



**LLOYD'S
MARITIME
ACADEMY**

DIPLOMA IN TERMINAL MANAGEMENT

**Extract from Module 2: The Role of Ports and
Terminals**

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1. INTRODUCTION



Learning Outcomes

On successfully completing this chapter, you will be able to:

- State the difference between a port and a terminal.
 - Categorise types of ports and terminals.
 - Appreciate the difference between public and private sector ownership.
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1.1 Welcome to Module 2

In Module 1, we covered an initial introduction to the subject of terminal management which included the role of terminals within ports, the supply chain, the commodities transported, trade routes and competition, along with issues of globalisation and the stakeholders in a terminal operation.

This module looks closely at the differences and similarities between ports and terminals. They are not one and the same thing as each have different roles and, more importantly, differing responsibilities.

- So, what are these different roles and what are these differing responsibilities?

In this module, we will explore and examine the role of:

- the port and the port authority;
- the terminal and the terminal operator;
- the relationship between the port authority and terminal operator and related legal obligations;
- ownership and operating structures; and
- the pricing for port and terminal services.

Finally, don't forget to make use of the forum to discuss issues and ask questions.

Remember that the course forum is what you, and everyone else on the course, make it. If you just enter it to read other people's posts and do not contribute yourself, it will be a lonely place!

1.2 Background

1.2.1 World Ports

According to the World Bank (2001), there are more than 2,000 ports around the world, from single berth locations handling a few hundred tonnes a year to some of the world's largest ports in China, South East Asia and Europe, which individually handle multiples of this figure.

Port	2011	2012	2013	2014	2015	2016	5-year change
Shanghai	730	736	776	756	717.6	700	-4.10%
Singapore	531.2	537.6	557.5	581.3	575.8	593.3	11.69%
Suzhou	380	428	454.3	478	540	573.8	50.98%
Tianjin	450	477	500	540	552.5	550	22.22%
Guangzhou	429	434	471.5	499	475.5	521.8	21.63%
Tangshan	317	364.6	446.2	500.8	493	515.8	62.71%
Qingdao	370	406.9	450	465	485	500.8	35.35%
Ningbo	385	453	496	526.5	510	500	30%
Port Hedland	199	246.7	288.4	446.9	460.4	484.5	143%
Rotterdam	436.6	441.5	440.5	444.7	466.4	461.2	5.60%
Dalian	337	374	410	428	415	437	29.67%
Zhoushan	220.8	291	313.8	347	379	425.9	92.88%
Busan	294.3	311	324.9	346.6	359.7	362.4	23.11%
Rizhao	250	281	283.7	300	337	350.6	40.24%
Yingkou	261	301.1	300	345	338	347	32.95%
Port of South Louisiana	274.3	278.9	241.6	291.8	292.8	294.9	7.50%
Zhangjiagang	221	250	260	270	280	290	31.22%
Caofeidian	170	227	245	286	259.9	289.8	70.45%
Yosu	234	242	240.6	254.4	272	284.6	21.62%
Yantai	200	200.7	221.6	236.1	245.2	265.4	32.68%

Figure 1
Top 20 Ports in the World Ranked by Total Tonnage Handled (HIS Markit)

Figure 1 above lists the top 20 ports in the world ranked by total tonnage handled.

These numbers are slightly dated and recent focus on league tables for ports have tended to be limited to container ports. The striking point remains that in 2017, seven out of the top ten ports by tonnage were located in China. The combined Chinese ports of Ningbo and Zhoushan, now known as NZP, claims to be the number one port by tonnage handled in the world with 1,077 million tonnes handled in 2017.



Further Research

Basic information on any port and their terminals can be found in many publicly accessible websites, such as <http://www.worldportsource.com>, or in print or electronic form from commercial publications such as *Lloyd's List Ports of the World*.

Sources provide varying information, from simple contact information through to satellite images and maps of ports and harbours, and specific terminal information throughout the world.

1.2.2 National Ports

- How many ports does a country have or require?
- Do the ports focus on one type of cargo and terminal, or are there a number of cargo terminals in competition or handling a variety of cargo types?
- Do the ports and terminals in a country compete with each other, or are they a part of a government controlled port plan?

Every country is different. Taking the UK ports industry as an example, it has one of the largest national ports industry in Europe. The UK Department for Transport reports on freight traffic through 161 ports around the coastline in the country.

The freight ports include:

- major all-purpose ports, London and Liverpool;
- ferry ports including Dover;
- specialised container ports such as Felixstowe; and
- ports catering for specialised bulk traffic, such as coal and iron ore (Port Talbot) or oil and gas (Milford Haven).

Despite the large number of ports in the UK, much of the tonnage moved is concentrated within a comparatively small number of ports. The top 16 ports account for over 80% of the total tonnage handled.

In 2018, total tonnage handled by UK ports was 470.0 million tonnes, compared to the peak of 584.5 million tonnes in 2005. (Compare this to the tonnage handled in Shanghai alone!)

1.2.3 Port Associations

National ports and sometimes regional ports form groups and associations to provide a forum for discussions of mutual interest and to represent the interest of the industry at national, regional and global levels.

The UK has two major groupings:

- the UK Major Ports Group (UKMPG) which has nine members owning 41 ports and two terminals; and
- the British Ports Association (BPA) with a membership of 86 members (essentially all ports outside the UKMPG)

Ports in Europe have formed a grouping to influence EU legislation and encourage high environmental and safety standards through the European Sea Ports Organisation (ESPO), and in the US the American Association of Port Authorities (AAPA) encourages education and sharing of best practice amongst its large membership.

You are encouraged to go online and see the wide range of resources provided freely by these organisations to improve the standards of performance in ports worldwide.



Directed Learning 1

Take your country and investigate the basic structure of the port and terminal industry:

1. How many ports are there?
2. What is the type and amount of cargo handled?
3. Which terminals are present in the key ports?
4. Are they part of a government port network or a function of the private sector?

Post your answer on the online forum and see what your fellow participants say so that we can build a wider picture of the port and terminal industry.

1.3 Definitions

Before continuing, we should develop our understanding of some basic definitions:

1.3.1 Seaport

A seaport can be defined as:

“an area where there are facilities for berthing or anchoring ships and where there is the equipment for the transfer of goods and people from ship to shore or ship to ship”

(Alderton P, *Port Management and Operations*).

1.3.2 Terminal

A terminal is defined as:

“a place where ships load or unload goods”.

A marine terminal is a distinct part of the port infrastructure where the transfer of cargo and/or passengers to and from vessels takes place. A port normally has several terminals used for handling specific cargoes of different types. A terminal will be either **dedicated** for use only by those ships of the party that owns or leases the terminal (a **single user terminal**), or will be a **common user terminal**, one that is available for use by all shipping companies.

1.3.3 Berth

A berth is defined as:

“a place at which a vessel can safely secure”.

A terminal usually consists of a number of berths and a defined land area for cargo handling.

1.3.4 Port Infrastructure

The port infrastructure is the:

“system that serves as a foundation for the rest”.

In ports, it includes structures such as enclosed docks, quays and locks, breakwaters, roadways, power supplies etc. and also marine infrastructure like navigable channels.

1.3.5 Port Superstructure

Port superstructure is defined as the:

“physical structure built on or developed from a fundamental form or base”.

Port superstructure covers ship-to-shore handling equipment, office buildings, workshops, amenity blocks and warehouses.

1.4 Importance of Seaports

A seaport is of major strategic and economic importance to the city, region and nation in which it is sited. Fundamentally, it is a gateway for trade through which import and export cargoes are transferred. The seaport is a focus for maritime transport activity where the land modes of rail and road transport meet the sea mode of ship or barge.

A port may also be described as an intermodal interface where cargoes continue their movement using different modes of transport as, for example, through the use of land bridge transport networks. A port area is often used for the storage and warehousing of cargoes. The adding of value to cargoes whilst in the port area will help it as an economic multiplier developing a nation's prosperity.

1.5 Different Types of Seaports

A seaport can have one or many functions. That of an **interface** for the transfer of cargo is dominant. Such ports include:

- multi-purpose ports;
- container ports; and
- single commodity bulk ports.

Specific ports which may have limited function include:

- naval ports;
- ferry ports; and
- cruise ship ports.

1.5.1 Multi-purpose Ports

Multi-purpose ports have a variety of functions, as Case Study 1 concerning Rotterdam describes. Rotterdam is a multi-purpose port with functions associated with containers, dry bulk, liquid bulk, ferries and cruise ships.

1.5.2 Case Study 1

Case Study 1 – A Multi-purpose Port

The Port of Rotterdam, Europe's Largest Port

The Port of Rotterdam is comprised of 91 terminals of ten types which include 35 liquid bulk terminals, 15 dry bulk terminals, 17 multi-purpose terminals, nine container terminals, seven roll-on/roll-off terminals, three fruit juice terminals and one all-weather steel/paper terminal, car terminal and cruise terminal.

1.5.3 Container Terminal

A container terminal will have one or more of the following roles depending on the schedule requirements of the container shipping companies, namely a direct call terminal or a transshipment terminal. A direct call terminal is also referred to as a gateway terminal because it serves the export and import requirements of a nation.

A transshipment terminal can be a hub port serving regional ports using feeder vessels or a relay port which is a trade route based transshipment port serving deep sea vessel strings. A transit port serves the trade needs of an adjacent, sometimes landlocked, country.

1.5.4 Commodity Port/Terminal

A commodity port/terminal may be considered either wet or dry depending on the commodity which is handled. They normally refer to a port which deals with a single commodity. Port Hedland in Australia which is concerned mainly with the export of iron ore is a classic dry commodity port and exported some 519 million tonnes in 2017/2018.

Ras Tanura in Saudi Arabia is the world's largest petroleum port exclusively used to export crude oil and its derivatives. Ras Tanura has an average handling capacity of 3.4 million barrels per day (7.33 barrels of crude oil is equivalent to 1 tonne).

No two ports are the same. Information about specific ports can be established from a variety of sources including:

Online port information sources.

Lloyd's List Ports of the World published by Informa.

(for example:

<https://lloydlist.maritimeintelligence.informa.com/one-hundred-container-ports-2020/port-data>)

- World Shipping Encyclopaedia published by Lloyd's Register/Fairplay.
- Guide to Port Entry published by Shipping Guides.
- Port Handbooks.
- Port/terminal websites (ports.com or marinetraffic.com or worldportsource.com).

1.6 Ports and Economic Activity

Ports and terminals represent centres of economic activity. In addition to port management pursuits, the economic activities of a port and its terminals can be designated as ship-orientated businesses, cargo and passenger-orientated businesses, and maritime affiliated businesses.

1.6.1 Ship-orientated Businesses

A port generates businesses associated with the support of the ships which use it. Businesses include:

- pilotage provision;
- mooring services;
- ship's agency;
- port towage;
- dredging;
- waste disposal services;
- engineering support;
- dry docks;
- ship repairs;
- bunker supplies;
- suppliers of chandlery; and
- victuals and provisions.

1.6.2 Cargo and Passenger-orientated Businesses

Many businesses developed in and around a port support the care, storage and processing of cargo and the needs of passengers in transit. Amongst important businesses will be:

- warehousing;
- security;
- stevedoring – loading and discharging;
- terminal operators;
- cruise line offices, reception and baggage handling;
- cargo processors;
- trucking companies;
- freight forwarders; and
- train companies.

Ports which specialise in container operations will have businesses associated with container storage and repair. In addition, Inland Container Depots (ICDs) will undertake work associated with the stuffing (loading) and stripping (unloading) of cargo into containers.

1.6.3 Maritime Affiliated Businesses

A port city may have businesses which are affiliated with the operation of the port and the ships which use it:

- Affiliated businesses might include safety-related agencies, port research, seafarer education and training facilities for port operatives.
- Servicing companies which might include maritime lawyers, insurance assessors, cargo and ship surveyors are also component parts of the business mix.

Work and wealth generation extend the role of the port well beyond being “just somewhere to berth a ship!” There is an entire ‘port eco-system’ around large ports, also known as port cluster.

1.7 Port and Terminal Management

Throughout this course we will differentiate between the business and management roles of ports with that of terminals. As stated in Module 1, ports have the wider ability and role to act as an economic multiplier in developing a nation’s prosperity and terminals within ports are part of this activity.

The role of the port management, therefore, is to look at the wider national interest in developing the port, improving the port’s infrastructure for attracting terminal operators, liaising with Govt to make the transport infrastructure serving the port and its hinterland and its terminals more efficient, and ensuring availability of land within and adjacent to the port for value-adding opportunities available and derived from port-related activities.

This last point is particularly relevant in terms of an employment multiplier and also in terms of an economic activity multiplier. So, port management will seek to position the port, in marketing activity terms, to attract gateway traffic which is cargo destined for and from that country and also transit traffic which is cargo destined for an adjacent country.

The former is related to industrial activity in the country providing employment to many more people than just port workers and is also economic wealth-related, including Customs duties, which impacts on the country's GDP. The latter enhances the reputation, influence and importance of the "host" country serving as it does as the gateway to an adjacent country. For these reasons, it is often the case that the port management role is a responsibility of the state, although by no means always.

The role of terminal management is not too dissimilar in certain regards inasmuch as the terminal also benefits from improved port infrastructure, including deeper and wider approach channels, from improved inland transport infrastructure and from a growing economy which results in increased trade.

But its influence in these matters, as a private sector operator, is far more restricted than in the terminal's primary goal of increasing volumes and improving margins. The role of terminal management, therefore, is to accentuate the benefits of that terminal in terms of location, performance and cost compared to another terminal, possibly in the same country.

Terminal management may seek to provide certain basic value-added services (for example, stuffing and unstuffing containers, or ripening facilities for fruit) within the terminal, sometimes in competition with other service providers within or outside the port boundary.

Terminal management will also actively market the terminal for services and cargo volumes, for the benefits it provides and which do not impact on the nation's economy except in a very peripheral way. A classic example is transshipment cargo from which there is no Customs duties, no value-adding work and only marginal additional volume-related revenue for the port authority.

It is increasingly becoming the case that the terminal operator role is within the private sector and therefore a commercial profit-making endeavour.

Because the success of one is directly connected to the success of the other, differences of opinion and disagreements between port management and terminal management are rare and generally relate to performance and reputational issues.

A port authority providing pilotage service, utility services and port gate control may not always work to the standards and service requirements of a terminal operator. Port management may be critical of safety and security lapses of terminal management, of poor handling and for damage to port property.

Directed Learning 2

Using the descriptors stated in the paragraphs above:

1. describe the type of terminal/port in which you work or are familiar with;
2. discuss the impact of the port/terminal you have described on the local economy; and
3. outline the ownership structure between the state and private sector.

Post your answers on the forum and see how they compare to other participants' comments.

[END OF MODULE EXTRACT]

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