CHAPTER I

RESEARCH SETTING, NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

The world that we now live in is possible mainly on account of innovations in transportation. Industrializations, massive production, new infrastructure are all possible due to competent transportation. Multi modes of transport enable us to keep up with fast pace and changing times of today's world. Huge trucks, bulldozers, trailers, buses, cars, cargo ships and large aircrafts carry men and cargo to different places all over the world. In other words, the global society is experiencing comfort and convenience essentially on account of advancements in transportation sector.

An ideal transport system would be

"A fully integrated safe transport network which supports social and economic regeneration and ensures good access for all which, is operated to the highest standards to protect the environment and ensure good quality of life."¹

The transport sector (including aerospace, automotive, marine and rail) plays an important role in modern economies, enabling the mobility of both people and goods. Indeed, Australia is highly dependent on transport due to its size and remoteness. Every country around the globe has to depend on one or more modes of transportation.

Transport provides a wide range of social and economic benefits. Availability of transport options that are safe, efficient, cost-effective and sustainable is a major goal of transport initiatives. Developing innovative

¹http://www.scribd.com
technologies for the transport sector can assist in improving transport safety and economic performance as well as reducing the impact of transport on the environment.

1.2 IMPORTANCE OF TRANSPORT IN ECONOMY.

The transport sector is an important component of the economy impacting on development and the welfare of populations. When transport systems are efficient, they provide economic and social opportunities and benefits that result in positive multipliers effects such as better accessibility to markets, employment and additional investments. When transport systems are deficient in terms of capacity or reliability, they can have an economic cost such as reduced or missed opportunities. Transport also carries an important social and environmental load, which cannot be neglected. Thus, from a general standpoint the economic impacts of transportation can be direct and indirect:

- Direct impacts relate to easy accessibility of various modes of transport which enables larger markets and saving in time and costs.
- Indirect impacts lead to economic multiplier effect where the price of commodities, goods or services drop and/or their variety increases.

Mobility is one of the most fundamental and important characteristics of economic activity as it satisfies the basic need of going from one location to the other, a need shared by passengers, freight and information. All economies and regions do not share the same level of mobility as most are in different stages of their mobility transition. Economies that possess greater mobility are often those with better opportunities to develop than those suffering from scarce mobility. Reduced mobility impedes development while greater mobility is a catalyst for development. Mobility is thus a reliable indicator of development.
Transport sector provides this mobility by offering services to its customers, employment of people, investing capital and generating income. The economic importance of the transportation industry can thus be assessed from a macroeconomic and microeconomic perspective:

- At the macroeconomic level (the importance of transportation for a whole economy), transportation and the mobility it confers are linked to a level of output, employment and income within a national economy.

- At the microeconomic level (the importance of transportation for specific parts of the economy) transportation is linked to producer, consumer and production costs. The importance of specific transport activities and infrastructure can thus be assessed for each sector of the economy. Transportation accounts on average between 10% and 15% of household expenditures while it accounts around 4% of the costs of each unit of output in manufacturing, but this figure varies greatly according to sub sectors.

Transport is an important part of Indian economy. Since the economic liberalizations of the 1990s, development of infrastructure within the country has progressed at a rapid pace, and today there is a wide variety of modes of transport by land, water and air. However, the relatively low GDP of India has meant that access to these modes of transport has not been uniform. Public transport remains the primary mode of transport for most of the population, and India's public transport systems are among the most heavily utilized in the world.

Despite ongoing improvements in the sector, several aspects of the transport sector are still riddled with problems due to outdated infrastructure, lack of investment, corruption and a burgeoning population. The demand for transport infrastructure and services has been rising by around 10% a year with the current infrastructure being unable to meet these demands. According to recent estimates by
Goldman Sachs, India will need to spend 1.7 Trillion USD on infrastructure projects over the next decade to boost economic growth of which 500 Billion USD is budgeted to be spent during the eleventh five year plan.\(^2\)

India's transport sector is large and diverse; it caters to the needs of 1.1 billion people. In 2007, the sector contributed about 5.5 percent to the nation's GDP, with road transportation contributing the lion's share.\(^3\) Good physical connectivity in the urban and rural areas is essential for economic growth. Since the early 1990s, India's growing economy has witnessed a rise in demand for transport infrastructure and services. However, the sector has not been able to keep pace with rising demand and is proving to be a drag on the economy. Major improvements in the sector are required to support the country's continued economic growth and to reduce poverty.

1.3 **ROLE OF MARINE TRANSPORT IN INDIAN ECONOMY.**

Maritime transport is a vital means of transport for the prosperity of a country. It has an impact on the rate of development. It is the most optimal cost efficient means of transporting a large number of goods. It creates employment opportunity in other dependant industries like shipbuilding, ship breaking, ship repairing, maritime training etc. It plays a huge role in increasing trade, generating employment.

Maritime transportation services in India have made tremendous progress over the years. It is vital for India's coastal trade. It has over a period of time accumulated physical and financial assets, skilled human resource, extensive knowledge base and dependable infrastructure. It accounts for nearly 90 per cent of India's trade volume. The Indian peninsular is located in the Indian Ocean, with the Atlantic Ocean in the


west and the Pacific Ocean in the east. The other auxiliary services handled by the maritime sector are cargo handling, ship repairing, freight forwarding, lighthouse maintenance and training for personnel.

The maritime transport is controlled by the Ministry of shipping. The shipping industry is well ordered by the Merchant Shipping Act 1958 and the Director General of shipping monitors all work related to shipping. The highlights of India's shipping policy are to promote shipping in India to make the country self reliant in carrying goods to and from other countries and to safeguard India's maritime interest. Indian commercial ships are one of the most important means of transport for the import of crude oil, petroleum products, coal and fertilizer, export of iron ore. It also acts as a second line of defense in case of war and emergency situation.

The scenario for the maritime transport changed after liberalization. It became very competitive be it for cargo or for mobilizing resource. Policy changes like moderation of the cabotage law and cargo reservation policy meant International ships decking at Indian ports did not require a license. To make the domestic industry competitive the government modified the Merchant Shipping Act and relaxed the process for raising funds to enable the maritime industry to acquire ships at cost effective prices. The government gave permission to both private and public shipping companies to repair their ships in any shipyard without having to take approval from them.

The volume of cargo handled in the major ports has increased from 271.87 million tons in 1999-2000 to 560.97 million tons in 2009-10. The vessel traffic has also grown from 15462 ships in 1999-2000 to 21251 in 2009-10. It is forecasted that

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the cargo handling capacity of the Indian ports will increase to 1,855 million tons by 2012. Further it is expected that the share of ship building industry in India of the global ship building market would be 15 per cent by 2020. Also, companies like Shipping Corporation of India have made huge investment to purchase ships.

The following s give an overview of the traffic growth of Major Ports in India over last decade both in cargo and vessel traffic.

**GRAPH 1.1G**

**TRAFFIC GROWTH OF MAJOR PORTS IN INDIA OVER LAST DECADE-- CARGO**

![Graph showing cargo growth from 1999-2000 to 2009-10](image)

*Year*

- 1999-2000
- 2000-01
- 2001-02
- 2002-03
- 2003-04
- 2004-05
- 2005-06
- 2006-07
- 2007-08
- 2008-09
- 2009-10

*Cargo (In million metric tonnes)*

5 [http://www.tradechakra.com, ibid](http://www.tradechakra.com)
GRAPH 1.2G
TRAFFIC GROWTH OF MAJOR PORTS IN INDIA OVER LAST DECADE—
VESSELS

SOURCE: http://ipa.nic.in/oper.htm

Marine transport sector contributes over 0.2% to the country’s GDP at constant prices (1999-2000 prices). Transport sector’s contribution to the GDP has been increasing because of the growing economic activities in the country. Shipping industry plays a significant role in the Indian economy. Indian Ports are the gateways to India’s international trade by sea and over 95 per cent of India’s foreign trade by volume and about 70 per cent by value pass through India’s seaports. The 12 major ports and 187 minor ports along the Indian coastline of around 7,517 km have handled 560.97 million tonnes of cargo in 2009-10.6 Ports are a crucial part of the

6 http://ipa.nic.in/oper.htm
transportation infrastructure of the country. Transportation by ship is highly energy and cost efficient.

Ports play a vital role in the economic development of our country. Most of our foreign trade involves transportation by sea. Inefficiency of port infrastructure will blunt the competitive edge of our exports. Government is giving special attention to the development of infrastructure including ports in India. In order to promote new investments in this area, a Cabinet Committee on Infrastructure has been set up to put in place the requisite policy framework to facilitate greater inflows of investment. Similarly, minor ports, which fall within the administrative domain of State Governments, will receive greater attention for faster development. There is a need for coordinated development of major and minor ports.

The long Indian coast line is dotted with 12 major ports—six situated on the West Coast, namely, Kandla in Gujarat, Mumbai and JN Port in Maharashtra, Mormugao in Goa, New Mangalore in Karnataka and Cochin in Kerala, other six situated on the East Coast, namely, Kolkatta, Haldia in West Bengal, Paradip in Orissa, Visakhapatnam in Andhra Pradesh, Ennore, Chennai and Tuticorin in Tamil Nadu. Following maps give pictorial depiction of all Major and intermediate ports along the coast line of India and their locations.
LOCATION OF MAJOR PORTS IN INDIA
1.4 BACKGROUND

The need for improving ports and maritime facilities has increased with the foreign trade policy of 2004-09 aiming at doubling India's share of global mercantile trade from 0.8% at present. The management and development of the major ports in the country are controlled by the central government through respective port trusts. Minor ports are controlled by state governments. The government has studied various strategies adopted by ports world-wide to address similar issues facing ports in India. The government envisages commercialization/privatization/modernization of major existing ports. These are expected to result in technological upgrades and overall improvement of performance levels of the ports. Although there is widespread recognition of the potential of ports as logistics centers, widely accepted performance measurements for such centers have yet to be developed. The essence of logistics and supply chain management is an integrative approach to the interaction of different processes and functions within a firm extended to a network of organizations for the purpose of cost reduction and customer satisfaction. The logistics approach often adopts a cost trade-off analysis between functions, processes and even supply chains. This approach could be beneficial to port efficiency by directing port strategy towards relevant value added logistics activities.

According to the latest data compiled by the Indian Ports Association (IPA), traffic at nine of 12 major ports in India registered a growth to the tune of 560 million tones (MT) in April 2009-March 2010, as against 530 MT in April 2008-March 2009. Traffic at major ports was up 2.4 per cent on a yearly basis in March 2010, which is the highest cargo volume over the last 24 months.\(^7\) Foreign Direct Investment inflows

\(^7\)http://www.oifc.in/article/ports-in-india
to the ports in India during 2009-10 stood at US$ 65.41 million. Major ports registered an increase in traffic by 5.7% during 2009-10. Annual capacity of the major ports will increase by 74 percent to reach 1 billion tones by 2012.

1.5 PROBLEM DEFINITION

1.5.1 PORT ACTIVITIES

Ports play a crucial role in the EXIM trade of the country. The main focus and core area of any port is handling of cargo and vessels. The main services rendered by port sector are:

- Cargo Handling
- Vessel Handling
- Storage
- Estate
- Railway

Since 90% of the export import trade of the India takes place through major and minor ports of India, their main activity consists of loading and unloading cargo such as fertilizers, food grains, iron & steel, project cargo, vehicles and bulk cargo. Containerization has created a revolution in the handling of cargo by ports. Most of the cargo are now stuffed in the containers which enables efficient handling of cargo.

For transporting this cargo to overseas as well as within the country, vessels are to be brought into the ports and berthed. These ships are very expensive and need efficient handling. From high seas these vessels are towed to the berths in docks and

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8 Consolidated FDI Policy, Department of Industrial Policy & Promotion (DIPP), Government of India.

9 KPMG(2007); Development of Business Plan for Mumbai Port, Final Report - VOL I - Commodity-wise capacity allocation and future requirements
parked. They need to be shifted within the dock area for convenience and speedy discharge of cargo.

Ports provide storage areas both open as well as covered for storage of cargo handled. Further storage facility is provided for aggregation of export cargo. Separate storage facilities are provided to store bulk cargo and storage of containers.

Ports have huge land attached to the port area which is let out on long term lease. Rentals collected from leased land are a lucrative source of income to the ports.

Ports are connected to the hinterland of the country through roads and rail network. Ports have dedicated railway lines to carry cargo to and fro from port. Both central and western railway operates cargo trains to and fro from ports.

1.5.2 MUMBAI PORT TRUST—THE PORT UNDER STUDY

There are 12 major ports along the Indian coast line. Six ports are on the west coast and six on the east coast. Mumbai port is the premier port along the west coast of India. It was established in 1873 and has been the main gateway to the EXIM trade of the country over last 137 years. Mumbai port’s contribution to the economic development of the country is unmatched. Mumbai port has carved a unique niche for itself in the Indian commercial geography. The port has completed 137 years of dedicated service to the nation. For decades, Mumbai port has remained India’s premier port. Even today, with the development of other ports within the vicinity, it caters to 10% of the total sea borne traffic handled by major ports of the country in terms of volume. It handles 20% of petroleum traffic and 16% of general cargo handled by major ports of India.10

10 Insight-2009(2009); Compiled by Planning and research Department, Mumbai port trust;
The Port of Mumbai has long been the principal gateway of India. Strategic location is one factor in its special favor. It lies midway along the west coast of India and is gifted with a natural deep-water harbor of 400 sq.Kms protected by mainland of Konkan on its east coast and island of Mumbai on its west. The deep waters in the harbor provide secure and ample shelter for shipping throughout the year. This gift of nature has been developed by the enterprise of men with vision and purpose, with the result that in the matter of natural facilities for shipping, Mumbai Port is one of the fortunate amongst the world ports.

1.5.3 SALIENT FEATURES OF THE EXISTING SYSTEM OF COSTING IN PORT SECTOR.

The existing system of measuring cost and profitability in port sector is broad based and general. A service cost statement is prepared by the ports annually for analyzing the cost and profitability of various services. Ports consist of many berths, storage areas, railway stations providing services to the port users. Each of these berths, storage areas, railway stations is equipped with different facilities and equipments. Mumbai Port has berths, storage areas and railway stations. This broad analysis of cost is not useful for strategic decision making. Measures to strengthen the regulatory structures of major ports have also been initiated. These pertain to tariff rationalization and the establishment in a phased manner, of a corporate structure for the existing ports. Currently Indian ports cater strategic decision making. Measures to strengthen the regulatory structures of major ports have also been initiated. These pertain to tariff rationalization and the establishment in a phased manner of a corporate structure for the existing ports.

Currently Indian ports cater mainly to transshipment and coastal movement. Most of the Indian cargo is transshipped through hub ports like Colombo, Singapore
and Salalah. This results in an increase in the freight of Indian cargo. To resolve this problem, the government is planning to set up two hub ports, one each on the east and west coasts at Chennai and Jawaharlal Nehru Port at Mumbai. Further, it is proposed to develop an International Container Transshipment Terminal at Cochin Port on BOT basis. Thus major investment opportunities exist in:

- Leasing out assets of existing ports
- Construction and operation of terminals, berths and storage facilities
- Captive facilities for port based industries

To ensure that these major investment opportunities are effectively exploited by the existing ports, it is essential that cost effectiveness of the various berths, storage areas, railway stations are analyzed independently.

Considering the background stated above, it becomes essential to introduce Activity Based Costing in Mumbai Port trust so as to inculcate an element of rationality, pragmatism and progressive trend. The researcher has considered this as a platform for her enquiry. Hence the problem is stated as follows:

"PROFITABILITY OF ACTIVITY BASED COSTING IN THE PORT SECTOR WITH SPECIAL EMPHASIS ON MUMBAI PORT TRUST."

.6 RELEVANCE OF ACTIVITY BASED COSTING

Activity-based costing (ABC) is a costing model that identifies activities in an organization and assigns the cost of each activity resource to all products and
services according to the actual consumption by each: it assigns more indirect costs (overheads) into direct costs\(^\text{11}\).

In this way an organization can precisely estimate the cost of its individual products and services for the purposes of identifying and eliminating those which are unprofitable and lowering the prices of those which are overpriced.

In a business organization, the ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers. It is generally used as a tool for understanding product, service and customer cost and profitability. As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing and identification and measurement of process improvement initiatives.

1.6.1 APPLICATION OF ACTIVITY BASED COSTING IN VARIOUS SECTORS.

Initially, Activity based costing was developed for manufacturing industries. It is an appropriate system for industries ,both manufacturing and service, which have high overhead costs, Product/service diversity or multiple products/services, Customer diversity, service diversity and face stiff competition. Like manufacturing industries, service industries also have diverse products and customers which can cause cross-service, cross-customer subsidies. Since personnel expenses represent the largest single component of any service industry, these costs must also be attributed more accurately to various services and customers. Activity based costing, even though originally developed for manufacturing, may even be a more useful tool in service industries.

\(^{11}\) http://www.en.wikipedia.org/wiki/activity-based-costing
1.6.2 POTENTIALS OF APPLICATION OF ACTIVITY BASED COSTING IN PORT SECTOR.

Ports are infrastructure oriented sector. Ports render multifarious activities and have diverse users. Activity based costing in fact would be the most appropriate cost system for ascertainment and allocation of cost to various services in a port sector. Activity based costing need to be applied to port sector for following reasons:

- Port sector belongs to infrastructure industries necessitating investment in capital assets of great value and huge investment of funds.
- Huge capital investment and resultant heavy overhead costs need to be absorbed into various services and sub-services.
- As the tariff of the ports is fixed on cost-plus approach, correct ascertainment of cost with respect to each of the services of the port will facilitate in correct pricing strategies.
- Further, services rendered by ports cannot be standardized. Appropriate ascertainment and allocation of costs will enable ports to fix differential pricing to effectively combat competition in the market.
- Being a service sector, employee costs are very high. There are many common sub-services which are utilized by different main services. This necessitates proper allocation and apportionment of costs for correct ascertainment of total cost of a particular service.

1.6.3 RELEVANCE OF APPLICATION OF ACTIVITY BASED COSTING IN MUMBAI PORT TRUST

In the preceding paragraph, researcher has elaborated various reasons for application of Activity based Costing in port sector. Here the researcher is enlisting the following reasons for application of Activity based Costing in Mumbai Port Trust.
- Mumbai Port being an old port, its financial and cost systems is traditional and hence cannot cater to the needs of modern requirements.

- There has been technological advancements and up gradation in the collection of data with computerization and integrated systems.

- Mumbai port trust was always enjoying a monopolistic position along the west coast of India. However, in recent times with the development of Jawaharlal Nehru port trust and other minor ports along the west coast, Mumbai port trust is facing stiff competition.

- The existing conventional cost system prevalent in Mumbai port trust is inadequate to cater to the needs of pricing of the services. Tariff Authority of Major ports is a regulatory body for fixing the tariffs of the ports. This authority has prescribed cost plus approach for fixing tariff and allows 16% return on capital employed.

- Mumbai port being the oldest port carries huge employee strength. It is loaded with past liability in the form of pension to over 35000 ex-employees. The existing employee cost along with past liability forms 70% of the total cost of Mumbai port trust.

- Mumbai port is embarking into development projects like an off-shore container terminal, three harbor wall berths, second liquid chemical berth, improvement of rail and road connectivity, etc. All these projects will require huge capital investment which will be recovered over a long period of time. Appropriate ascertainment of cost is crucial in order to correctly price the services rendered and ultimately recover the investment.

Considering the reasons stated above for application of activity based costing to Mumbai Port Trust the need for installation of this system is rightly justified. The researcher is making an attempt to identify the potentials, probabilities and
possibilities of installing Activity based costing in Mumbai Port Trust. This will help in analyzing the likely strengths of the new proposed system, benefits that can be derived and the superiority of proposed system over conventional cost system of Mumbai Port Trust.

1.7 SCOPE OF THE RESEARCH

As stated above there are 12 major ports in India. However researcher has selected Mumbai port for this study. Mumbai is located on the west coast of India. It is considered as the financial capital of the country. The Port of Mumbai is gifted with a natural harbor which was commissioned in 1873. The Port of Mumbai has long been the principal gateway of India. It lies midway (Latitude 18° 56.3' N, Longitude 72° 45.9' E) on the West coast of India.

In the 2007-2008 shipping year, the Port of Mumbai handled a total of over 57 million tons of cargo, including 32.4 million tons of imports and 24.7 million tons of exports. The functionalities, capacity, facilities and other aspects of Mumbai Port Trust has been discussed in detail in chapter IV.

Researcher has selected Mumbai Port Trust as an institution under study to find out the feasibility for establishment of Activity Based Costing. Considering this researcher intends to study the following aspects of Mumbai Port trust.

Scope of study is defined as follows:

1) Researcher is studying only one organization namely MUMBAI PORT TRUST.
2) The study is related with analysis of existing cost system and its implications.

12 Administration Report-2007-08; Mumbai Port Trust-Performance Indicators.
3) The study deals with identifying the limitations of existing cost system.

4) The study provides insight as to applying Activity Based Costing as an alternative superior cost system.

1.8 METHODOLOGY OF RESEARCH

The present study is related with analysis of conventional cost system used in Mumbai Port trust. Hence, this is basically a study of one organization. Therefore, research methodology has the following salient features:

1) This is a study of one organization—MUMBAI PORT TRUST.

2) This is a case study of MUMBAI PORT TRUST.

3) This being a case study, researcher has collected empirical data from the organization as to the existing system about its establishment, features and functions.

4) This study is related with analysis of existing conventional cost system of MUMBAI PORT TRUST.

5) This is an evaluator study because researcher intends to identify the limitations of existing cost system and their impact on functioning and performance of Mumbai Port Trust. This study also suggests a course of action for development of a new cost system namely Activity based costing system. Hence it is suggestive in nature.

6) The study diagnoses critical elements and factors responsible for existing state of affairs and suggests course of action to improve upon.

7) This being a case study of a particular organization—MUMBAI PORT TRUST, it is necessary to identify measures for installation of Activity based costing system.

8) The study also suggests a proposed model for installation of Activity based costing system as a replacement to the existing system.
1.9 SOURCES OF DATA COLLECTION.

The researcher has collected data from both primary and secondary sources.

1.9.1 PRIMARY SOURCE

Primary sources of data are sources from where basic, core and first hand information is collected. The research being analytical in nature required substantial amount of first hand and core information. This data is basically related with

- Performance of the port.
- Financial analysis
- Cost structure
- Cost system
- Cost centers
- Pricing policies
- Tariff guidelines
- Government policies
- Port development in the five year plans
- Projects taken up by the port.

From this point of view, primary sources considered by the researcher are as follows:

- Annual accounts consisting of Income and expenditure statement, Balance sheet and cash flow statements.
- Administrative reports consisting of statistical and financial statements and tables, performance profile and chairman’s report.
- Cost statements giving income and expenditure of each cost and budget centre.
- Business plan giving details about port’s development plans and road map of the same.
Service cost statement giving the complete cost of each service rendered by port along with its profitability.

Tariff guidelines issued by Tariff Authority for major ports from time to time.

Guidelines and policies formulated by Government.

Role of ports in the overall plan development programs.

1.9.2 SECONDARY SOURCE

Secondary source of data is taken from outside sources to provide value addition to information obtained from primary source. Secondary data collected for purposes of this study is related with cost systems, information about installation of activity based costing system, conceptual inputs from books and other secondary sources.

The general secondary sources used are as follows:

- Texts books of Indian and foreign authors.
- Reports of various agencies
- Research reports
- Data regarding functioning of other ports in India
- Web sites related with ports and costing in ports.
1.10 **INSTRUMENTS OF DATA COLLECTION.**

The researcher has collected primary data by using structured questionnaire and interview schedules. The following are the details of instruments of data collection:

**TABLE NO. 1.1**

**DETAILS OF INSTRUMENTS OF DATA COLLECTION.**

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1.11 **TECHNIQUE OF DATA ANALYSIS**

Data is collected from different sources by researcher. Main features of data collection for this study are as follows:
1.11.1 PRIMARY QUANTITATIVE DATA

Researcher has collected primary quantitative data of financial nature from following sources:

(1) Cost sheet of Mumbai port trust.
(2) Financial information from annual reports.
(3) Audit reports up to financial year 2008-09.
(4) Cost audit report.
(5) Business plan of Mumbai port trust.
(7) Duties and responsibilities statement of cost officers of Mumbai port trust.
(8) Cost allocation and determination system.

The quantitative data is analyzed by using EXEL spread sheet.

Following statistical tools are used to evaluate this data:

- Measures of central tendency
- Numerical analysis

1.11.2 PRIMARY QUALITATIVE DATA

Opinions and views of the officers of Finance Department has been collected by researcher in order to understand functioning of existing conventional cost system, its features and limitations. Data is analyzed by using appropriate techniques.

Researcher has also used graphics namely Bar, Pie charts to exhibit data.

1.11.3 JUSTIFICATION OF TECHNIQUES OF ANALYSIS USED

Researcher has basic limitations as to number of respondents who is to respond regarding existing cost system and structures in Mumbai port trust. As the number of cost and finance officers in Mumbai port trust is limited in number, the
sample size is small and data is also very narrow and lopsided. Hence statistical analysis of responses of officers is not possible.

Financial and cost related data is analyzed wherever possible to identify limitations and pitfalls in the existing conventional cost system. However considering the element of secrecy, sensitivity of information and restrictions laid down by organization (Mumbai Port trust) only representative data is analyzed.

1.12 OBJECTIVES OF THE STUDY

Present study is a case analysis of a large Government undertaking i.e. Mumbai Port trust. Port trust as an organization has a vast scope in terms of number of activities, large size in terms of number of employees and enormous volume in terms of turnover and transactions conducted.

Present study is related with analysis and evaluation of cost systems in Mumbai Port trust. No organization can continue to grow with an established orthodox set of systems that cannot answer queries raised by environmental changes. Often established routine systems are unable to witness changes happening within the organization and their impact on the existing systems and policies

To compete with players in the market as well as to overcome situational and environmental constraints, reengineering and restructuring becomes essential. Introduction of new cost system to replace the existing conventional system is one such exercise in the line of development of organization.
From this point, researcher has laid down following major objectives of her study.

**TO EVALUATE STRENGTHS AND WEAKNESSES OF EXISTING CONVENTIONAL COST SYSTEM.**

Existing cost system was established quiet a long period ago wherein accounts and financial structures were simple and restrictive in nature. However with changes in economical and social environment, as well as changes in the approach of organizational development, cost systems like other systems is found ineffective to meet upcoming challenges. It is appropriate to understand, identify and enlist major strengths and weaknesses of the system, which cause hindrances in the organizational development.

**TO FIND OUT OPERATIONAL DIFFICULTIES IN MODIFYING THE EXISTING SYSTEM SO AS TO MEET THE CHALLENGESPOSED BY CHANGING ENVIRONMENT**

It is noticed that many systems which are found effective in a given set up and frame work of time lose their relevance and utility with a change in environment and organizational factors. This is quiet true even for conventional cost system in Mumbai Port trust . Researcher intends to find out as to what are the limitations of existing cost system which makes it redundant and inappropriate in the changing organizational dimensions.

**TO UNDERSTAND POSSIBILITIES AND POTENTIALS FOR ESTABLISHMENT OF ACTIVITY BASED COSTING**

Replacement of any system is a challenging activity because it invites resistance from different sections of the organization. Similarly, it is often difficult to
replace existing system because of non-availability of suitable inputs for establishment of new systems, limitations of technology, resource constraints and philosophical lethargy. The study intends to identify what are the likely difficulties in the installation of Activity Based Costing in Mumbai Port trust.

**TO PROPOSE A SUITABLE METHOD FOR ESTABLISHMENT OF ACTIVITY BASED COSTING IN MUMBAI PORT TRUST.**

Often it is theoretically easy to suggest modifications and reforms in any system or institutional working. However defining procedure, drafting the road map and charting out the blue print is a formidable challenge. From this point of view, researcher has tried to find out what are the essential requirements to establish the proposed cost system like Activity based Costing in Mumbai Port trust.

1.13 **HYPOTHESES**

The researcher has undertaken the study with following major Hypothesis.

**H 1 The existing conventional cost system adopted in Mumbai Port trust has functional limitations and limitations of principles.**

Mumbai Port trust was established in 1873. Since then in order to have right assessment of activities, proper ascertainment of cost and rational evaluation of performance, it became essential to establish balanced, comprehensive and logically accepted cost system. Considering this, Port authorities have taken initiative to install cost system which will cater to the needs of the organization.
Existing conventional cost system was established during the period when the scope and functioning of Mumbai Port trust was restricted due to limited operations, territorial scope and quantum of trade as well as operational activities.

In the last two to three decades Mumbai Port trust has modernized in terms of technique, expanded in terms of size and quantum, enlarged in terms of volume of activities and trading.

The process of advancement of any organization is never unidirectional. A change in one activity influences simultaneously other activities and at different levels both vertically and horizontally. As such with upgradation of technology, expansion in size and operational quantum, it became essential to upgrade financial and cost systems.

In last few decades even the science of costing has also enhanced in terms of new principles, techniques and systems. It has become imperative for Mumbai Port trust that a modified upgraded, competent and befitting cost system is established to meet new expectations and needs of the organization.

On this background, the statement of hypothesis is justified.

\textbf{H} 2 \textit{Installation of Activity Based Costing will help in implementation of differential pricing system as well as to assess profitability in most appropriate manner.}

Conventional cost system as presently implemented in Mumbai Port trust has witnessed certain limitations and as such cannot cope up with new requirements of cost department.
There are gradual and continuous changes in the accounting system, standards and procedures. National and apex institutions are adopting new standards considering global changes in the economy, trade, practices and settlement of trade agreements.

Cost systems also are being reviewed and revised taking into account new norms of ascertainment of cost, idea of introducing differential pricing system as well as revised guidelines issued by The institute of cost and works accountants of India.

The concept and practice of cost audit has also changed significantly. Rational assessment of profit, pragmatic assessment of expenses, just and logical ascertainment of various elements of cost as well as impact of technology on norms of measurement of cost demands that a more pragmatic cost system.

Considering these issues second Hypotheses that a rational cost system is required to assess profitability is justified.

H 3 Implementation of Activity Based Costing will result in enhancing port users' satisfaction, elimination of waste and improvement in financial efficiency.

Every advancement in any field of science results in modification, alteration and advancement of systems. Science grows with experiments, experience and explanation. A scientific experiment is an instrument of testing, validity and reliability. From this point of view, normative and social science have enhanced their quality and acceptability by refining and redefining existing concepts, procedures and systems.
Costing as science —extension of accounting science, has developed many specialized and specific services and system. There are continuous and gradual improvements in the managerial and cost related systems.

Many new concepts are applied, tested and found valid to improve functioning, efficiency and efficacy of organizations. Concepts like cost center, responsibility accounting are result of these experimentations.

Large organizations like Mumbai Port trust with established practices and procedures cannot grow and improve unless and until their procedures, practices and systems are continuously reviewed and improved. From this point of view, cost systems and procedures that are established by Mumbai Port trust should be revisited so as to identify limitations of existing conventional cost system, to examine the pitfalls and bottlenecks generated because of procedural acquaintances and myopic vision resulting in failure to see new trends.

Considering the above logic, it can be rightly stated that replacing conventional cost system will result in improving financial cost system vis a vis improvement in profitability, efficiency and effectiveness.

1.14 WORKING DEFINITIONS

For the purpose of this study, following terms have been defined by Researcher so as to decide the limits of present research work.

MUMBAI PORT TRUST

Researcher has considered Mumbai Port trust as defined in The Bombay Port Trust Act, 1879.
Section 3 of The Bombay Port Trust Act, 1879 states as follows:

"Port" means the port of Bombay within such limits as may, from time to time, be defined by Government for the purposes of this Act, by notification in the Bombay Government gazette, and till a notification is so issued within such limits as may have been defined by Government under section 73 of The Bombay Port Trust Act, 1873 for the purposes of that Act.13

Subsequently in 1996, by a Board Of trustees’ resolution, Bombay Port trust was renamed as Mumbai Port trust.

**COST SYSTEM**

The concept of Cost System for the purpose of this study means

"An accounting system established to monitor a company’s cost, providing management with information on operations and performance."14

**COVENTIONAL COST SYSTEM IN MUMBAI PORT TRUST**

The term "Conventional Cost System In Mumbai Port Trust" means and includes existing structures, procedures and policies related with various cost related activities. It includes ascertainment, determination and classification of cost, allocation, transfer and computation of cost. Similarly, setting up of cost structure and pricing policies are also a part of the existing conventional cost system of Mumbai Port Trust.

**ACTIVITY BASED COSTING**

The term Activity Based Costing means the following:

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13 Bombay Act No.VI of 1879; The Bombay Port Trust Act, 1879. Modified up to 1st February, 1926. Published by Government of Bombay, legal Department.

“It is a Cost accounting approach concerned with matching costs with activities (called cost drivers) that cause those costs. It is a more sophisticated kind of absorption-costing and replaces labor based costing system. ABC states that (1) products consume activities, (2) it is the activities (and not the products) that consume resources, (3) activities are the cost drivers, and (4) that activities are not necessarily based on the volume of production. Instead of allocating costs to cost centers (such as manufacturing, marketing, finance), ABC allocates direct and indirect costs to activities such as processing an order, attending to a customer complaint, or setting up a machine. A subset of activity based management (ABM), it enables management to better understand (a) how and where the firm makes a profit, (b) indicates where money is being spent and (c) which areas have the greatest potential for cost reduction.” Activity Based Costing has been developed by professors Robert Kaplan and Robin Cooper of Harvard University in late 1980's.  

1.15 CHAPTER SCHEME.

The study on Profitability of Activity based Costing in port sector with special emphasis on Mumbai port trust has been divided into 9 chapters as follows:

Chapter I: The research setting - Nature and scope of study.

This chapter gives an overview of the transport sector, its importance in the economic development of the country and importance of marine transport. It also covers in detail the research methodology which includes the problem definition, objectives of the study, hypotheses and their justification followed by scope of study.

Sources of data collection, techniques and instruments of data analysis and working definitions are covered in this chapter.

Chapter II: Development of cost accounting.

This chapter covers the history and development of cost accounting systems in the nineteenth and twentieth century. This chapter has covered cost accounting during first and second world wars followed by its development at the end of twentieth century. It also elaborates on the application of various cost accounting systems in areas like manufacturing, services, etc. Chapter II concludes with a detailed analysis of the impact of environmental changes on cost.

Chapter III: Activity based Costing (ABC): A Conceptual Analysis

In chapter III the researcher has done a review of literature from national and international literature on Activity Based costing. This chapter begins with a review of various literature about the history of the development of Activity based costing and its concepts. The researcher has also reviewed literature on the impact of ABC on product cost and profitability, adoption and implementation of ABC, benefits of ABC and its limitations.

Chapter IV: Mumbai port trust—The organization under study.

The researcher has chosen Mumbai Port trust for the case study. The chapter elaborates the importance of marine sector and shipping policies. The role of ports in the economic development of the country is elaborated in this chapter. Mumbai Port Trust—the organization under study gives the background and development of Mumbai port from its inception in 1873 and various facilities provided in Mumbai port. The administration set up of Mumbai port trust, development of Mumbai port
during five year plans, future projects and development of Mumbai port are elaborated in this chapter.

**Chapter V: Cost systems of Mumbai port trust**

Financial and cost accounting systems of Mumbai port trust are analyzed in detail in this chapter. The various income and expenditures heads are explained in this chapter. Management accounting system and functionalities of costing department are enumerated in detail. This chapter also includes procedure of Overhead allocation in Mumbai port trust.

**Chapter VI: Cost considerations and determinants in Mumbai Port Trust.**

Chapter VI details the income and expenditure components in each type of service rendered by Mumbai Port trust. Further the chapter elaborates on cost guidelines prescribed for tariff fixation of ports and pricing policies of ports. This chapter concludes with various pitfalls of the existing conventional cost system which is classified into operational, functional and managerial.

**Chapter VII: Cost systems in Mumbai Port Trust: Insights from analytical study (I)**

This chapter highlights the changing scenario of Indian economy and its impact on the port sector. The changing economic and operational scenario in Mumbai port is elaborated here. Chapter VII looks at the critical factors influencing the need to change the existing cost system in Mumbai port trust.
Chapter VIII: Analysis and interpretation of data: Responses of the officers of Mumbai Port Trust (II).

The responses obtained from 20 officers of Mumbai port trust who are working in the finance and cost department are analyzed in this chapter. Forty two questions were posed through a questionnaire by the researcher covering in section A personal details of the respondents, in section B seeking responses with respect to different aspects of Mumbai port trust, in section C opinions of the respondents were sought about the existing cost system of Mumbai port trust and in section D the respondents views and knowledge level about Activity based Costing has been sought. All responses has been analyzed and conclusions based on the responses has been arrived at.

Chapter IX: Conclusions and suggestions.

This chapter being the concluding chapter concentrates on conclusions derived from the study by the researcher and suggestions for a new and improved system of costing to be introduced in Mumbai port trust. A model depicting the road map for implementation of activity based costing in Mumbai port trust has been developed. The hypotheses stated in the first chapter are proved in conclusion.