CHAPTER VIII

ANALYSIS AND INTERPRETATION OF DATA: RESPONSES OF THE OFFICERS OF MUMBAI PORT TRUST (II)

8.1 INTRODUCTION

This chapter deals with the analysis of specific issues related with the installation of Activity Based Cost systems, challenges and critical areas to be addressed. In order to understand the views and opinion of the officers of Mumbai port trust, researcher had structured a questionnaire comprising of forty-two questions.

The researcher, in order to elicit the responses of the officers of Mumbai port to the introduction of Activity based Costing in Mumbai port, circulated the questionnaire. The researcher then interviewed and collected information from 20 officers of Accounts department. All officers have more than 10 years experience in the Finance department. The researcher intends to assess the opinions of the officers about installation of Activity Based Cost system and its application.

The purpose of this is as follows:

(i) To understand the limitations of the existing cost system.
(ii) To examine the constraints in proper allocation of cost in the existing system,
(iii) To analyze the limitations of the existing cost system in appropriate cost ascertainment.

The views of the officers are useful to know and understand various functional and practical aspects associated with cost ascertainment. It is observed by the researcher that, cost system being dynamic with many flexible and time relevant
dominant factors, it is necessary to identify variables and factors that influence the applicability of Activity Based Cost system.

The researcher is of the opinion that installation of a suitable cost system is not an independent and isolated issue. It has many functional and operational dominant factors. These factors can be external and internal to the organization. Hence such a study is not complete without proper analysis as well as understanding of the opinion of those who will operate, install, implement and work with the system.

General as well as relevant information as to the applicability of the Activity Based Cost system is thus collected from the respondent officers. The information with the comments and observations of the researcher is presented below.

The questionnaire has been divided into 4 sections. Areas of respondent’s opinion sought in these sections are briefly brought out as follows:

1. **Section A:** This section deals with personal details of the officers like Qualifications, short courses attended and experience in the port and finance areas.

2. **Section B:** This section seeks the opinion of the respondents about the Core activity of the port, Number of services rendered by the port, Number of port employees, Organizational structure, current operational trend in the port, important factors affecting the port and tariff fixation, adaptation of the port and change in its policies to the changed economic scenario and the degree of competition faced by the port and its impact on tariff fixation.

3. **Section C:** The questions in this section seek responses with respect to the opinion of the respondents to the existing cost system at Mumbai port. Information with respect to type of cost accounting techniques used in the port, costing methods, basis for allocation of overheads, importance of various
factors in the allocation of overheads, percentage of various elements of cost in the total cost of the port, information provided by the present cost system, extent to which the top management use cost accounting information, respondents opinion about the cost accounting system and overhead allocation.

Section D: The questions in this section are mainly for ascertaining the knowledge of the respondents about Activity Based Costing, factors which will influence the port to change the cost system, whether the respondents support implementation of Activity Based Costing and the likely benefits, which the port will derive from implementing Activity Based Costing.

Thus from the above it is clear that the questionnaire covers the entire gamut of the need to introduce a new cost system and cost system suitable in the present economic and operational scenario of the port.

The analysis of the responses of 20 respondents with respect to the questions posed in the questionnaire is given below. Detailed analysis with respect to the responses to each of the question in the questionnaire is carried out to understand the opinion of the officers about the present economic scenario and environment of the port, the efficacy of the present cost system, necessity to introduce a new system and appropriateness of ABC as a cost system in the port.

The researcher has attempted to analyze each question in the questionnaire, its relevance to the study and the responses of the respondent.

8.2 Section A

QUALIFICATION OF THE OFFICERS

The term qualification (educational) usually refers to the educational or academic performance or achievement of the respondent. It also indicates the level of education acquired and its implication on performance of duties, functions and
activities assigned. In certain select cases qualifications are associated with positions acquired and professional experience gained. From this point of view the researcher has taken into account the qualification of the respondents.

The information is presented in the following table.

**TABLE NO. 8.1**

**QUALIFICATION OF THE OFFICERS**

<table>
<thead>
<tr>
<th>Degree Name</th>
<th>Subject</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Ph.D Degree</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2- Professional Degree</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>3- Master Degree</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4- Bachelor Degree</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>5- Diploma</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>6- Secondary Education</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

**GRAPH NO.8.1G**

**QUALIFICATION OF THE OFFICERS**
The data in the table clearly indicates that most of the officers contacted as respondents are having a professional qualification. This indicates that professional qualification being a prerequisite for the position attained, they have acquired this degree. The professional qualification (Management Accountancy or Chartered Accountancy) is a prerequisite for the job as a mandatory or essential qualification.

However it is also noticed that apart from the minimum required professional qualification no other qualification is acquired by the respondents, which may add to their knowledge, area of activity or professional acumen.

SHORT COURSES ATTENDED

There are many new aspects and improvements taking place in all areas and more so in the area of Finance. Globalization has brought about lot of changes and improvements in Finance and other related areas. Officers of any organization need to update themselves with all the changes taking place in their area of specialization. They should keep themselves abreast with the latest happenings in their core area and other related fields. There are dynamic changes taking place both in the financial and management accounting areas like the method of preparing financial statements with the introduction of International Financial Standards, new management accounting systems with application of Just In Time approach, Balanced score Card. Further, in the area of taxation, one of the most important areas in finance, new taxes like service tax, value Added tax are being introduced along with many amendments in the existing tax laws. Taxes have tremendous impact on the costing of products and services. Hence it has become essential for the officers in the field of finance to attend short duration courses to gain knowledge to improve their efficacy.
However it is seen from the responses of the officers that very few of them have attended short courses to be updated. The respondents have not attended courses in the new areas of finance and hence do not appear to be updated.

CURRENT POSITION

The organization has a hierarchy, which is depicted, by an organization chart. The chart shows the flow of authority and responsibility. It also shows the levels of decision-making. From the chart, it is easy to ascertain at what level which type of decisions can be taken. The question about the current position of the respondents was posed to them to understand their positions in the organization structure and level of authority enjoyed by them to take decisions with respect to change in the costing system of Mumbai port.

CHART NO.8.1C

MUMBAI PORT TRUST

ORGANISATION CHART - ACCOUNTS DEPARTMENT

![Organization Chart]

SOURCE: ORGANISATION MANUAL, MUMBAI PORT TRUST
From the above organization chart, the hierarchy followed in Mumbai port trust can be understood. Financial Advisor and chief accounts officer is in overall control for policy decisions and general functioning. Deputy Chief Account officer senior and junior assist him in this activity. Senior accounts officer and junior accounts officer support them in the day-to-day functioning. The Financial advisor is a management accountant.

Chartered and management accountants occupy Deputy Chief Accounts officer and senior officers positions.

Following table gives the current position of 20 respondents in the organization.

TABLE NO.8.2
CURRENT POSITIONS OF OFFICERS IN MUMBAI PORT TRUST
ACCOUNTS DEPARTMENT

<table>
<thead>
<tr>
<th>Score</th>
<th>(A) Chartered accountant</th>
<th>(B) Management accountant</th>
<th>(C) Others – (Pl. Specify)(post graduates and graduates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>(A) Chartered accountant</td>
<td>(B) Management accountant</td>
<td>(C) Others – (Pl. Specify)(post graduates and graduates)</td>
</tr>
<tr>
<td>5</td>
<td>(A) Chartered accountant</td>
<td>(B) Management accountant</td>
<td>(C) Others – (Pl. Specify)(post graduates and graduates)</td>
</tr>
<tr>
<td>10</td>
<td>(A) Chartered accountant</td>
<td>(B) Management accountant</td>
<td>(C) Others – (Pl. Specify)(post graduates and graduates)</td>
</tr>
</tbody>
</table>
From the responses given in table no. 8.2, the researcher has observed that out of 20 respondents, 50% are professionals and occupying important positions that of chartered accountant and management accountant in the organization. The other 50%, which are not professionals, but have a commerce background and are involved in routine and establishment related activities. The professionals are involved in the sphere, which are connected with financial and costing activities of Mumbai port. Further these respondents occupy positions, which are at higher levels in the organization chart, many of them at top level, and can take important policy decisions including change in the costing system of the organization.

EXPERIENCE

According to Macmillan dictionary Experience means “Knowledge and skill that is gained through time spent doing a job or activity”. Ability, skill and power are synonyms to the word Experience.

In order to understand the level of ability and skill possessed by the respondents, the researcher posed the question about the number of years of service that the respondents have worked in the organization as well as in the finance department. The main intension of the researcher in posing this question to the
respondents was to ascertain their experience in the field of finance and knowledge about the finance function of the organization. The experience of working in the organization enables a person to gain insight into the procedures, rules and regulations of the organization. Long years of work experience in the same organization helps a person to develop familiarity and adaptation to work culture. The following tables depict 20 respondent’s length of service and their experience in finance department of Mumbai port.

**TABLE NO 8.3**

EXPERIENCE OF THE OFFICERS IN MUMBAI PORT TRUST

<table>
<thead>
<tr>
<th>Score</th>
<th>(A) Less than 5 years</th>
<th>(B) 5-10 years</th>
<th>(C) 11-20 years</th>
<th>(D) More than 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCORE</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>13</td>
</tr>
</tbody>
</table>

**TABLE NO 8.4**

EXPERIENCE OF THE OFFICERS IN FINANCE DEPARMENT

<table>
<thead>
<tr>
<th>Score</th>
<th>(A) Less than five years</th>
<th>(B) 5-10 years</th>
<th>(C) 11-20 years</th>
<th>(D) More than 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

From the above table, it is clear that 60% of the respondents have more than 20 years of experience both in the organization as well as in the finance department. Remaining 40% have experience for more than 5 years. From the above information,
it is clear that majority of the respondents contacted have good exposure both in the organization as well as in the finance department. Also the researcher is of the opinion that the respondents chosen can adequately give information about the present cost system, lacunae in the existing system, about changes taking place, both functional and operational, in the organization and appropriateness of ABC in the port.

8.3 Section B

CORE FIELD OF ACTIVITY

The second section of the questionnaire mainly deals with the general information about the port and the trends in the current scenario.

The first question in this section is with respect to the core field of activity of the organization. The researcher posed this question to the respondents to know whether the respondents are aware about the core activity of their organization. Mumbai port deals with the EXIM trade of the country. The port handles exports and imports. Shipping relates to ownership of ships and the shipping companies are involved in chartering the ships for transporting cargo from one country to another or within the country itself.

Port related services are concerned with freight brokers or clearing and forwarding agents or transport providers etc. Port services include piloting and towing the vessels to the berths, berthing the vessels, loading and unloading cargo, etc.

The following table gives the responses to this question about the core activity if Mumbai port by the respondents.
TABLE NO. 8.5

CORE FIELD OF ACTIVITY OF MUMBAI PORT TRUST

<table>
<thead>
<tr>
<th></th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Shipping</td>
<td>0</td>
</tr>
<tr>
<td>(B) Port services</td>
<td>16</td>
</tr>
<tr>
<td>(C) Port related services</td>
<td>4</td>
</tr>
<tr>
<td>(D) Others (please specify)</td>
<td>0</td>
</tr>
</tbody>
</table>

GRAPH NO. 8.3G

CORE ACTIVITY OF MUMBAI PORT TRUST

From the above responses it is clear that 80% of the respondents know about the core activity of Mumbai port, which is a port service. This clearly shows that the respondents have good understanding about the functioning of their organization. Their experience in the organization and finance department has given them adequate exposure to various activities of the port. 20% of the respondents however feel that Mumbai port is rendering port related charges.
ORGANISATIONAL STRUCTURE

The information about the organizational structure was sought from the respondents in order to ascertain the flow of authority and responsibility. Decision-making and policy formulation are important aspects of any top management. It is essential for the researcher to understand the factors which dominate and influence the decision making process in the organization. The main intention of posing this question to the respondents was to ascertain the type of organizational structure of Mumbai port.

The responses to this question are tabulated below:

TABLE NO 8.6

<table>
<thead>
<tr>
<th>ORGANISATIONAL STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>(A) Centralized decision-making Authority.</td>
</tr>
<tr>
<td>(B) Several hierarchical levels Of organization structure</td>
</tr>
<tr>
<td>(C) Dependence on rules, regulation and procedures.</td>
</tr>
</tbody>
</table>

From the above table it is clear that majority of the respondents opine that there is centralized decision making authority. For administrative convenience some routine decision-making powers have been de-centralized. But all major decisions like investment in projects, Major policy changes, etc. need the approval of Ministry.
About 85% of the respondents have stated that there are several hierarchical levels in Mumbai port. In finance department there are six levels in the officer’s cadre. There is Deputy Chairman, Chairman and Board of trustees above financial advisor.

90% of the respondents have stated that there is complete dependence on rules, regulations and procedures at Mumbai port. The functioning at Mumbai port is procedure oriented and is governed by various rules and regulations. The organization is 134 years old and most of the procedures are practiced over long years.

CURRENT OPERATIONAL TREND IN MUMBAI PORT

The question about the current operational trend was asked with a specific idea in mind. It is to know what are the contemporary issues associated with activities, functions and development programs undertaken by an organization like Mumbai port. It also indicates the researcher’s approach to know issues, challenges and activities that have a great bearing on installation of ABC.

This also indicates as to how the system of costing as well as other activities is being undertaken, operated and responding to different environmental, functional as well as core issues of Mumbai port.
The responses of the officers are presented below:

**TABLE NO 8.7**

**CURRENT OPERATIONAL TRENDS IN MUMBAI PORT TRUST**

In numbers

<table>
<thead>
<tr>
<th></th>
<th>Not at all extent</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Capital intensive operations</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>(B) Diversity in operations</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>(C) Intensity of competition amongst Major Ports</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>(D) Competition from Minor Ports</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(E) Latest technologies in Port operations.</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(F) Flexibility in operations</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(G) Variation in size and Number of operations</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

The information in the statement of responses help to draw following major conclusions:

(i) Diversity in the operations is the principle issue or trends that is being addressed as a major trend by the respondents. They feel that the changes taking place in economy, role of port in the transport system, these issues have gained a great importance.

(ii) The officers contacted are also of the opinion that the capital intensive nature of activities and operations are also equally important issues that has a significant bearing on the activities of the port.
(iii) Similarly the variation in size and number of operations of Mumbai port needs to be properly addressed to by the authorities of Mumbai port on priority basis.

IMPORTANT FACTORS IN MUMBAI PORT

There are various factors that affect the functioning of any organization. This question was asked to the respondents with the main idea to ascertain the respondents’ opinion about the factors, which affect the port sector. The researcher is interested in understanding the main factors, which impact the port functioning.

Ascertainment of correct cost plays a vital role while analyzing these factors. Where quality of services is an essential factor and where tariff does not affect materially, charges can be levied commiserate with the services rendered. However, port being commercial organization and functioning in a highly competitive scenario, the factors, which the researcher has envisaged, play a crucial role. Thus the researcher has tried to understand the views of the respondent officers about the factors, which the researcher feels are important.

The following table gives the views of the respondents to the factors which are important.

<table>
<thead>
<tr>
<th>TABLE NO 8.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPORTANT FACTORS IN MUMBAI PORT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Little important</th>
<th>Normal important</th>
<th>Substantial important</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Tariff</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>(B) Cost</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>(C) Quality of service rendered</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>(D) Reliability of services</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>(E) Variety of services</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>
From the responses given in the above table following inferences can be drawn:

(i) 65% of the officers who were administered the questionnaire have stated that tariff is extremely important to the port. Correct fixation of tariff will enable revenue generation for the port. Presently, port tariff is fixed on cost plus approach.

(ii) The second factor that the researcher has asked is cost. Profitability of any activity depends on its cost. Higher the cost lower is the profitability. Majority of Officers have opined that cost is a crucial factor that affects the functioning of a port. As opined in the previous question capitals intensive natures of port activities are highly costly and hence cost need to be effectively monitored.

(iii) A port can retain its users only when the qualities of services rendered are maintained at the best levels. 50% of the officers agree that qualities of services rendered are extremely important and remaining 50% also feel agree that qualities of services rendered are important.

(iv) The Exim trade of the country takes place through the ports. Mumbai port is located strategically and plays a pivotal role in the foreign trade along the west coast. The services rendered by the port should be reliable. 80% of the officers have agreed that reliability of services is an important factor in port functioning.

(v) Mumbai port renders variety of services. 40% of the officers have opined that variety of services rendered is normally important whereas 30% feel that it is extremely important. From the responses it is clear that officers do agree that
port should render variety of services rather than concentrate only in specific activities.

(vi) Time is the essence in any business. Foreign trade of the country runs into crores of rupees. Slow service or inefficient rendering of service can be damaging to the business of the port. All the respondents feel that timely rendering of service is important and 40% feel that it is extremely important.

(vii) Till recent years Mumbai port was enjoying a monopolistic position as it is one of the oldest ports of India. Mumbai port was handling a major share of the cargo throughput of the country. However, with the construction of Jawaharlal Nehru port just across the harbour with all modern facilities, Mumbai port started facing severe competition especially in container handling.

50% of the respondents feel that marketing of services has become an essential requirement in the current scenario of high competition. Only 10% feel that marketing of services is of little importance. 40% feel that this is substantially to extremely important factor.

IMPORTANT FACTORS TO BE CONSIDERED WHILE FIXING THE TARIFF STRUCTURE OF PORT SERVICES

There are four important factors, which need to be considered while fixing the tariff structure of the port services. This question was posed to the respondents in order to find out their opinion about the level of importance of these factors while fixing the tariff structure of the port services. The researcher is interested in eliciting the respondent’s opinion to ascertain the level of importance of service cost, stakeholder’s demands, competition and the surplus from operations while fixing the tariff structure of the port services.
The researcher has considered the following four factors which are important while fixing the tariff structure of the port services:

(I) Service cost:

The cost of providing service is very vital while fixing the tariff structure of the port services. The service cost comprises of both direct and indirect cost. Direct cost includes labor cost, equipment cost, stores, materials and repairs and maintenance. Indirect cost includes all allocated and apportioned cost. Any organization to attain profitability should fix tariff, which will not only recover the cost but also will generate some profit. The regulatory authority monitors the levels of profit that can be earned by ports. TAMP has capped the level of profit that the ports can earn to the extent of 16% of Return on capital employed.

(II) Stakeholders demand

There are various stakeholders i.e. users of port services like shipping lines, freight brokers, clearing and forwarding agents, transport contractors, oil companies, etc. While fixing the tariff of the port, TAMP adopts a consultative process with all the stakeholders. Comments from all stakeholders are called for and a common hearing is held by TAMP to understand the issues of the stakeholders resulting from the tariff fixed by the port.

(III) Competition

Till about last two decades port government governed sector and all major ports of India were under the control of Ministry of Surface transport. With the introduction of globalization and privatization, port sector has been opened up to private sector. With the result, there are about 200 minor ports along the coastline of India. Further these are modern ports providing cost effective services with modern equipments and handling methodologies.
Speedier discharge of cargo and efficient handling by these ports has resulted in diversion of traffic from older and cost ineffective ports. Thus, it is essential to focus on competition while fixing the tariff structure of the port services.

(IV) Surplus from operations

The port renders many services, which are broadly classified into different operations. Some operations are profitable whereas some others are running in losses. While fixing tariff, TAMP considers the overall profitability. No increase in charges is allowed in operations rendering surpluses. Oil cargo handling being in surplus, TAMP does not sanction any increase in tariff proposed for oil cargo even though oil cargo can observe the increase of tariff.

The following table gives the views of the respondents

TABLE NO 8.9

IMPORTANT FACTORS TO BE CONSIDERED WHILE FIXING THE TARIFF STRUCTURE OF PORT SERVICES

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Little important</th>
<th>Normal important</th>
<th>Substantial</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Service cost</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>(B) Stakeholders demand</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>(C) Competition</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>(D) Surplus from operations</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

From the responses given in the above table following inferences can be drawn:
(i) 65% of the respondents are of the opinion that service cost is extremely important while fixing the tariff of port services. Remaining 35 % also feel that service cost is substantially important.

(ii) 80% of the respondents are of the view that stakeholders demand is normally important to extremely important. They are of the opinion that users opinions and views need to be considered while fixing port tariff.

(iii) Similarly, 85% of the respondents opine that competition plays a crucial role while fixing tariff for port services. The respondents are of the view that port should fix tariff competitively in order to ensure that traffic is not diverted to other ports because of comparatively higher tariff.

(iv) 90% of the respondents agree that surplus generated from the operations play a important role while fixing tariff of port services. The respondents are of the view that port operations should generate surpluses.

AN ANALYSIS OF ADAPTATION OF PORT POLICIES TO CHANGED ECONOMIC SCENARIO DURING LAST DECADE.

Last two decades have experienced dynamic changes in the economic scenario not only in India but also all over the world. Globalization, Liberalization and privatization introduced by Indian government in the last decade has brought about revolutionary changes in the economic scene of the country.

This question was posed to the respondents with the basic intention of eliciting information from them about the policy changes made by the port to adapt to the changed economic scenario. Economic liberalizations have brought about tremendous impact on the port sector and the researcher is interested in understanding the steps taken by Mumbai port to effectively tackle the changed economic scenario.
With this in mind, the researcher elicited the following information from the respondents:

**TABLE NO 8.10**

**ANALYSIS OF ADAPTATION OF PORT POLICIES TO CHANGED ECONOMIC SCENARIO DURING LAST DECADE.**

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) The port has constantly changed its policy to adapt with economic changes</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>(B) The port has changed its policy to keep up with the current changes</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>(C) The port has restructured or reorganized to survive</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>(D) The port has introduced new services</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(E) The port has introduced total quality standards</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>(F) The firm adopted equalizing policy for its workers.</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

The above table gives the responses of the respondents from which the following results emerge:

(i) 80% of the respondents are of the view that the port has constantly changed its policy to adapt with economic changes. Port has identified areas where privatization can be implemented. Port is in the process of undertaking many projects with private participation.
(ii) 50% of the respondents feel that port has changed its policies to keep up with current changes only to some extent whereas the other 50% feel that port has changed its policies to a large to medium extent.

(iii) Majority of the respondents i.e. 80% are of the opinion that port has restructured or reorganized in order to survive in the changed economic scenario only to a limited extent. Only 20% feel that port has restructured to a large extent.

(iv) 50% of the respondents are of the opinion that port has introduced new services only to some extent and 25% feel that port has introduced new services to a medium extent. Whereas 25% feel that port has not at all introduced any new services.

(v) 50% of the respondents have opined that port has introduced total quality standards. Mumbai port is one of the few ports in India which ISO 9001-2008 (International Organization for Standards) compliant. Accordingly, the port has developed quality standards which needs to be adhered to by the port at all times. The other 50% feel that the port only to some extent has prescribed quality standards.

(vi) 75% of the respondents are of the opinion that the port has not adopted qualifying policy for its workers to suit the changed economic scenario. However, 25 % feel that port has adopted qualifying policies for its workers.

CHANGE IN PORT POLICIES TO KEEP UP WITH GLOBALISATION AND INFORMATION TECHNOLOGIES.

The researcher is interested in knowing the respondents opinion about changes made in port policies as a result of globalization and information technologies.
Mumbai port being one of the oldest ports required a lot of changes in its policies and
system of working.

Respondent’s opinion is given in the following table:

TABLE NO 8.11
CHANGE IN PORT POLICIES TO KEEP UP WITH GLOBALISATION AND
INFORMATION TECHNOLOGIES.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

From the above table, it can be seen that 75% of the respondents are of the
opinion that port policies have been changed only to some medium extent as a result
of globalization and information technologies whereas the remaining 25% are of the
opinion that port has made lot of changes in its policies.

DEGREE OF COMPETITION FACED BY THE PORT IN THE CURRENT SCENARIO.

With the introduction of minor ports, privatization of port operations and
modernization of port infrastructure port operations have become extremely
competitive. Mumbai port being one of the oldest port is still to gear up to face
competition. Infrastructure facilities in the port are not modern and port operations are
still being handled by its own workforce. The researcher is interested in knowing the
respondents opinion about the extent of competition faced by the port.

The following table gives the responses to this question:
TABLE NO 8.12

DEGREE OF COMPETITION FACED BY THE PORT IN THE CURRENT SCENARIO.

<table>
<thead>
<tr>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>9</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

About 45% of the respondents feel that the port faces competition only to a medium extent whereas 55% feel that the competition faced by the port is to a high to very high extent.

EXTENT TO WHICH TARIFF INFLUENCES THE PORT'S COMPETITIVENESS.

Till two decades earlier, there were not many ports along the Indian coast line. Few ports that were then in existence handled all the EXIM cargo of the country. So the port tariff was not regulated and each port fixed tariff based on what the traffic can bear. Though the port charges form only 2-3% of the entire chain of movement of cargo in the import export trade, it does play a crucial role in the overall costing.

In order to understand the respondent’s opinion about the extent to which tariff influences port’s competitiveness, the researcher posed this question to the respondents. The following table gives the responses:

TABLE NO 8.13

EXTENT TO WHICH TARIFF INFLUENCES THE PORT'S COMPETITIVENESS.

<table>
<thead>
<tr>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>17</td>
<td>0</td>
</tr>
</tbody>
</table>

85% of the responses state that tariff influences the port’s competitiveness to a high extent. A cost effective port is always in demand for port users.
8.4 SECTION C

In this section the researcher has posed questions to the respondents to get their opinion and views on the existing cost systems and procedures of the port. The researcher is of the opinion that these responses are important in order to understand the level of awareness of the respondents about the existing costing systems of the port.

IMPORTANCE OF COST AND MANAGEMENT FUNCTIONS OF FINANCE

Following table gives the responses to the question relating to whether Cost and management accounting is one of the most important functions of finance in your port.

**TABLE NO 8.14**

**IMPORTANCE OF COST AND MANAGEMENT FUNCTIONS OF FINANCE**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>3</td>
</tr>
</tbody>
</table>
85% of the respondents have stated that Cost and management accounting is one of the most important functions of finance in Mumbai port.

INTEGRATION OF COST AND FINANCIAL ACCOUNTING

Researcher has elicited information from respondents about the integration of cost and financial accounting in Mumbai port trust.

Out of 20 respondents, 17 i.e. 85% felt that there is integration of cost accounting and financial accounting systems in the port.

EXISTENCE OF COST OR COST MANAGEMENT DEPARMENT IN THE PORT

This question was posed to the respondents to understand their awareness about the existence of cost or cost management department in Mumbai port trust.

Out of 20 respondents, 15 i.e.75% were aware that a cost management department was in existence in Mumbai port trust. Mumbai port has a costing cell which is a section of the Finance department.
COST ACCOUNTING TECHNIQUES USED IN MUMBAI PORT TRUST

The researcher has posed questions to get the respondent’s opinion on the costing techniques followed in the port. The following table states the responses to this question.

**TABLE NO.8.15**

**COST ACCOUNTING TECHNIQUES USED IN MUMBAI PORT TRUST**

<table>
<thead>
<tr>
<th>(A) Job costing</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) Process costing</td>
<td>5</td>
</tr>
<tr>
<td>(C) Target costing</td>
<td>5</td>
</tr>
</tbody>
</table>

50% of the respondents have stated that the port is following job order costing techniques while 25% feel that process costing technique is being followed. The remaining 25% feel that target costing technique is being followed.

COSTING METHODS FOLLOWED IN MUMBAI PORT TRUST

The researcher has posed the next question on the costing methods followed in the port. The table below shows the opinions of the respondents to this question.

**TABLE NO 8.16**

**COSTING METHODS USED IN THE PORT**

<table>
<thead>
<tr>
<th>(A) Actual method</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) Standard method</td>
<td>3</td>
</tr>
<tr>
<td>(C) Normal method</td>
<td>2</td>
</tr>
</tbody>
</table>

75% of the respondents opine that actual method is being followed in the port whereas the rest feel that standard or normal method is being followed in the port.
Further the researcher is interested in understanding from the respondents the costing methodology followed in the port for preparation of cost sheet and reports. The responses are given in the table below.

**TABLE NO 8.17**

**COSTING METHODOLOGY FOLLOWED IN MUMBAI PORT TRUST**

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Full absorption costing</td>
<td>16</td>
</tr>
<tr>
<td>(B) Utilized capacity costing</td>
<td>2</td>
</tr>
<tr>
<td>(C) Indirect costing</td>
<td>0</td>
</tr>
<tr>
<td>(D) Variable costing</td>
<td>2</td>
</tr>
</tbody>
</table>

80% of the respondents have stated that Full absorption costing is followed while preparing cost sheets and reports. 20% feel that utilized capacity costing or variable costing is being followed while preparing cost sheet and reports.

**COMPUTERISATION OF COST SYSTEMS**

The researcher is keen to know whether the cost systems in the port are computerized. The responses to this question is given below,

**TABLE NO 8.18**

**COMPUTERIZATION OF COST SYSTEMS**

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>20</td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
</tr>
</tbody>
</table>
The respondents were unanimous in their opinion to this question posed by the researcher regarding the computerization of the accounting system of the port. They all agreed that the accounting system of the port was fully computerized.

**BASIS FOR ALLOCATION OF OVERHEADS**

The researcher has posed this question with an intention to know the respondent's views and understanding about the basis of allocation of overhead followed in Mumbai port. The table below enumerates the responses:

<table>
<thead>
<tr>
<th>BASIS FOR ALLOCATION OF OVERHEADS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct labour hours</td>
<td>2</td>
</tr>
<tr>
<td>Direct labour costs</td>
<td>4</td>
</tr>
<tr>
<td>Equipment utilization hours</td>
<td>1</td>
</tr>
<tr>
<td>Direct material cost</td>
<td>0</td>
</tr>
<tr>
<td>Total cost</td>
<td>13</td>
</tr>
<tr>
<td>Percentage to total cost</td>
<td>0</td>
</tr>
<tr>
<td>Policy decision</td>
<td>0</td>
</tr>
<tr>
<td>Any other methodology</td>
<td>0</td>
</tr>
</tbody>
</table>

65% have stated that overhead cost of the port is absorbed based on the total cost whereas 20% feel that it is based on direct labour cost and the remaining feel that it is based on direct labour hours or equipment utilization hours.
RECOGNITION OF ACTIVITIES AND ALIGNING THE SAME TO OPERATIONS AND OBJECTIVES OF THE PORT

In order to understand the existing system better, the researcher has asked the respondents whether the port recognizes activities and aligns them to operations to which the respondents have given the following responses:

TABLE NO 8.20
RECOGNITION OF ACTIVITIES AND ALIGNING THE SAME TO OPERATIONS AND OBJECTIVES OF THE PORT

<table>
<thead>
<tr>
<th>YES</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>2</td>
</tr>
</tbody>
</table>

RECOGNITION OF ACTIVITIES AND COST POOLS BY EXISTING COST SYSTEM OF MUMBAI PORT TRUST

The researcher is further interested in knowing whether the existing cost accounting system recognize activities and cost pools to which the responses are as follows:

TABLE NO.8.21
RECOGNITION OF ACTIVITIES AND COST POOLS BY EXISTING COST SYSTEM OF MUMBAI PORT TRUST

<table>
<thead>
<tr>
<th>YES</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>2</td>
</tr>
</tbody>
</table>
90% of the respondents have stated that the port recognizes activities and aligns the same to operations and objectives of the port as well as the cost accounting system of the port recognizes activities and cost pools.

IMPORTANT FACTORS INFLUENCING ALLOCATION OF OVERHEADS

The researcher is further interested in eliciting the respondent’s opinion and views about the importance of various factors in the allocation of overhead costs in the port. The factors taken into consideration by the researcher are Tariff fixation, cost control, External reporting, Cross subsidization, past liability, and Performance measurements. The respondent’s views are given below:

![Table 8.22]

90% of the respondents were of the opinion that tariff fixation is substantially to very important factor in the allocation of overheads. According to 80% of the respondents cost control is an important factor influencing allocation of overheads.
80% of the responses state that no major role is played by external reporting in the allocation of overheads. Similarly, 85% feel that cross subsidization is only normally important to not at all important. Past liability mainly relating to pension payments, has no major relevance according to 70% of the respondents. Only 30% state that past liability is substantially to highly important factor in the allocation of overheads. Responses on the relevance of performance measurements to allocation of overheads is evenly spread with 40% opining that it is of little importance to 20% each feeling that performance measurements is normally important to substantially important.

PROPORTION OF VARIOUS COSTS IN TOTAL COST

The researcher is interested in understanding the proportion of Direct labour cost, Operation overhead, Management overhead and Pension liability in the total cost of the port. This will enable the researcher in the analysis of the cost structure of the port. The responses summarizing the percentages are given below:

<table>
<thead>
<tr>
<th>Cost</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct labour cost</td>
<td>60%</td>
</tr>
<tr>
<td>Operation overhead</td>
<td>10%</td>
</tr>
<tr>
<td>Management overhead</td>
<td>10%</td>
</tr>
<tr>
<td>Pension liability</td>
<td>20%</td>
</tr>
</tbody>
</table>
GRAPH NO.8.5G

PROPORTION OF VARIOUS COSTS IN TOTAL COST

From the above table, it can be seen that direct labour is the major component of the total cost of the port. The respondents have given the view that direct labour is 60% of the total cost of the port. Operation and management overhead comprise 10% each and the pension liability is 20%.

INFORMATION AVAILABLE IN THE EXISTING COST SYSTEM.

In this question the researcher is ascertaining the responses with regard to the information provided by the existing cost system. The researcher seeks to know whether the present cost system can provide relevant information in the areas of preparation of annual accounts, control, planning and decision making purposes, for calculation of service and activity cost, Tariff fixation and accountability.

The responses are tabulated below:

TABLE NO 8.24

INFORMATION AVAILABLE IN THE EXISTING COST SYSTEM

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of annual accounts.</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
80% of the respondents feel that information only to some extent is provided by the present system of costing for preparation of annual accounts. However 90% feel that adequate information is provided in the existing system of costing for control purposes. Similarly, 90% of the respondents opine that information to some extent to a very high extent is provided by the present system of costing with respect to planning and decision making purposes and calculation of service and activity cost.

60% of the respondents strongly feel that present system of costing provides information to a very high extent for the purposes of tariff fixation. Remaining 40% also feel that information to a medium to high extent is provided by the present costing system for tariff fixation. However 80% feel that information for fixing accountability is not adequately provided by the present system of costing.

**TOP MANAGEMENT'S INTEREST IN DETAILED OPERATION COST**

Here the researcher is interested in knowing the respondents views about the top management’s interest in detailed operation costs. The views are tabulated below;
TABLE NO 8.25

TOP MANAGEMENT'S INTEREST IN DETAILED OPERATION COST

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

From the above responses it can be seen that it can be seen that 60% of the responses state that top management care for detailed cost only to a medium extent. Whereas 40% do feel that top management does care for detailed cost to a high to very high extent.

AREAS WHERE THE TOP MANAGEMENT USE COST ACCOUNTING INFORMATION.

The researcher is interested in knowing the responses of the respondents with respect to areas where the top management use the cost accounting information. For this purpose he has identified areas relating to Tariff fixation, Decision making process, Planning, Cost control, Performance measurement, improvement in operations, to tackle competition, operational planning and authorization.

The following table gives the responses:
TABLE NO 8.26

AREAS WHERE THE TOP MANAGEMENT USE COST ACCOUNTING INFORMATION.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tariff fixation</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Decision making process</td>
<td>0</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Planning</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Cost control</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Performance measurement</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Improvement in operations</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Operational planning</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Authorization</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

From the above responses it can be seen that 85% opine that management use the cost information to a high to very high extent for tariff fixation purposes. Whereas 45% feel that cost information is used by the management for decision making process to a high to very high extent. The remaining 55% feel that management uses cost information to some to medium extent only. 55% feel that cost information is used by the management for planning and cost control purposes to a high to very high extent. The remaining 45% feel that management uses cost information to some to medium extent only.

60% are of the opinion that top management uses the cost information only to some extent to medium extent for performance measurements. 50% of the responses
have stated that top management use cost information to a high to very high extent for improvement of operations. With respect to using the cost information to tackle competition the responses are evenly spread. 55% have opined that cost information is used by the top management only to a medium to some extent whereas the remaining 45% feel that management does use the cost information to a high to very high extent to tackle issues relating to competition.

50% of the respondents opine that top management uses the cost information for operational planning to a high to very high extent whereas the rest 50% think that cost information is used only to some to medium extent.

RESPONDENT'S OPINION ABOUT THE PRESENT COST SYSTEM.

The researcher is interested in knowing the respondents views about the appropriateness of the present cost system with respect to Current cost accounting system, Current overhead cost allocation, Cost control and performance measurement systems, and Traditional budget methods.
. The opinions are tabulated below:

**TABLE NO 8.27**

**RESPONDENT'S OPINION ABOUT THE PRESENT COST SYSTEM**

<table>
<thead>
<tr>
<th></th>
<th>Inappropriate</th>
<th>Need Improvement</th>
<th>Reasonable</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current cost accounting system</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Current overhead cost allocation</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Cost control and performance</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>measurement systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional budget methods</td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

25% feel that Current cost accounting system needs improvement, 35% feel that it is reasonable, 20% feel it is good and 15% feel it is very good. 5% feel that the Current cost accounting system is inappropriate.

55% of the respondents are of the opinion that Current overhead cost allocation is reasonable whereas 30% feel it is good to very good. 15% opine that Current overhead cost allocation is inappropriate and need improvement.

30% of the respondents are of the view that Cost control and performance measurement systems are reasonable whereas another 30% of the respondents are of the view that the same is good to very good. However 40% of the responses state that Cost control and performance measurement systems are inappropriate and need improvement.
50% of the respondents feel that Traditional budget methods are reasonable whereas the remaining 50% feel that the same is inappropriate and need improvement.

8.5 SECTION: D

In this section the researcher wants to obtain information from the respondents with respect to their level of awareness about Activity based costing, source of their awareness, what best explains ABC. This will enable the researcher to know whether the respondents have the basic understanding as to what is ABC.

The first question with respect to ascertaining about the awareness of ABC, the researcher has asked whether the respondents have heard about ABC. The responses to this are as follows:

**TABLE NO 8.28**

**RESPONDENT'S AWARENESS ABOUT ACTIVITY BASED COSTING**

<table>
<thead>
<tr>
<th>YES</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>2</td>
</tr>
</tbody>
</table>

From the above it can be seen that 90% of the respondents have heard about Activity based costing.

**SOURCE OF INFORMATION ABOUT ACTIVITY BASED COSTING**

Next, the researcher seeks to ascertain the source of their awareness for which he has given three sources namely university, seminars, journals and books. If any other source, the researcher has requested the respondents to specify the same. The responses are as follows:
TABLE NO  8.29

SOURCES OF INFORMATION ABOUT ACTIVITY BASED COSTING

<table>
<thead>
<tr>
<th>At university</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through seminars</td>
<td>1</td>
</tr>
<tr>
<td>By reading (book, journals and so on)</td>
<td>11</td>
</tr>
<tr>
<td>Others (Pl. specify)</td>
<td>1</td>
</tr>
</tbody>
</table>

From the above it can be seen that 55% of the respondents have come to know about ABC while reading books and journals while 25% have got knowledge about ABC at the university. Only 5% of the respondents have become aware about ABC at seminars.

DEFINITION OF ACTIVITY BASED COSTING

The researcher has posed the next question to the respondents regarding what according to them best describes ABC. The responses are as follows;

TABLE NO 8.30

DEFINITION OF ABC

| Classification of inventory on value and volume basis as a method of control over inventory cost. | 0 |
| Assigning cost of services not directly allocable through pre determined methodology. | 2 |
| Assigning resources to activities and aligning activities to operations and measuring consumption cost to services through activities. | 18 |

From the above it can be seen that 90% of the respondents have stated that ABC means Assigning resources to activities and aligning activities to operations and measuring consumption cost to services through activities. From this the researcher
is able to establish that the respondents are aware about ABC and They also know as to what is ABC.

VIEWS OF THE RESPONDENTS TO THE EXISTING COST SYSTEM IN MUMBAI PORT TRUST.

Here the researcher is interested in eliciting the views of the respondents on the cost accounting system in vogue in Mumbai port trust. This understanding is necessary in order to establish whether there is any need to change the existing system of cost accounting. The responses are as given below;

**TABLE NO  8.31**

**VIEWS OF THE RESPONDENTS TO THE EXISTING COST SYSTEM IN MUMBAI PORT TRUST.**

<table>
<thead>
<tr>
<th>Inadequate system of cost measurement</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated cost accounting system</td>
<td>0</td>
</tr>
<tr>
<td>Piecemeal maintenance of cost ledgers.</td>
<td>1</td>
</tr>
<tr>
<td>Cost statements are derived from financial statements</td>
<td>14</td>
</tr>
</tbody>
</table>

From the above responses it can be seen that 70% of the respondents feel that Cost statements are derived from financial statements and as such there is no separate system of costing in existence. 25% of the respondents have stated that the cost system in vogue is an inadequate system of cost measurement. None of the respondents feel that the present system is an integrated system. Only 5% feel that the existing system involves piecemeal maintenance of cost ledgers.
FACTORS INFLUENCING CHANGE OR DEVELOPMENT OF ACTIVITY BASED COSTING

Here the researcher wants to ascertain the respondents opinion about the factors that will influence the port to change or develop Activity based costing systems. The researcher has identified some factors which according to him can influence the port to change or develop Activity based costing systems. The responses to these factors are as follows

**TABLE NO 8.32**

**FACTORS INFLUENCING CHANGE OR DEVELOPMENT OF ACTIVITY BASED COSTING**

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional cost system provides inaccurate product cost</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>The increasing proportion of overhead cost</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>The increase of operation and administrative cost overhead</td>
<td>2</td>
<td>0</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Problems in allocation of overhead</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Complexity of operations</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Lack of relevent information for decision making</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

From the above responses it can be seen that 35% of the respondents have opined that traditional cost system provides inaccurate product cost to some extent.
whereas 30% feel that to a high extent traditional cost systems provide inaccurate product cost.

50% of the responses have stated that change in the cost system or development of ABC to a medium to high extent could be due to increasing proportion of overhead cost while 15% feel that this factor highly influences a change in the present system. 25% feel that increasing proportion of overhead cost plays a limited role in influencing the port to change the present cost system.

The next factor considered by the respondent is increase of the operation and administration overhead which can influence the port to change the present cost system. 60% of the responses state that this factor will influence the port’s decision to change the cost system only to some extent whereas 30% feel that this factor does influence the port’s decision to change the cost system to a high to very high extent.

According to 40% of the respondents problems in allocation of overheads and complexity of operations to some extent influences the port’s decision to change the cost system and 30% feel that this factor influences to a medium extent. Only 15% feel that this factor influences to a high to very high extent.

45% of the respondents feel that lack of relevant information for decision making influences port’s decision to a medium extent whereas 25% feel that this factor influences only to some extent.

APPLICATION OF COSTING TECHNIQUES IN MUMBAI PORT TRUST

The researcher now wants to find out the respondents views with regard to the costing techniques which they find suitable and easy to apply in the port sector. The researcher has identified the costing techniques namely Activity based costing, Activity based management, Just-in-time approach, Target costing and quality as weapon to combat competition. The responses are as follows:
TABLE NO 8.33
APPLICATION OF COSTING TECHNIQUES

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Not easy</th>
<th>Easy</th>
<th>Highly easy</th>
<th>Very highly easy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity based costing</td>
<td>0</td>
<td>2</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Activity based management</td>
<td>0</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Just in time approach</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Target costing</td>
<td>1</td>
<td>11</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>quality as weapon to combat</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>competition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above analysis it can be seen that 60% of the respondent feel that Activity based costing is easy to apply in port sector while 30% feel that Activity based costing is highly to very highly easy to apply.

Only 45% feel that Activity based management technique is easy to apply. While 30% feel it is highly to very highly easy to apply. 25% feel that Activity based management is not easy to apply.

60% strongly feel that Just in time approach is not easy to apply in port sector while 40% feel that it is easy to highly easy to apply.

Again, with regard to target costing 60% of the respondents feel that the same is not easy to apply and adopt in port sector. 25% feel it is easy and the remaining 15% feel that is highly easy to apply target costing to port sector.
With respect to quality as weapon to combat competition, 50% of the respondents feel it is not easy to apply whereas 25% feel it is easy. The remaining 25% feel that this technique is highly easy to apply in the port sector.

SUPPORT FOR APPLICATION OF ACTIVITY BASED COSTING IN MUMBAI PORT TRUST.

The researcher has asked the direct question to the respondents whether they will support introduction of activity-based costing in port sector. The responses are as follows:

TABLE NO 8.34
SUPPORT FOR APPLICATION OF ACTIVITY BASED COSTING IN MUMBAI PORT TRUST.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>19</td>
</tr>
<tr>
<td>NO</td>
<td>1</td>
</tr>
</tbody>
</table>

From the above it can be seen clearly that 95% of the respondents are in favor of introduction of activity-based costing in port sector.

ADVANTAGES TO MUMBAI PORT TRUST BY APPLICATION OF ACTIVITY BASED COSTING.

Here the researcher after ascertaining from the respondents that they are in favor of applying Activity-Based Costing approach in the port sector is interested in knowing the advantages which the port sector will derive by applying Activity-Based Costing approach. The researcher has identified some advantages for which the responses are as follows:
TABLE NO 8.35
ADVANTAGES TO MUMBAI PORT TRUST BY APPLICATION
OF ACTIVITY BASED COSTING.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To some extent</th>
<th>To medium extent</th>
<th>To a high extent</th>
<th>To a very extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair overhead allocation</td>
<td>0</td>
<td>2</td>
<td>11</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Increase in profitability</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Improvement in cost control</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Decision making in right direction</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Accurate management reports</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Improvement of performance measurement</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Proper costing of services rendered.</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

From the above responses, it can be seen that 90% of the respondents feel that by applying Activity-Based Costing approach to the port sector it will enable fair allocation of overheads and increase in the profitability of the port.

40% of the respondents are of the view that Activity-Based Costing approach will result in improvement in cost control to a high extent while 30% feel that it will improve cost control only to a medium extent. The remaining 30% are of the view that Activity-Based Costing approach will not result in much improvement in cost control.

45% of the respondents that are of the view Activity-Based Costing approach will help the port in decision making in the right direction to a high extent while 40%
have stated that it will only be to a medium extent. 15% support this view only to some extent.

80% of the respondents have stated that Activity-Based Costing approach will facilitate in accurate management reports and improvement of performance measurements to a medium to a high extent. Whereas 20% feel that no benefit will be derived for accurate management reports from Activity-Based Costing approach.

50% of the respondents have opined that proper costing of services rendered by the port can be ascertained to a medium extent with Activity-Based Costing approach. The remaining 50% feel that Activity-Based Costing approach will enable proper costing of services to a high extent.

From the analysis of the questionnaire it can be seen that the respondents are of the view that the present costing system is redundant and is not suitable to cater to the requirements of the port in the current scenario. Traditional cost system is fraught with deficiencies which do not enable correct ascertainment of costs and allocation of overheads. The respondents were unanimous in their view about introduction of Activity Based Costing approach to the port sector. The respondents are aware about this technique and are willing to adopt the same to port sector. Thus, it is ascertained that it will be appropriate to introduce Activity-Based Costing system in Mumbai port trust.

In the next i.e. conclusion chapter, researcher has developed a model for implementation road map of Activity-Based Costing system in Mumbai port trust and has proved all hypotheses framed in chapter I.
CHAPTER IX
CONCLUSIONS AND SUGGESTIONS

In the previous chapter, it was seen that the questionnaire prepared by the researcher to understand the responses of the officers working in the Finance department of Mumbai Port Trust towards the existing cost system, necessity to review the existing cost system and the urgent need to devise a new cost system i.e. Activity Based Costing was analysed in detail. The responses elicited from the officers included their understanding of the present cost system, the changed economic scenario and the role of Mumbai Port Trust therein, the pitfalls of the existing cost system to cater to the needs of port pricing and in strategic decision making, the circumstances justifying a relook and review of the present cost system, evolving a new cost system to cater to the current requirements of the port and suitability of Activity Based Costing in port sector.

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.

9.1 CONCLUSIONS

Present study is basically related with identifying the strengths and limitations of existing conventional system in Mumbai Port Trust. Mumbai Port Trust is a government of India organization under the Ministry of Surface transport having a significant control over marine transport activities of India. This organization is a flag-ship organization of Government of India that controls various aspects related with management and factors governing cost systems as well as other operational aspects of management of port trust. No organization can continue its successful
existence without having an efficient, effective and result oriented system. The best criteria to judge the efficacy of any system is its simplicity in application whereas raison d'etre for introduction of a new system is its low commitment to profitability and improvement of work systems.

The researcher in the preceding chapters have tried to identify what are the strengths and weaknesses of existing conventional cost system, can the existing conventional cost system be replaced by Activity based cost system. If at all such a change is required, useful and appropriate then what are the requirements for introduction of a new cost system. The general conclusions related with justification of introduction of Activity based cost system are presented below:

I Change in the structure and philosophy of the organisation.

With the advancement of computers and information oriented systems, the traditional manufacturing and service organisations are transforming their nature, functioning and activities. There is radical change in terms of system, philosophy and even in functional aspects like ascertainment of costs.

The industrial age organisations concentrated on measuring short-term quantitative results and emphasizing on mere accuracy of functional performance. The invisible finer points like system development and advancement, continuity with change and re-engineering as per techno-economic changes were missing. The Information organisation requires new cost systems to face these challenges.

The following table explains difference between Mumbai Port Trust as industrial age organization and information age organization for a smooth switch over.
TABLE NO.9.1

DIFFERENCE BETWEEN INDUSTRIAL AGE AND INFORMATION AGE ORGANISATION

<table>
<thead>
<tr>
<th><strong>Industrial Age Organisations</strong></th>
<th><strong>Information Age Organisations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Insignificant overhead costs compared to direct costs</td>
<td>• Substantial overhead support costs of technology dwarfing direct costs.</td>
</tr>
<tr>
<td>• Allocation of overhead costs based on Labour or material volume/cost.</td>
<td>• Traditional overhead allocation basis are incompetent and deceptive cost drivers.</td>
</tr>
<tr>
<td>• Focus on efficient and good organization.</td>
<td>• Flexible business processes, custom-made products with information-added services.</td>
</tr>
<tr>
<td>• Focus on expansion and development</td>
<td>• Focus on value, excellence, quality, service, time and cost.</td>
</tr>
<tr>
<td></td>
<td>• Focus on customer driven demands and requirements.</td>
</tr>
</tbody>
</table>

The above table indicates that a change over from Industrial age organization to Information age organization is definite and significant. Many features of Industrial age organization have changed over a period of time because of structural and institutional changes. Information age organization is more flexible, dynamic and focused in terms of customer orientation.

Also, the above table indicates clearly that concept of cost as traditionally considered is only in terms of efficiency, physical burden, cost of material and specific measurable overhead. The burden of overhead is given a different consideration because of emergence of information. Information age organization
considers customization of quality, service and time dimension as well as specificity of cost burden as major consideration.

II Model of Activity Based Costing for improving cost decisions.

The sole purpose of introduction of any new cost system is to improve the quality of financial system. Delivering right results, accuracy in measurement of cost, saving of resources, proper and justified disclosure of data, coordinating cost factors of different departments for accurate estimation of inter-departmental costs, activities and setting suitable norms and basis for allocation and determination of cost is the true test of an ideal cost system.

Activity Based Costing can adequately fulfill the above parameters and help in improving decision making significantly. Major cost related decision areas in Mumbai Port Trust can be enlisted as follows:

- Allocation of overheads
- Competitive tariff fixation
- Differential pricing strategies
- Appropriate cost ascertainment of activities to suit TAMP guidelines.
- Fixing upfront tariff for Public Private Partnership projects.
- Accurate Cost information to management while giving rebates and remissions.

Installation of Activity Based Costing shall definitely help in improving decision making in all these areas. Researcher proposes here to introduce Activity based cost system for improving quality of decisions. A diagrammatic reflection of proposed system as to how it will enhance quality of cost decisions is presented here:
The above figure explains how Activity Based Costing helps in improving strategic decisions viz. revenue and cost decisions. The earlier traditional concepts of cost as compared to Activity Based Costing stands far below in terms of application, satisfying specific organizational requirements, generating desired volume of revenue and minimization of cost at each level of operation.

For Mumbai Port Trust application of Activity Based Costing shall help in improved quality of decisions of varied nature. The case in point is illustrated by giving following examples:
A Improving Quality of Decisions

General quality of decisions at Mumbai Port Trust can be enhanced significantly if keen emphasis is given on implementation of Activity Based Costing technique at each functional level. Following are some illustrative decision areas which can rightly benefit if Activity Based Costing techniques are implemented.

1) Presently, vessels docked at any of the berths at Indira dock has to pay same charges for berth hire. Whereas different facilities exist at different berths like draft, availability of cranes, higher discharge rate, etc. Present cost system does not facilitate determination of cost for every berth so that a single rate can be prescribed. With Activity Based Costing technique it will become feasible to ascertain the cost of operation at every berth which in turn will enable fixing of appropriate tariff for each berth.

2) Various capacity vessels visit Mumbai Port Trust. Large vessels need to be maneuvered carefully while entering the port and docking. Time and efforts taken for handling these vessels are not measured in the present costing system as the data is inadequate. All vessels are charged similar pilotage and towage. Activity Based Costing technique will enable the port to ascertain in detail the resources in terms of time and efforts required to perform the activity of maneuvering such large vessels and fix tariff accordingly.

3) Presently all overheads are allocated based on direct cost of that activity. 80 percent of direct cost of most of the activities like cargo handled at docks, dry docking, pilotage and towage comprise of labour cost whereas activities at Jawahar Dweep i.e. POL wharfage and Port activities at MOT bunders are highly mechanized and the labour cost is comparatively negligible. This allocation of overheads based on direct cost distorts the service cost leading to inappropriate pricing. This is further complicated by TAMP guidelines which allow tariff based on cost plus approach. Activity Based
Costing will enable the port to identify cost drivers and resources for allocation of overheads leading to correct ascertainment of cost and proper pricing of services.

B Improving relations with external elements

The external elements that come in contact with Mumbai Port Trust are

- Contractors
- Suppliers
- Port users
- Others

Every activity in relation to above mentioned public can be improved, revised, enhanced and made more efficient if specific attention is given to the incidence of cost and attempts to curtail the cost factors at point of incidence itself. The role of Activity Based Costing in improving relations with external elements is explained hereunder:

Contractors and suppliers are engaged in supplying materials, repairs and maintenance work at various locations of Mumbai Port Trust. Some locations like Jawahar Dweep and Pir Pav are located at a great distance from the main docks area. The only connecting link between the main land and these locations are through launches which operate depending on tides. The working hours are limited and all materials and equipments have to be transported to the island. Contractors are unable to factor these costs as there is no suitable cost system in Mumbai Port Trust to measure these costs. Hence, tender quoted for any work in these locations are exorbitant leading to Mumbai Port Trust paying high cost. With Activity Based Costing technique, Mumbai Port Trust will be able to identify the cost elements in these locations and provide cost data which will enable the contractors to appropriately quote for tenders.

Port users include vessel agents, freight brokers, clearing agents and transport operators. Irrespective of the type of berth or type of vessels, the tariff at Mumbai Port Trust
is same. This is disadvantageous to users who do not get berths with good facilities or those who handle simple vessels. With Activity Based Costing, differential tariff will facilitate port users.

Other users are those using dry docking facilities, ship-breaking facilities, leases of estate will benefit with Activity Based Costing as cost drivers and resources for these activities will be ascertained leading to correct pricing of services.

C Improvement of Internal Business processes.

Various internal business processes are associated and influenced by cost considerations. Different departments in Mumbai Port Trust are regularly taking cost related decisions or decisions involving cost considerations. These departments are as follows;

- Traffic operations
- Civil Engineering
- Mechanical Engineering
- Business Development
- Port services
- Security
- Administration
- Finance
- Investment
Activity Based Costing will prove useful if appropriate techniques are introduced to establish interrelationship between these departments. Similarly, Activity Based Costing will prove useful in enhancing efficiency and improved work systems of internal business processes. From this point of view Activity Based Costing has a major role to play in improving business processes affecting following cost concepts:

- Service Cost
- Administration cost
- Operation Cost
- Investment decisions

III Activity Based Costing model for improvement of business level activities.

The sole purpose of any cost system is to identify elements and inputs resulting in financial losses, process leakages and waste due to different reasons. A cost system tries to reduce these losses and waste which in turn becomes savings leading to improvement of profit. Another invisible purpose is to have higher standards of control over resource utilization and employees responses for work system. It reduces idle hours, gaps between two inter related work activities, piling of inventories and even maintenance of high unspent balances of funds.

The justification of Activity Based Costing as a device for improvement of business level activities is very noteworthy. Mumbai Port Trust can definitely find installation of such a system as an essential technique to enhance efficiency, improve efficacy, proper monitoring of human resources and development of employee morale. Activity Based Costing as a cost system can become a major decision making support system for improvement of overall efficiency and quality of Mumbai Port Trust. The thrust area of every business activity ultimately leads to improvement of business. From this point of view, every aspect of
business should be impoverished, developed and revised considering its impact on cost and volume of profit.

Activity Based Costing is a most useful technique for business level activities. A model as to how Activity Based Costing improves financial efficiency is presented here

MODEL NO.2

IMPROVEMENT OF BUSINESS ORGANISATIONS

Management & Employees

Visualization of future scenario
Development
Business tactics
Blue Print
Traditions & organizational Pyramid
Human
Core
Experstise
To serve business clientele

Business & Management Policies

Strengthening
Team
Business Infrastructure & technologies

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The above diagram explains the role of Activity Based Costing in six basic activities of any organization. These are

- Visualization of future scenario
- Traditions and Organizational pyramid
- Core aspects
- Business tactics
- Business Infrastructure and technologies
- Strengthening

**Visualization of future scenario**

Vision of the organization is usually associated with looking into future prospects of organization, identifying potential business prospects and developing a right platform for growth on long term basis. No organization can develop its own vision without considering appropriate cost factors. Vision is not mere imagination but a cost based planned estimation of future benefits that can be acquired.

**Traditions and Organizational pyramid**

Cultivating suitable traditions and culture which cares for efficiency, efficacy, austerity and resources recycling is the need of the hour. Mumbai Port Trust cannot think of a better alternative than Activity Based Costing in order to cultivate this kind of culture which is keen to develop appropriate cost system.

Future growth of any organization always is based on concepts of efficiency, thinner in terms of size, flexibility and adaptability. Designing good organisational structure requires extreme cost consciousness and rewarding organizational structure.

**Core aspects**

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For Mumbai Port Trust service is core aspect of its growth. Service without profit means restricting future growth of the organization. But service with efficiency and surplus can be basis for survival and growth. Activity Based Costing shall definitely be of a great help in providing this criteria to Mumbai Port Trust.

**Business Infrastructure and technologies**

Designing suitable infrastructure is essential for improving functioning of business enterprise. The basic purpose of implementation of Activity Based Costing in Mumbai Port Trust is to eliminate duplication of cost, overlapping of activities, avoiding unnecessary and unwarranted activities leading to incremental costs and reduction of revenue.

**Strengthening**

The most important aspect for success of any new system in any organisation are proactive employees. Human element in any business process is unavoidable. A dedicated and well trained work force can contribute to the success of any new system. Mumbai Port trust has professional and well informed officers and staff on its roll. Mumbai Port trust needs to train and motivate them before installing Activity Based Costing.

From the above justifications, it is pertinent to note that application of Activity Based Costing technique shall be of great help to Mumbai Port Trust.

Application of Activity Based Costing is rightly justified for an information age organization. In the words of William B. Castenholz

"Very Often, although a cost system may be nearly perfect and all possible factory economies may have been effected, a manufacturer may nevertheless show losses due to inadequate control over his selling and administration expenses. In fact unless the same
(costing) principles are applied in controlling selling and administrative cost (as for production) the entire advantage gained through efficient low-cost production may be lost.”¹

IV Reasoning for implementation of Activity Based Costing.

The implementation of Activity Based Costing in organization like Mumbai Port Trust is very useful. It will help the organization in 4 different ways as stated below:

- Traditional cost allocation system is turning obsolete with changes in the approach towards cost concepts.
- Very few organizations continue with identical kinds of operations for long period of time.
- The concept of variable cost and overheads has become extremely dynamic which makes it difficult to allocate cost appropriately at every point of time.
- Conventional cost system demands high margins which increases the total cost structure, inflates overall cost estimation and creates unnecessary high profit margins. Thus organizations lose their competitive edge in the market place.

Conventional cost system advocates and supports short term financial thinking wherein mere numerical accuracy is considered. The basis of cost allocation is distorted. Traditional accounting blocks managers and cost officers from seeing the relevant cost. Traditional accounting utilizes cost giving an improper impression that all costs directly vary with units of end output. Thus it sends misleading signals. The unused capacity costs are also not properly dealt with.

V Justification of Activity Based Costing

¹ William B. Castenholz.(1922)"The Application of selling and Administrative expense to product.” National Association of Cost Accountants (NACA) year Book,

420
As traditional cost system is having a large number of limitations and needs modification, researcher advocates Activity Based Costing system to be implemented in Mumbai Port Trust. The strengths of Activity Based Costing as seen in terms of its philosophical base, system strengths and application area; it becomes a viable alternative to conventional cost system. The justification for installation of Activity Based Costing in Mumbai Port Trust can be stated as follows:

- Activity Based Costing will have substantial impact on strategic and operational decisions of the organisation.
- It will make a rational assessment of value adding contents of work at different business process levels.
- It will develop appropriate awareness and understanding as to the cost structure and economics of organisation. It will help in providing guidance for improved operations and actions to eliminate waste and losses.
- Activity Based Costing will help in reassigning resource cost considering importance, impact and role of different activities. It will also help the organisation to measure cost of different inputs in relation to the total output.

Hugo Diemer\(^2\) had justified Activity Based Costing over conventional cost system in following words:

"The question well may be asked: To what extent are cost records actually brought to the attention of foremen? Our experience (shows that) management keeps the cost data closely guarded and usually does not want the foremen to know....."

Many foremen have risen from the ranks...As a class they do not realize that whenever they endeavor to find a reason for doing a certain thing...they are searching for a theory. The dominant characteristics of any group of foremen are likely to be as follows:

- They have well-established habits.
- They are largely “self-made” men.
- They are self confident and “show-me” type.
- They are usually not entirely open-minded.
- They think best in the face of opposition.
- They keenly enjoy discussing their everyday problems.
- They have high regard for the square deal.

This whole question (of providing foremen with cost data) is one of the most important issues confronting the cost accountant, the solution of which can materially advance the progress of American industry.”

9.2 CONCLUSION FOR INSTALLATION OF ACTIVITY BASED COSTING IN MUMBAI PORT TRUST

In order to install Activity Based Costing in Mumbai Port Trust researcher proposes to adopt following stages of implementation:

DECIDING KEY POINTS

Mumbai Port Trust has well established cost and financial department. It has appropriately defined account codes, manual for Income and Expenditure as well as guidelines for cost allocation and distribution. Hence, the idea of installing Activity Based Costing in Mumbai Port Trust is not much difficult with adequate and necessary ground work and suitable documentation. The proposed preparatory stages are diagrammatically presented here:
DATA REQUIRED FOR INSTALLATION OF ACTIVITY BASED COSTING

Data that will be required for installation of Activity Based Costing is classified into 3 parts.

(i) Time

(ii) Cost

(iii) Quality

(i) Time

Time parameters will include
TABLE NO.9.2

TIME PARAMETERS FOR DATA REQUIRED FOR INSTALLATION OF ACTIVITY BASED COSTING

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEED</td>
<td>Application and completion time</td>
</tr>
<tr>
<td>FLEXIBILITY</td>
<td>Willingness to respond, interruption and bottlenecks</td>
</tr>
</tbody>
</table>

(ii) Cost

The cost shall comprise the following

(a) Basic inputs
(b) Relevant cost associated with processing, conversion and other activities.
(c) Overheads and other charges taken for services.
(d) Cost of invisible factors influencing time, quality and connectivity.

(iii) Quality

(i) Conformance to specification and
(ii) Satisfying Port users’ expectations for contents, features and characteristics.

9.3 FACTORS DECIDING SUCCESSFUL IMPLEMENTATION OF ACTIVITY BASED COSTING

A new cost system like Activity Based Costing cannot be implemented in Mumbai Port Trust without giving due consideration to critical factors, core elements and essentialities.
of procedural implementation. Activity Based Costing being a new cost system will have to pay attention to four basic essentials for this implementation. These are:

- Design and Structure
- Implementation
- Identifying Core elements
- Decision areas

Key factors for successful implementation of Activity Based Costing in Mumbai Port Trust are as follows:

(i) Activity Based Costing model, design and structure

Constructing an activity based model shall require the following inputs.

- Mission and goal of the organization.
- Expectations from the cost system.
- Type of cost structure available
- Organizational setup.
- Set of financial activities.
- Role and importance of each activity in the total system.

(ii) Implementation

It is important to select promising pilot sites and key persons with adequate cost and information technology skills.

(iii) Developing support system for establishment and advancement of the cost system.
(iv) **Identifying the expectations of end users that will be met by Activity Based Costing.**

Elements of Activity Based Costing success factors thus can be presented in the form of a model as follows.

**CHART NO.9.1C**

**FACTORS DECIDING SUCCESSFUL IMPLEMENTATION**

**OF ACTIVITY BASED COSTING**

<table>
<thead>
<tr>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic areas</td>
</tr>
<tr>
<td>Stages of implementation</td>
</tr>
<tr>
<td>Pilot study</td>
</tr>
<tr>
<td>Suitable software</td>
</tr>
<tr>
<td>Data collection and interfaces</td>
</tr>
<tr>
<td>Validation of the data</td>
</tr>
<tr>
<td>Smooth switch over</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design and Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of difficulty</td>
</tr>
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<td>Process and strategy review and improvements</td>
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I  Design and Structure

Activity Based Costing as a system when installed shall be based on certain key considerations. These are:

- Level of difficulty
- Level of detail
- Cost drivers
- Level of correctness
- Identification of activities
- Linking business processes

Mumbai Port Trust being a very large and complex government undertaking various legal, regulatory and administrative facets will have to be taken into consideration before finalizing the model and structure of the new system. This is essential in order to ensure that Activity Based Costing system as a new cost system is implemented successfully in Mumbai Port Trust.

II  Implementation

Installation of any new system is only a beginning. Activity Based costing system being a new cost system, it will face many hurdles and teething troubles in the take-off stage. Basic consideration for installation and implementation of Activity Based Costing will include the following:

- Strategic areas
- Stages of implementation
- Pilot study
- Suitable software
- Data collection and interfaces
• Validation of the data
• Smooth switch over

The implementation phase will require co-ordination amongst different departments, collection of adequate and useful data as well as identifying potential usage and users of new system.

III Identifying core elements

While implementing any new system it is essential to identify the core areas of the organization as well as the core elements of the new system. Adequate care and attention has to be paid to effectively implement the new system by proper identification and implementation of core elements. The core elements of any organization include the following:

• Core team
• Project team
• Training and increasing awareness
• Reliability of results
• Accountability

IV Decision Areas

In order to implement and apply Activity Based Costing, it will become essential for cost controller and other officials associated with costing department to find out how effectively Activity Based Costing can be applied in terms of cost saving, revenue generation, reduction of unnecessary expenses, waste control and avoidance of duplication. It will also help in designing more effective process changes and making strategic choices.
9.4 ROAD MAP FOR IMPLEMENTATION ACTIVITY BASED COSTING IN MUMBAI PORT TRUST.

Activity Based Costing has now become globally accepted cost system. There is large number of businesses and non-profit organizations that have introduced and implemented Activity Based Costing. The core purpose of Activity Based Costing can be stated in three simple steps.

- Identify and Determine
- Develop and evaluate
- Periodic review and Improvements

How Mumbai Port Trust can introduce Activity Based Costing is a crucial question which needs to be addressed to by giving a more rational and systematic answer. From this point of view researcher has given nine stages of the road map for implementation of Activity Based Costing in Mumbai Port Trust.

Activity Based Costing being a recent and conceptually different cost system will require many cautions to be taken at policy formulation and implementation level.
Above diagram depicts the basic steps required in implementation of Activity Based Costing in Mumbai Port Trust. However, following pre-conditions prevail which need to be rightly satisfied for introduction of Activity Based Costing in Mumbai Port Trust.

These prerequisites are as follows:

a) Activity Based Costing is not merely a cost system but a philosophy of expenses and revenue management. Therefore, there is a necessity for a basic change in the mind set of officers and management of Mumbai Port Trust who will be instrumental in the implementation of Activity Based Costing.

b) Re-engineering of the organization structure along with the cost structure plays a very important role in the implementation of any new system. In order to introduce new
system like Activity Based Costing in place of conventional cost system, it is essential that entire existing cost system should be re-engineered and restructured. It will help in bringing about suitable changes in the working and installation of a new and pragmatic cost system.

e) Mumbai Port Trust should undertake preliminary survey and ground work before introduction of Activity Based Costing. Further, Mumbai Port Trust should do basic screening and survey of all its cost related activities. A detailed analysis of each element, activity and cost related procedure should also be undertaken.

d) A new improved cost system should eliminate the deficiencies of the existing system and provide added advantages over the existing system. The purpose of installation of Activity Based Costing in Mumbai Port Trust must be clearly defined. There should be appropriate justification as to how Activity Based Costing will be installed and the reason for introducing the same in Mumbai Port Trust.

e) While introducing any new system it is important to design the system keeping in perspective the requirements of the organization and the environment. A cost system conducive for installation and implementation of Activity Based Costing should be properly designed. While designing the new system it is pertinent to ensure that there are no duplications or overlapping of procedures on one hand and missing or complimentary system on the other.

f) Adequate training to staff is compulsory before any new cost system is installed in the organization. Staff and officers of cost, finance and other associated departments that will be closely associated in the implementation of Activity Based Costing should be properly and thoroughly trained. Training should not be restricted to the extent of only system implementation but should also cover those aspects which will be required to develop right attitude amongst the staff and officers. This is necessary to
ensure that new improved cost system namely Activity Based Costing is successfully implemented in Mumbai Port Trust.

9.5 **CRITICAL DETERMINANTS FOR SUCCESS OF ACTIVITY BASED COSTING**

Success of Activity Based Costing shall depend both on environment and internal factors influencing cost system in Mumbai Port Trust. Major barriers for successful implementation are enlisted as follows.

- Resistance at organizational level due to belief in existing cost system and unwillingness to adopt any new system.
- Presumptions and skeptical doubts as to success of the new system.
- Anxiety as to performance and result orientation of any new proposed system.
- Designing of new tasks and responsibility centers asking for high end expectations.
- Stringent cost control measures.
- Change in the approach towards the cost system.

9.6 **TESTING OF HYPOTHESES**

Researcher has set the following three hypotheses for research. After collection of data and analysis, researcher has tried to satisfy the relevance and justification of hypotheses.

From the available data it is noticed that hypothesis H 1 set for the purpose of the study is as follows:
H 1 The existing conventional cost system adopted in Mumbai Port Trust has functional limitations and limitations of principles.

From the analysis of the existing cost system, cost considerations and determinants, researcher is of the opinion that the existing conventional cost system in Mumbai Port Trust is not withstanding the current and contemporary requirements of the organization. Hence there is a great necessity for replacement of the existing conventional cost system and restructuring the same to suit the current needs of the organization.

Hence, Hypothesis 1 stands and is accepted.

Hypothesis 2 reads as follows:

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

The data and information collected in chapter VII (Cost systems in Mumbai Port trust: Insights from Analytical study(I)) and chapter VIII(Analysis and interpretation of data: Responses of the officers of Mumbai Port Trust) clearly indicates that in order to improve profit and revenue generation in Mumbai Port Trust, it is essential to introduce a new cost system. This system shall change the general cost, structure, utility of cost system and its effectiveness. It will also help in introduction of better pricing system in Mumbai Port Trust. From this point of view, introduction of Activity Based Costing will be of great help.

Hence Hypothesis 2 stands accepted.

Researcher has considered the third hypothesis in order to identify the efficacy and utility of Activity Based Costing in the contemporary context. Hypothesis 3 reads as follows:
**H 3** Implementation of Activity Based Costing will result in enhancing port users' satisfaction, elimination of waste and improvement in financial efficiency.

After discussion with officers of Mumbai Port Trust and a section of users of port services, it is noticed that in order to enhance the efficiency of Mumbai Port Trust, offering right type and kind of services and improving its revenue generation, it is necessary to rethink about the existing cost system. Considering different types of users associated with Mumbai Port Trust, it is necessary that differential pricing system should be introduced. This system cannot be introduced unless and until a highly effective cost system is installed. Researcher has proposed three models of Activity Based Costing for improvement of cost decisions, business organisations and road map for implementation. From this point of view; Activity Based Costing has little chances of success in the contemporary context.

**Hence Hypothesis 3 stands accepted.**

**9.7 EPILOUGE AND DIRECTIONS FOR FUTURE STUDIES.**

Present study is one of its own type of enquiry about application of Activity Based Costing methodology in Mumbai Port Trust. This study is a primary enquiry. However it has certain limitations which are as follows:

i) This study is based on limited and classified data. Hence, conclusions are inclined more towards hypothetical nature.

ii) This study is based on researcher's observation regarding application of Activity Based Costing system in Mumbai Port Trust. I agree with the view that many other dimensions can be added to this study in order to make it more fruitful and pragmatic in nature.
iii) Similarly, it is accepted that this study has its own limitations of resources, funds, time and skills.

**Future Directions of the Study**

In order to improve the existing cost system and structure of Mumbai Port Trust few more studies are required. They are mainly as follows:

i) Analysis of existing cost system, procedure and methods for improvement of efficiency and productivity.

ii) Application of new techniques of costing for system development and organisational effectiveness.