

**Strategies of Leading Global Terminal Operators
in Establishing Global Networks**

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DECLARATION

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Table of Contents

Introduction 1

Chapter 1. Structural changes of shipping industries in each sector 3

1.1. Facing challenges of shipping industry with logistics 3

1.1.1. Larger supply of services to customers 3

1.1.2. Global accounts 3

1.1.3. Reduction in vendor base 4

1.1.4. Increasing influence of forwarders 4

1.2. Shipping lines 4

1.2.1. Alliances among container carriers 5

1.2.2. Changes in behaviour of container carriers 5

1.2.3. Appearance of larger container ship 6

1.3. Market in ports 9

1.3.1. Port Authority 10

1.3.2. Improved container handling per crane 10

1.3.3. Market factors 11

1.3.4. Technical considerations 12

Chapter 2. Configuration of major global terminal operators in formation 14

2.1. The ownership 14

2.2. Development of global terminal operators 15

2.3. Global port operators 22

2.3.1. Hutchison Port Holdings (HPH) 24

2.3.2. Port of Singapore Authority (PSA) 25

2.3.3. P & O Ports 27

2.3.4. Eurogate 30

Chapter 3. Strategies comparison among global terminal operators 31

3.1. Hutchison Port Holdings (HPH) 31

3.1.1. Regionalisation in Mainland China 31

3.1.2. Impact on Hong Kong container traffic 32

3.1.3. Bargaining power 34

3.2. Port of Singapore Authority (PSA) 34

3.3. P & O Ports 35

3.4. Eurogate 36

Chapter 4. Terminal operators by region 37

Chapter 5. Strategies of major global terminal operators 42

5.1. Internationalisation 42

5.2. Vertical integration and cost leadership 44

5.3. Co-operation with other market players in the port 44

Conclusion 46

Bibliography 48

Tables

Table 1.1 Design developments of large container vessels 8

Table 2.1. International Stevedores – Global Port Presence mid-2004 19

Table 2.2. HPH Terminals 24

Table 2.3. PSA international terminals 26

Table 2.4. P&O Ports Terminals 27

Table 2.5. Eurogate Terminal 30

Table 4.1. Far East – Top 10 terminal operation companies 37

Table 4.2. Southeast Asia – Top 10 terminal operation companies 38

Table 4.3. North Europe – Top 10 terminal operating companies 38

Table 4.4. North America – Top 10 terminal operating companies 39

Figures

Figure 2.1 Public/private control of container terminal throughput, 1991-2003 (million TEU) 14

Figure 2.2 International Stevedore Developments 1998-2004 18

Figure 3.1. Changing South China container base, 1996-1999 33

Figure 3.2. Intermodal Service of Eurogate 36

Strategies of Leading Global Terminal Operators in Establishing Global Networks

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Abstract

The explosive growth in world trade associated with the spatial dispersion of production and consumption of economic goods has revolutionised the structure and management of maritime transport and ports. Export-oriented growth strategies, coupled with pressure applied by technology intensive container shipping firms have focused ports to become rationalised so that this specific multi-modal link in the global transport system does not frustrate regional and national economic competitiveness. In response, the deregulation, port ownership, management and operations away from public control during the 1990s is an under appreciated component of the "long wave maritime cycle" accompanying the fifth Kondratieff cycle.

Globalisation has become an unfolding trend in many industries nowadays. The port industry has undergone a rationalization process over the last decades. An increasing proportion of port management and operations is being taken over by global port operators such as Hutchison Port Holdings, PSA Corporation and P&O Ports. The trend towards the globalisation of port business can be regarded as the geographical diversification of port operators.

Many port operators who ran only their local business are now extending their business scope to the regional or global scale. Most of terminal operators are regarded as

Multinational Corporations(MNCs). MNCs invest in different parts of the world to develop their global empires. They compete against a number of players who confront one another in various markets around the world. MNCs play a very important role in globalisation, and there is a trend for them to replace nation states as primary player in the new economy.

In the era of global economy, a global distribution channel with a reliable multimodal system is essential. The role of the Port has been changed from that of a node for transferring cargoes between the sea and other transport modes to that of a link in the logistics chain. The port holds a significant role in this system, but no longer enjoys a natural monopoly.

With some changing trend of shipping industries, a certain form of competition and co-operation among ports is necessary so as to provide services that fit into shipping lines' strategies and so on.

Bearing the background in mind, this paper proposes a new strategic option for the terminal operators in establishing global networks with explaining the current situations of them. The results of this research will provide a useful insight into the port industry, especially some of major terminal operators, which is currently required to carry out its business to the world.

Introduction

The explosive growth in world trade associated with the spatial dispersion of production and consumption of economic goods has revolutionised the structure and management of maritime transport and ports. Export-oriented growth strategies, coupled with pressure applied by technology intensive container shipping firms have forced ports to become rationalised so that this specific multi-modal link in the global transport system does not frustrate regional and national economic competitiveness. In response, the deregulation, port ownership, management, and operations away from public control during the 1990s is an under appreciated component of the “long wave maritime cycle” accompanying the fifth Kondratieff cycle. (Airriess, 2001)

Globalisation has become an unfolding trend in many industries nowadays. The port industry has undergone a rationalisation process over the last decade. An increasing proportion of port management and operations is being taken over by global port operators such as P&O Ports, PSA Corporation and Hutchison Port holdings. This trend towards the globalisation of port business can be regarded as the geographical diversification of port operators. (Song, 2003)

Many port operators who ran only their local business are now extending their business scope to the regional or global scale. Most of terminal operators are regarded as Multinational Corporations (MNCs). MNCs invest in different parts of the world to develop their global empires. They compete against a number of players who confront one another in various markets around the world. MNCs play a very important role in

globalisation, and there is a trend for them to replace nation states as primary players in the new economy.

However, distance still matters and companies must explicitly and thoroughly account for it when they make decisions about global expansion. Traditional country portfolio analysis needs to be tempered by a clear-eyed evaluation of the many dimensions of distance and their probable impact on opportunities in foreign markets. (Ghemawat, 2001)

In the era of global economy, a global distribution channel with a reliable multimodal system is essential. The role of the port has been changed from that of a node for transferring cargoes between the sea and other transport modes to that of a link in the logistics chain. The port holds a significant role in this system, but no longer enjoys a natural monopoly as was the case in the past.

With some changing trend of shipping industries, a certain form of competition and cooperation among ports is necessary so as to provide services that fit into shipping lines' strategies and so on.

Bearing the background in mind, this paper proposes a new strategic option for the terminal operators in establishing global networks with explaining the current situations of them. The results of this research will provide a useful insight into the port industry, which is currently required to carry out its business.

Chapter 1. Structural Changes of shipping industries in each sector

In recent years, a number of structural changes have occurred in the shipping market as players have attempted to be competitiveness and to improve and expand service offerings.

1.1. Facing Challenges of Shipping Industry with Logistics

The role of the port has been changed from that of a node for transferring cargoes between the sea and other transport modes to that of a link in the logistics chain.

1.1.1. Larger Supply of Services to Customers

Customers require and increasing number of services from a logistic provider. Apart from the traditional port-to-port container shipping, customer require, amongst others, pre- and on carriage EDI connections and IT support, documentation services and proactive pre-sales, sales- and after services. They also ask for more frequent sailings and reliable transit, preferably at the same or an even lower price.

1.1.2. Global Accounts

Due to the globalisation, customers also expect a state of the art, proactive forthcoming attitude of their logistics service provider who can serve on a worldwide basis. In negotiations with logistics suppliers they ask for on point of entry.

1.1.3. Reduction in vendor base

In order to reduce costs, customers are in the process of reducing their number of logistic suppliers. For example, General Motors used in the past approximately 125 container carriers. In recent years, they reduce the number of container carriers to 25. In the years ahead, finally, this number will probably be further reduces to five carriers. (Berndsen, 1997)

1.1.4. Increasing influence of forwarders

Severe competition is coming from international forwarders. As recognised architects of transport chains, they are will positioned to take over the logistic activities from their customers. Along with increased volumes, forwarders are using their buying power in order to get the best deal for their customers.

1.2. Shipping Lines

Almost all movements of goods at sea related to consumer products, are containerised today. Success factors of containerisation in two decades evolved from the productivity and improvement of container management to low cost strategies and improved land operation management in the early nineties. The quality of service particularly in terms of frequency, port coverage and reliability has improved substantially. As a result of the changing requirements of customers, container carriers started to concentrate increasingly on door – to - door services instead of just port-to-port operations.

Today's scale in operation has become one of the key success factors in container shipping & logistics. Scale, not only seaside (larger and more efficient vessels) but also landside scale is a prerequisite to get access to the lowest-cost producers status.¹

1.2.1. Alliances among container carriers

To cope with the changing environment in container shipping, carriers were looking increasingly for global alliances. Co-operation in the past between carriers primarily focused on vessel sharing agreements and slot arrangements: the 'sea leg'. The new alliances, however, also aim at co-operation on land.

Hence the co-operation among partners does include most of the 'operational' aspects the customers usually will now see, but very much value. Only marketing and sales are explicitly excluded from this co-operation. The scope of this new kind of alliance therefore offers a variety of possibilities for further service improvement and cost reduction, while preserving each partner's strategic identity.

1.2.2. Changes in behaviour of container carriers

Due to the globalisation, customers put more and more complex requests on the providers. To deal with these demands, carriers must be able to offer a worldwide network. Carriers, who are not able to offer worldwide services, will migrate to niche

¹ Marketing of container terminals, 2004, Ocean Shipping Consultants Ltd.

players.

Since all the major carriers are looking for scale in their operations and load factor management has become increasingly important, severe competition has emerged. Also the fight for the customer interface is becoming stronger and stronger. In addition to the fight for the customer interface, carriers must be able to offer additional services. At the same time the traditional role and influence of the conferences is weakening. Partly because of the efforts of the EU and American regulators, but also because of the formation of new alliances and the increasing pressure exercised by the shippers organisations on the regulators.

1.2.3. Appearance of larger container ship

One of the most important trends shaping the deep-sea container trades has been the steady increase in the size of vessels employed. On a slot-mile basis, the savings from larger vessels are significant and also one of the few factors that are directly controlled by the shipping line. Furthermore, as soon as one major line advances to the next size echelon, the competitive nature of shipping industry forces other owners to follow suit.

Since the Panamax barrier was broken in 1988, there has been a continuous increase in vessel sizes. At present, the largest vessels are the Maersk S-class units, which have an estimated capacity of around 8,000TEU+ (although reported at around 6,600 TEU). Vessels of 7,500 TEU have also been delivered for Hapag-Lloyd. The largest vessels currently on-order are the 10,000TEU+ units under construction for China Shipping and

there are well-founded rumours that Maersk-Sealand has significantly larger vessels under development.¹

The design draughts of these units are placed at between 14-14.5m. Orders for vessels upwards of 8,000TEU have been placed for CMA CGM, China Shipping, COSCO, Evergreen, K Line, MISC, MOL, MSC, NYK and Yangming as well as Hapag-Lloyd, Maersk-Sealand and OOCL - in other words nearly all of the major deep-sea lines. The orderbook in June 2004 contained 195 vessels upwards of 6,000 TEU, of which 147 were at least 7,000 TEU and 108 were at least 8,000 TEU in size.²

Designs are underway for containerships of 12,000-13,000 TEU – the so-called ‘Ultra Larger Container Ship’. There are no technical or market obstacles to the introduction of such vessels, although the timeframe remains unclear. All major ports (where it is possible) are planning for the introduction of such vessels.

¹ Figures are from marketing of container terminals, 2004, Ocean Shipping Consultants Ltd.

² Data from marketing of container terminals, 2004, Ocean Shipping Consultants Ltd.

Table 1.1 Design developments of large container vessels

	TEUs	LOA(m)	Beam(m)	Design draught (m)
First generation: 1968	1,100			
Second generation: 1970-80	2-3,000	213	27.4	10.8
Panamax: 1980-90	3-4,500	294	32.0	12.2
Post-Panamax: 1988-95	4-5,000	280-305	41.1	12.7
Fifth generation: 1996-2005	6,400-7,500	300-347	42.9	14.0-14.5
Current development stage	8,000-9,000	330-380	43-47	14.5
Ultra large container carriers:				
-2007 & later	12,500	380-400	58-60	14.5-15.0

Source: Ocean Shipping Consultants Ltd., 2004

Table 1.1 summarises the general development of containership dimensions since the early 1980s, and provides an indication the liability course of future development. Access channel clearance should be at least 10 per cent more in most ports or as much as 15 per cent at some. This will increasingly focus port demand (for the major trades) on those terminals that can comfortably berth vessels drawing between 13.5-14.5 and also result in a progressive requirement for longer berths – with 400m now becoming the standard requirement for major terminals.

It is also anticipated that there will be a corresponding progression in the size of feeder vessels on the major regional trades, with a clear requirement noted for the development of modern high capacity feeder / intra-regional vessels. It means more frequent

transhipment with larger transit volume.

1.3. Market in Ports

It is estimated that the maximum dimensions of container ships will be as follows:¹

Capacity	12500 TEU
LOA	380/400 m
Reefer capacity	750 plugs (1500 TEU)
Beam	Max 60m – 22 containers
Draught	14.8m maximum
Design Speed	23 knots – single engine, 25 knots – twin engines
Amachinery	Single or twin engines
Max cargo weight	123,125 tonnes
Likely max cargo weight	110,800 tonnes

This will place great pressure on the largest terminals to boost handling rates in order to minimise port times for such vessels.

The speed of ship to shore container handling can be increased by two methods:²

- 1 Faster container handling per crane, and;
- 1 The use of more gantries per vessel.

If the turnaround time for ULCS tonnage is to be kept within an acceptable period then both routes will have to be advanced simultaneously.

¹ Average dimensions for Ultra-large container vessel

² based on the search from Ocean Shipping Consultants Ltd.

1.3.1. Port Authority

The rivalry amongst the various players in the development of international transport and logistics systems involves the working of complex forces in the evolution of the new vertical and horizontal relationships. The outcomes affect the public interest in the preservation of structures and practices consistent with effective competition. Whilst the power of port authorities appears to have weakened, at least temporarily they still play an important role in determining the development of the new systems.

According to the T. Heaver, strategies for port authorities are confronted to two areas. The first is the strategy of authorities with respect to the granting of terminal concessions. Port Authorities face two primary issues in their decisions about terminal concessions. The first is who should operate a terminal and what are the conditions under which operation will be allowed. The second is the strategy of ports with regard to the competitive relationship amongst ports. (Heaver, 2001)

Port Authorities are compelled to adapt their strategies in light of the abovementioned transformations in the structure and practices of other participants in international logistics. The response of shipping lines and others to the needs of shippers for improved logistics services are leading to a variety of pressures on ports.

1.3.2. Improved container handling per crane

Crane cycle speed is increasingly becoming a constraint as vessel sizes increase. The largest crane – 66 m outreach – generates the requirement for very rapid acceleration

and deceleration and (even with partial automation of some of the cycle) this places considerable strain on both the operator and the equipment.

1.3.3. Market factors

To maximise terminal capacity it is necessary to minimise the average container dwell time. However, the scope for terminal operators to achieve lower dwell time is restricted. The prevailing competitive position in a port range is the most significant factor in this regard.

In general, dwell times in the major North Continent container terminals are 4/6 days per container in the import/export mode and around 4.6 days for terminals that have a major role in the transshipment sector. These figures are considerably higher than those noted in the Asian markets but are broadly comparable with the position in the North American Pacific ports.¹

The provision of comprehensive and correct information from the shipping lines and shippers to the terminal operators is also an important issue. It is not unusual for up to 70 per cent of data to change during the time a vessel is at the terminal.² This has far-reaching effect on productivity – not just for the vessel but also for secondary modes of transportation.

¹ Data from Ocean Shipping Consultants Ltd., 2004

² Figure from Ocean Shipping Consultants Ltd., 2004

1.3.4. Technical Considerations

Despite the underlying importance of the dwell-time issue there have been considerable developments to improve container yard productivity.¹

In general the following measures will allow more rapid container handling and thus improve potential land use levels:

- 1 Higher stacking in the yards;
- 1 Increased automation;
- 1 Faster automated movement of containers;
- 1 Improved gate technology.

These technical factors have the potential to improve land use rates significantly.²

To lower dwell-time significantly it will be necessary to comprehensively improve the relations between shipping lines, stevedores and shippers. By improved scheduling, direct marketing and other improvements it will be possible to reduce the length of time containers are stored at the terminal (this will of course increase storage requirements at other locations). Too much pressure will result in cargo diversion to other ports in this competitive market, however.

¹ From a field trip to Europa Terminal in Terminal Management Lecture, ITMMA 2004-2005

² Lectured by Vandewalle J. (PSA, Antwerp), ITMMA 2004-2005

Solving these problems will be critical to providing the next leap in terminal productivity that will be critical for the introduction of the next generation of container ships into the market.

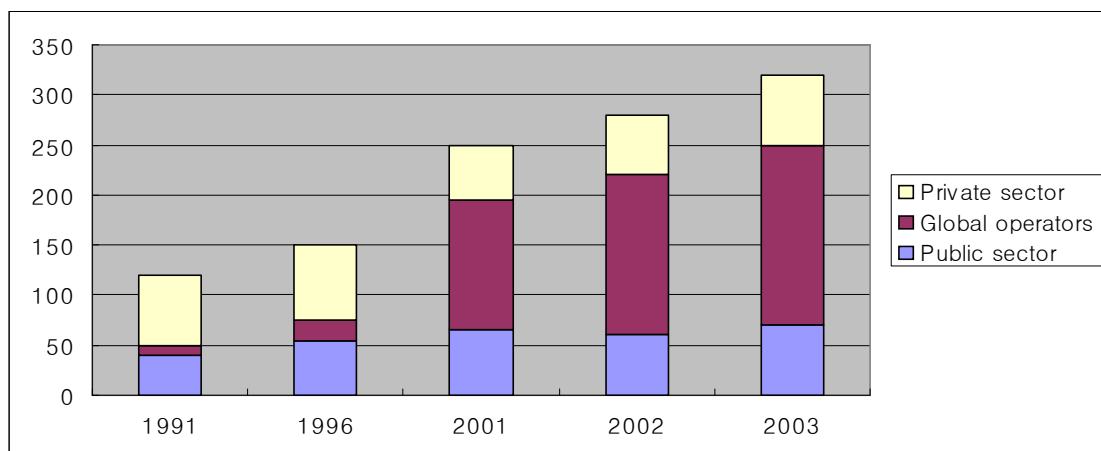
Chapter 2. Configuration of major global terminal operators in formation

2.1. The ownership

To examine the ownership, it is very important to distinguish what terminal operator and stevedore is. A terminal operator has full control over both the quayside and landside operation, and undertakes container handling within a defined area of the port – usually operating under lease or a concession arrangement. In comparison a stevedore typically undertakes only the quayside element of the operation, renting cranes from the port authority.

There has been a marked increase in the level of private in the world container terminal industry. As Figure 2.1 illustrates the proportion of throughput handled at state-run terminals has declined from as estimated 42% in 1991 to 22% by 2003.

Figure 2.1 Public/private control of container terminal throughput, 1991-2003 (million TEU)



Source: Drewry Shipping Consultants Ltd.

2.2. Development of global terminal operators

There have been some major changes in the ownership structure of terminals in the past few years that have reflected the increasing importance of the container trade sector. On the one hand there have been increased levels of investment of the part of shipping lines on container terminals. At the same time, international stevedoring companies have emerged and are now the dominant force in terminal development. There has been a blurring of the distinction between shipping lines and terminal operating companies.

The management of stevedoring has undergone a revolution in recent years, as countries have privatised port operations, and stevedoring companies have merged or made acquisitions in the development of an international stevedoring industry. This development has taken several forms, some of which overlap:¹

- 1 Horizontal expansion – This involves the movement of one stevedore into another port through acquisition. Examples are acquisitions of concession at ports in East Asia, Europe, the American and elsewhere by Hutchison Ports, PSA Corporation and P&O Ports.

- 1 Inward investment – As stevedoring has expanded from national or port boundaries to international dimensions, investment across countries has become more commonplace.

¹ The Drewry Annual Container Market Review and Forecast 2004/05, edited by John Fossey, 2004, Drewry Shipping Consultants Ltd.

- 1 Vertical expansion – Such investment includes the downstream diversification of shipping lines terminal management, for example by AP Moller (Maersk Sealand).

- 1 Stevedore mergers – Many container stevedore companies now operation at major ports, such as Europe's north-countries ports, are the product of mergers. Typically, such mergers have been defensive moves to compete with the increasingly large scale of rival stevedoring companies and to combine resources to generate investment on the scale needed to meet the cargo handling requirements of increasingly large shipping line alliances, in terms of vessel size, throughput volumes and consignment sizes.

- 1 Joint ventures between shipping lines and stevedores, such as Euromax (P&O Nedlloyd / ECT) in Rotterdam, Altenwerder in Hamburg (Hapag Lloyd / HHLA), Korea International Terminals in Kwangyang, South Korea (Hutchison / Hnajin) have been a significant trend.

From its roots in Hong Kong, Hutchison Ports has developed into the leading global container stevedore. It has container port interest in East Asia, Europe, the Caribbean, Latin America and Africa. In 2001 it acquired the overseas container terminal interests of Manila's International Container Terminal Services Inc., and in 2002, it acquired the container terminal interests of Hyundai Merchant Marine.

APM Terminals is a subsidiary of AP Moller, the parent company Maersk Sealand, the largest container ship operator in the world. The company has used its market position

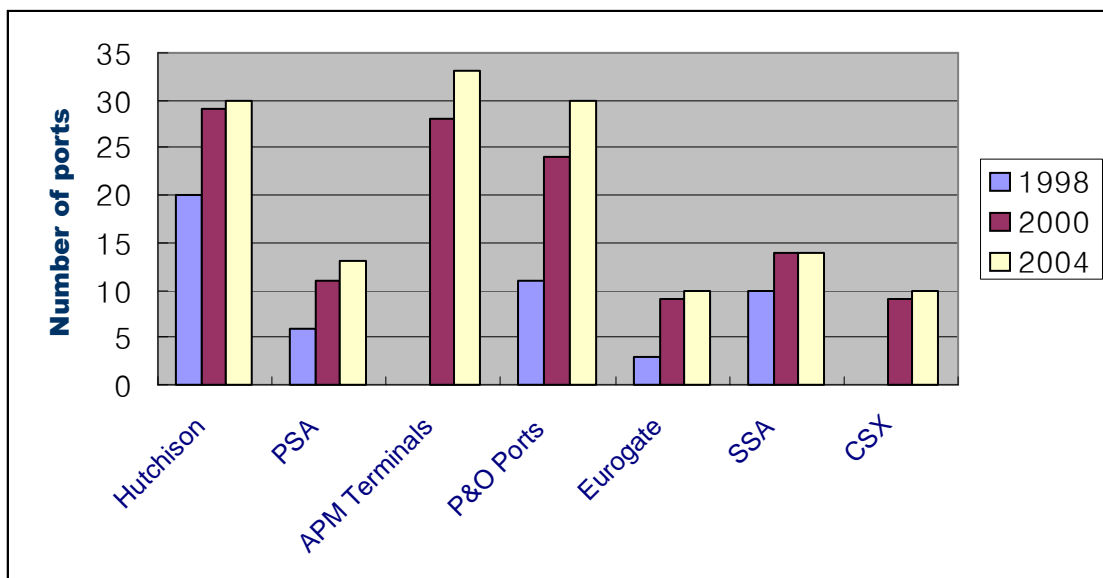
in container shipping and the financial resources of the parent group to extend its logistics chain. Including joint ventures and financial interests in independent terminals, APM Terminals now claims to be the third largest terminal operator in the world, with around thirty terminals. Whilst AP Moller's Involvement in terminal management commenced from the desire for dedicated stevedoring services for Maersk Sealand, efforts are now focusing on developing APM Terminals into an international organisation offering services to third-party carriers.

Part of the P&O Group, P&O Ports claims 33 container terminals on a truly global basis. Its container handling business are particularly concentrated at ports in Australia and in developing countries in Asia and Latin America, but it also has stevedoring interests in the UK, Italy, Belgium, France and the USA. The strategy for P&O Port's global investments is more closely focused on direct profitability of each specific terminal, with synergies between shipping and port operations apparently of less direct importance. Singapore's PSA group has 12 overseas port ventures in eight countries. Recognising the vulnerability to competition of its transshipment hub in Singapore, the PSA Corporation set out on a strategy of internationalisation in 1996. The group now has container port interests in Asia, Europe and the Middle East.

CSX World Terminals grew out of the merger of Sealand and Maersk. Not all of Sealnd's terminals investments were included in the deal and this resulted in the establishment of the CSX World Terminals brand that operates in Hong Kong and China and is also a major player in South Korea. The operator also has major terminal investments in Venezuela and the Dominical Republic.

Eurogate was formed from the 1999 merger of two major German container stevedoring companies – Eurokai and Bremerlagerhausgesellschaft (BLG). Eurogate and Eurokai also have controlling interest in Contship Italia, which manages important container terminals in Italy and at Lisbon in Portugal.

Figure 2.2 International Stevedore Developments 1998-2004



Source: Ocean Shipping Consultant (2004)

Other smaller and regional players include ICTSI, Stevedoring Services of America and Dubai Ports International.

The involvement of major stevedore companies has been a major factor in boosting productivity levels. As the port sector becomes even more internationalised, then these improvements in productivity can be expected to continue.

Table 2.1. International Stevedores – Global Port Presence mid-2004

	East Asia	Europe Mediterranean	North America	Other Americas	Middle East / Indian SC	Sub-Saharan Africa	Australasia	Total
Hutchison Ports					Saudi Arabia	Tanzania		
	Hong Kong	UK *2		Bahamas				
	China *11	Netherlands		Mexico *2	Pakistan			
	S. Korea *2			Panama *2				
	Malaysia			Argentina				
	Indonesia							
	Thailand							
	Myanmar							
Total	18	3	6	2	1	30		
APM Terminals	Malaysia	Denmark	USA *13	Argentina	Oman	Nigeria		
	Thailand	Germany		Jamaica	India			
	Taiwan	Netherlands						
	Japan *2	Italy						
	China *3	Spain						
		Romania						
		Egypt						
	Total	8	7	13	2	2	1	33
P&O Ports	Russia	UK *2	Canada	Argentina	Pakistan	Mozambique	Australia *4	
	China *2	Belgium	USA *7		India			
	Philippines	France *3			Sri Lanka			
	Indonesia							
	Thailand							
	Total	6	6	8	1	4	1	4
PSA Corporation	Singapore	Belgium *2			India			
	China *3	Italy *2						
	Brunei	Portugal						
	S. Korea							
	Japan							
Total	7	5	1	1	13			

CSX World Terminals	Hong Kong			Venezuela		Australia	
	China *4			Dominican Rep.			
	Russia						
	S. Korea						
	Total	7		2		1	10
Dubai Ports Int.	Romania			UAE *2			
				Saudi Arabia			
				Djibouti			
	Total	1		4			5
	Eurogate /Contship	Germany *3					
Portugal							
Italy *6							
Total			10				10
ICTSI	Phillippines *3			Brazil			
	Poland		1		1		
	Total	3					5
Stevedoring Services of America	USA *10			Panama			
				Chile *2			
				Mexico			
	Total		10	4			14

Source : Ocean Shipping Consultant (2004)

A number of dedicated (Owned or joint venture) terminals have been established by major shipping lines in the past few years. The motive for these developments is primarily linked to the issues explored above. As vessel size increase, the control available by integrating stevedoring with vessel scheduling becomes increasingly attractive. It is far from clear that dedicated terminals are cheaper – rather they represent an integration of the service to the customer.

Increasing annual volumes and vessel sizes combine to make the terminal handling aspect of the container logistics chain ever more important in the overall cost structure of a shipping line. In addition, stevedoring becomes a sector where shipping lines can exert an influence on pricing. The idea that lines can operate more efficiently for their own account has been a major feature worldwide.

Given these pressures, the degree to which the common-user stevedore will be able to sustain a role in high-volume terminal operation has become a major issue, focusing attention on productivity and overall service levels. These pressures will continue, but development since 2000 has significantly modified the outlook.¹

1 The profitability of major shipping lines was being severely undermined by over-ordering of new tonnage and by the macroeconomic slowdown. This meant the investment finance for container terminal was far less readily available. During the recent market downturn most lines were focused on survival and did not have the same perspective on such longer-term strategic developments. Contrary to some expectations, the more recent market upturn has not initiated a rapid increase in terminal investment and this will once again restrict the ability of lines to step-up capital commitment in the terminal sector.

1 In Europe, major stevedores are now actively exploring measures such as ‘gain sharing’, that are designed to boost container terminal productivity to provide some of the advantages that lines seek from dedicated terminals, but without the extra cost, and

¹ The Global Containerport Market to 2015, 2000, Ocean Shipping Consultants Ltd

also allow greater terminal volumes (and profitability) for the stevedores.

Essentially ‘the jury is still out’ on the future role of line-owned terminals in the market. Generalisation in this sector is difficult, but the path of co-operation between stevedores and liners will offer significant advantages as capital commitments increase. Indeed, the distinction between these two types of organisation is already becoming somewhat blurred.

2.3. Global Port Operators

The largest shipping lines are undertaking strategies to unite and consolidate their market share, resulting in the emergence of a handful of large global operators. This pattern is also mirrored with global terminal operators, with five major players spreading their tentacles all over the globe, and a growing number of regional operators extending their influence. While the trend is clear to see, it would be somewhat naïve to suggest that notions of ‘national interest’ no longer play any part in port development, but this concern is far less pronounced than was previously the case. ‘National Interest’ is now more likely to mean a local shareholder than a domestically owned terminal.

The leading terminal operators, in terms of the number of facilities that they operate, and their expanding empires are examined.¹ To a large extent, port deregulation has made this pattern of growth possible. The industry is also experiencing more ‘vertical

¹ Annual Review of Global Container Terminal Operators-2004, Drewry Shipping Consultants Ltd., July 2004

integration', meaning that companies involved in containerised trade have extended into more than one of the various areas of competence that can be identified in the field (port or terminal operation, liner shipping, intermodal rail service provision, logistics, etc.). For container ports, the most important trend is shipping lines owning their own container terminal facilities.

There are a number of reasons that why the shipping want to get involved in operating container terminals, and these are explored below. The message for large container ports is that, if they do not already have dedicated facilities for the major shipping lines, they need to carefully consider whether they can retain their traffic without doing so. Competition is becoming such that a growing number of terminals are offering dedicated berths, rather than risk losing business. This situation is more pronounced for terminals seeking to handle the larger vessels and transshipment cargo.

While deregulation and the concession process have enabled the global operators to extend their spheres of influence and spread their capital risk, there are major problems in developing a global port network. Ports in many of the prime locations are not 'up to sale' and what concessions are on offer are hotly contested. In many economies access to foreign companies is only theoretical; protectionism, subsidies and the pattern of economic growth can all prevent foreign investment. Despite this the giants of the terminal operating world seem prepared to accept higher levels of risk, and this is reflected in some of the projects that are discussed below.

2.3.1. Hutchison Port Holdings (HPH)

Hong Kong based Hutchison Port Holdings Group (HPH) claims to be the world's largest international joint venture port project company and the world's largest private container terminal operator. It has interests in the following terminals:

Table 2.2. HPH Terminals

Country	Location	Per cent (%) equity held by HPH
Hong Kong	HIT(Terminal 4,6,7)	Owned by HIT(an HPH subsidiary)
	COSCO-HIT (Terminal 8 East)	50% owned by HIT
United Kingdom	Port of Felixstowe	100% owned by Hutchison Westports (which is 90% owned by HPH)
	Thamesport	
	Harwich	
The Netherlands	Rotterdam	35% owned through Hutchison Atlantic)
Peoples' Republic of, China	Shanghai	40%
	Yantian	49.5%
	Jiuzhou	50%
	Nanghai	50%
	Shantou	70%
	Jiangmen	50%
	Gaolan	50%
	Xiamen	49%
Bahamas	Freeport	50%
Panama	Free port	Joint venture
Myanmar	Myanmar International Terminals	20 year concession

	Thilawa	
Indonesia	Jakarta International Container Terminal	

Source : Strategies for container ports, a Cargo System report by Paul Avery, 2000, IIR Publications Ltd., available at <http://www.cargosystems.net>

In the late 1998, HPH confirmed that it had been offered a 50% stake in ECT. This later became the subject of an EC investigation which ultimately led HPH and ECT to strike a new deal: HPH, through its Hutchison Atlantic subsidiary, now holds a 35% stake in ECT with Rotterdam Port Management holding a 35% share. Other investment companies hold 28% and staff hold 2%. Because there is no shareholder with a majority interest, the deal does not fall under the jurisdiction of EC's merger task force.¹

2.3.2. Port of Singapore Authority (PSA)

The Port of Singapore Authority (PSA) is looking to expand its international operations. Unlike other international operators, it has demonstrated a willingness to get involved in large-scale transshipment projects where the risk is higher than ports with a local cargo base. The biggest outside of Singapore, is the transshipment hub of Aden that began operations earlier in 1999. Since setting up its international business division in 1996, PSA has secured participation in nine port projects in China, Italy, Portugal and the Middle East. In 1998 PSA handled some 1.5 million TEU outside of Singapore. PSA operates the following terminals:

¹ available at <http://www.hph.com.hk> , Performances of Container Terminals-Report, 2003

Table 2.3. PSA international terminals

Port	Nature of facility	PSA's Interest
Dalian, China	4 berth terminal	50 year joint venture between the Port of Dalian Authority and PSA Corporation Limited Maersk has an equity holding
Fuzhou, China	2 terminals	Joint venture management company with Fuzhou Port Authority
Tuticorin, India	1 berth terminal	Joint venture with, South India Corporation (Agencies) Ltd. And Nur Investment Pte. Ltd.
Pipav, India	still at planning stage	
Volturi Terminal Europa, Genoa, Italy	1.2 million TEU PA facility	PSA has a stake (60%) in Sinport. Sinports owns 95% of (VTE), a controlling 53% interest in Vecon, the company operating the Venice Container Terminal
Venice, Italy	Container terminal	
Aden, Yemen	Transshipment Hub	20 year concession to Yeminvest - a joint venture between PSA corporation Ltd. And Yemen Holdings Ltd.
Mura Container Terminal, Negara Brunei Darussalam	1 berth facility, being extended to 2	Concession to develop, manage and operate Muara Container in a joint venture with local Archipelago Development Corporation (ADC)
Sines, Portugal	Import/Export port - transshipment development	30 year concession to build operated and manage terminal 12

Source : Ocean Shipping Consultants Limited, 2004

PSA's latest project in Portugal arguably represents its greatest risk yet, the project has been considered before and other have concluded that it is not viable. The number of transshipment hubs in the region presents some very stiff competition. PSA, however, would no doubt point to growth projections like those from predicting Mediterranean container trade to double from 17,557,000 TEU in 1998 to 35.6m TEU by 2010. ¹

PSA is looking for a throughput of 10m TEU per annum from overseas facilities by 2007. It also wants 30% of its revenue to come from outside Singapore.

2.3.3. P & O Ports

P&O Ports is a wholly subsidiary of the P&O Group, which owns 50% of the shipping line, P&O Nedlloyd. P&O Ports is a leading global port operator. With 27 container terminals and logistics operations in over 100 ports it has a presence in 18 countries.²

Table 2.4. P&O Ports Terminals

Region	Ports
North America	Houston, Miami, New Jersey, New Orleans, Norfolk, Philadelphia, Vancouver
South America	Buenos Aires
Europe	Antwerp, Fos, Le Havre, Marseille, South Hampton, Tilbury

¹ available at <http://www.internationalpsa.com/>, Drewry Shipping Consultant Ltd.(DSCL), 2004

² all data about P&O Ports available at <http://portal.pohub.com>

Africa	Maputo
Australia	Bisbane, Fremantle, Melbourne, Sydney
East Asia	Laem Chabang, Manila, Shekou, Surabaya, Qingdao, Vostochny
South Asia	Chennai, Colombo, Mundra, Nhava Sheva, Port Qasim

Source: P&O Ports home page, available at:

[http://portal.pohub.com/portal/page?_pageid=36,1,36_31159:36_34057&_dad=pogprtl
&_schema=POGPRTL](http://portal.pohub.com/portal/page?_pageid=36,1,36_31159:36_34057&_dad=pogprtl&_schema=POGPRTL)

As P&O owned P&O Ports and has a 50% stake in P&O Nedlloyd, it is logical to look for some synergies between the businesses of the two divisions. P&O Ports reports that it does not develop its business along these lines. P&O Ports requires all terminals to be judged as a good return on investment before investing. It looks for the following attributes in a potential project.

- 1 Opportunities for growth
- 1 The potential to add value by bringing expertise
- 1 The potential for the terminal to reach a critical mass

Recently, P&O India, a subsidiary of P&O Ports (Australia), was the only bidder in the tender to build a container transshipment terminal on the island of Vallarpadam, near Kochi. However, according to the Port's deputy chairman, Janardhan Rao, this does not necessarily mean that either P&O will be awarded the tender or that a new tender will

have to be issued. The contract to be awarded will initially consist of managing the existing Rajiw Gandhi Container Terminal, although the company will then have to develop an entirely new facility of Vallarpadam island. P&O Ports already has a strong presence in India, managing two berths at Jawarhalal Nehru port near Mumbai(Bombay) and having recently won a contract to develop and operate the new container terminal at the port of Kandla.¹

P&O is now testing the waters in American market, something it regards as a long way from a level playing field for a foreign international investor. On 1 July 1999 P&O Ports acquired all of the issued stock of the US company, International Terminal Operating Co.(ITO) for US\$80 million Net of cash. ITO is one of the East and Gulf coast and offering full service stevedoring and terminal services in all cargo-handling sectors. Its main operational locations include New Jersey, Baltimore, Miami and Gulfport.²

Aside from its limited involvement in the Cagliari terminal, P&O Ports does not target transshipment facilities. It considers that transshipment terminals are too much of a gamble on the basis that they are very exposed to competition and transshipment rates are lower than for import/export cargo. On top of this the costs of building a transshipment terminal is very high, because of the extensive infrastructure requirements. Unless there is port authority or government agency putting up some of the capital, then P&O Ports is reluctant to get involved.

P&O Ports has demonstrated a willingness to develop in areas there is no history of

¹ Marketing of container terminals, Ocean Shipping Consultants Limited, 2004

² Marketing of container terminals, Ocean Shipping Consultants Limited, 2004

privatisation. It was the first operator in China, Malaysia and Russia and has taken on projects in South Africa, India and Mozambique.

2.3.4. Eurogate

Eurogate was formed after a 50/50 merger between German terminal operators BLG and Eurokai in August 1999 after a long period of negotiation. The deal another global player, with a very strong presence in logistics and an appetite for further expansion.

Table 2.5. Eurogate Terminal

Country	Terminal/Operation
Germany	Eurokai Terminal at Hamburg BLG Terminals at Bremen and Bremerhaven
Italy	Gioia Tauro* La Spezia
South America	Septeiba, Brazil
Portugal	Lisbon Container Terminal
Lithuania	Kalipeda Container Terminal
Logistics Interests	Contship Italia, Medexpress, BLG Logistics and Sogemar Logistics

Source: Ocean Shipping Consultants Limited, 2004

* Maersk had taken a 10% stake in Gioia Tauro as part of an agreement whereby it had secured a dedicated terminal area.

The Eurogate group now controls container terminal with a throughput of around 6 million TEU per annum.¹

¹ Data available at

Chapter 3. Strategic comparison among global terminal operators

As we have examined in the above, each member of this industry have shown different statuses these days. Anyway, in reality, all their profits are getting higher with a lot of success. There are the reasons that we have to search further their strategies in establishing global networks.

3.1. Hutchison Port Holdings (HPH)

HPH is the single largest privately held port corporation in the world. With their numerous subsidiaries, HPH possesses ports in East Asia, Southeast Asia, the Americas, and Europe. In particularly among global terminal operators, HPH has been successful in capturing Mainland China's container port joint venture market share (Airriess, 2001).

3.1.1. Regionalisation in Mainland China

According the Airriess research, there are factors driving HPH's regionalisation dive in to Mainland China. Central to both push and pull factors is Hong Kong's changing economic and political relationship with Mainland China. Following the implementation of the 1979 Open Door Policy. Push Factors include competitive conditions and transport congestion in Hong Kong, and pull factors involve substantial profit opportunities and a more liberalized transport environment in Mainland China.

(Airriess, 2001)¹

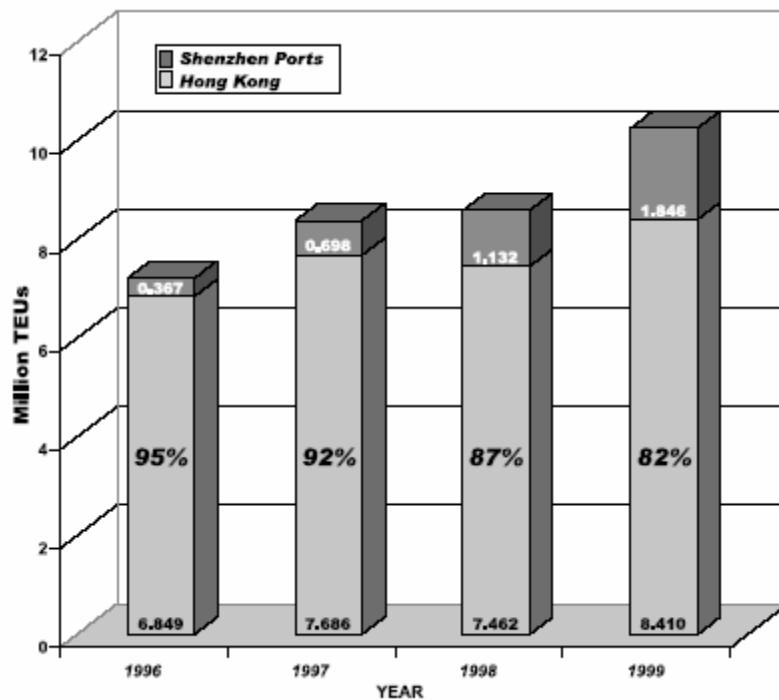
3.1.2. Impact on Hong Kong container traffic

Despite South China containerised cargo base dramatically increasing during the 1996-1999 period, Hong Kong's share in terms of transshipment of South China cargos has decreased from 95% in 1996 to 82% in 1999. Conversely, from production areas in Guangdong only, Shenzhen ports have increased their share of ocean traffic from a meagre 5% in 1996 to a substantial 18% share in 1999.²

¹ HPH's port joint ventures are located in open door policy regions and locations comprising special economic zones, open cities, and open economic zones created by the central government to test the waters of the global market economy. Because HPH was able to pick and choose among many port joint ventures offers from newly created municipal port corporations, the firm possessed a strategy to create a new port network architecture reflecting Mainland China's Articulation with the Pacific Rim and global economy. Because of their geographic location along the entire stretch of the southern China coastline, contrasting functions, as well as their varying physical size and scale, single statements that generalize HPHs Mainland China investment strategies are problematic. The focus of this section of the paper is a description of these ports based on spatial function, and their contribution to HPH's Mainland China container traffic market share.

² Airriess A. C., 2001, The regionalization of Hutchison Port Holdings in Mainland China, In: *Journal of Transport Geography*, Vol. 9,p.267-278

Figure 3.1. Changing South China container base, 1996-1999



Source: Adapted from Hong Kong Port, *Shippers Today*, 2000, 23(3), 34-35

HPH's regionalisation drive only benefits its Hong Kong operations as well as Hong Kong itself because as domestic firms internationalise, these more distant activities translate to higher order and higher value added work at home in the form of management, finance and logistics functions. As these knowledge based activities become territorially embedded and are perceived as a resource to be developed, urban agglomerations such as Hong Kong are able to reach toward the post-industrial world-class status that its managers so desire. (Airriess A. C., 2001)

3.1.3. Bargaining power

When foreign partners possess greater technological and capital assets when compared to the local partner, TNC¹s exhibit greater bargaining power. Considering both the capital and technological intensive nature of container terminals, coupled with the cash poor condition of municipal port corporations, HPH's bargaining power also appears to be favourable. (Airriess A. C., 2001)

TNC bargaining power increases when the domestic partner is a lower order government entity. HPH's bargaining power then would hypothetically be superior because the municipal port authority possesses little experience in operation logistically complex container terminals.

Competition among potential TNC investors should enhance the bargaining power of the local partner. Yet despite implicit central government permission given to municipal governments to invite potential foreign partners to engage in competitive bidding to promote operational efficiency, most of HPH's port joint ventures have not been negotiated under competitive conditions.

3.2. Port of Singapore Authority (PSA)

Volumes at Singapore reached a record 1.8 million TEU in 2003, Exceeding the previous record of 17u.1 million gained during 2000 thanks to continued strong growth

¹ TNC : Transnational Corporation

in the containerised trade in Asia, but it remains under strong competitive pressure from Port Tanjung Pelepas (PTP) and, to a slightly lesser extent, Port Klang.¹

The major impact of PTP on PSA has been on its financial performance as the Singaporean operator continues to offer concessionary rates for empty and transshipment containers. PSA has, finally, bowed to strong pressure from its customers, and to counter the threat of PTP, by entering into joint venture agreement with COSCO for a dedicated facility at the Pasir Panjang Terminals in Singapore in an attempt to look in volumes.

Meanwhile the company has improved its competitiveness position in Southeast Asia and Europe with the acquisition of 50% of Eastern Sea Laem Chabang Terminal Co. Ltd. in Thailand and receipt of confirmation that it will operate all the west side concession at Antwerp's Deurganckdok development.

3.3. P&O Ports

P&O Ports portfolio offers truly global port coverage and with an expanding presence in key containerised growth areas of China and India, coupled with the company's willingness to form strategic partnerships.

¹ The Drewry Annual Container Market Review and Forecast 2004/05, 2004, Drewry Shipping Consultants Ltd.

3.4. Eurogate

Eurogate is one of the narrowest geographic spreads of operations of all global operators. Eurogate has invested in intermodal activities and, most recently, feeder shipping to support its core terminal activities in Europe.

Eurogate is looking towards East Europe to provide future volume growth – via increased transshipment at its German hub ports, and investment in the Ust-Luga terminal development in Russia.

Figure 3.2. Intermodal Service of Eurogate



Source: Eurogate homepage, available at http://www.eurogate.de/live/eg_site_en/show.php?id=33

Chapter 4. Terminal operators by region

Following tables (table 4.1. - 4.4.) are showing bulls of global terminal operators in several regions. Still small-medium sized terminal operators are existed and global terminal operators are very rare in America, in particularly.

Table 4.1. Far East - Top 10 Terminal operation companies

Rank	Operator	Total Regional Throughput (%)
1	HPH	24.6
2	China Merchant Holdings International	9.2
3	Wharf Holdings(1)	5.9
4	COSCO / Cosco Pacific(2)	5.4
5	PSA	3.3
6	Evergreen	2.9
7	P&O Ports	2.8
8	NWS Holdings Ltd.(3)	2.7
9	APM Terminals(4)	2.5
10	CSXWT	2.4
Top 10 Operators		
Total		61.7

Source: Annual Review of Global Terminal Operators 2004, DSCL

Notes

Some double counting occurred where joint ownership structures exist

- (1) Via majority shareholding in Modern Terminals
- (2) Excludes minority shareholdings (i.e. 10% or less)
- (3) Formerly known as Pacific Ports Company
- (4) Excludes CSXWT Xiamen which is managed under a consultancy

Table 4.2. Southeast Asia – Top 10 terminal operating companies

Rank	Operator	Total Regional Throughput (%)
1	PSA	41.6
2	HPH	9.8
3	Malaysian Mining Corp.	9.3
4	APM Terminals	9.0
5	Northport	5.6
6	P&O Ports	5.5
7	ICTSI	2.8
8	APL	2.5
9	TIPS Co. Ltd(1)	1.5
10	Evergreen	0.9
Top 10 Operators Total		88.5

Source: Annual Review of Global Terminal Operators 2004, DSCL

Notes

Some double counting occurred where joint ownership structures exist

- (1) Shareholders include NYK Line and Mitsui OSK Lines

As several researches mentioned, the Asian market will continue to increase in importance within the global market with the strongest growth in throughput. With market growth, ‘Hub-and-Spoke’ concept will be activated. Therefore, not only the hub ports as Hong Kong and Singapore but also lots of small ports will be busy.

Table 4.3. North Europe - Top 10 terminal operating companies

Rank	Operator	Total Regional Throughput (%)
1	HPH	21.2
2	Eurogate	14.1
3	PSA(HNN)	12.9

4	HHLA	10.7
5	P&O Ports	9.5
6	APM Terminals	7.9
7	ABP	5.1
8	Perrigault Group	3.2
9	Mersey Docks & Harbour Co.	2.9
10	CNM Group	2.2
Top 10 Operators Total		89.8

Source: Annual Review of Global Terminal Operators 2004, DSCL

Notes

Some double counting occurred where joint ownership structures exist

The North European market has become further concentrated in the hands of the global operators, which now hold top 7 places in the North Europe league table, as table 4.3. Highlights. This trends looks set to continue, with these same major terminal operators playing a significant role in future developments.

Table 4.4. North America - Top 10 private sector terminal operating companies

Rank	Operator	Total Regional Throughput (%)
1	APM Terminals	16.4
2	Marine Terminal Corp.(1)	13.0
3	SSA Marine	11.1
4	OOCL	6.7
5	APL(Eagle Marine Services)	6.5
6	Maher Terminals	5.5
7	P&O Ports	5.0
8	NYK / Ceres	5.0
9	MOL (TraPac)	2.7
10	COSCO	2.7

Top 10 Operators Total	72.1
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Source: Annual Review of Global Terminal Operators 2004, DSCL

Notes

Some double counting occurred where joint ownership structures exist

Figures exclude stevedoring operations at state controlled, common-user terminals.

(1) Stevedoring company operating common-user terminals and dedicated terminals on behalf of/in partnership with Evergreen, Hanjin, Yang Ming Line and Wan Hai Lines

In several regions, the global terminal operators are pitted against each other. They either bid for the same container terminal, or operate separate, neighbouring terminals that target the same cargoes. An intense competition has arisen in China, Southeast Asia and to a lesser extent in the Caribbean and the United States.

In 2000, container shipping giant Maersk Sealand, the sister company of APM Terminals, moved its Southeast Asian transshipment hub from Singapore, the dominant port in the region, to the neighbouring Malaysian PTP. This move was linked to the decision of APM Terminals (and the AP Moller Group at large) to buy a 30% stake in PTP and effectively become a major competitor to PSA's Singapore operations. Maersk Sealand, the largest customer of PSA in Singapore, dealt a heavy blow to the Singaporean port group by switching virtually all of its container services calling at Singapore to the new Malaysian port, representing about 2 million container moves a year of business.

In Southeast Asia, Hutchison started positioning itself as a competitor to the dominant port of Singapore and to the fast-growing port of Tanjung Pelepas in 2000. It acquired a 30% stake in Westport, based in Port Kelang in Malaysia. The Westport port complex in Malaysia occupies a huge area of 1,280 acres of waterfront land and is now Hutchison's largest terminal in terms of area.

Sometimes like this case, all three major global terminal operators – HPH, PSA and APM Terminals- are fighting for market share in an area.

Chapter 5. Strategies of major global terminal operators

In the last ten years, the container handling industry has been characterised by massive consolidation, vertical integration and the formation of terminal networks operated by international stevedoring groups. Port authorities and policy makers are challenged to cope with emerging dominant positions in cargo handling. (Lectured by Notteboom T. in ITMMA, 2005)

To follow up several changes in shipping industries, terminal operators have to more powerful strategies.

5.1. Internationalisation

The increased commercialisation of ports and the global expansion of container trade created an opportunity for the growth of specialised container-terminal operating companies. The companies have the resources to support substantial investment, have wide experience in container handling and logistics and have considerable expertise in technologies, particularly information technologies.¹ In 2005, now:

- 1 PSA International, AP Moller-Maersk, P&O Ports and China Ocean Shipping Co. are competing for a project to build a new USD 600 million port in Panama, which is expected to be awarded this year. (De Lloyd, April 12, 2005)

¹ Heaver T., Meersman H. and Van De Voorde, E., 2001, Co-operation and competition in international container transport: strategies for ports, In: Maritime Policy & Management, Vol. 28, No. 3, P. 293-305

1 PSA bought a 31.4% interest in Asia Container Terminal (ACT) from Hong Kong property developer –New World Development. (Containerisation International, March 2005)

1 APM Terminals has a rapidly growing portfolio of operations in the Chinese Market. (Containerisation International, February 2005)

Sometimes global operators can make a joint venture with local operators to set up new operation successfully against the confines from the local economic, commercial and cultural environment. Hesse-Noord Natie in Europe, is the PSA's largest investment outside Singapore. They operate the Noordzee Terminal and Europa Terminal in Antwerp, OCHZ Terminal in Zeebrugge, and Holland Terminal in Rotterdam. The main terminal for container handling is in Antwerp, and they produce better service by rail or barge with Zeebrugge and Rotterdam to their customers. PSA expand their business into new areas more efficiently.

For another example, even though they are shipping line, MSC has a dedicated terminal through joint venture with Hesse-Noord Natie in Antwerp.

Yet not all successful terminal operators attempt to extend their businesses internationally. For instance, ECT in Rotterdam initiated a terminal management programme for the Port of Treiste, but consequently decided to refocus its resources on Rotterdam.

In any case, it will create synergies with other activities of themselves to develop a Pan-World network.

5.2. Vertical integration and cost leadership

With the port concentration and Hub-and –Spoke networks, port's hinterland shows a tendency to enlargement. In other words, we need not only intensive but also more frequent and convenient connection between port and hinterland. (Notteboom, 2004)

By structuring effect of inland terminals, deep hinterland penetration via shuttle train, and liberalisation of hinterland transport, intermodal network have to be developed with port as the central figure. Hinterland connection – vertical integration among logistics market players - is very important concept in logistics chain also to minimize delivery time and cost.

Through the vertical integration, in a highly competitive environment, minimising costs within the transport is not only a matter of reducing the direct transport cost, but is also a matter of eliminating operational inefficiencies and stimulating rational economic behaviour of all parties involved.

5.3. Co-operation with other market players in the port

In external and internal environment of port, there are market players besides a port

authority and terminal operating companies, e.g. shipping agents, road/rail transport and shippers. Even though they are very small, but to cooperate with them will create significant opportunities to improve service through co-operation. (Heaver et al., 2001)

With shipping agencies, the trend is for shipping companies to assume direct responsibility for previous agency functions. In some cases, rather than drop an agency relationship, a shipping line may enter into a joint venture with a former agency.

The highly competitive road transport is the most important transportation to connect port and hinterland. The role of railways is depending on the provision of good dependable services. This has led to initiatives by shipping lines, terminal operators and port authorities to enter into arrangements of the operation of scheduled 'shuttle' trains.

Shippers have numerous influences on the patterns of vertical and horizontal reorganisation. Perhaps their strongest influence is their indirect influence through the preferences that they express in the market in their purchase of transport and logistics services. Consolidation amongst the shippers is adding weight to the need for service suppliers with a global capacity. Characteristics of supply-chain management are encouraging vertical integration. However, shippers may also have opportunities to express their concerns about market structures that affect competitiveness in industries. The traditional example is in relation to shipping conference.

Conclusion

“We don’t go after geography – we look at each port on a stand-alone basis. We have no concept of a grand plan, where we see an empty space and say ‘we must have a flag there.’” (John Meredith who is group managing director of HPH, February 2002, American Shipper)

“Consolidation is not unique to this business.” (Robert Scavone who is regional director Americas, of P&O Ports North America, February 2002, American Shipper)

These are the different and special strategies that were in each of their mind.

Growth factors, such as rising containerised trade volume, the takeover of competitors, and investments in new port projects, have created billion-dollar organisation in the port business. Therefore, each major global terminal operator has operations spread across the world with large capital investment budgets and several thousand employees.

Huge amount of capital-intensive industry, port operation is a field of limited competition. Entrance barrier is too high for small operators to take part in. Furthermore, in some region, because of several factors some companies feel difficulty to extent their business. For example, HPH and PSA currently operate no container terminal in North America, whereas they are active on most other continents. Searching this phenomenon will be a good study, even though we cannot get the reasons of those in this paper.

It is very clear that there is 'synergy' in establishing global networks to terminal operators. On the other hand, there is always 'risk' which we are afraid of.

To cope with a lot of changes and risks in this sector, terminal operators need more reasonable and efficient strategies based on sufficient information. Only with real-competitiveness can lead the real- profit and happiness to the firm.

This research has done by only literature study. In the respect of the active shipping business, we need more practical study condensed by sweat and efforts.

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