

CHAPTER-I
INTRODUCTION

1.1 INTRODUCTION

In the complex and dynamic environment of maritime logistics, the handling of high-risk cargo presents unique challenges and risks that necessitate specialized attention and protocols. High-risk cargoes, which include flammable, explosive, radioactive, toxic, and environmentally hazardous materials, require not only strict adherence to safety and security regulations but also demand sophisticated management techniques to ensure their safe transportation from one point to another. The efficiency of handling such cargoes is critical, impacting not only the safety of port operations but also the throughput capacity and overall operational success of maritime ports.

This investigation aims to evaluate the efficiency of high-risk cargo handling specifically at the Cochin Port Authority, assessing how well it manages the operational, safety, and regulatory challenges associated with such cargoes. By examining the strategies, technologies, and protocols employed by Cochin Port, this study seeks to understand its effectiveness in this critical area and propose potential areas for improvement or innovation.

In doing so, the study will contribute valuable insights into best practices in high-risk cargo handling that could be applicable not only at Cochin Port but also at other maritime ports facing similar challenges. This foundational introduction sets the stage for a deeper exploration of specific handling procedures, efficiency measures, and the impact of technological advancements in the field of maritime high-risk cargo management.

The global logistics industry is foundational to international trade, underpinning the seamless movement of goods across borders. Maritime ports serve as crucial junctures in this complex network, facilitating the flow of commodities worldwide. High-risk cargo, encompassing goods that pose potential hazards to health, safety, or the environment, necessitates superior management due to its inherent risks. The efficiency with which these cargoes are handled at maritime ports directly influences the operational efficacy, safety standards, and compliance of logistics companies with global shipping regulations.

Handling high-risk cargo involves navigating a myriad of challenges, from stringent regulatory compliance to the adoption of specialized handling techniques and safety protocols. For logistics companies, the efficiency of these operations at maritime ports is not just about regulatory compliance but also about achieving optimal operational velocity and minimizing risks to cargo, personnel, and the environment.

1.2 AREA CHOSEN FOR STUDY

This area is conducted at Cochin Port, Kochi

1.2.1 INDUSTRY PROFILE

PORT INDUSTRY PROFILE

Ports are one of the primary components of the general transportation sector and nowadays linked to the expanding world economy. In fact, ports are a way of incorporating the global economic structure. India has a rich sea-wide trading history. In coastal cities, ports are a significant economic activity. Ports are also important for the support of economic activities in the hinterland since they act as a crucial connection between sea and land transport and they are also vital part of country's economy. The growths of ports will unerringly boost the country's economy. Growth in (sea)(maritime)trade of a country is an important indicator of its overall growth. A country's trade is an indicator of its economic status. Since time immemorial, water transport has played a significant part in the Indian economy. It as an (economic way for export & import of heavy items) easy and cheap means of export and imports of heavy items. The function of ports is all the more relevant in this sense. A port is a gateway for entering into hinterland from sea. In fact, a Port is a (facilitator in maritime industry for EXIM cargo) place in a waterway where a ship can stop for loading and alighting goods. Ports are the land and sea trading nodal points. Approximately 95% of trade in India is by volume and 70% by value by maritime transport, according to the Ministry of Shipping. There are 12 main ports in India and 187 non-major ports in India. The Indian ports and shipping industry play a vital role in sustaining the growth in the country's trade and commerce. India is the sixteenth largest maritime country in the world, with a coastline of about 7,517 km. New Mangalore Port is the seventh largest port of India, and it is the only major port of Karnataka, Situated at the convergence of Guru Pura and Netravati rivers to Arabian Sea.

PORT FUNCTIONS

Ports are an important part of freight distribution since they provide a maritime/land interference for export and import activities. They are locations of convergence of interior and coastal transportation system that define the hinterland of a port. In which freight arrives at port via an inland ports or traffics consolidation at a regional port and is shipped via coastal transportation one or more organization play the following functions within the ports systems

- Private entry landlord providing a variety of service
- Regulator of economic activity and operations
- Operations of nautical services and facilities
- Marketer and promotor and port services and economics growth
- Cargo handler and storage
- Provider of ancillary activities

- Planning for future operations and capital investment

India has a coastline of 7516.6km (approx.)making it one of the world largest peninsulas. The Indian mainland has a shoreline length of 5422.6km while the total Arabian sea the west and the bay of Bengal on the east. Gujrat. Maharashtra. Goa, Karnataka, and Kerala, are the western coastal states where's Tamil nandu ,Andre Pradesh Orissa and west Bengal are the Easters coastline states daman and Puducherry, the Lakshadweep islands and the Andaman and microbar island are the four union terrorist, positives traffic increase has been recorded at 9of the total 12 main ports. Cochin port saw the greatest increase in freight handling up 16,5 precent and Kandla the major ports, kamala ports (Deendayal port) handled the most cargo withy 110.10 million tones.

A STUDY ON THE PERFORMANCE OF MAJOR PORTS IN INDIA.

India has 13 major ports and 176 non-major ones. The major ports carry about 3/4th of the total traffic. Despite adequate capacity and handling facilities the average turnaround time of major Indian ports is less than 4 days which is very high compound to the average turnround time of the 10 hrs. is Hong Kong. This undermines the competitions of the ports. Since the ports are not adequately linked to the hinterland. The evaluations of cargo is slow leading to congestions to this end. All ports trust has set up groups with representatives from the national highway authority of India (NHAI) railways and state government to prepare comprehensive plans aimed at connectivity of ports. The NHAI has taken up ports connectivity as major component of the national highways development project traditionally most ports in the world are owned by the public sector in the recent years privatization of the ports

International trade is a cornerstone of the global economy. Exchange of goods amongst countries widen the choice of supply and ensure that production takes place where it is cheapest and best. This is reflected in the intensification of globalization where it is cheapest and best. And the fact that world trade is growing faster than the world output. World trade relies on cheap secure transport. Maritime transport, enabled by technological developments and competitive transport cost, is estimated to handle over 80% world trade by volume and over 70% by value. As trade grows, the demand for maritime transport also grows, technological developments in bulk and container transport have made maritime transport cheaper. Bulk transport involves shipping one homogenies commodity at any on time, but in large quantities; in contract container transport that are easy to load and unload. However the slower growth in world seaborne trade compared to world trade in general reflects that the rising trade in processed goods like electronic items medicines apparel gems and jewelry trade in processed goods like electronics items, medicines weight International trade is a cornerstone of the global economy. Exchange of goods amongst countries widen the choice of supply and ensures that production takes place where it is cheapest and best. This is reflected in the intensification of globalization and the fact that world trade is growing faster than the world output. World trade relies on cheap and secure transport.

2.1 STATEMENT OF THE PROBLEM

High-risk cargo handling efficiencies, this study will contribute valuable knowledge that can enhance strategic planning, operational execution, and risk management for logistics companies operating in global markets. It will also offer recommendations that could be implemented by maritime ports to optimize their handling of hazardous cargoes, thus fostering a safer, more efficient, and compliant global supply chain environment.

2.2 OBJECTIVES OF THE STUDY

- To relate to high-risk cargo at Cochin Port and their alignment with best practices in the industry.
- To Evaluate the technological and infrastructural support that Cochin Port provides for the handling of hazardous materials.
- To Analyze safety and compliance metrics to understand how risks are mitigated and regulations adhered to during the handling processes.
- To Identify challenges and bottlenecks that affect the efficiency of high-risk cargo operations and propose actionable solutions.

2.3 RESEARCH METHODOLOGY

Research is defined as a scientific and systematic search for pertinent information on a specific topic. Research is an art of scientific investigation. It is a careful investigation or inquiry especially through search of new fact in any branch of knowledge. It is the systematized effort to gain new knowledge. It is an academic activity and as such, the term should be used in technical sense. Research is thus, an original contribution to the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search of knowledge through objective and systematic method of finding a solution to problem is research. As a research, defining, evaluation and organizing data; making deductions and conclusion; and finally carefully testing the conclusion to determine whether they fit the formulating hypotheses is priority.

Research Design

The research design undertaken by the researcher is “Descriptive research”. The methodology involved in this design is mostly qualitative in nature. The major purpose to this descriptive research is the description of the state of affairs as it exists at present. The researcher has no control over the variable and can only report what that has happened or what is happening.

Method of Data Collection

Primary Data Collection.

The response would be at their liberty to represent their view and the data collection by questionnaire method which is conducted in a fair manner.

TYPES OF DATA:

Data is the basis input to any decision making process in a business. The processing of data gives statistics of importance of the study. The reliability of managerial decisions depends upon the quality of data. The quality of data can be expressed in term of its representative feature of the reality which can be ensured by the usage of a fitting data collection method. There are two types of data, namely.

- Primary data
- Secondary data

2.4 SAMPLING:

Sampling is the process of selecting units from a population on interest so that by studying they sample we may fairly generalize our results back to the population from which they were chosen. The importance of the theory of sampling lies in the facts that for a large population, it is neither practical nor possible to collect the data from each and every number of the population.

SAMPLE SIZE:

In view of the time constraints, the sample size is as 100.

PRIMARY DATA:

Primary data are those which are collected afresh and for the first time and hence, happen to be original in character. Such data are published by authorities who themselves are responsible for their collection. The collection of primary data thus requires a great deal of deliberation and expertise. Depending upon the nature of information required, the following method of collecting primary data are available.

PERCENTAGE ANALYSIS

Percentage analysis shows the entire population in term of percentages. It reveals the number of belonging is a particular category or the number of people preferring a particular thing, etc., in term of percentage. In this study, the number of people who responded in a particular manner is interpreted in the form of percentages.

Each table has been calculated on the basis of percentage.

$$\text{Percentage analysis} = \frac{\text{No of respondents}}{\text{Total respondents}} \times 100$$

2.5 LIMITATION OF THE STUDY

- To study may focus on a specific organization or industry, which limits the generalizability of the findings to other contexts.
- The study heavily relies on the availability and accuracy of data from the organization or industry being researched.
- External factors beyond the control of the study, such as changes in market conditions, economic fluctuations, or industry-specific regulations, may impact

the material management practices and outcomes, introducing potential confounding variables.

- The interpretation of data and analysis may be subjective, influenced by the researchers' biases or perspectives.