Shanghai Port has 3084 loading and unloading machines including 170 container cranes, 338 operating vessels including 7 transport ships and 59 container transfer stations. The marine lanes of Shanghai Port are over 220, and there exists silts in the channel.

Singapore Port has a proper water depth of 15 meters which can allow the vessels of a draught of 12 meters to get through the channel. The length of coastline of Singapore Port is about 10.3 kilometers and it has 37 container berths. Singapore Port has complete facilities including forklifts, cranes, container cranes, tugboats and so on.

Hongkong Port has many modern exclusive berths for unloading oil, coals, food and passengers and Kuiyong container berths which has the highest efficiency of loading and unloading cargo. The acreage of port reaches 5200 square kilometers, and the port width reaches 9.6 kilometers which can allow the vessels of 305 meters to anchor. Hongkong Port has the auxiliary support system including vessel maintenance, material supply, crew ser-

vices and so on. Meanwhile, it has over 2000 mooring buoys.

Comparing the port condition of three ports, their conditions are all superior, and their loading and unloading facilities, container port and operating vessels are complete. However, the channel conditions of Singapore Port and Hongkong Port are better than Shanghai Port. Shanghai Port lacks the petroleum pipelines to transport oil like Singapore Port and it also lacks the exclusive berths for unloading oil, coals, food and passengers like Hongkong Port. The most important problem is the lack of water depth of channel and a large of silts from the Yangtze River blocking the channel. This situation seriously hinder the development of Shanghai Port because the large-sized vessel can not anchor.

### 3. Conclusion

Comparing the similarities and differences of Shanghai Port, Singapore Port and Hongkong Port, we can find that Shanghai Port has certain advantages. However, it has some problems to improve, such as the lack of water depth of channel leading to the difficulty for large-sized vessel to anchor and the single transportation mode which restricts the development of port. Shanghai Port needs to rely on the existing advantages to develop and pay attention to the following points in the later development:

Because of its port type, the conditions of economic hinterland and the types of goods, Shanghai Port should actively construct the Hengsha deep-water port, and consider the new port as the place of processing the import and export goods in order to achieve the ability of processing and appreciation and the function of transportation. Meanwhile, it is necessary to build the exclusive ports and transport the oil and agriculture products.

Because of the single transportation mode, Shanghai Port should enhance the construction of port traffic facilities, improve the railway transportation system and build the railway for loading and unloading containers in the ports of Waigaoqiao Free Trade Zone and Yangshan Free Trade Zone. Meanwhile, it should strengthen the cooperation with the transportation of railway and highway in

order to relieve the pressure of traffic jam in the port. At the Hengsha deep-water port, it is available to use the canalage transportation to transport the bulk cargo such as coals, oil, food and so on. It is necessary to reform the channel and probe the sea-air transportation system with Pudong Airport in order to attract more sources of goods. Meanwhile, it is necessary to optimize the transportation network and provide the customers with efficient and cheap transportation services in order to attract more stable sources of goods.

In terms of the port facilities, Shanghai port should actively cooperate with peripheral port for complementary advantages and mutual benefit. It should take advantage of the policy of the Belt and Road and the investment from the Asian Infrastructure Investment Bank to enhance the construction of port facilities, improve the quality of storage facilities and carry out the expansion construction of the hardware facilities including the berths, navigation equipment, freight yards in order to raise the operating efficiency. Meanwhile, Shanghai port should pay its attention to frequently dredge the deep-water channel and promote the construction of the channel.

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