

Port Competition and Co-operation as a Strategy of Busan Port

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Abstract : The maritime logistics environment including seaborne trade, shipping and ports is changing rapidly and continuously. Large containerships, mega carriers and global terminal operators try to achieve economies of scale and economies of scope. As a result of the changing environment, the competition between ports to achieve competitiveness is intensive. Port competition among China, Japan and Korea is becoming fiercer, both directly and indirectly, resulting from the increased trade in northeast Asia. Port development projects within each country stimulate more intensive port competition. As a result, overcapacity, fierce price competition and overlapping hinterland problems will be caused in the future. Co-operation for survival is considered as a strategy in order to solve anticipated problems caused by port competition. Busan port, for instance, could co-operate with China and Japan as well as with other ports in Korea. Terminal operators' expansion through investments including joint-ventures will make connections between ports smoother. At the port authority level, continuous cooperative interchange between countries is indispensable.

Key words : Port competition, Port co-operation, Overcapacity, Hinterland, Win-win strategy

1. Introduction

In recent years, the maritime logistics environment has been changing rapidly. Seaborne trade has increased continuously under the expansion of globalization. Large containerships, mega carriers and global terminal operators appear, aimed at achieving economies of scale and economies of scope. In such changing environment, the importance of the port industry stands out in relief, since the port industry positively influences national economies, both directly and indirectly. The competition between ports to get a main position, therefore, is intensive. Ports that can not cope with this situation will inevitably be weeded out.

Especially, China is going through a remarkable economic development, resulting in an increased trade in northeast Asia and fiercer port competition among China, Japan and Korea. In order to cope better with this intensive competition, Busan port concentrated on port development projects. Because Chinese ports are also developing projects on a large scale, Busan faces a dangerous situation with many limitations. Lately, a co-operation plan was drawn up by the administrator of the Ministry of Maritime Affairs and Fisheries in Korea.

This thesis, therefore, aims at analyzing the problems of competition and suggesting more detailed co-operation plans.

The second chapter analyzes port competition and

co-operation based on established theory according to the aspects of changing port logistics environment. After analyzing, the third chapter sets Busan port in the fierce competition among northeast Asian ports and considers anticipated future problems. The last chapter then shows co-operation as a strategy to solve the problems caused by port competition.

2. Theoretical Analysis of Port Competition and Co-operation

2.1 Changing port logistics environment

Fig. 1 gives a round-up of the changing trends causing port competition. In general, we can state that changes in the seaborne trade environment, the shipping environment and the port environment are intertwined and cause port competition. This port competition is manifested in hub and spoke systems. Mega carriers, created by the strategic alliances among shipping lines, reduce the number of port calls to minimize transport cost. As a consequence, a minority of ports will hold an advantageous position as a hub port. On the other hand, a majority of ports will fall into the category of feeder ports. The striving for shipping lines' cargoes then causes competition among (big) ports to become extremely fierce.

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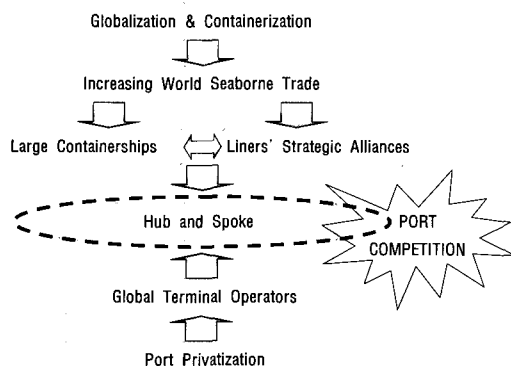


Fig. 1 Changing trends of port and port competition

2.2 Port competition and competitiveness

Van de Voorde and Winkelmanns (2002a) propose three levels of port competition, namely intra-port competition at operator level, inter-port competition at operator level and inter-port competition at port authority level. The distinction between the (private) operator and the (public) authority levels is made since both serve a different purpose. Private undertakings aim to maximize profit and minimize costs whereas public initiatives aim to provide a utility.

Intra-port competition at operator level is the competition among terminal operators within a port. Although there is no intra-port competition under the public management, port privatization causes intra-port competition among operators. Since a port is considered as a profit-creating entity, its commercial function is stressed upon. Inter-port competition at operator level is the competition of terminal operators operating in different ports. This level of competition usually appears in ports within the same range. Competition among terminal operators became a factor stimulating strategic alliances.

Competition among port authorities of different ports is called inter-port competition at port authority level. Usually government still owns the ports and the port thus still has a public character. Port competition, here, therefore is not devoid of any political influences.

If a port as a supplier cannot meet the requirements of shippers or shipping lines, these customers will leave the port or potentially even look for another transport mode. Port competitiveness is thus indispensable in order to survive in a world characterized by fierce port competition. Port competitiveness determines the power to compete, it implies the capability and ability (Winkelmanns, 2005b). To achieve competitiveness, each port develops plans. These can be external, such as strategic alliances with other ports, or internal, for instance facilities development. Most of all,

in order to develop competitive advantages, it is important to have core competences through unique capabilities (Winkelmanns, 2005b). These activities, however, can have a positive as well as a negative influence, resulting in advantages and disadvantages of port competition.

2.3 Port co-operation against competition

The development philosophy of port development faced with competition changes from 'hardware' to 'software'. Hardware of port development includes the construction of infrastructure and superstructure. Software of port development includes port management on behalf of port privatization for high efficiency, know-how, IT technology for supporting and network structure. Now, however, software of port development can be expected to be the factor of determining importance in port competition.

The fourth generation of ports is introduced by UNCTAD and characterized by co-operation in combination with competition together with horizontal and vertical integration (Jung, 2002). Port co-operation can be considered as a strategy against competition. Song (2003) said co-operation is a way of collaborating to compete¹⁾.

Intra-port co-operation at operator level is the co-operation regarding terminal operations within a port. Inter-port co-operation at operator level, on the other hand, is a co-operation of terminal operators among different ports. According to the research of Song (2002), competition between the ports of Hong Kong and Shenzhen is increasing, so that Hong Kong decided to cooperate with Shenzhen port, instead of continue competing. This cooperative strategy has for objective to strengthen the position in times of high competition of South China, by a joint venture. In this Hong Kong-Shenzhen example, for the terminal operators there are elements of competition as well as co-operation, both within and among the ports. Usually the co-operation within or among ports is accomplished by the same terminal operator. Terminal operators are used to expand their power sphere through investments, such as joint venture, because co-operation through joint venture enhances the competitiveness as well as the market power (Song, 2002).

Inter-port co-operation at port authority level is the co-operation of port authorities among ports. For example, Copenhagen Malmö Port as a limited company was founded by Copenhagen port of Denmark and Malmö port of Sweden on 1 January 2005 (Copenhagen Malmö Port website). Both ports had already cooperated before they found Copenhagen Malmö Port and considered a closer

1) Co-operation means "co-operate to compete" (Jorde and Teece, 1989)

co-operation. The aim of the co-operation is to realize economies of scale through collaboration of marketing and operations, and finally to improve competitiveness

According to UNCTAD (1990), highly suggested areas for port co-operation are technical training, harmonization or exchange of tariffs and information for common services. The other areas are harmonization of statistics and operational documents or procedures, relationships between port users (including conferences) and pooling of port services or equipment. Song (2002) states that co-operation leads to advantageous results: risk reduction, economies of scale, rationalization, technological exchanges, co-opting or blocking competition and overcoming government-mandated trade or investment barriers. Both parties can be stronger by sharing techniques and information through co-operations. Finally, co-operation as a strategy of competition can be a competitiveness among parties. The parties, especially, are expected to be largely complementary. If they can cooperate through each party's core competence, they can have unique a competitiveness and achieve a more competitive position.

3. Competitive Environment of Busan Port

3.1 Northeast Asian port competition

Total throughput forecasts for the northeast Asian ports amount to 64.16 million TEU for 2010, and even 73.44 million TEU in 2015. The average annual growth rate is estimated to be 7.4% between 2005 and 2010 versus 4.8% between 2010 and 2015 (Busan Port Authority, 2004). It is easy to see, then, that competition among Chinese, Japanese and Korean ports is extremely fierce. In the competition, Korean and Chinese ports seem to concentrate on port construction, such as new berths. Japan, on the other hand, looks for increased competitiveness in changing port management.

Table 1 Plans of port development in northeast Asia

Section		Berths	length(m)	Depth(m)	Term
Korea	Busan North	1	300	16	~2006
	Busan New	30	9950	16	~2011
	Gwangyang	21	7350	16	~2011
China	Shanghai	52	21200	16	~2020
	Ningbo	18	-	17	~2009
	Qingdao	21	-	17.5	~2020
	Tianjin	10	3200	16	~2010
Japan : 3 regions of the "super-major ports"		Kehin	Tokyo port, Yokohama port		
		Hanshin	Osaka port, Kobe port		
		Iseman	Nagoya port, Yokkaichi port		

Source: own representation based on Lim and Lee, 2005

Table 1 shows the plans for port development in Korea and China. It also shows that Japan changes track by focusing on changes in port management instead of direct physical expansion.

3.2 Anticipated problems caused by port competition

1) Overcapacity

Some ports compete with severe excess capacity. With the increase in international trade through Asian ports, huge investments are made in capacity expansion projects. This "war of expansion", however, warns for overcapacity in the future (De Lloyd, 2006). Shanghai port, for instance, plans to construct 56 berths by 2011 and 16 berths by 2020. Busan, on the other hand, also has some considerable expansion plans in mind

Table 2 Forecasting throughput and capacity of Busan port (unit: 1,000 TEU)

Section	2001	2002	2003	2004	2005	2011*	2020*
Total	8,073	9,453	10,408	11,492	11,843	14,038	22,688
Growth rate	-	17.1%	10.1%	10.4%	3.0%	-	-
Port capacity	4,188	4,860	4,860	4,860	4,860	14,643	14,643
More or less	-3,885	-4,593	-5,548	-6,632	-6,980	+605	-8,045
Berth Occupation ²⁾	51.9%	51.4%	46.7%	42.3%	41.0%	104.3%	64.5%

Source: own representation refer to BPA, 2004 port of Busan container statistics

* : Forecasting (2011, 2020)

Table 2 shows the capacity of Busan port. Currently, Busan is facing a capacity shortage compared to its throughput, which port efficiency might suffer from. To solve this issue and keep enough capacity, Busan plans in the Busan New Port project to construct 30 berths by 2011. By constructing 30 new berths, the berth occupation rate is expected to be 64.5% in 2020, compared to a theoretical optimum of 65% (Paelinck, 2005). Nevertheless, one has to be cautious. Indeed, the Busan Port Authority assumes the growth rate of throughput to exceed 5.5% in their forecasts while it in reality, however, shows a decreasing trend, from 17.1% in 2002 to an old time low of 3% in 2005. The result of capacity expansion combined with lowered throughput growth rates is that in the future overcapacity problems might occur.

2) the rate of berth occupation = (Cargo handling capacity / Total TEU handled) X 100

2) Price competition

Port competitiveness has its existence within port competition and as such leads to price wars to achieve success at the cost of others. Table 3 shows a comparison of terminal use costs among major northeast Asian container ports. Compared to Busan port, Gwangyang and Shanghai offer terminal services at a relatively low cost. The Japanese ports of Kobe and Yokohama, on the other hand, charge almost the double of Busan.

In the case of Gwangyang, the terminal use cost is comparatively very low in order to attract shipping lines. Gwangyang has a special reduced tariff that should stimulate shipping lines and shippers to opt for the port. Furthermore, the low price for terminal use is a factor of competitiveness for Gwangyang port. This low pricing is a result of the overcapacity, manifested in a high rate of berth occupation of 140%³⁾. Therefore it is possible to cause fiercer price competition in the future. According to competitive port development, price competition among ports will become more severe when overcapacity raises.

Table 3 Comparison of terminal use cost

Section	Busan	Gwangyang	Shanghai	Kobe	Yokohama
Facility	100	0	36	117	117
Service	100	98	488	514	487
Handling	100	102	98	297	263
Subtotal	100	85	106	277	249
Container tax	levy	no	no	no	no
Total	100	67	84	219	197

Source : Gwangyang port website based on the research of KMI(2002)

3) Overlapping of hinterland

With the development of port capacity and facilities, hinterland is also under construction. Hinterland development projects are expected to provide land transport connections in a flexible way. They also provide value-added logistics service and are very important function to attract transshipment. Shanghai plans four such hinterland zones, where 64% of the companies are manufacturing and logistics companies (Arthur D Little Ltd., 2003). Hinterland transport network are also set up in Shanghai, while northeast China, Qingdao, Tianjin and Dalian, follow. The size of the hinterland is almost equal to that of Shanghai. In Korea, Busan and Gwangyang expand their hinterlands. They concentrate on the connection of road and rail as well as

logistics centers. Fig. 2 shows the coverage of Busan, Shanghai, Qingdao and Tokyo. Japan has already constructed hinterland systems since the 1960s but these systems are not expected to affect Korea and China. On the other hand, hinterland overlaps will exist among Korea and China. Especially, Qingdao in China will be affected by Korea, on top of the pressure from other parts of China. Hinterland overlaps, however, can be a serious loss of money, since the investments made will not necessarily pay off. Since hinterland is also one of the factors that make shipping lines opt for a certain port, hinterland development quickly becomes a structural factor in port competition as well.

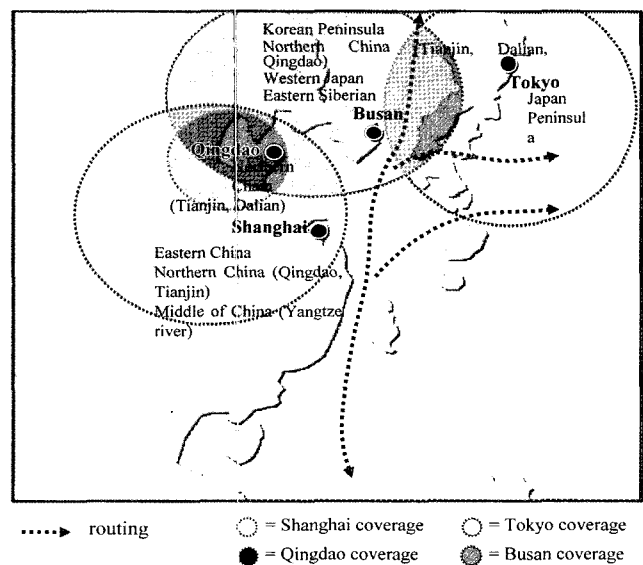


Fig. 2 Coverage of Busan, Shanghai, Qingdao and Tokyo (Source: Arthur D Little Ltd., 2003)

4. Co-operation as a strategy of Busan port

4.1 Intra-port co-operation at operator level

Within the privatized port, competition among terminal operators can be fierce. In intra-port co-operation at operator level, co-operation between terminals of the same operator seems to be easy. Usually, terminal operators cooperate through joint ventures(Song, 2002) since it reduces risk.

The global terminal operation, Hutchison Port Holdings (HPH) invests in two terminals, each in a separate zones, the Jaseongdae zone and Gamman zone. The co-operation between Jaseongdae and Gamman, then, can be accomplished easily. Similarly, Hanjin shipping has

3) the rate of berth occupation = (2,014,000 TEU / 1,439,000 TEU) X 100 = 140 (%)

dedicated terminals in Gamcheon and Gamman.

Recently, a close relationship and connection between Busan port and Busan New port is also of utmost importance because Busan New port is attracting the existing customers from Busan port. Joint marketing, pooling spaces, facilities and equipment, sharing technique, information and interchange of human resources are needed to attract customers and increase total cargoes in Busan.

4.2 Inter-port co-operation at operator level

In port co-operation, it is important to look for a good target port first. In the competition with China, it can be stated that Shanghai is at a rapid pace and has a favorable competitive position in northeast Asia. If one wants port co-operation to succeed, complementary benefits between both ports are indispensable. Shanghai and Busan, however, are both large scale ports, with the same goal: to be a hub port in northeast Asia. Therefore, co-operation between Shanghai and Busan would be difficult. Nevertheless, port competition is also fierce within China and Shanghai competes with northern Chinese ports. When we consider that the backward facilities and infrastructures in northern China, Busan port can handle transshipment cargoes for this region. It is expected to lead to the development of feeder services with northern China.

In the competition with Japan, some effective co-operation with Japanese local ports could also be established. Some of the biggest weaknesses in Japanese logistics are the high land transport and port user costs. It is more cost effective when Japanese ports use feeder services. It is thus important for Busan port to keep its feeder network to attract transshipment from Japan.

Keeping transshipment is thus of the utmost importance and will also contribute to the competitive position for each other. In order to give benefits to each of them, co-operation on the basis of price and service has to be concluded with the respective feeder operators. For the long-term co-operation, joint marketing, joint ventures, sharing technique and information are also needed.

4.3 Inter-port co-operation at port authority level

In order to enhance co-operation, the Busan port authority concluded a memorandum of understanding(MOU) with the Port of Rotterdam and Los Angeles. Major purposes here were the sharing of port information and the interchange of human resource.

In northeast Asia governments conduct port development. The role of the port authority, therefore, is important and co-operation among northeast Asia is needed at the port

authority level. Within specific areas, the port environment has similar characteristics, so that regional co-operation is expected to lead to a large extent to synergetic effects. In the competitive environment, sharing information on port operations and management can improve customer service as well as port efficiency. To the extent allowed by competition policies, agreements on tariffs, furthermore, could block severe price competition and increase profits. In order to keep sustainable co-operation, active and close interchange between countries is indispensable.

4.4 Expected positive effects

Table 4 summarizes the plans for port co-operation and positive effects for cooperative ports as well as Busan port.

Joint marketing is going to reduce cost and create total cargoes. Sharing information, technology and interchange of human resources are able to improve customer service on the whole and lead to the collaborative development. In order to prevent fierce price competition, agreement of price or sharing information related to price is expected to be helpful. Sharing information of hinterland and standardization of infrastructures are needed to prevent overlapping hinterland and provide flexible connections between different regions. Overcapacity can be solved by pooling spaces and efficiency will be improved by pooling equipment and facilities. Especially, joint ventures through investment can increase cooperative relationship but reduce risk.

Table 4 Plans for port co-operation and effects

Plans		Effects
joint marketing	→	reduce cost, create cargoes
sharing information/ technology, interchange of human resources	→	improve service, collaborative development
price agreement	→	prevent fierce price competition stable benefits
sharing information of hinterland, standardization of infrastructure	→	prevent overlapping hinterland
pooling spaces, equipment, facilities	→	improve port service, reduce overcapacity
joint ventures	→	reduce risk, increase co-operation

5. Conclusions

This study analyzed port competition in northeast Asia and suggested co-operation between ports as the way to

follow. Busan port is competing considerably with other northeast Asian ports. Co-operation, therefore, is regarded as the solution and strategy in order to survive in the competitive market place and to maintain a sustainable port environment. The strategy is expected to minimize risk and maximize efficiency by contracting a positive-sum game(win-win). For parties with complementary and interdependent relationships, the strategy will especially prove to be successful.

The main reason that co-operation is indispensable in northeast Asia is the anticipation of a number of problems. As a result of port competition, overcapacity, fierce price competition and overlapping hinterlands are anticipated future problems. In northeast Asia as a whole, overcapacity problems will emerge, because China and Korea both construct berths excessively. Therefore, it will be useful to attract cargo by promoting all the northeast Asian ports together. Collaborative marketing efforts will reduce cost and at the same time increase synergetic effects. Fierce price competition, however, leads to a reduction of the benefits. Nevertheless, by agreeing on tariffs, these benefits could be stabilized. Furthermore, overlaps in the hinterlands cause excessive competition and duplicated investments. The overlapping hinterland areas have to be defined and divided by agreement, so as to avoid duplicated investments. Agreements dealing with flexible connections between two regions are also indispensable.

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