

AN ANALYSIS OF EFFICIENCY AND COMPETITIVENESS OF MUMBAI PORT

*A dissertation submitted to the Indian Maritime University in partial
fulfillment of the requirement for the award of the degree of Master of Business
Administration in Port and Shipping Management*

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INDIAN MARITIME UNIVERSITY

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KOCHI CAMPUS

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DECLARATION

I, **VISHNU A V (2005304030)** student of School of Maritime Management, Indian Maritime University, Cochin Campus hereby declare that the project report titled **AN ANALYSIS OF EFFICIENCY AND COMPETITIVENESS OF MUMBAI PORT** submitted in partial fulfilment of the requirement for the degree of **Master of Business Administration in Port and Shipping Management** is my original work carried under the guidance of my project guide. It has not formed the basis for the award of any degree/diploma or associate-ship of any University/Institution. The information submitted is true and original to the best of my knowledge.

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CERTIFICATE

This is to certify that the report titled **-AN ANALYSIS OF THE EFFICIENCY AND COMPETITIVENESS OF MUMBAI PORT** submitted to the School of Maritime Management, Indian Maritime University, Cochin Campus, by **VISHNU A V**, (Registration Number: 2005304030) in partial fulfilment of the requirements for the award of degree of Master of Business Administration in Port and Shipping Management is a record of project work done under my supervision.

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EXECUTIVE SUMMARY

The dissertation is a study of the importance of cost/time of a ship related to the problems and constraints in port facilities and the quality of services that are hampering Mumbai Port to be a competitive and efficient port.

The dissertation analyses the turnaround time of vessels in the port as the most important element concerning the users of the port. Therefore, subsequent analysis of outcomes aims to solve the problems which influence and hinder the competitive level of Mumbai Port. The reasons behind this topic are results of the competition of neighbouring ports in the same region in attracting cargo owners and shipping lines to transport their cargo overseas.

Analytical techniques are applied to port operations involving the port facilities, and quality of services. It will also refer to the geographical location of Mumbai port which comes in its advantage while comparing to the competitors to measure Mumbai Ports efficiency to identify the problems that need to be solved in order to place MbPT in line with increasing Indian cargo volume and development in the Indian Maritime Sector.

Considering the strategic location of MbPT on the west coast of India and its close proximity to one of the World's most populous cities and the need for Indian ports to be more effective and efficient in serving vessels with fewer delays, the particular study become more significant.

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1. INTRODUCTION

1.1 BACKGROUND

India is expanding its trade with the international community, via exports and imports. The state's economy has to recover damages caused by the recent COVID-19 pandemic. In the last decade, the main sources of India's imports have been China, the United States, UAE, Saudi Arabia and Switzerland. In the meantime, the GDP has been increasing rapidly in recent years.

It is a well-known fact that about 90% of the global trade is by sea transport, which is considered to be a mechanism for world trade. The global network of merchant ships provides one of the most important modes of transportation. Global trade movements connect with ports of call as a link with other transportation networks.

Therefore, there is an urgent need to develop the transport sector in general and ports in particular to assist in facilitating such huge development plans to meet with the mentioned projects and extraordinary budget allocation. Mumbai port, one of the Government owned major port in India, has the potential to endeavor faster to handle increasing cargo and to be a competitive port in the region. The research will discuss the factors that affect such fast growth and try to recommend solutions to the port authority to take serious actions to meet future requirements.

Competition from neighboring ports is substantial although MbPT is able to compete and attract new traffic with its existing facilities and services if its performance and competitiveness level increases. However, the neighboring ports continue to pose a challenge for the Port in maritime sector. On the other hand, the MbPT faced under-utilization as a result of the long turnaround time of vessels staying at the port while competing neighbouring ports in Nhava Sheva , Mangalore and Mundra.

There are many factors which influence the port users preferring a particular port for their import-export and warehousing operations. These factors will be determined by quality of services in terms of the time in a port of a vessel, appropriate port facilities to be in line with development projects and finally the geographical location in connection with hinterlands of neighbouring ports, which may give rise to shipping lines and cargo owners avoiding the long-time cost in a port of a vessel if not addressed these factors will lead to transport of cargo overland rather than through MbPT.

1.2 CURRENT SITUATION OF INDIA

The Indian economy has been affected by inflation and the COVID pandemic over the past few years. However, the situation has continuously improved in recent years, providing a foundation for studying increasing port competitiveness in this research. The need for such research could be realized as a first impression when looking at India's recent focus on improving the maritime sector and trade and the Sagarmala project. The

ports , both government owned and private , has a very crucial role to play in this regard. Therefore, the need to speed up cargo handling and solve other issues related to the time of the vessels at the port is urgent.

1.3 MUMBAI PORT

The Indian subcontinent has had fame in the world map, in terms of trade since the ancient times. It was through the water route that various goods were imported and exported by the erstwhile kings and the emperors in the older days. British's, Portuguese, and many voyagers came into India, partly because they found the water routes to be easy roads to the rich country of India.

According to the Ministry of Shipping, around 95 percent of India's trading is by volume and 70 percent by value is done by maritime transport. India has 12 major ports and 187 non-major ports. The Indian ports and shipping industry plays a vital role in sustaining the growth in the country's trade and commerce. India is the 16th largest maritime country in the world with a coastline of about 7,517 km.

With about 7,500 kms long stretch of coastline, in the states of Maharashtra, Goa, Gujarat, Karnataka and Kerala in the western part and Tamil Nadu, Andhra Pradesh, Orissa and West Bengal in the eastern side, riches in India have been contributed much by the ports. Most of the ports in India are located in these states.

The 12 major ports in India includes:

- The major ports in the eastern coast are Kolkata-Haldia (West Bengal), Visakhapatnam (Andhra Pradesh), Paradip (Orissa), Ennore (Tamil Nadu), Chennai (Tamil Nadu) and Tuticorin (Tamil Nadu).
- The western coastline ports are the Kandla (Gujarat), Mumbai (Maharashtra), Mormugao (Goa), Mangalore (Karnataka), Cochin (Kerala) and Jawaharlal Nehru port in Navi Mumbai (Maharashtra).

Mumbai Port still remains as India's premier port till date. Even today, with the development of others ports in the neighbourhood, it caters to about 10% of the total sea borne handled by major ports of the country in terms of volume. It handles about 18% of POL traffic and 17% of General traffic handled by Major Ports of India.

Mumbai port (MbPT) is located almost midway on the western coast of India. With some of its docks built in the 1870s, it is a legacy city port with old infrastructure that is in need of modernization and upgrades.

It has a dry cargo handling dock, Indira Dock; marine oil terminals for POL with four jetties at Jawahardweep; bunders and dry docks; and storage areas for uncleared and export cargo.

The predominant dock of the Port, viz. India Dock has 24 berths where all the activities associated with loading and unloading of cargo and containers take place. There is also a huge dry dock names Hughes Dry Dock for carrying out repairs to ships and 2 open berths Ballard Pier and

Ballard Pier Extension with a draft 10 Meters and 9.5 Meters respectively. Ballard Pier extension berth handles passenger vessels.

1.3.1 Brief history of Mumbai Port

The East India Co. by 1615 had set its base at Surat. From Surat it steadily strengthened its hold on the trade of western India. Realising the immense natural advantages of Mumbai islands, the Surat council of East India company urged upon the London authorities to purchase

the Mumbai Islands from the Portuguese. This was achieved in 1661 when under the marriage treaty between Charles 2 of Great Britain and the infant Catherine of Portugal, the Port and Islands of Mumbai were transferred to the King of Great Britain, his heirs and successors. The British sold the Port and Islands of Mumbai to the East India Company in 1668. The East India

Company took measures for encouragement of trade like construction of Custom House,

Warehouses, Mole Stations, etc. In 1672 the President of Surat Council and the Governor of Mumbai transferred the company's headquarters from Surat to Mumbai.

1.3.2 Construction of Docks

As cargo and passenger vessels grew in size and draft larger docks were needed and in 1880, Prince's Dock comprising of 14 berths was opened for traffic. So rapid was the growth in trade,

that immediately thereafter in 1888 another dock Victoria Dock comprising 15 berths was commissioned.

With the growth of shipping and the advent of ships of deeper draft, these two docks were found inadequate at the beginning of the present century, the need to construct a third dock with deeper berths to serve bigger ships took shape. The new dock was started after First World

War and was named Alexandra Dock. It had an entrance lock, 17 berths in the wet basin and 3 berths for ferry steamers. The Ballard Pier constructed at the same time as Alexandra Dock, is an extension of the west arm of the entrance lock and provides 800 feet long berth for accommodating larger passenger liners. All the docks were provided with sheds and warehouses for receipt and storage of cargoes. Most of the sheds/warehouses were multistoreyed buildings and cargoes could be received directly on any floor from the ships at the berth.

In 1922, a berth at Pir Pau, north east of Indira Dock was constructed to handle liquid chemicals and petroleum. On account of the decision to install two large refineries at Trombay, north-east of the Island of Mumbai, it became necessary for the Port Trust to create berthing facilities for receiving deep drafted oil tankers. The berth at Pir Pau was found too inadequate to handle the increasing oil traffic.

1.4 RESEARCH OBJECTIVES

To achieve the research goal there is a need to identify and determine the port operations related to the time in port of a vessel. Constraints and problems at the port will be highlighted to know which aspects need to be taken care of in order to be able to improve the port's competitiveness and efficiency. Under the Port User Cost concept, it will analyse turnaround time of the vessel in the port as the most important element concerning the user of the port. Therefore, the analysis will be applied to solve the problems that influence and hinder the competitive level and performance of MbPT, eventually making it more attractive to users.

1.5 SCOPE OF THE STUDY

This study analyses MbPT through assessing the situation of port operation and the time in port of vessels for attracting vessels and shipping lines to the port through the requirement of competitive advantage and minimizing time at the port. It can shed some light into the efficiency and competitiveness of government owned ports in India and how they can contribute to the economic growth.

The discussion and analysis in this research will be based on the previous experience as an internship trainee at the MbPT, contacts with port users and clients, data available about rival ports, relevant reference books, articles, magazines, field trips and lectures on port performance, management and logistics from Indian Maritime University

1.6 RESEARCH METHODOLOGY

In this research the methodology followed is, a literature review and KPI analysis in order to identify the problems and constraints that prolong the time of vessels to improve the competitiveness and efficiency of MbPT. A literature review is used to study significant

previous research, reports and conferences which have been pursued on the subject by different authors to contribute to ideas and suggestions to develop the topic.

2 LITERATURE REVIEW

2.1 PORT COMPETITION AND COMPETITIVENESS

Prof. Willy Winkelmanns, (2003) stated that *“The final aim of port competition is indeed not just getting more traffic, more tonnage, etc., but achieving a sustainable degree of generating added values in relation to the input and effort.”*

In this regard, it is necessary to understand basically the main idea that drives port competition and the factors that make the port more effective in terms of competition. A further question is can the port be managed in a good way with less time to achieve profits and avoid losing clients. Strong management is essential to overcome the problems or weaknesses in a port as results of the nature of the maritime sector as a competitive environment which becomes more challenging as global trade becomes more intensive, according to increase in freight volumes, and container traffic. Development of port facilities and the quality of services is needed to attract clients and transform threats into opportunities.

Alderton (2005, p. 17) in his book *Port Management and Operations* stated that “Ports, like most other commercial activities, are constantly changing. Their design and infrastructure change as the vehicles using them change and their functions develop and alter as the trade passing through them varies in type and quantity.”

However, in spite of many projects to develop the MbPT and other Indian ports by government and private sector the LPI of Indian Ports has shown a decrease or little increase in the past years.

As a result, the Mumbai port should be studied and necessary changes identified in order to stay in line with its competitors as a first step. The port could be a more effective and efficient port when it is changed with development of its facilities to satisfy the customers and cut the cost of time.

2.2 USER'S PERSPECTIVES

The concept of PUC, 'port user cost' is the most important issue concerning the users of the port, and is considered the main reason that determines the port as attractive or not. For instance, the cost of the time is calculated according to the price of the vessel divided by the useful life of the vessel times the number of days in the year and number of hours in the day to result in the sum of money the owner will lose.

Berth occupancy which is defined as the total time of vessels at berth divided by total berth hours available is considered as an indicator of port performance. High berth occupancy is not preferable to users of the port as it costs more than they expect as well as it means there is congestion in the port. On the other hand, low occupancy in the berth means the port has an underutilization problem.

2.3 TIME IN PORT (TURNAROUND TIME)

Drake Education Association, (UNCTAD, 1982, p. 18) stated that ship turnaround Time is the total time spent by a particular vessel in port. Also it is defined in another sense as the average time spent in port by all vessels calling in a specific period. Then they are divided into two components namely, the Waiting Time and Ship's Time at Berth.

The time in the port is not only an essential factor to clients but also to the port as the most important element to reduce or increase port competitiveness, which should be observed all the time in port operations. Several Authors as well as the UNCTAD have given a strong interest to this issue as they believed that the time at port is the most important factor to develop the port and to achieve profits to all parties concerned in business in the port sector.

Therefore, the time in port of a vessel is one of the main indicators used to measure the quality of services in the port. It is calculated by the time a vessel arrives at the port to the time it leaves that port at last buoy of the channel at pilot station. It involves a waiting time; a maneuvering time; Berthing time or service time including the Productivity time.

2.4 PORT SERVICE FACILITIES

“High costs, poor services and low efficiency and productivity are symptoms of the problem rather than the causes. When there are problems in the port, the infrastructure and the cargo-handling equipment are often first considered to be at fault.” (UNCTAD, 1995, p. 5)

2.5 GEOGRAPHICAL LOCATION

From cargo owners’ point of view, Port Location is the most important factor in terms of the total costs. Therefore, the port location should be taken into account when the port management assesses the competitiveness of a port.

In spite of economic and social benefits of the flow of goods across the border, it represents a threat to the productivity of the port when the shipping lines use the hinterland connecting India’s border with its neighbouring ports.

2.6 MANAGERIAL DIFFICULTIES

Excessive interference by the government in internal and external affairs is causing many problems to the port. The activities that need to be done immediately for the work to succeed do not work with the government bureaucratic system, which makes for long procedures in Iraqi ports. For example, when equipment should be replaced as the work changes are required; it takes a long time to obtain approval to start. From the middle manager, Board Director then ministry agreement which will give an advantage to the competitors of the port.

2.7 OPERATIONAL DIFFICULTIES

Another serious challenge is with navigational control and Berthing control as well as the connectivity of the berths in port with national hinterland to make the goods flow smoothly. Smooth flow of goods is essential to the port of improvement performance and competitiveness. Channel capacity with inappropriate depths, unreliable aids to navigation and poor berth service, as there are several failures with cargo gears, are key factors for the vessels to delay and prolong their time in the port.

3. MUMBAI PORT AS CASE STUDY

Port operation is classified by Frankel (1987) into “Waterfront Operations and Land Operations. Waterfront Operations comprise navigational control, accommodation of ships and floating equipment, loading and unloading of vessels, servicing of ships, maintenance of ships, and marine operation administration.”

On the other hand he stated that “the Land Operations including cargo storage and cargo processing interfacing transportation modes, and short term accommodation and administration of passengers” (Frankel, 1987, p. 495)

3.1 THE PORT AND SITE CONDITIONS

Mumbai Port is one of the major ports located on the west coast of India, commissioned more than a century ago and is a natural harbour, situated at latitude 18° 54' N and longitude 72° 49' E, protected on the east by mainland and sheltered by Mumbai Peninsula on the west.

The main harbour accommodates the Indira Dock and the Ballard Pier. Further northeast of the harbour is located Jawahar Dweep accommodating the POL berths. The Pir Pau chemical berth is at the northern extremity of the harbour's deep water. In addition, there are 63 general ship anchorages straddling the main harbour channel from south Karanja buoy northwards as far as the Indira Dock approach channel. Crude and POL products are handled from the jetties at Jawahar Deep and chemicals are handled at Pir Pau. Dry bulk, break bulk, automobiles and

passengers are handled at Indira dock and Ballard Pier.

3.1.1 Rail and Road Connectivity

(a) Road connectivity

Mumbai Port is well connected to the hinterland through major arterial road network of suburbs of Mumbai city. The main road networks connecting the hinterland to Mumbai Port are as follows:

- NH-8 connecting Delhi – Jaipur – Gandhi Nagar – Surat – Mumbai. This is a six lane road network connecting cargo generation clusters in the North to JNPT port. It is a part of the golden quadrilateral project. The majority of the cargo from Gujarat and Rajasthan hinterland will utilize this route.
- NH-3 connecting Delhi – Agra – Bhopal – Nashik – Panvel This is a four lane road network connecting cargo generation clusters in UP and MP via Agra. This road will serve the requirement of Central Maharashtra and part of Northern Cluster.
- NH-4 connecting Thane – Pune – Belgaum – Bangalore – Ranipet - Chennai This is a four lane network connecting 3 main industrial networks at Pune, Chennai and Bangalore. NH9 merges into NH4 at Pune.
- NH-17 connecting Cochin – Mangalore - Goa - Panvel. This is a road connecting Cochin to Panvel via Goa. The south bound cargo utilizes this route. NH 17 is a four lane road and part of the stretch is two lane roads which are being widened to 4 lanes with a provision to expand to six lanes to accommodate future expansions.

The NH-8 from North & Gujarat, NH-3 from Central part and Nashik, NH-4, Mumbai – Pune Expressway and NH-17 from Southern Part of country bring the traffic to Mumbai port.

(b) Rail Connectivity

MbPT railway system is connected to Indian Railways at Raoli Junction, Wadala for receiving and dispatching the traffic generated from and to hinterland. The Port of Mumbai owns and operates its own railway which is connected to broad-gauge mainlines of Central and Western Railway through its interchange yard at Wadala. The Port Railway runs about 10 kms of a

straight route between Indira Dock and Wadala and has network of tracks of about 55 kms. Port Railway provides rail connectivity to the hinterland of country from exim cargo and has rail sidings for loading/ unloading in the Docks area and also in outline area. The railway owns its fleet of 5 direct locomotives and has facilities for handling coal, agro-products like oil cake, sugar, maize, rice etc; Iron and steel and ICD containers.

The Docks and outlying areas are serviced by a network of railway owned by MbPT. The railway is broad gauge and measures about 55 track kilometres. This network is connected to Central and Western Railways at its interchange yard at Wadala. For handling ICD traffic, a fully-fledged RCD has been set up at Cotton Depot with facilities for reception, stacking etc of container. It can handle two trains of 45 wagons with double dispatch facilities.

3.1.2 Site Conditions

(a) Winds

During the fair weather period from October to June, the general wind direction is from the NW-NE quarter. Form June, for two or three months, the wind has an almost constant SW direction. The south-west monsoon winds are relatively stronger than the north-east winds.

The

maximum wind speed recorded is 150 kmph during the cyclonic storm of 1948.

(b) Rainfall

The SW monsoon period starting about mid-May is the season for heavy rains. Nearly all the rainfall in Mumbai occurs during this period. The average yearly rainfall is about 2098 mm, of which 1965 mm (93.66%) occur during June to September. Usually maximum monthly rainfall

occurs in July. The average monthly rainfall in July is 709 mm. There is practically no rainfall from December to April.

(c) Temperature

The mean of the highest air temperature recorded in Mumbai is 35° C in the months of March, April and May while the mean lowest is 16° C recorded in the month of January. Mean daily

maximum and minimum temperatures are 31° C and 24° C respectively.

(d) Visibility

At Bombay from November to March smog hangs over the land, obscuring everything in view.

This happens only for short periods most often shortly after sunrise but also occasionally in the evenings. Visibility is generally good for most part of the year.

(e) Relative Humidity

Mean yearly relative humidity at 0830 hours is 77% while the same at 1730 hours is 71%. The monthly average is lowest in February (62%) and highest in July to September (85%).

3.2 Oceanography

(a) Tides

The tides in the Mumbai region are of the semi-diurnal type i.e. characterised by occurrence of two High and two Low Waters every day. There is a marked inequality in the levels of the two low waters in a day. The various tide levels with respect to Chart Datum reported at Mumbai are shown below:

Highest High Water: +5.39 m

Mean High Water Springs (MHWS): +4.42 m

Mean High Water Neap (MHWN): +3.30 m

Mean Sea Level (MSL): +2.51 m

Mean Low Water Neap (MLWN): +1.85 m

Mean Low Water Springs (MLWS): +0.76 m

Lowest Low Water: - 0.44 m

(b) Currents

The currents in the Mumbai region in the near shore zone are tide induced with reversal at high and low waters. The currents in the creeks are also affected by the freshets which result in not only increasing the strength of the ebb current but also limiting the propagation of the tide upstream. The normal maximum currents inside the harbour are about 2 to 3 knots although 4 knots occur on ebb flow during the monsoons.

(c) Waves

The significant waves entering the harbour are the long period swell waves generated by deep sea storms. These mainly arise just before and during the monsoon and their direction of approach is normally from South – West.

3.3 ORGANISATION STRUCTURE

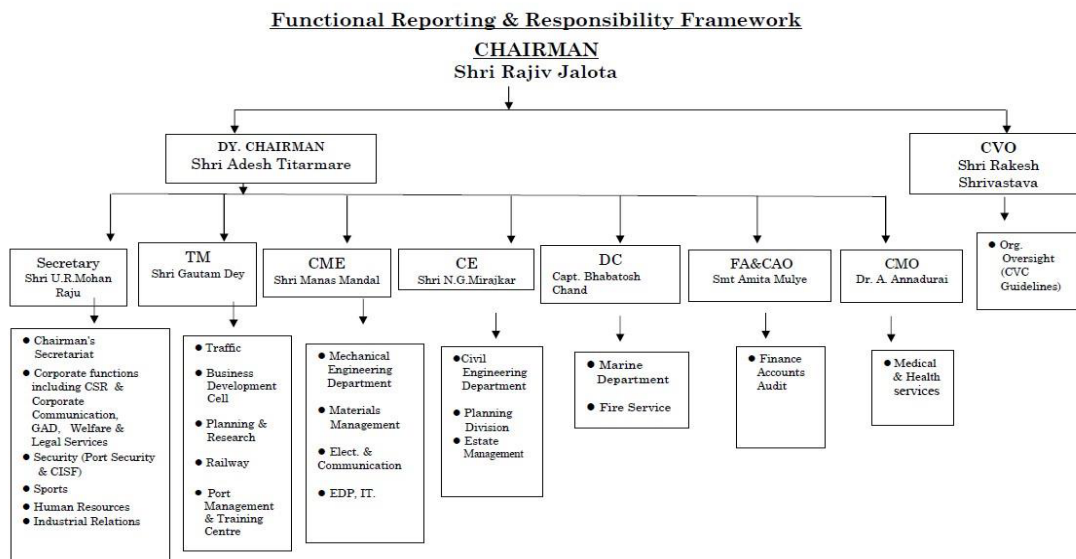


Fig 1

3.4 DETAILS OF EXISTING FACILITIES

The port is geographically spread into different areas based on the type of cargo to be handled.

- Main Harbour in Colaba area – for handling dry bulk, breakbulk, general cargo, automobiles
- Jawahar Dweep (Butcher island) – for handling Crude and POL products
- Pir Pau – for handling chemicals

Mumbai port was handling coal at Haji Bunder and this has recently been discontinued due to environmental considerations. The Princess & Victoria Docks in the Main Harbour have been closed and filled up to create stockyard for containers.

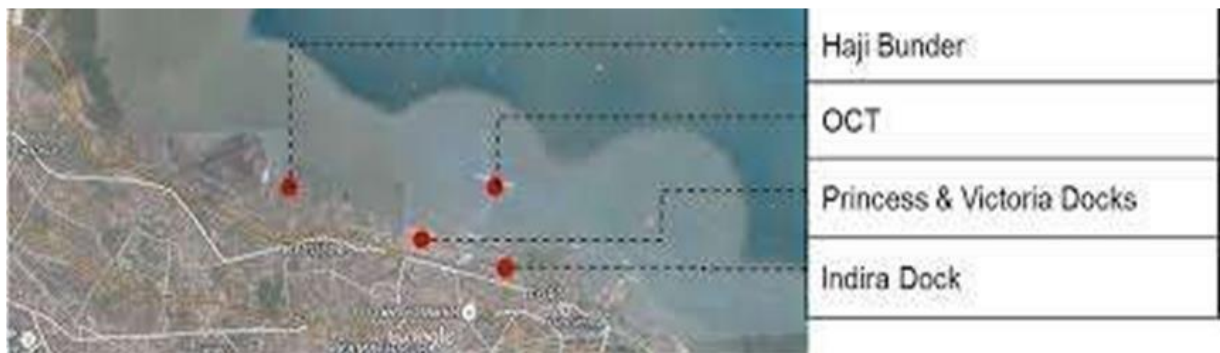


Fig. 2

3.4.1 BERTHING FACILITIES

(a) Indira Dock

The Indira dock works on a lock-gate system with a lock length of 228.6 m and a width of 30.5 m, through which vessels can enter and leave the docks at any state of tide. There are 21 berths inside the basin and 5 berths along the harbour wall. The design depth available inside dock and at outside berths is 8.8 m and 7.5 m, respectively. The depth of berths inside the basin can be further increased by 1.2 m by impounding water by electric pumps.



Fig 3

Name of berth	Width wharf of (m)	Length of wharf (m)	Berth type
1 Indira Dock	13.72	180	Multi-Purpose berth
2 Indira Dock	13.99	158	Multi-purpose berth
3 Indira Dock	13.84	158	Multi-Purpose berth
4 Indira Dock	13.84	158	Multi-Purpose berth
5 Indira Dock	13.82	158	Leased to Cochin Shipyard Ltd
6 Indira Dock	13.84	158	Leased to Cochin Shipyard Ltd
7 Indira Dock	18.36	152	Leased to Cochin Shipyard Ltd
8 Indira Dock	18.36	152	Leased to Cochin Shipyard Ltd
9 Indira Dock	13.42	152	Multi-purpose berth
J/E Indira Dock	18.97	130	Multi-purpose berth
10 Indira Dock	18.29	152	Multi-purpose berth
11 Indira Dock	18.29	152	Multi-purpose berth
12 Indira Dock	13.72	152	Multi-purpose berth
12A Indira Dock	18.26	180	Multi-purpose berth
12B Indira Dock	18.26	180	Multi-purpose berth
13B Indira Dock	16.61	180	Multi-purpose berth
13A Indira Dock	16.61	180	Multi-purpose berth
13 Indira Dock	16.61	158	Multi-purpose berth
14 Indira Dock	20.29	158	Multi-purpose berth
15 Indira Dock	20.29	158	Multi-purpose berth

16 Indira Dock	16.30	158	Multi-purpose berth
17 Indira Dock	16.54	158	Multi-purpose berth
18 Indira Dock	9.22	183	Multi-purpose berth
19 Indira Dock	27.13	168	Multi-purpose berth
20 Indira Dock	18.26	168	Multi-purpose berth
21 Indira Dock	18.26	168	Multi-purpose berth
22 Indira Dock		431	Leased to Indian Coast Guard

As can be seen from the figures, berths 1 to 17 are inside the dock basin and berths 18 to 23 are outside along the dock wall. Inside berths 6 to 9 are used for berthing port crafts and are not used for handling cargo. Berth no. 17 is also not operated since it is close to the lock gate.

The principal cargo handled are steel, sugar, yellow peas, fertilizers, project cargo, cars and containers. There are 12 sheds with a total area of 76,740 m². There are three 16 T electric Wharf Cranes serving Berth 2, 3 and 4 of the dock. Apart from these there are eight 10 T cranes, which are under disposal being obsolete.

(a) Ballard Pier Berths

There are two berths on the southward extension of Indira Dock named Ballard Pier. The Ballard Pier Extension (BPX) and the Ballard Pier Mole Station (BPS) are the two berths. The BPX has a modern passenger terminal building which houses check-in baggage facilities, a lounge, duty-free shop, curios and handicraft stalls, toilets etc.



Fig 4

Name of Berth	Width of Wharf	Length of Wharf	Berth Type
Ballard Pier Station	10.24	244	Break-bulk berth
Ballard Pier Extension	22.38	244	Passenger cum cargo berth

(b) Ship Repair Facilities

Mumbai Port has two systems of repair facilities – slipways in Workshop area at Clerk Bunder adjoining Mazagon Docks and Hughes Dry Dock within Indira Dock.

(c) OFFSHORE CONTAINER TERMINAL

This is the first and single largest container privatization project at the Mumbai Port. The Project involves construction, financing, equipping, operations, and management of the offshore container terminal, comprising at least two berths in the Mumbai Harbour on a BOT basis. It is expected to handle about 1 million TEUs at the offshore container facility.

It is now operated by Indira Container Terminal Private Limited. Since the dredging process is only half completed, container vessels were not able to berth at the container terminal and operate. However, at present the OCT is utilized for handling Pure Car Cargo (PCC) and other general cargo vessels on revenue share basis.

VESSEL OPERATIONS

Mumbai Port carry out loading and unloading operations in four section of Indira Docks (ID) A, B, C1, C2 and also at Victoria Docks, Bunders and berths for handling POL and chemicals.

Mumbai Port handles mainly two types of cargoes like bulk cargo and break-bulk cargo.

The major commodities which are exported are agricultural products, fertilizers, chemicals, vegetable and castor oils, projected cargo, containerized cargo, iron and steel, motor vehicles, molasses, POL, Miscellaneous and the imported products are chick pea, pulses, and wheat, containers, fertilizers, coal, lube and oil, iron and steel, rock phosphate, sugar, vegetable oils, POL, Miscellaneous. The major modes of receiving export cargo and dispatching import cargo are

- By Road
- By Coastal
- Through Pipelines and
- By Rail

Cargoes are stored in sheds under the supervision of shed superintendent for a limited period of time at free of cost. If the time exceeds the limited period of time the consignee is required to pay demurrages.

Vessel operations are carried out according to the decisions taken in the daily Operation Group meetings. The procedures of vessel operations are as follows;

- **Allotment of berths to the vessels** –Application is filed to PCS by vessel agent for allotment of berth to vessel. The application is enclosed with Documents, Import General Manifest (IGM), Hazardous Cargo declaration, Advance payment receipt/ advice and cargo documents for liquid and dry bulk commodities. On scrutinizing the documents, berth is allotted in operation group meeting conducted daily berth allotment also depend on length, beam, and draft of vessel, nature of cargo, gears available on vessel.
- **Operations planning for vessel working-** Sectional Asst Tr Managers obtains the cargo related information, vessel static data and determine requirement of mobile equipment, gangs, space. Also determines expected time of departure of the vessel.

CENTRAL DOCUMENTATION OFFICE

The major documents for import and export are handled by Central Documentation Office (CDO). Central Documentation Office (CDO) is a centralized office providing facilities for scrutiny and passing of delivery documents, drawing of outturns of cargoes landed and issue of outturn and landing remark certificates required for the trade.

At the CDO office we saw the different documentations related to shipping, related to operation,

INTEGRATED PORT OPERATIONS SYSTEM (IPOS)

IPOS covers all the activities of Port operation. The system caters to Vessel, Port, Cargo, Container, Rail and Operation Resource activities in five modules. The activities comprise of all transactions at the Port including Vessel, Sheds, Gate activities, Import and Export processing, Container Stuffing and Stripping (de-stuffing), Cargo Receipt and delivery, Labour/Equipment Booking, Documentation, Resource Allocation, Rail documentation and operations and the terminal management.

Prior to berthing of vessel, the Shipping Agent submits hard copy of Import General Manifest (IGM) to the IPOS Centre. The soft copy of IGM is received from Customs through EDI network. The soft copy of IGM is tallied with hard copy and IGM is uploaded in the system. In case of any amendment in cargo details, the CHA/ Consignee/ Shipping Agent submit documentary proof of Customs amendments and accordingly system is updated. The out-turn reports generated by Central Documentation Office are sent by e-mail to various Agents and Customs. Shipping bills data are received on line from Customs and uploaded in IPOS. In case of manual shipping bills, data are entered in system. Amendments of shipping if any, are carried out on the basis of documentary proof. Hardware and software problems reported by the users are attended and informed to P & R Department for rectification. For implementation of system, application software is tested and modification and new requirement if any, is reported to P & R Department. User logins for new user are created at IPOS center and functions are allotted as per the requirements of the user. Inventory of computer and printer located at various locations are maintained and on hand training to the staff is imparted as when new application implemented.

CASH OFFICE

Cash offices are centralized offices where cargo related charges are assessed, audited and recovered.

The documents to be brought by the importer/CHA to the cash office for assessment of charges are Port Trust and duplicate Customs copies of Bills of Entry and Customs checked invoices and specifications.

PAYMENT OF CHARGES AT CASH OFFICE

In MbPT there are two types of offices for the payments of charges such as cargo related charges and vessel related charges. Cargo related charges are to be paid at Ambedkar bhavan which is at Indira Dock named as finance department and Vessel related charges are to be paid at O.S.C (Operation Services Centre) office which outside of port premises.

CARGO RELATED CHARGES

The Port trust copy of the shipping bill along with the customs certified invoice and packing list is then produced by the shipper to the assessor at the Cash Office which is Ambedkar Bhavan, Indira Dock for payment of Port Trust charges.

VESSEL RELATED CHARGES

The vessel related charges are collected at separate billing department called as operation service centre. The vessel related charges are collected in different manner and in classified way as per SOR. The bill should be generated by O.S.C within 7 days if the payment is not made within 10 days, then O.S.C enforces the interest 15% as per SOR (Scale of Rate). For

avoiding the fraud O.S.C takes bank guarantee from vessel agent, for Coastal Vessel – 2 lakhs & for foreign vessel – 5 lakhs.

If the vessel Agent fails to pay charges even after getting bank guarantee the O.S.C puts name of such Agent in BLACKLIST. Means port will stop providing services to such Agents.

ONBOARD LABOUR

SECTION CHART

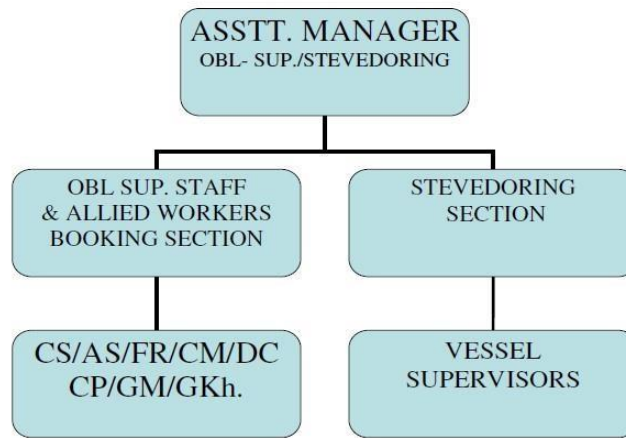


Fig 5

Onboard labour sections deal with recruiting and allocating skilled labour on demand of shipping agents for loading and unloading of cargoes to and from vessels. Mumbai Port Trust is providing Stevedoring / Gear services for loading and unloading of various categories of cargo on board the vessel and Container loading, unloading, stuffing destuffing in the port. The operations are carried out efficiently by the skilled On-Board Labour under the instruction of experienced On-Board Supervisory staff in coordination with vessel agents and under the supervision of the master of the Vessel. MbPT is committed to offer time bound and prompt quality service to the Vessel Agents in accordance with the ISO quality policy.

During the OBL session we got the opportunity to visit 4 vessels including MELODY, HAN HUI, NYK LINES. These vessels handled bulk cargo of lentils, project cargo, and pure car cargo respectively. We saw loading and unloading operations carried out by group of workers including the gangs from port and additional labours brought by agents. These workers include Ship crane operator (winch driver), Hatch foreman, Foreman, Chargeman, Gear man, Cargo supervisor.

DISPOSAL OF CARGO

Disposal of uncleared cargo is performed by sales department through online auction. As per sec (61 63) of Major Port Trust act 1963, the sale procedure takes place when the party fails to clear the cargo out of port. Port authority conducts E- Auction. The valuation of cargo done on the basis of recent prices or market price. This process is done after the final outturn list which is prepared after the 26th day of LFD (Last Free Date).

If the cargo value is below 10 lakhs, the cargo to be auctioned is considered as non-EMD and those above 10 lakhs is considered as EMD. Every week auctions takes place on Monday (non-EMD) and Tuesdays (EMD). Online auction starts at 11 AM and the right for bidding is given to individuals and companies who are registered in the MSTC portal.

3 types of committees in sales department monitor the sales proceedings.

- Sales Committee
- Dy. Chairman Committee
- Traffic Committee

BUNDERS

Bunder is non-customs bound area that handles barges transporting cargoes, allows fishing operations and supply of oil and fresh water and other related activities. Assistant Sr. Manager is in charge of bunders. He also monitors cargo handling in CFS and traffic of bunders. There is an Assistant Jr Bunder Manager who manages cargo activities under bunders as well as ship repairs and ship breaking.

Mallet bunder is mainly involved in breaking of ships, ice supplies, water supply and oil supply for vessels and also boats. They also recover license fee from these service providers. New fish jetty wharf, new ferry wharf gate and Sassoon dock ensure that they are paid the port trust charges and they also provide permit for lorries and tankers.

There is a coal bunder that operates repairs of boats on hard/basin and maintain day to day entries in the basin book (register) of the activities. Brick bunder, Sewri Bunder also doing same kind of operations and Hay Bunder shed there is loading and unloading operations and they recover of port trust charges on craft includes wharfage and demurrages.

Organisational structure of Bunders

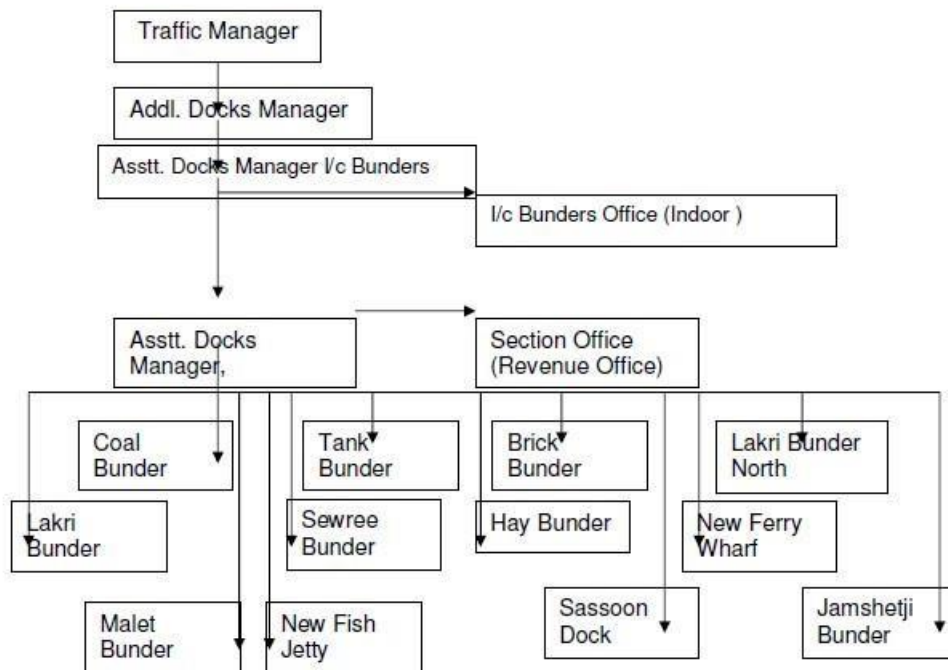


Fig 6

CONTAINER FREIGHT STATION (CFS)

There is one CFS station Manganese Ore Depot (MOD) which consist of 4 sheds. Containers reach the MOD station by road from JNPT and also through barges which are delivered directly to the consignee. Containers coming from JNPT through road are given 3 free days for the container clearance after that demurrage are charged based on scale of rates (SOR). There are mainly 2 types of containers; Full Container Load (FCL) and Less than Container Load (LCL). The size of the container is 20 ft. and 40 ft. respectively. The normal daily transport of containers is around 250-300. The DRI randomly selects the containers and those are scanned through large X-ray machines. The group of custom officers examine the containers and clearance is given based on the percentage of

matching with the submitted documents. If any disparity found those containers are destuffed and thorough examination is conducted. In the further proceedings agents are given time to submit proper documentation failing which results in seizing of the cargo. Such seized cargo which are in good condition after 60 days of seizing will be auctioned off.

At the CFS we observed the process of destuffing of LCL cargo containers and its checking.

MOD Shed No. 1	2190	1200 slots
MOD Shed No. 2	2709	
MOD Shed No. 3	2709	
MOD Shed No. 4	2600	
Timber Pond No. 1	3875	2565 slots
Timber Pond No. 2	3300	
Frere Basin No. 1	2414	676 slots
Frere Basin No. 2	2414	
Frere Basin No. 3	3004	
Frere Basin No. 4	1784	
Frere Basin No. 5/6	2504	
Wadala Incn. Plot	2890	656 slots
Cotton Avenue	1950	5760
Hay Bunder Shed No.1 & 2	5400	
Wadala Cont. Depot	----	14182 + 72 slots
Wadala Golden Yard	----	31500
Haji Bunder Haz. Shed A	----	11545 + 410 slots
Haji Bunder Haz. Shed B	----	
Haji Bunder Haz. Shed C	4484	
TW-1 Cotton Depot	13000	
TOTAL:	57227	62987 + 5579 slots

PROCEDURES FOR VESSEL BERTHING, IMPORT AND EXPORT

PROCEDURE FOR OBTAINING BERTHS FOR VESSELS

Steps to be taken by a new ship owner/ agent

All new ship owners/agents wanting their ships to be serviced in the port have to generally take steps enumerated below

- 1) They should inform by a letter to the Deputy Conservator, Harbour Master, Sr. Dock Master ID, Traffic Manager, Dy.Manager ID& PV Docks, Dy.Manager Container Division, Dy.Manger OSC and Dy.Manager Hamallage that the Company is owning ship or has been appointed as an agent in Mumbai for their principals/Charterers. The firm should furnish in the said letter details such as the frequency of call, whether the ship is carrying break bulk cargo, liquid/dry bulk or containers.

- 2) The Companies will have to be registered with Dy. Manager, Hamallage for the purpose of obtaining Dock Entry Permits for their employees requiring to come to the docks. On registration, a number will be given to the company which is to be mentioned for renewal and future references to the Port Procedure to get Dock Entry Permit.

- 3) The Company is required to execute a Bank Guarantee for Rs. 2 lakhs in the name of the Board of Trustees of the Port of Mumbai from a scheduled nationalised Bank in Mumbai. The Guarantee should be executed for a minimum period of one-year renewable with further claimable period of six

months. The Bank Guarantee has to be executed in the prescribed form a copy of which is available with the Dy. Manager, OSC. There is an option for the Company to lodge a Govt. Promissory Note or fixed deposit receipts.

- 4) The Bank Guarantee is to be lodged with the office of the Dy. Manager, OSC whose office as started earlier, is situated at OSC building. Charges payable for the services rendered by the Port Department are (a) Port dues, (b) Anchorage fees, if any and (c) Pilotage and towage fees. Charges payable for the services rendered by the Traffic

Department are (a) Berth hire charges for vessels berthed in Indira, Prince and Victoria Docks, Jawahar Dweep and PirPau (b) Container related charges for all containers handled in the port and (c) Wharfage on POL products and chemicals handled at Jawahar Dweep and Pir Pau. Charges payable to both the departments are recovered and billed from their respective offices situated in the OSC building.

Steps to be taken by a regular Ship Owner/Agent

- (1) In the case of a regular port user, it is assumed that he has registered himself with the Dy. Manager, Hamallage and executed a Bank Guarantee in the name of Board of Trustees as mentioned earlier. Before berthing of any vessel, every Owner/Agent has to lodge in advance a deposit to cover berth hire charges and container charges with the Docks Department and an advance deposit to cover port dues, pilotage and towage and anchorage fees, if any, with the port department. Since the services from the Port department are requisitioned first, charges payable to the Port department are usually paid first. The Company will have to fill up self-assessment form for payment of advance for port dues, pilotage

and towage fees and anchorage charges. After verification, the form is endorsed to the State Bank of India Extension Counter at OSC for accepting payment. On payment of advance, the Bank sends a copy of payment receipt to the Port Department's office at OSC informs the Harbour Master, Dock Master of the Docks and Port Control Station of the advance payments by the Port users so that they could give the required service of Pilots and tugs to the Port users.

(2) Similarly, before berthing of the vessel, the Company has to lodge with Traffic Department and an advance deposit on the basis of the nature and quantum of services required and the expected stay of the vessel at the berth. This is an estimated deposit payable by the party applying for berth and services. No splitting of liability for the charges is permitted except when the vessel is chartered by a Public Sector Undertaking carrying full shipload of cargo and where there is a specific clause regarding payment of port charges under the charter party terms. The advance deposit for berth hire charges can be split. There are three types of payment to be made to the Traffic Department (a) deposit for berth hire charges (b) deposit for container charges and (c) deposit for berth hire charges of vessels berthed at Jawahar Dweep and Pir Pau. For each deposit there is a separate form which has to be self-assessed by the applicant. The applicant has to present a copy of the berthing application, a photo copy of the ship registry showing GRT of the vessel together with the self-assessed proforma duly filled in. On the basis of the proforma filled in by the applicant and verified by the OSC staff, the deposit amount is arrived at. Once the advance deposit is calculated, the applicant is asked to make the payment at the Bank counter. In respect of container vessels, there will be 2 deposits to be paid, one for the vessel related charges and other for the container related charges. The vessel related charges will have to be paid by the main agent of the vessel whereas container related charges can also be paid by each

slot charterer. Initially deposit is paid for services included in the proforma and for the expected number of days, the ship is likely to be at berth.

(3) On payment of deposit by the applicant, the bank sends one copy of the receipt to the office of the Dy. Manager, OSC. Only on receipt of the payment advice from the bank, Dy Manager OSC will advise the concerned Dy Manager of the Dock for berthing of vessel. In respect of deposit made for container related charges, a copy of the payment advice is sent to the Container Terminal office for their information.

(4) On departure of vessel from the berth, a bill is prepared in duplicate on the basis of an advice received from the concerned berth regarding the various services rendered to the vessel and number of days the ship was at berth. After the bills are audited, they are sent to the despatch section of OSC from where the bills are collected by the Companies. The original and duplicate copies of bills are sent to the Companies only when there is no short fall. In the event of a shortfall, only duplicate copy is sent with the demand notice. Similarly, on departure of the vessel, the final bill is sent by the Port Department for the services rendered by that Department.

(5) After the vessel owners/agents have given the initial application indicating the quantity and description of the cargo they have to furnish the firm ETA of the vessel atleast 24 hours prior to the arrival of the vessel. The Master of the vessel is instructed by the vessel owner/agent to inform the Port Signal Station through radio message/telephone the date and time of arrival of the vessel. The Master is also instructed to register the time and date of arrival in the harbour with Port Signal Station. The vessel owners/agents decide and apply for anchorage berth or direct berthing depending upon the requirement of ship or position of cargo or berth

availability etc. Application forms are separate for anchorage berths and alongside berths. For anchorage berths, application is made to the Harbour Master/ Asst. Harbour Master and for the dock berth to the concerned Dy. Manager of the Dock. While applying for pilotage to the Asst. Harbour Master, the Company should produce receipt of payment made to the Port Department. On arrival, the vessel is brought to the anchorage berth or in the vicinity of Outer Station depending upon the availability of anchorage berth during the material time. Generally, the vessel is brought to the anchorage berth before she is brought alongside a berth for cargo operations. Once the ship arrives, the Ship Owner/Agents have to obtain a certificate from the Asst Harbour Master regarding the vessels's arrival to enable them to obtain entry inwards from the Customs.

CUSTOMS PROCEDURE- ARRIVAL/DEPARTURE OF SHIPS

Under the prior entry system, every Master/Agent can file in Form No.1 part or full manifest of the ship 14 days prior to the arrival of the vessel. If the application is complete in all respects with full manifest it will be accepted by the Import department of the Customs House. A rotation number known as Import General Manifest no. will be allotted by the Import Department of the Customs. All references by the vessel agents to the Customs should be with reference to the said IGM. If the manifest is not filled under prior entry system, under Section 30 of the Customs Act, 1962, the Master/Agent has to submit the complete manifest within 24 hours of the arrival of the vessel. On arrival, every vessel has to seek Custom's permission for its entry for unloading /loading of cargo. Such permission is known as "Entry Inward" for which an application accompanied by the following documents has to be submitted in Import Department.

(1) General Declaration

- (2) Port Clearance from the previous port
- (3) Status of the present voyage
- (4) List of stores on board
- (5) Endorsement from Port regarding arrival of vessel
- (6) Arrival report
- (7) Foreign currency list
- (8) Deck cargo list
- (9) Same bottom cargo

If the application is complete in all respects, IGM No. is granted. Once IGM No. is granted the Master/Agents can discharge cargo either in stream or all at the berth allotted. The import department also issues an Inward Clearance Certificate which has to be produced while applying for port clearance. Under the priority entry system, a floppy and 3 hard copies of IGM and under final entry a floppy and 4 hard copies are required to be submitted to the customs. Any vessel can file a loading application (its willingness to load export cargo) in export department of the custom house 14 days in advance of arrival of the vessel. Application can also be filed on arrival. On receipt of such an application, permission to load is granted. Such a permission is known as “Entry Outward”. Till such a permission is granted, no cargo can be loaded. Such requests for permission for loading are registered and their serial number is known as Rotation number. Rotation number is an identity of the export vessel for that voyage and shipping bills for the vessel can be presented only after the Rotation No. for the vessel has been given by the export department of customs.

Application for Port clearance is given at the export department for the custom house. At the time of application for port clearance, the application has to produce.

- (1) Income Tax certificate valid up to at least 5 days from the date of issue in case the vessel has loaded export cargo.
- (2) Application from the agent and port clearance form.
- (3) NOC from the police.
- (4) Outward Entry Form.
- (5) Inward Clearance Certificate from import department.
- (6) Light dues receipt.
- (7) Port Health Clearance.
- (8) Same bottom cargo clearance from import department.
- (9) Permission obtained for Export Rotation No. to be attached.

Some kind of the ship owners/agents have the facility of giving an undertaking in lieu of the import clearance certificate and light dues receipt. Port clearance certificate issued by the customs is valid for 3 days. The said certificate is produced by the shipping company to the customs officer of the section where the ship is berthed who will hand it over to the master of the vessel. In the cases of vessels loading export cargo, the ship owners/agents have to submit to the Manifest department of the Customs Export General Manifest with customs duplicate copies of shipping bills of all consignments loaded on the vessel within seven days from the departure of the vessel.

Fees payable to the customs by the masters/owners/agents to the vessel:

- (a) Every vessel entering the dock has to pay to the Customs. Light dues at the rate of Rs.8/- per NRT fees paid in any Indian Port is valid for 30 calendar days.
- (b) Fees are payable for vessels working during night shifts and on Sundays and holidays. (c) In the case of export, vessel owners/agents have to avail the services of preventive officers to supervise shipping of export cargo and to keep

gates open for carting of cargoes during night shifts/Sundays and holidays on payment of the prescribed fees. (d) For the movement of import/export containers from docks to CFS and vice versa, vessel owners/agents have to keep the concerned gates open on payment of the prescribed fees to the customs.

Priority Berthing:

According to the existing guidelines, priority berthing may be provided to vessels on payment of a fee equivalent to berth hire charges for a single day or 75% of the berth hire charges calculated for the total period of actual stay whichever is higher. This fee is in addition to berth hire charges payable in the normal course. The fees for priority berthing shall not be levied for the following:

- (1) Vessels carrying cargoes on account of ministry of defence.
- (2) Defence vessels coming on any goodwill visit.
- (3) Vessels hired for the purpose of Antartica Expedition by the department of ocean development.
- (4) Any other vessel for which special exemption has been granted by the ministry of surface transport.

Only vessels carrying edible oil on government account for public distribution have so far been given priority berthing described above.

Import Clearance Procedure

Break bulk cargo

Break bulk cargo is defined as non-containerized cargo excluding bulk cargo. On or before arrival of the vessel, the ship owner agents have to furnish copies of ships manifest to the Customs and to the port. As custodian of the cargoes landed, the port

authorities have to tally all cargoes landed in their custody showing their conditions at the time of landing. Cargoes landed from a vessel are generally stored in the same shed till the last free day of the vessel. At times, due to shortage of space in the landing shed, cargoes are required to be trucked by ship owners/agents to another berth allotted by the Dy.Manager of the docks. The port authority commences removal of uncleared cargoes lying in the transit shed to warehouse for storage depending upon the space requirement in the shed. Generally warehousing of cargoes from the transit sheds commence after the last free day of the vessel. From each transit shed, uncleared cargoes are removed to a particular warehouse open or covered. Records of removal are available with the concerned Shed supdt of the transit shed cargoes landed from a vessel will be available for clearance either in the landing shed or in the warehouse.

Central Documentation Offices and Service Centres

Central Documentation Officer (CDO) is a centralised office providing facilities for scrutiny and passing of delivery documents, drawing of outturns of cargoes landed and issue of outturn and landing remark certificates required for the trade. There are two Central Documentation Offices, which is CDO Indira Dock and CDO P&V Docks. In order to assist trade further in the clearance of cargoes and eliminate unnecessary trips from the CDO to sheds, cash offices etc. port has introduced Service Centres in certain sheds in Indira Dock. These Service Centres function both as documentation offices as well as Cash Offices. The consignees/CHAs clearing cargoes from sheds having Service Centres need not come to the Documentation Office or cash office. At the Service Centres, outturn of import cargoes landed are finalised and certificates issued in respect of cargoes outturned as short landed. Landing remark certificates are not issued from the Service Centres but only from the Central Documentation Offices. **Cash Offices**

Cash offices are centralised offices where cargo related charges are assessed, audited and recovered. The documents to be brought by the importer/CHA to the cash office for assessment of charges are Port Trust and duplicate Customs copies of Bills of Entry and Customs checked invoices and specifications. At the time of presenting the documents, the party endorses on the Port Trust copy of Bill of Entry to recover the charge and debit to the personal deposit Account No. and is signed by him quoting his Dock Entry Permit number. Relevant data from the documents submitted by the importer/CHA are entered in the computers in the Cash Office or Service Centres and a computerised chappa is obtained in duplicate. All documents alongwith computerised chappa are forwarded to the audit for verification after which the charges are debited from the personal deposit account of the importer. The duplicate copy of computerised chappa is given to the importer as his receipt.

Custom Examination Centres

Cargoes are handled and stored in a large number of places in the port. Customs Examiners at all the places of storage for examination of cargoes. At certain centralised places, custom examining staff are regularly posted. These Centres are known as Customs Examination Centres. They are provided with weighing machines, measuring tapes etc necessary for examination of cargoes. Details of packages taken from the sheds/warehouses to Customs Examination Centre are entered in a register maintained in every shed by the representative of importer and signed. The Port Trust copy of the B/E is retained in the shed. It is returned to the importer/CHA only after the packages taken for customs examination are returned to the shed and the register is again signed for having returned the packages.

Bill of Entry

The Bill of Entry is a custom prescribed form in which declaration about the imported goods have to be made by the importer for clearance of goods. The consignee gets the Bill of Lading discharged in his favour by the ship owners/agents authorising the Traffic Manager to deliver the goods to him or his assignee or agent. It is on the strength of the Bill of Lading duty discharged that the port delivers goods to the consignee or his assignees. In fact, no one except customs is allowed to interfere or open a package unless pre-received Bill of Lading is surrendered to the Port Trust. In place of Bill of Lading, ship owner/agent may also issue delivery order addressed to the Traffic Manager in favour of the importer/clearing agent.

Delivery procedure for break bulk cargoes

Importer or his CHA desiring to take delivery of the consignment for home consumption will prepare a Bill of Entry for home consumption as prescribed above and gets them noted in Custom House. The Customs duplicate copy of the Bill of Entry and Port Trust copy alongwith the Bill of Lading duly endorsed in favour of the Traffic Manager or Agents Delivery Order(ADO) are presented to the concerned Central Documentation Office or Service Centre for scrutiny and permission.

Delivery procedure for bulk cargoes

The documents required to be verified and the procedure to be followed at the Central Documentation Office, Shed and Gate for delivery for bulk cargoes is the same as that of break bulkcargo. After completing Customs formalities, the

importer/CHA pays port charges. The importer/CHA then obtains forwarding and passing endorsement on Port Trust copy of Bill of Entry from CDO, P&V Docks where documents of all bulk cargoes are handled.

Thereafter the Bill of Entry and Shed Delivery Order are presented to the shed for delivery. After verification of documents a gate pass is prepared for each lorry loaded with cargo. The gate pass is handed over to the gate before the lorry and the net weight of cargo are mentioned on the reverse of each gate pass. The pass is handed over to the gate before the lorry is allowed to go out.

Delivery of FCL cargo

In the CFS, the port procedure with regard to delivery of LCL and FCL cargo in containers are slightly different from that in the docks. In the CFS there are no Service Centres or Central Documentation Offices. Asst Shed Supdt(Import) of each shed at CFS will scrutinise the delivery documents for forwarding and passing before delivery. The staff at CFS ensure that the list of containers discharged by vessel is received by them from the Container Terminal. In the case of FCL, the importer/CHA approaching for delivery should first obtain endorsement regarding the date of receipt should first obtain endorsement regarding the date of receipt of container and its location in the yard from the delivery clerk on the Port Trust copy of the Bill of Entry. If the container is not received or its location not known when the importers/CHA approaches with the completed documents, he can make a log entry in the shed. If the log entry is made, the endorsement of receipt of container and its location will have to be certified by their Asst. Manager concerned. If the location of the containers is furnished, importers/CHA should obtain from the delivery clerk a forwarding slip. With forwarding slip he presents the Bill of Lading

or Agents Delivery Order, Customs and Port Trust copies of Bill of Entry and the Shed Delivery Order to the Shed Supdt(Import).

In the above aspects are in order, Shed Supdt puts the forwarding stamp on the Port Trust copy of the Bill of Entry. Then the seals of containers are checked. If the seals are not intact, security is informed by the port authorities and the containers will be permitted to be opened only after clearance then the security. If the seals are intact, Asst. Shed Supdt signs the forwarding endorsement on the B/E. In the second check procedure the forwarding slip and the Port Trust copy of the Bill of Entry are handed over to the party for further action.

The importer then gets the seal cut open by the Stevedore's carpenter and gets cargo examined by Customs. The importer then pays duty at the Custom House and gets "out of Customs charge" endorsement on the duplicate customs copy of the B/E. Once the Bill of Entry is out of Custom's charge, the importer pays the port charges and octrol at the respective Cash Offices. After payment of charges, the importer/CHA is required to produce the documents to Shed Supdt for verification regarding payments of customs duty and Port Trust charge. If everything is in order, Shed Supdt stamps "please pass" endorsement on the Port Trust copy of the B/E and Shed Delivery Order. The Bill of Entry and Shed Delivery Order are then given to the importer/CHA for clearance of cargo. With the cargo destuffed and directly loaded on the lorry, a tally is maintained by the port. Delivery clerk prepares gate pass for the goods destuffed from the container. The importer/CHA then proceeds to the gate alongwith the B/E and the gate pass.

At the gate the marks and numbers on the B/E and the gate pass are again checked with those on the cargo before the same is finally allowed to go out of the gate. Before opening the container for delivery, if the seal is intact but shortage is noticed at the time of destuffing and the party does not want the shortage to be investigated, delivery will be given on the basis of an undertaking given by the importer/CHA that no claim will be lodged with MBPT for the shortage.

Delivery procedure for cargo in containers after customs examination

If the importer/CHA wants to delivery of cargo in containers after completing all the customs procedures in the Port, then (a) he will have to obtain custom's permission on the customs copy of the B/E for delivery of cargo in containers. (b) a letter in duplicate from the vessels agent authorising the port to give delivery of containers with cargo. The documents required to be submitted to the port for customs examination and clearance of loaded containers are in break bulk form. After getting point where container is destuffed after a log entry has been made by the importer/CHA endorsement of destuffing has to be certified by the concerned regarding destuffing from the Asst. Supdt will suffice.

Once the Bill of Entry is out of Customs charge, the party pays port charges and octroi at one of the Cash Offices. Asst. Superintendent who after verifying that the Bill of Entry is out of custom's charge and port charges have been paid.

EXPORT DOCUMENTS AND PROCEDURES

As mentioned earlier, any person, whether an individual or a firm, importing or exporting goods in to/ from India, will require Importer-Exporter code number to be obtained from the regional import – export licensing authority.

Export involves 18 steps as detailed below:

1. The first step is to examine the export contract and/or the letter of credit to ensure the terms and conditions stipulated in these documents are in accordance with those originally proposed, or the amendments subsequently agreed to, by the exporter. On receipt of these documents, the exporter writes to the importer acknowledging these documents, where necessary, drawing attention of importer to the discrepancies in the terms of conditions of contract/letter of credit. **2.** Instructions to Factory / Supplier: If the above mentioned documents are in order, a delivery Note (in duplicate) containing the specifications and other details of the order is sent to the factory for the manufacture and dispatch of export cargo to the port of shipment.

3. Pre-shipment inspection and central Excise (clearance): As soon as the goods are ready for dispatch, the factory office arranges to complete the following formalities:

→Make out an application to the export inspection agency for conducting pre-shipment and quality control inspection. The Export inspection agency will depute an inspector to inspect the consignment and issue the certificate of inspection if the goods confirm to the prescribed specifications.

→Secure clearance of export consignment from excise authorities.

→Dispatch of consignment to the port of shipment by rail and obtaining railway receipt or by road obtaining lorry way bill.

4. Dispatch of documents to the Export department of the firm by the Factory office: The factory office prepares a 'Dispatch advice' and sends it to the Export department along with following documents.

- Rail way receipt/lorry way bill.
- AR- 4 form (original and duplicate copies).
- Duplicate copy of delivery note duly signed by factory office. It states that the consignment has been sent to the port town.
- Certificate of inspection.

5. Arranging Insurance coverage: On receipt of these documents the Export department makes an application to the Insurance Company for marine insurance cover and requests them to issue an insurance policy/certificate in duplicate with appropriate risk coverage.

6. Instructions to forwarding agent: At the same time, the export department prepares a note for the forwarding agent at the port of shipment giving detailed instructions regarding the shipment of the consignment. The exporter must also give details of the vessel on which space has been booked for shipment of the cargo. This note is sent to the forwarding agent along with the following documents:

- AR- 4 form (original and duplicate copies)
- Commercial invoice
- Packing list

- GR Form (original and duplicate copies)
- Customs- invoice
- Original letter of credit/contract
- Declaration form in triplicate
- Quality control certificate
- Purchase memo
- Railway receipt/ lorry way bill

It is declaration by the exporter stating that the value, specifications, quality and description of the goods being exported as mentioned as in the shipping bill are in accordance with the terms of export contract and that the statements made in the shipping bill are true.

7. Port, Shipping and Customs formalities: On receipt of the documents, the forwarding agent takes delivery of the consignment from the Railway station or from the road transport at the port of shipment and arranges its storage in the warehouse.
8. He also initiates action to obtain customs clearance. For this purpose, the forwarding agent prepares four/five copies of the relevant 'shipping bill' and presents it along with the above mentioned documents to the exporter departments of customs House. The customs appraiser examines these documents and appraises the value having regard to the following considerations: That the value and quantity declared in shipping bill is the same as in the export order/letter of credit. That the formalities regarding exchange control, pre-shipment quality control inspection etc. have been duly completed.
9. After examination of documents and appraisal of value, the customs Examiner/

Appraiser makes an endorsement on the duplicate copy of shipping bill giving directions to the

Dock appraiser about the extent of physical examination of the cargo to be conducted at the

Docks. All the documents, except GR form, the original shipping bill and copy of the Commercial Invoice are returned to the Forwarding Agent to be presented to the Dock appraiser.

10. After taking delivery of the documents from the export department the Forwarding agents presents the Port Trust Document (Port Trust copy of shipping bill) to the shed superintendent of the port and obtains carting order for bringing the export cargo to the transit shed for physical examination by the dock Appraiser. He then presents the following to the Dock Appraiser for conducting physical examination of the cargo:

- Duplicate, triplicate and export promotion copies of the Shipping Bill.
- Commercial invoice
- Packing list
- AR- 4 form
- Inspection certificate
- GR duplicate

Dock Appraiser after conducting physical examination records and makes “Let Export Endorsement” on the duplicate copy of shipping bill and hands it over to the forwarding agent along with the other documents to be presented to the preventive officer of the Customs department who supervises the loading of the cargo on Board the vessel.

- 11.** The preventive makes an endorsement “Let ship” on the duplicate copy of the shipping bill and hands it over to the agent of the shipping company. This constitutes an authorization by the customs to the shipping company to accept the cargo on Board and vessel.
- 12.** After the goods are loaded on board the vessel, the captain of the ship issues a receipt of the “Mate receipt” to the superintendent of the port. The forwarding agent then makes a payment of the port charges and takes delivery of the Mate’s receipt. He presents the Mate receipt first to the preventive Officer who records the Certificate of Shipment on all the copies of Shipping Bill, original and duplicate copies of AR- 4 form and returns the Export promotion copy, a copy of Drawback Shipping Bill and duplicate AR-4 form to the forwarding agent. The latter then presents the mate’s receipt to the shipping company requests it to issue the bill of lading.
- 13.** Dispatch of documents by forwarding agent to the Exporter. After obtaining the bill of lading from the shipping company to the forwarding agent sends the following documents to the exporter:

 - One copy of the commercial invoice duly attested by the Customs.
 - Export promotion copy of the Shipping Bill.
 - Drawback copy of shipping bill.
 - Full set of clean on-board bill of lading together with a few non-negotiable copies.
 - Original letter of credit/contract order.
 - Copies of customs invoice.
 - AR-4 form duplicate and gate pass.
 - GR form duplicate.
- 14.** Certificate of origin: On receipt of above documents, the exporter makes an application to the Chamber of commerce and obtains a ‘Certificate of Origin’ in

duplicate. In case of export shipment to countries offering GSP concessions, the GSP Certificate of origin will have to be procured by the exporter from the concerned authority like export inspection agency or others.

15. Shipment advice to Importer: The exporter then sends 'Shipment advice' to the importer initiating the date of shipment of the consignment by a named vessel and its expected time of arrival (ETA) at the destination port. The following documents are also sent along with the shipment advice so that the importer may start making arrangements for taking delivery of the consignment.

- A non-negotiable copy of the bill of lading.
- Commercial invoice.
- Packing list.
- Customs invoice.

Presentation of documents to Bank: The exporter presents the following documents to the bank for negotiation/collection:

- Commercial invoice (with required number of copies).
- Certificate of origin (2 copies).
- Customs invoice (with requisite number of copies).
- GR form (duplicate)
- Packing list (with requisite number of copies)
- Full set of clean-on-board of bill of lading plus non-negotiable copies as required.
- Original letter of credit/export contract.
- Additional copies of the Commercial Invoice for certification by the bank.

- Bank certificate in the prescribed for in duplicate.
- Marine insurance policy/certificate.
- Quality control/pre-shipment inspection certificate.

16. At the bank these documents are processed in the following manner. The documents are examined with reference to the terms and conditions of the original order and also that of the letter of credit. A set of following documents is transmitted to the bank of importer by the first air mail followed by the second set of these documents by the second air mail to ensure that in case the first set is lost or delayed, the importer or his bank can take delivery of the consignment on the basis of the second set of documents.

- Commercial invoice.
- Customs invoice.
- Packing list.
- Certificate of origin.
- Negotiable bill of lading.
- Insurance policy certificate.
- Bill of exchange.
- GSP certificate of origin (in necessary).
- Certificate of inspection.

17. Exporter claims rebate of central excise and duty drawback.

18. Exporter initiates action for claiming export benefits.

4. ANALYSIS OF KEY PERFORMANCE INDICATORS

The major purpose for collecting information to maintain performance indicators is to provide management information for planning and control.” (UNCTAD, *Port Performance Indicators, TD/B/C.4/131/Supp.1/Rev.1*).

4.1 Traffic handled in Indian ports

Traffic

[Home](#) / [Traffic](#)

(in '000 tons)

PORTS	APRIL TO December' 2021-22*	During Month
Kolkata Dock System	11111	1303
Haldia Dock Complex	31032	3841
TOTAL: KOLKATA	42143	5144
Paradip	83604	9711
Visakhapatnam	50912	5929
Kamarajar	27995	3173
Chennai	35622	4224
V.O.Chidambaranar	26056	2892
Cochin	25511	3382
New Mangalore	27455	3482
Mormugao	13219	1244
Mumbai	44317	5482
J.N.P.T.	56066	7017
Deendayal	96514	11319
TOTAL:	529414	62999

Fig 7

4.2 Average turn around time

Average Turnaround Time

[Home](#) / Average Turnaround Time

(In Hrs.)

PORTS	PERIOD	DRY BULK		Liquid Bulk	Break Bulk	Container	TOTAL
		MECH.	CONV.				
Kolkata Dock System	Apr -Nov' 2021-22	0.00	234.72	50.21	112.65	63.42	68.90
Haldia Dock Complex	Apr -Nov' 2021-22	68.90	57.74	58.26	127.95	44.93	60.00
Paradip	Apr -Nov' 2021-22	42.49	72.10	43.42	119.61	14.89	54.97
Visakhapatnam	Apr -Nov' 2021-22	58.99	105.12	40.36	219.13	29.00	76.16
Kamarajar	Apr -Nov' 2021-22	69.63	96.72	33.75	44.21	25.46	46.83
Chennai	Apr -Nov' 2021-22	0.00	105.63	50.83	95.41	34.49	52.62
V.O.Chidambaranar	Apr -Nov' 2021-22	73.44	84.48	46.32	61.44	21.60	48.00
Cochin	Apr -Nov' 2021-22	59.02	126.45	44.90	52.92	20.74	33.95
New Mangalore	Apr -Nov' 2021-22	40.19	101.82	46.56	30.17	44.36	47.25
Mormugao	Apr -Nov' 2021-22	81.53	125.28	30.95	127.23	35.21	77.91
Mumbai	Apr -Nov' 2021-22	0.00	277.93	54.86	109.67	0.00	75.09
J.N.P.T.	Apr -Nov' 2021-22	62.40	0.00	35.76	39.12	24.24	27.84
JNPT	<input type="checkbox"/>						

Fig 8

4.3 Average output per ship berth day

Average Output Per Ship Berthday

[Home](#) / Average Output Per Ship Berthday

(in Tonnes)

PORTS	PERIOD	DRY BULK		Liquid Bulk	Break Bulk	Container	TOTAL
		MECH.	CONV.				
Kolkata Dock System	Apr -Nov' 2021-22	0	779	2645	576	5178	3843
Haldia Dock Complex	Apr -Nov' 2021-22	12986	14020	8986	3019	9304	10235
Paradip	Apr -Nov' 2021-22	36227	17425	41898	4746	8040	26004
Visakhapatnam	Apr -Nov' 2021-22	25971	8465	15975	1874	26962	11247
Kamarajar	Apr -Nov' 2021-22	25320	18753	13941	9196	59455	23629
Chennai	Apr -Nov' 2021-22	0	7094	14605	2429	31024	15559
V.O.Chidambaranar	Apr -Nov' 2021-22	19714	11240	4660	1012	40614	16530
Cochin	Apr -Nov' 2021-22	5150	5393	32284	965	22861	23434
New Mangalore	Apr -Nov' 2021-22	24167	10635	17265	2940	7972	15424
Mormugao	Apr -Nov' 2021-22	21043	6850	6463	4519	4281	11693
Mumbai	Apr -Nov' 2021-22	0	1911	17465	2184	0	9162
J.N.P.T.	Apr -Nov' 2021-22	5865	0	7099	784	37240	29111

Fig 9

4.4 Traffic- Commodity wise

PORTS	PERIOD	P.O.L.(Crude, Prod., LPG/LNG)	Other Liquids	Iron Ore Incl. Pellets	Fertilizers		Coal		Containers		Other Misc. Cargo	TOTAL
					FIN.	RAW	Thermal & Steam	Coking & Others	Tonnage	TEUs		
Kolkata Dock System	Apr -Dec ' 2021-22	211	372	0	230	24	0	1172	6370	431	2732	11111
Haldia Dock Complex	Apr -Dec ' 2021-22	7337	3882	880	181	304	95	9707	2578	126	6068	31032
TOTAL: KOLKATA	Apr -Dec ' 2021-22	7548	4254	880	411	328	95	10879	8948	557	8800	42143
Paradip	Apr -Dec ' 2021-22	25554	1460	14525	291	3636	20933	10606	141	7	6458	83604
Visakhapatnam	Apr -Dec ' 2021-22	10350	1515	10837	861	1167	6937	3572	6475	383	9198	50912
Kamarajar	Apr -Dec ' 2021-22	3642	101	0	0	0	13824	1472	6827	354	2129	27995
Chennai	Apr -Dec ' 2021-22	8084	824	0	0	208	0	7	23294	1207	3205	35622
V.O.Chidambaranar	Apr -Dec ' 2021-22	277	739	25	249	572	5781	3876	11663	593	2874	26056
Cochin	Apr -Dec ' 2021-22	15970	369	0	0	236	0	0	7960	555	976	25511
New Mangalore	Apr -Dec ' 2021-22	16555	1775	2827	217	87	2603	386	1760	114	1245	27455
Mormugao	Apr -Dec ' 2021-22	357	127	2520	36	0	1363	5511	168	13	3137	13219
Mumbai	Apr -Dec ' 2021-22	27177	1226	4954	278	85	4369	290	188	18	5750	44317
J.N.P.T.	Apr -Dec ' 2021-22	2381	2118	0	0	0	0	0	51007	4177	560	56066
Deendayal	Apr -Dec ' 2021-22	44629	8290	614	2784	244	16209	533	6374	365	16837	96514
All Ports:	Apr -Dec ' 2021-22	162524	22798	37182	5127	6563	72114	37132	124805	8343	61169	529414

Fig 10

4.5 Annual overseas coastal traffic

PORT	PERIOD	OVERSEAS				COASTAL				TOTAL			
		Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total
Kolkata Dock System	2020-21	6229	6043	3050	15322	302	121	155	578	6531	6164	3205	159
Haldia Dock Complex	2020-21	32264	7061	1071	40396	3317	1755	0	5072	35581	8816	1071	454
Paradip	2020-21	55950	27853	0	83803	1602	29144	0	30746	57552	56997	0	1145
Visakhapatnam	2020-21	34865	17607	514	52986	3871	12471	515	16857	38736	30078	1029	698
Kamarajar	2020-21	11424	2803	482	14709	11179	0	0	11179	22603	2803	482	258
Chennai	2020-21	23199	13904	861	37964	3509	1072	1007	5588	26708	14976	1868	435
V.O.Chidambaranar	2020-21	14130	6931	75	21136	8396	2258	0	10654	22526	9189	75	317
Cochin	2020-21	16901	2903	599	20403	6930	3497	673	11100	23831	6400	1272	315
New Mangalore	2020-21	20382	5448	0	25830	7507	3163	0	10670	27889	8611	0	365
Mormugao	2020-21	11139	9440	0	20579	1387	22	0	1409	12526	9462	0	219
Mumbai	2020-21	21878	2849	4855	29582	2116	6059	15567	23742	23994	8908	20422	533

Fig 11

SWOT ANALYSIS

SWOT analysis is a framework used to evaluate a company's competitive position by identifying its strengths, weaknesses, opportunities and threats. Specifically, SWOT analysis is a foundational assessment model that measures what an organization can and cannot do, and its potential opportunities and threats. SWOT analysis is a basic, analytical framework that assesses what an entity — usually a business, though it can be a place, industry or product can and cannot do, for factors both internal and external.

Using environmental data to evaluate the position of a company, a SWOT analysis determines what assists the firm in accomplishing its objectives, and what obstacles it must overcome or minimize to achieve desired results: where the organization is today, and where it may go.

- **Strength** describe what an organization excels at and separates it from the competition.
- **Weakness** stop an organization from performing at its optimum level. They are areas where the business needs to improve to remain competitive: higher-than-industry average turnover, high levels of debt, an inadequate supply chain or lack of capital.
- **Opportunities** refer to favorable external factors that an organization can use to give it a competitive advantage.
- **Threats** refer to factors that have the potential to harm an organization

STRENGTH

- Multi-cargo handling capabilities.
- Captive cargo of the two oil refineries.
- Sound financial position.
- Vast land estate and the port's proximity to vibrant mega-city.
- Working Environment.
- Effective Leadership.

- Effective procedure.
- Area for storage.
- Number of berths.
- Maximum export and import of project cargo throughout the country.
- Experienced workforce.
- Connectivity.
- Effective planning (berth allotment and resource allocation etc).
- CFS (Container Freight Station).
- Effective organization structure.

WEAKNESS

- Draft constraints.
- Outdated Technology.
- High cargo-handling costs.
- Ageing workforce.
- Delay in project implementation.
- Idle time.
- Not all weather port.
- Underutilization of capacity of port.
- Old infrastructure.
- Traditional methods of assessment or analysis.
- Labour intensive port.

OPPORTUNITIES

- Passenger or cruise Terminal up to certain extend only.

- Create a multi-layer vehicle parking for vehicle storage.
- Marina.
- Development of port under the Sagarmala project.
- Development of Jawahar Dweep & pir pau considering the future development of vessels.
- Effective uses of Barge vessel
- Adoption of effective and modern software technology.
- Adoption of automation only for Hazardous Cargo.
- New recruitment for students of qualification related to shipping industries.
- Investment for dedicated berths for project cargo.
- Full utilization of port capacity.
- Effective utilization of Dry Dock.
- Reconstruction of sheds (Modernization).

THREATS

- Productivity at competing neighboring ports.
- Containerization of cargo.
- Fluctuation in economy.
- Political factors

5 CONCLUSION & RECOMMENDATIONS

5.1 CONCLUSION

A pillar of the national economy is the port, not only as a gateway for entry of cheaper prices compared with other transportation modes but also as a source of revenue to the government and a means for other country activities which will be delayed if the port has inadequate functions to receive the cargo.

Mumbai Port is one of the major ports located on the west coast of India, commissioned more than a century ago in a natural harbour. It remains as India's premier port till date. Even today, with the development of other ports in the neighborhood, it caters to about 10% of the total sea borne handled by major ports of the country in terms of volume. It handles about 18% of POL traffic and 17% of General traffic handled by Major Ports of India.

The report aims to provide an idea about the organizational structure of MbPT and the chapter wise information regarding the facilities available and services provided in the port.

The main objective of this research was to study the turnaround time in the MbPT to find the problems that prolong the time of vessels and to recommend solutions for these problems and constraints related to time/cost in order to be more efficient and effective within a shorter total time in port of a vessel. By doing so, it will be more attractive for users, which will increase the number of vessels calling this port and, therefore, result in more revenue for the port and more benefits to the users as well.

5.2 RECOMMENDATIONS

5.2.1 NAVIGATIONAL CONTROL

To minimize time in the navigational channel at MbPT, involving the maneuvering in the channel and at the anchorage area, embarking and disembarking the sea pilot and harbour pilot and the berthing and unberthing operations, it is necessary to break down the activities of the stages of transferring the vessels from on stage to another.

5.2.1.1 WAITING TIME

One factor affecting the waiting time is the idle time in the berths when the vessels waiting at berth for sample results, or due to the equipment breakdown and unavailability of the trucks as a result the vessel is occupying the berth with idle time, making the berth unavailable to other vessels.

Therefore, it is necessary to reduce the idle time by making sure the trucks are ready when the handling operation is in progress. Increasing terminal cargo handling productivity by optimizing the stevedoring activities can be assisted by using port's modern cranes rather than the cranes of the vessels for all cargo handling activities.

In other words, it is highly required to solve, the breakdown of the cranes and trucks through outsourcing to private companies to secure these services in a good and timely manner to avoid the high cost of vessels spending more time in the port.

5.2.1.2 MANEUVERING TIME

This stage involves the time when the vessel passes the sea enter to the anchorage area to drop anchor in case it has not direct order, and the time when the vessels enter the access channel to proceed to berths.

Regular maintenance of the buoys is advised to avoid blackouts for long periods of time and avoid giving rise to a bad reputable to the channel.

The tug boat service and pilot station vessel are the most important in the manoeuvring operations, in and out which are in connection with the sea and harbour pilots to do the berthing and unberthing operations.

5.2.2 BERTH CONTROL

Handling operations are a part of berth services rendered by the port that should be made available full-time. Using the method of two shifts in a day and night time will optimize the berth productivity and minimize idle time to give good effects to minimize the waiting time. Securing good equipment on the berth will avoid excessive delays and enable ships to save time as they may engage in supply chain under the method of Just-In-Time, used by several companies to encourage them to come to the port. The working hours at the berth should be increased as the management should increase the labor productivity.

Moreover, quality of service is improved by rendering a good service and ensuring availability of the trucks and other essential equipment for the vessels to contribute to minimizing the total time in port.

Further studies need to be carried out for equipment utilization and labor utilization with other KPIs in order to decide whether more investment is needed or not to enhance existing capacity. Implementing a Terminal Operation System will enable the port management to analyze with more accuracy the future needs and raise the service level to meet customers' satisfaction.

5.2.3 LAND CONTROL

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