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SHIPPING AND IMPLEMENTATION OF COST CONTROL SYSTEM IN DEVELOPING COUNTRIES WITH REFERENCE TO MADAGASCAR

BY
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MADAGASCAR

A dissertation submitted to the World Maritime University in a partial fulfilment of the requirements for the award of the degree of:

MASTER OF SCIENCE

IN

GENERAL MARITIME ADMINISTRATION

year of graduation

1992
I certify that all material in this dissertation which is not my own work has been identified and that no material is included for which a degree has been previously conferred upon to me.

The contents of this paper reflect my personal views and are not necessarily endorsed by the University.

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their immense love, encouragement, and patience in taking care of Manoa and Sandy during these 2 years.
DEDICATION

To my parents, for their unfailing support, encouragement and inspiration in all my endeavors

To my understanding and loving husband
EVARISTE,
My children MANOA and SANDY.
They waited patiently during the past 2 years

---------------------
INTRODUCTION

At present, in an environment where world shipping is characterized by low freight rates as a consequence of oversupply of shipping services, where competition is therefore hard, the way of managing ships appears to be very important and is even judged to make a difference between shipping companies in a period of depression. Only the strongest will survive and the successful shipowner is deemed to be the one who shows as far as possible enough expertise and intelligence in controlling the various costs relating to all the activities associated with management of shipping.

From that perspective "Management" has become a key-word to such an extent that many authors have made an effort in attempting to describe the theories, facts and problems involved in the subject. Thus, various schemes and styles of management have been developed through the years.

Nevertheless, whatever may be the viewpoint of different authors to ship management, one has to mention that the cost control aspect was very often neglected, stress being always put on theoretical descriptions of the various costs and the reasonable ways of minimizing them in order to maximize profitability. Such an approach of course is valid but remains incomplete as, in my opinion, it is very important to have a system of follow up on the said costs on a permanent basis.

The purpose of this dissertation is consequently to try to set up a model for a rational system of cost control which could be applied practically to small
shipping companies as they stand at the present moment in developing countries, referring more particularly to Madagascar.

At first, for a comprehensive appreciation of the problem, it is indispensable to bear in mind how important maritime transportation is in the economic life of a seafaring nation, especially for an island like MADAGASCAR. Part one of this dissertation will therefore consider two points. Briefly the role of shipping in the whole economy will be examined; and at the failure of most shipping companies in developing countries will be examined from a management point of view.

The "system of cost control", strictly speaking, will be examined in part two. Starting from the basic idea according to which a relevant system of cost control should help the manager to have a better understanding of the different costs involved in ship management, emphasis will be given to the need for implementing such a system. A model of "fleet management" which could be carried out by a shipping company from developing countries will be drafted. Assessment of the eventual difficulties which could be encountered during the implementation phase will be described as well. Inevitably such an approach has its limitations. At the more comprehensive level of the costs of shipping, this can be determined through an approach which breaks down shipping costs into their component parts. Using that approach it is possible to focus on the importance of different costs segments which are at work.
PART 1

MARITIME TRANSPORT
CHAPTER I

THE ECONOMIC IMPORTANCE OF SHIPPING

Economic growth in many countries of the world has been considerably accelerated by the increasing use of capital goods (manufactured goods, machinery, equipment etc...) and improved techniques of production. The growth of national economies was influenced by the trading patterns that evolved from specialization in modes of transport and which in turn affected competition patterns in the shipping trade as well.

For most developing countries, their agricultural sectors and primary production activities played an important role in the economic development of these countries. A new movement away from agriculture in favor of manufacturing and service products influenced the economic development of developing countries in recent years and entailed at the same time, great changes in the shipping industry in general.

Although it seems obvious that secondary sectors also had significant impact regarding these changes in the field of shipping. Are these changes, therefore, the principal condition for making the national merchant marine of a country competitive in the international market?

The competitiveness of the national merchant marine on the international markets could well be an important contributing factor to the development of the nations shipping industry, and under favorable local economic
improvement, their maritime industry (in a broad sense) flounders in an everlasting recession.

Considering the afore-said, it is evident that developing countries must re-organize their efficiency in other factors, but what are these factors?

1-2 Internal and external factors which affect the efficiency of shipping company in developing countries

The changes that should be introduced by developing countries ships, are determined by the equilibrium between what is socially desirable, technically practicable and economically possible to perform. The internal, external economics factors of a country to a large extent determine the development in ports and shipping.

Developing countries must direct their efficiency towards those factors in which they are able to effect the necessary changes.

To meet these developments in shipping, certain conducive circumstances should be in place in the maritime transport system of such developing countries, such are:

1)- The possession of a good strategic position of the country.

2)- The maintenance of good relationship with international trading countries. This is useful to determine the reaction of competitors in the market or new entrants into the trade and further to define the market structure of one's own country. The size of the country in terms of geography, population etc are also, factors
conditions could play a significant role in the national economy.

It is thus admitted that under favorable local and international conditions the national merchant marines of developing countries could compete in the international market if they are sufficiently competitive.

I.1- The actual situation in developing countries

Growth in percentages of the world maritime transport network has shown tremendous changes during the past twenty years. Most industrialized countries have, for instance, experienced great expansion in the field of maritime transport and traffic. While, at the same time, in spite of a lot of effort, the great majority of developing countries still experience tremendous problems in their national merchant marine fleets, which are far from being competitive in the international market.

In this respect, the technological progress is one of the factors which, paradoxically, blocks the development of shipping in developing countries. In effect, although the technological progress is certainly desirable, it constitutes however a heavy burden for developing countries like Madagascar, owing to the high costs of investment that it implies. For this reason, current experience shows that, for instance, ports in developing countries do not have adequate facilities while the national fleet tends to be obsolete and does not respond to the new requirements of the changing maritime transport, more particularly to the increasing use of containers. Indeed, as the developing countries do not have the financial means to realize the needed
for consideration.

3) - The implementation of industrialized organisation inside a country

4) - The management of shipping company should be run on a cost efficient manner.
CHAPTER TWO

THE PRESENT SITUATION IN MADAGASCAR WITH REGARD TO SHIPPING

As an Island, maritime transport in Madagascar is a necessity for economic development and the improvement of the population's welfare. It is also the most important network available for communication with the country's neighbors and a means for maintaining international trade relations.

Like most other developing countries, Madagascar experiences problems in competitively and profitably operating its national merchant marine fleet, in the international market.

First of all, it is necessary to have a brief overview of the shipping situation in Madagascar before proceeding to specifically addressing the various aspects which might be changed. The most important factor requiring detailed discussion is the suggestion for a cost control system within one company in Madagascar.

II-1 Shipping as part of the national development in Madagascar

Madagascar is the biggest island in the Indian Ocean, and is situated approximately 390 km (250 miles) off the East African coast across the Mozambique Channel, and 5,000 km (about 3,000 miles) eastwards across the sea
to the islands of Indonesia (1).

II-11 Shipping operations in Madagascar

There are presently two main national shipping operators in Madagascar in the transport of general and containerised cargoes namely C.M.N (Compagnie Malgache de Navigation) for the cabotage, and S.M.T.M. (Societe Malgache de Transport Maritime) for the sea-going services.

The national cabotage operates among the islands surrounding Madagascar and along the coast of Africa. This fleet consists of 7 vessels which have 17,968 deadweight tons in total (2). The international traffic routes of Madagascar's sea-going vessels are to Europe and also to the islands of the Indian Ocean with 3 vessels of approximately 16,000 deadweight tons each.

II-12 Possibilities for route expansion

Presently, as regards its geographical location, Madagascar still has some opportunities to exploit certain new routes, for example, the South West of Africa, passing through the South of Africa.

(2) Source: C.M.N "30 ans au Service du developpement National, 1960-1990"
It is the biggest African trading partner. The expansion of a new trade route along the west coast of Africa admittedly will depend on certain factors, namely:

- New market possibilities,
- new trade relations, and
- closer regional cooperation.

For its international trade, on the other hand, Madagascar is totally unknown as regards international shipping routes. The Mozambique Channel became a popular route for tankers and other vessels coming from Cape-town (South Africa) to Bombay and Karachi (Persian Gulf) or from Southampton to Kuwait. Madagascar, which is situated along this channel, should have had a better chance to benefit from this traffic since the Port of Antsiranana is well situated in the north of the country, but which unfortunately, lacks the necessary facilities. The shipyard which is located at this port also lacks the necessary facilities to provide quality services to passing vessels. The vessels on this route could have called at the Port of Antsiranana, but it remains underutilized for the above reason.

II-13 The need for promoting industries to support ports and shipping in Madagascar

The Malagasy economy is dominated by the agricultural sector which contributes 45% to GDP and employs about 80% of the population (4).

(4) Source: Africa South of the Sahara (1992 21st edition)
As regards its exports, Madagascar is the world's largest exporter of vanilla (4) which has as its main importers the U.S.A and France. The growth of the agricultural sector has however, fluctuated due to droughts and cyclones, and to competition from very cheap synthetic substitutes produced elsewhere which undermine further growth.

In analyzing Madagascar's case, most of the primary commodities on which it mainly depends for its export earnings have low supply elasticity. Its economy has to be broadened and diversified through promoting and developing new industries to increase imports. However, the position remains unchanged and future possibilities for expansion seem remote due to a lack of capital for expansion and diversification of industry, and subsequently its export potential.

It is clearly evident that the expansion and diversification of industry would help a country's general economic development and its shipping trade specifically. Looking to the future is a very problematic exercise, but for developing countries, it is a wise and rational way to promote integrated development of both agriculture and manufacturing industry. Each sector uses some kind of output from the other in its own production process, and growth and development of export potential through diversified industrial expansion is a significant factor in determining the growth and development of the shipping industry.
II-2 Overview of management of a shipping company

Organizational problems could affect shipping companies and reduce efficiency of the maritime system of transportation. This is mostly due to the management system of a shipping company which reflects the idea that company activities should be grouped administered and rated reflecting the management plan.

Today, especially in developed countries, to have better efficiency in the management of their vessels, many shipowners have given the responsibility for managing their vessels to the ship management companies. The latter are total independent of the shipping company itself and have the role of representing the shipowner, acting on their behalf in the administration, and control the ships.

However, many shipping companies are still keeping the management of their fleet under their own responsibility. But it is obvious that, new technological advances and other environmental changes have imposed on most shipping companies the need for new management controls, new accounting rules, and new methods of fleet operations. These functions are under the direction of the company's policy role and objectives. Therefore, to meet these objectives, organizations should be well planned and arranged in accordance with the size of the company, the type of ships, etc.

II-21 Proposal for an organizational chart

First of all, an organisation must be simple, whatever the size of the shipping company, it must be
well planned and arranged as its goal is to facilitate the flow of communication among departments.

Moreover, shipowners have different choices in their organizational approaches. Therefore, the proposed organisation is not tailor-made for all organizations. In order for this approach to be successfully applied it should fit with the cost control system used, the size of the company and its planned future. To facilitate the control of all vessel operations, fleet management departments should be taken here as a separate activity center which has its own expenses and which can keep tight control over the development of the fleet. (see figure 1-1)

II.2.2 Comment on the chart

a) The fleet management department

The prime objective of fleet management is to maintain a profitable enterprise, to facilitate information, decisions and advice. The functional manager who is in charge and responsible for the fleet management section is able to know the type of ships required, and the right time for buying or selling the ships.

The fleet management department is responsible for ship operational activities, such as manning, storing, repair and maintenance, purchasing, drydocking, etc. It has furthermore under its responsibilities the development of the fleet, with operational analysis in cooperation with other departments.

There are at least 4 operational functions under fleet management services. This department is in charge
(Figure 1-1) Proposal for an organizational chart.
of manning or crew, maintenance and repairs, purchases and supplies and administration of fleet management.

Service for manning or crew
--------------------------

The service for manning is based on the manning scales for the ships, the nationality of the crew to be employed and the conditions of service.

The manning scale depends first upon statutory requirements by the government of the country, particularly with regard to the certification of officers. This condition is applied with regard to the nationality of the crew.

The condition of service, on the other hand, is often supplemented by the shipowners to attract higher quality crews to their ships. The fringe benefits of having good conditions of service for crew is that it is always better to employ the same men who know the company policies and who have constantly worked on the ships and know the operational aspects intimately. This includes the importance of qualified manpower who are sufficiently specialized and can cope with the complexities of their individual responsibilities. Qualified manpower, with the ability to supplement the skills of others, who will be capable of working together as a team is an important factor for successful fleet management. Qualified long term contract manpower has the ability to understand the overall objectives and policies of the company, and know what to contribute to acquire benefits.
Service repair and maintenance
----------------------------------

Ship maintenance is vital and very important in shipping. Without constant maintenance a ship’s operational capabilities can deteriorate very quickly. The services of repair and maintenance is in charge of maintaining the ships in a high level of safety, ensuring the availability of equipment and an adequate level of equipment efficiency in accordance with the budget.

In this lies the ability to responsibly to monitor and maintain the rate of equipment deterioration, which must be controlled within the best possible economic limits. A lack of maintenance would result in excessive deterioration and high costs, and therefore planned maintenance and repair should be budgeted and implemented.

Service purchasing
-------------------

This service is in charge of the purchasing management of a variety of materials covering the maintenance of the hull and machinery for the operation of vessels, cargo protection and the maintenance of crew and passengers.

The person in charge of this service must have sufficient knowledge of planning and forecasting. Planning and forecasting are very useful tools in order to know what items are required, when and in what quantities. Budgetary problems will arise if the operation predictions have been based on a wrong forecast. The responsible person for these purchasing services must also have a background in recording and accounting and proper organizational ability for inventory control and purchase control.
II- 2.3 The reasons for implementing a cost control system

Most developing countries with their own fleets are running them uneconomically and unprofitably. This is mainly due to the lack of technology and uncompetitiveness. However, inefficient management, improvisation and top heavy structures cannot be overlooked. Therefore, it is essential to stress the various aspects of the managerial issues.

Departmental structures are overloaded with personnel because of the inconsistency of recruitment policy. It happens that recruitment is principally based on social considerations. Furthermore, the profitability and economic considerations which should prevail while operating the national fleet do not have the priority they should deserve. Most importantly, problems have accumulated over time, and have now reached critical proportions. Finally, the reasons for this state of affairs can be summarized as follows:

Because of regrettable political issues, it is a fact that most national fleets of developing countries have become unprofitable and uneconomical in the post colonial period, as at this time, the departure of the European left these countries without enough expertise in the maritime field. Thus, they were obliged to learn step by step, while in shipping, the "trials and errors" rule is not admitted, given the importance of the interests at stake. It is not surprising, therefore, to see these countries left far behind the traditional maritime countries.

National fleet management has become too
institutionalized and bureaucratic.

Management departmental structures are overstuffed and top heavy and, hence, reduce efficiency and hamper freedom of information due to the existence of many channels.

In many cases, persons in authority are chosen because of political considerations and not on the grounds of professional expertise.

Outdated and routine organizational methods are still applied while too much administrative paperwork is not in line with the requirements of modern technology and developments.

From an accounting point of view, profitability is very often accounted for in terms of the "fleet" as a whole, with no separation of individual vessel's unit profit or loss. It has to be noted that this system of "fleet accounting" (instead of the unit system) affects the diversity of trade and suitability of vessels, as well as management innovation in the productive employment of vessels.

New innovative methods should consequently be explored, and it is suggested that a system of individual vessel unit accounting should be applied through an accounting method of cost control per unit.
PART TWO

SUGGESTION OF A COST CONTROL SYSTEM
"There is no one way to run a shipping company, but there are some right ways and some wrong ways that it is the good owner and manager only which can tell to us the difference."

(John M. Downard)

CHAPTER ONE

NOTIONS OF COST CONTROL

INTRODUCTION

First of all it is important to have a clear understanding of the various cost elements in which the manager is interested. Indeed, it would not be possible to identify the whole array of potential cost factors, but there are at least two mechanisms which must be understood in terms of the costs of ocean transport for the company management.

The first need is for an understanding of the fact that freight rates affect both the cost and profit elements, and profit can only be assessed when costs are known.
The second need is an understanding of the effects of limited competition on operating efficiency. In shipping this may be a difficult assessment, but a cost control system can be most useful in developing the information required by the shipper in determining the profitability of the business ventures.

In spite of many problems which remain in the implementation of a model, a cost control system is for instance, applicable to a particular type of ship. The implementation of such a model of cost control is largely dependent on management policies. However, continuous evaluation and consideration of more cost effective management and operational methods should be regarded as an aid in assisting management, and forms a basis for decision-making, planning and control. It does not mean that every system is infallible and continuous evaluation and revision in accordance with changing circumstances is an effective means of judging the success or failure and shortcomings of such a cost control system.

These various methods of cost control will now be briefly discussed under the following heading.

I.1 - THE COST ACCOUNTING

Cost accounting is used by management as a tool to systematically arrange business trade accounts in a formalized manner. It is used to compile statistics on the state of affairs of the company and further serves as an instrument for responsibility accounting.
Accounting systems have long been an established practice to facilitate business management through the determination of certain critical bases and the provision of essential information. One of the difficulties experienced by ship managers when dealing with accounts lies in reconciling the financial data presented to them, with complex business decisions. The reason for this is because accounting is based on a number of philosophies regarding the arrangement of business accounts which looks strange to the uninitiated. The different purposes for which accounts are prepared must be understood.

1) As a psychological means

Every manager would certainly insist (as part of his overall responsibility) on assessment of accounting data for every unit of activity and be able to continuously trace every operational detail of a particular unit. It provides a sense of security for management to know the financial state of each unit of business as well as that of the company as whole.

2) As a judicial means

The accounting system serves as legal evidence and proof of company business activities. Information and data, therefore, form the juridical basis determining contractual relationships, for example, between sellers and buyers, and between the companies and its shareholders.
3) As a fiscal means

It can serve both the company and revenue authorities in assessing and calculating tax payment and is used as a means of control and verification.

4) As a management means

The accounting system is a tool of management because it provides a system of information that it needs to exercise proper control over. It should be assumed that in order to establish a systematic and efficient procedure of management in a shipping company, it is not sufficient to merely accumulate accounting data of financial transactions regarding business activities by means of balance sheets, revenues and expenses statements, but it is also important to use sources of cost data for purposes of management assessment, control and policy.

1.2 A COST CONTROL SYSTEM

A cost control system requires a more in depth study than cost accounting and the working mechanisms of its component parts should be analyzed to determine the methods required for policy implementation by management. The objective of a cost control system in a shipping company is the same as the cost control system, for example, in a manufacturing firm. However, the point which distinguishes it for shipping companies is its ability to track the many different costs which are involved in ship operations. Broadly speaking, the goals of a cost control system are to know and to analyze the different cost components applied in the cost accounting
of the company.

The accounting department of a company has as one of its functions the recording of data and information about the individual unit of operational cost and revenue as well as the analysis of unit and overall company profitability.

This department is to compare the budgets for individual unit operations based on past experience with the aim of keeping operational costs within budget limitations. The realization of budgeted costs provides financial security, whereas variance between actual and budgeted costs could mean unprofitable operations or unrealistic cost predictions.

Managerial decision-making is often based on good estimation and prediction of all cost components and factors.

A cost control system is used purely for internal evaluation and control by management and as a source of information and data collection. A cost control system, however, unlike a general accounting system only uses revenues and expenses in its evaluation and assessment of data and information regarding unit operational profitability.

1.3 - GENERAL PRINCIPLE OF THE COST CONTROL SYSTEM

In general, costs may be viewed as the value of the input factors needed to produce a certain output. In ocean transport the output may be defined as the transport
operational services, whereas the inputs required take on different forms such as: port labour, cost of repairs and maintenance, fuel oil, etc. These inputs, taken as activities of a shipping company, can be divided into two basic parts maritime operational activities and onshore activities.

The maritime operational activities can be defined as all the inputs in a particular unit voyage operation for example, bunkering, port charges etc. The onshore activities can be defined as mainly managerial administrative and operational coordination activities which bring about overhead costs, for example, staff wages, salaries, equipment, stationary, marketing, etc.

The reason for evaluating the cost components is to determine the profitability of the vessel per voyage, or sequence of voyages, or per traffic line in determining the feasibility of the venture or the profitably thereof. To reach these objectives, the cost control system must be adapted exactly to the specific activities of the shipping company. This procedure for a cost control system can be effected as follow:

First, management must define the area of business activity and type of venture in accordance with company policy.

Second, having defined the area of business activity and type of venture, management then proceeds to determine different cost elements that should be considered in achieving its cost control objectives. These cost elements to be considered are usually categorized and classified under the expenses statement in
accounting and may include costs, such as repairs and maintenance, wages, taxes, etc.

However, managers usually want to know which activities incur which expenses. In the case of manufacturing, the question which is usually asked is:

<table>
<thead>
<tr>
<th>WHO</th>
<th>CONSUMES</th>
<th>WHAT?</th>
</tr>
</thead>
</table>

This is also the case in the shipping company. However, the manager in this case wants to know which expense components are grouped under which classification, namely, whether the expenses were incurred under operational activities or onshore activities.

In general, in accounting, especially in the case of shipping companies, too often all expenses incurred by the company are classified, categorized and grouped together with the result that the overall expenses of the company are known but the unit expenses are not. For example these companies seldom know whether a particular ship has made a profit or not, since the whole fleet expenses or income are pooled together generally. This merely provides a general picture of the financial position of the company as all the eggs are in one basket.

However, the aim is to separate or split the company expenses into two groups of activities in accordance with the different categories of expenses incurred. The following is a briefly explanation of the two types of activities and then the nature of the cost items that they incur.
I.3.1 Type of activity center
- offshore activity (operation costs) and
- onshore activity (administration and managerial costs)

I.3.2 The nature of charges
- operating costs,
- voyage costs,
- cargo costs, and
- overhead costs.

I.3.3 - The result of a cost control system

By using the direct cost method, the result of a cost control system can be evaluated by determining what charges are included in the costs? Some charges are directly affected by variations in the market, such as operating costs, voyage costs, cargo costs; others are charges which are fixed as a cost and which seldom vary. The result includes both fixed and variable costs of the company as whole. From the result, the cost of a unit can be calculated but only in those categories where it is possible to do so. This method of categorizing and determining the result of a cost control system applies equally to categories of offshore and onshore activities.

I.4 - DIFFERENTS COSTS IN A SHIPPING COMPANY

The reasons for arranging a ship's costs into groups are similar to those of other businesses. There are no general standards for the magnitude of the cost items because they may vary from one operator to another, in accordance with the management policy of the company. However it is most important to discriminate between the
following:

- total costs,
- average costs,
- fixed and variable costs,
- marginal costs, and
- direct and indirect costs

I.4.1 Total costs

In shipping matters the total costs are those which are associated with transporting the cargo. A shipping company is, for instance, a firm which renders service in transporting cargo from one place to a determined destination. To carry out this operation, certain costs are incurred such as port expenses, crew expenses, bunker expenses, and the administrative expenses of running the shipping company itself. By adding up all the cost elements associated with carriage of the cargo, the total costs are determined.

I.4.2 Average costs

The average cost is the total cost involved in transporting cargo divided by the unit of interest. In shipping, the output may be described in terms of unit costs in different ways according to the reasons for the analysis. The unit of output may be:

1) - The tonnage of cargo transported a given distance,
2) - The tonnage of ship's deadweight,
3) - The ton-mile,
4) - The ship-day in operation, and
5) The voyage of the ship.

The average cost per ton could therefore be: the total cost divided by the number of tons transported. This is important when requiring an estimation of unit performance.

\[
\frac{\text{total cost}}{\text{number of tons transported}}
\]

The average cost of ton-miles is the total cost divided by the number of ton-miles performed, which is useful in the study of unit capacity.

\[
\frac{\text{total cost}}{\text{number of ton-miles}}
\]

The average cost of the voyage is the total cost divided by the number of voyages; this is, however, dependent on certain factors namely whether the venture is undertaken on a voyage or time charter.

\[
\frac{\text{total cost}}{\text{number of voyages}}
\]
1.4.3 - fixed and variable costs

Costs may be divided into two main categories.

a) Variable costs

Variable costs are those costs which are subject to change on the market and which tend to vary directly with fluctuations in the volume of output. These costs can never be precisely calculated or fixed as they are directly influenced by changing circumstances. When taking, for example, voyage patterns as the output of the unit. Furthermore, when, for example, the price of bunkers changes frequently, this ultimately has an influence on the voyage cost per unit. When costs are estimated for a particular voyage, some of the costs are a direct input of the voyage. Such costs, for instance, cannot be foreseen and only arise on the voyage (e.g., crew repatriation) and can be directly attributed to that particular voyage. The overall voyage cost of that unit will then vary from the original voyage cost estimate.

b) Fixed costs

Some costs do not vary in relation to the level of output. For example, a managing director’s salary does not vary with the level of the company’s activity. Such costs may be labelled fixed costs. Insurance premiums can be taken as fixed costs also. These costs are not subject to dispute and must always be paid whether there is output or not. However, this does not mean that a fixed cost is always fixed in amount, for there are other forces, such as price levels, market shortages, etc. which can cause
Fixed costs to change in amount from period to period.

The managing director's salary, which is a fixed cost in this year, for example, may be increased in the next year. Yet, it is still regarded as a cost. This difference is not due to a variation in the level of output but is rather due to the passage of time. Therefore, it can be said that fixed costs vary over time and not with the level of activity.

c) Reasons for separating fixed and variable costs

The importance of separating variable and fixed costs is that variable costs must be controlled in relation to the level of activity, while fixed costs must be controlled in relation to time. For the manager it is important to know whether or not a particular cost will vary as a result of a given decision.

The relevance in the context of cost control is that a break-even analysis is based on the important distinctions between variable costs and fixed costs, and between direct and indirect costs. A break-even analysis is an important and useful device to provide background information for reviewing overall cost and profit levels.

I.4.4 Marginal cost

Marginal cost is a more useful technique for studying the effects of changes in volume and type of output. It is primarily concerned with the provision of information to management on the effects of costs and
revenues on short run changes in volume and type of output. Marginal cost may be defined as the increase in total cost resulting from raising production by one unit.

1.4.5 Direct and indirect costs

The traditional "unit of account" for shipping management is the voyage. In voyage accounting all revenues and expenses are classified by vessel and voyage. The operating profit or loss of the particular voyage can readily be determined.

In this case, the cost system should provide for the segregation of every cost made directly or indirectly and may be classified on the basis of function or activity. Thus for the purpose of accounting, cost elements are divided into two types of costs.

1) Direct voyage cost, and
2) Indirect voyage cost.

Voyage results are generally stated on a daily, as well as round-trip basis so that the profitability of voyage patterns can be readily compared. Only a few costs are incurred directly because of the particular voyage of a vessel. For this purpose, it is useful to identify direct and indirect costs.

a) Direct voyage costs

Direct voyage costs are the expenses that can be charged directly according to a particular voyage. The most important is the expenditure on fuel; other...
expenses are port charges, agency fees and canal dues. For vessels engaged in liner trade, cargo handling expenses would be included. Other direct voyage costs would include:
- Seamen’s wages,
- Repairs and maintenance,
- Stores, supplies and expendable equipment.
- Fresh water
- Fumigation,
- Tonnage taxes,
- Harbour dues,
- Tug and lighterage service, and
- Stevedoring.

b) Indirect voyage costs

There are many costs incurred in generating output that are not identifiable as being direct. An indirect cost cannot be directly associated with the production of a cost unit or with the activity of a cost center, but has to be apportioned to the cost center or absorbed by the cost unit on a suitable basis. The expenses, such as vessel depreciation, insurance, etc., are indirectly incurred with by the voyage of vessels. They remain constant with the unit itself or with its cargo per voyage.

These costs are incurred as necessary expenses; one example would be insurance. Indirect costs may occur when an unexpected major overhaul needs to be done. This would be regarded as a fluctuating expense between one voyage and another relating to that particular operational unit. However, in the case of hull insurance, the cost is not related to a particular voyage, but rather over a
period of time, for example one year. This cost is thus not directly related to the voyage but a fluctuating charge between several voyages over a period of time.

c) Relationship between the different concepts of costs

It can be noted that the term "variable cost" has different meanings in different accounting systems. Seamen's wages, payroll taxes, fuel and fresh water, for instance, do not fluctuate in response to a change in the volume of traffic, but they do vary with the length of the voyage.

On the other hand, stevedoring and cargo handling fluctuate with the volume of traffic. Repairs, maintenance, stores and supplies vary both with the volume of traffic and with the length of the voyage. Fumigation, tonnage taxes, canal tolls and agency fees fluctuate neither with the volume of traffic nor with the length of voyage. Direct costs, such as taxes, may be considered as fixed expenses.

I-5 Suggestion for a system of cost control

The cost control system that is suggested here is especially designed for shipping companies where the ship is owned by the company itself; it can be used for vessels hired on bareboat terms also. However, it is not designed for management of vessels under a voyage charter party or a time charter party. It has been seen that cost items can be categorized in different ways, such as variable or fixed costs, direct or indirect costs. The importance is
in splitting the costs in different ways to make the accounting system adaptable to three different types of chartering:

- bareboat charter,
- time charter, and
- voyage charter.

(see fig. 1-2)
<table>
<thead>
<tr>
<th>COST ITEMS</th>
<th>1</th>
<th>COST BORN BY SHIPOWNERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A- CAPITAL COSTS</strong></td>
<td>bare</td>
<td>I t p l v l v l</td>
</tr>
<tr>
<td>- Repayment of capital</td>
<td>boat</td>
<td>l i e l o l o l</td>
</tr>
<tr>
<td>- Interest</td>
<td>charter</td>
<td>m r l y l y l</td>
</tr>
<tr>
<td><strong>B- OPERATING COSTS</strong></td>
<td></td>
<td>- e i l a l a l</td>
</tr>
<tr>
<td>- Crew, wages etc</td>
<td></td>
<td>o l g l g l</td>
</tr>
<tr>
<td>- Provisions</td>
<td></td>
<td>l c d l e l e l</td>
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<tr>
<td>- Spare parts</td>
<td></td>
<td>l a t l c l c l</td>
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<tr>
<td>- Luboils</td>
<td></td>
<td>l r l h l h l</td>
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<tr>
<td>- Repairs &amp; maintenance</td>
<td></td>
<td>l t i l a l a l</td>
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<tr>
<td>- Insurance</td>
<td></td>
<td>l e p l r l r l</td>
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<td>- Administration</td>
<td></td>
<td>l r l t l t l</td>
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<tr>
<td>- Other</td>
<td></td>
<td>l e l e l e l</td>
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<tr>
<td><strong>C- VOYAGE COSTS</strong></td>
<td></td>
<td>- r l r l r l</td>
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<tr>
<td>- Fuel (bunkers)</td>
<td></td>
<td>I t l l l</td>
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<tr>
<td>- Port dues and fees</td>
<td></td>
<td>l e l i l</td>
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<tr>
<td>- Canal tolls and fees</td>
<td></td>
<td>l r l n l</td>
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<tr>
<td>- Others</td>
<td></td>
<td>l m l e l</td>
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<tr>
<td><strong>D- CARGO COSTS</strong></td>
<td></td>
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<tr>
<td>- Loading</td>
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<td>- Discharging</td>
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</table>

Source: lecture of J.A. Sandervärn & Son AB shipping consultants (figure 1-2)
Under each charter party arrangement the responsibilities of the shipowners and charterer are well defined. As a matter of interest here, the bareboat charter ocean costs are charged to the company as in the case where the company itself runs its vessels like the shipowner. The activities engaged in by such an operation can be divided into distinct categories:

- The fleet management activity,
- the offshore operational activity, and
- the onshore activity.

These are addressed in detail in chapter 2

(see fig. 1-3)
"Fleet management" activity (Figure 1-3)
Figure 1-3 shows the structure of a cost control system which could be split into three major sections and which is shaped like a pyramid. This concept reflects the idea that the company's activities should be grouped and administered in three major sections. These three sections will now be schematically represented in the form of a pyramid and represent the company's activities. These activities, however, can vary from one company to another. Each section contains specific costs related to the activity of the section concerned. As it could lead to false conclusions if the cost of port dues for instance, were to be mixed with the costs of running a vessel, it is therefore split into three major sections:

1- 5.1 Fleet management activity

This activity contains operating and capital costs. These costs are somewhat misleadingly called running costs which keep ships ready for sea. They consist of cost elements which may be grouped into: crew costs, insurance costs, repairs and maintenance costs, stores and miscellaneous. The performance of the ship will be seen from this perspective.

1- 5.2 Offshore exploitation activity

This activity concerns both voyage and cargo costs which occur because the ship is sailing and carrying out a voyage whether loaded or in ballast. When the ship is moved from one port to another, fuel is needed. Then there are costs related to port calls and possible canal transits. The costs connected with loading and discharging a vessel and storing the cargo onboard the vessel are called cargo costs, but remain within the offshore
exploitation activity. Voyage and cargo costs are clearly variable costs because when the ship is idle practically no voyage and no cargo costs will accrue at all.

I- 5.3 Onshore activity

This activity embraces all company overhead costs which concern costs of general administration and costs of ship management, such as costs relating to finding cargo, determining routes and schedules, arranging agents, and it further includes also, costs for arranging stores, crew, insurance etc. Costs for general administration concern the costs of overall management, accounting, finance, and so on which can be: computer costs, banking costs, advertising costs, communications costs (telex, telephone onshore), or salary of personnel onshore. Broadly speaking these are the costs of keeping the company running.

Why a pyramidal shape?

A pyramidal shape is best because, all these costs can be grouped in each step of the pyramid in more detail from the bottom and gathered step by step in accordance with the policy of management until it will represent one unit of activities on the top of the pyramid. A more detailed discussion follows:

For the fleet management activity

The first step (the bottom of the pyramid): all charges which appear within each vessels can be seen in detail.
The second step: these charges are divided into two groups, one for cabotage, for instance, and the other one for sea-going vessels.

The third step shows both costs incurred by sea going and cabotage vessels, which means the situation of the fleet management in general.

I.5 SUMMARY

Cost accounting definitions and methods have been developed to serve particular purposes. The major influence has been the need for financial reports to assist the managers and tax authorities. Managers do not only require an overall cost picture but detailed analysis of the different cost components, and it is for this purpose that a cost control system needs to be implemented.

Costs do vary from one company to another. The reasons for this varying are important in terms of competition. An effective cost analysis system that allows an understanding of the behavior of costs is of great interest to shipping company managers.

Break-even analysis, for instance, is based on the important distinctions between variable costs and fixed costs, and between direct costs and indirect costs. The break-even analysis can serve as an effective background information device for review by shipping company managers to apply in the overall cost and profit levels.

As can be seen from the above-mentioned shipping company, its activities were grouped into three major
parts. However, the activity which is of most interest here is the "fleet management activity" and this will be the subject of further discussion.
CHAPTER II

THE SYSTEM OF "FLEET MANAGEMENT"

II.1 GENERAL POINTS

II.1.1 Sources and objective

"Fleet management" is one of the activity sectors within the organisation of the shipping company. It is responsible for keeping the ship operating, whether it is sailing or in port.

In this system of fleet management, the purpose is to make a profit on the professional ability of maintaining and running ships efficiently. Fleet management has the role of administering the ships under all conditions, whether old or new, carrying a cargo or not, in service or out of service, at sea, in port or laid up.

Under this system of fleet management, the control of costs is the responsibility of the ship manager or master. In a fleet management system, the vessels will be the property of the company, leased or contracted under a bareboat charter party arrangement.

Broadly speaking, the fleet management sector ensures that vessels are available to the operators when required (operators are responsible for the functions associated with earnings through use of vessels). Management ensures that the vessel is ready and equipped
for sailing, whereas the operation then uses and works the vessel and equipment to generate income, this is termed the offshore activity.

A "fleet management" system provides for the operator a standard cost per vessel per day, which is designated as a "daily cost". This daily cost is considered as the vessel's "unit of account" by fleet management. The fleet management has separate tasks and responsibilities from the operator. It is responsible for the calculation and the provision of the ship operating costs. It then provides these expenses for management.

II.1.2 Three types of fleet management

The company can operate vessels of different types as well as on different traffic lines. Fleet management can be divided into main types of functions and are grouped here as follows:

- Manning
  - Ocean-going,
  - Cabotage, and
  - Tiers.

- Technical
  - Maintenance,
  - Equipment for safe navigation,
  - Spares, stores, and
  - Operational equipment.

- Administrative
  - Budgeting,
  - Accounting,
  - Personnel training,
  - Insurance, and
  - Purchasing and marketing.
These functions of fleet management can be combined in the activities of one company or a company may specialize in one of the above activities in particular.

II.1.3 Charges for fleet management

The procedure is employed by fleet management to track all expenses derived from the fleet activities of the whole company.

The cost elements involved in fleet management can be broken down and classified as follows:

a) Operating costs of vessels

- Manning,
- repairs and maintenance,
- food supplies,
- stores and miscellaneous,
- insurance,
- income tax, and
- administration costs of manning.

b) Capital costs of vessels:

- Depreciation,
- interest of loans, and
- leasing.
II.2 THE COST ANALYSIS OF "FLEET MANAGEMENT"

II.2.1 The operating costs of vessels

II.2.1.1. Manning costs

Crew costs represent the single most expensive item to be addressed by fleet management systems. This may vary according to the flag flown by the ship or the nationality of the crew, but this factor is largely outside of the control of the ship manager. However, this is not always the case. Usually the nationality of the crew is dependant upon the same statutory requirements as the manning scale. Nevertheless not all shipping companies necessarily follow the international statutory requirements, since these are high, especially in developed countries, such as, the U.S.A. and Australia. National statutory requirements, on the other hand, are much lower and in many cases minimum wages. Thus, such operations from developed countries, since they employ crew from countries, where the training levels are reasonably high (e.g., India, the Philippines), but the wages are low compared to their European counterparts, this represents a substantial saving on manning costs.

Generally speaking, manning is considered a direct cost when the crew is permanently employed on one vessel, but where crew are constantly changed, it becomes more difficult to apportion the crew costs. For this reason and for proper cost control, the manning costs will be divided into two categories:
DIRECT
-------
- Basic wage items,
- leave,
- overtime,
- pension/Provident fund,
- travel, and
- food, supplies.

INDIRECT
--------
- Welfare/Social payments,
- union dues,
- agency fees/communication charge,
- working gear,
- recruitment/Medical services training, and
- crew accident insurance.

II.2.1.2 Repairs and maintenance

The prime objective of repairs and maintenance is to keep a vessel operational for the maximum period of time possible. After manning, repairs and maintenance usually present the next most important cost item, but this is not always the case. In some circumstances, this may exceed the manning costs. Some companies, for instance, keep operating old vessels due to the lack of capital for new investments. Operating old vessels requires excessive repair costs and consequently it affects other costs as well. In old vessels and low operating capital venture schedules, repairs are supposed to be made by the crew as routine work, but it often postpone until the vessel enters drydocking. This is due, in most cases, to crew sizes being reduced as a means of saving costs. Thus, the age of the fleet influences both time and cost in terms of repairs and maintenance. As a result of access to various international conventions, government and classification society requirements, and especially to
safeguard ship safety; vessels are required to undergo various inspections during their lifetime, for instance:
- an annual survey,
- a special survey every 4-5 years,
- a periodic survey which falls between an annual and a special survey and includes a drydocking survey.

It is theoretically possible to only drydock a vessel every five years on average. Practically, and depending on the age of the vessel, vessels are normally drydocked once every two and half years, but the option of when to drydock also depends on the individual company's policy. Owners may adopt a policy of minimum repairs and maintenance in a bad market, for example, and at other times when an owner wants to minimize the docking time needed to operate a well-maintained vessel.

One factor which influences the variation of repair and maintenance costs is the difference in trading patterns. Vessels which operate in national cabotage, for instance, tend to concentrate on the near sea trade, making frequent port calls. This entails more intensive use of the vessel's cargo handling equipment, increasing the wear and tear which directly results in increasing repairs and maintenance.

II.2.1.3 Insurance

The desired arrival of the vessel must be accomplished safely with the cargo undamaged and the passengers uninjured. Shipping is subject to many risks. Protection against these risks is necessary and the shipowner must arrange to be insured against such eventualities:
- physical loss or damage,
- loss of interruption of earnings,
- third party liability, and
- cargo liability.

Furthermore, shipowners need to indemnify themselves against possible loss to secure their capital investment in the following cases:

"Hull insurance and machinery policy" covers physical loss or damage to the ship. Usually it is the most costly of insurances, often absorbing more than 50% of the vessel's total insurance costs.

"Protection and Indemnity" covers cargo liability and third party liability. This protection and indemnity is obtained through mutual protection societies, or clubs of which shipowners are members.

Insurance is a very complex subject and it requires careful consideration. It therefore requires professional background and know-how. The insurance manager needs to make sure that the shipowner is protected by insurance against risks.

The expertise and experience of the insurance manager or broker is necessary in the evaluation of the insurance requirements. He needs to consider various factors for the purpose of insurance evaluation, such as rate of insurance, age of the vessel etc.

Insurance premiums, on the other hand, are dependent largely on vessel age, and the older the vessel, the higher the risk and consequently the premium to be paid. Insurer indemnities usually consider two criteria.
1) The degree of risk and classification of the vessel as determined by the underwriter's classification society. In this case, different underwriters may have different experiences and offer different quotes. This creates a competitive insurance market, and in this case, the expertise and experience of the insurance manager or broker is invaluable in matching the right underwriter to the insurance requirements.

2) Where the vessel is very old and the cost of insurance may be due to the high risk, the owner often has to choose between continuous insurance and operation with accompanying high maintenance and repair costs or scrapping the vessel since it has become unprofitable to operate.

A decision must be taken by the insurance manager and he commonly needs the services of professionals like the insurance brokers. Alternatively, the shipowner must be advised that running this kind of vessel is no longer beneficial.

II.2.1.4 - Supply costs:

Keeping the vessel operating means having an adequate supply of reliable equipment. The lack of the same can contribute towards the unseaworthiness of the vessel.

Supplies include all consumables used for:
- Deck stores,
- engine stores, and
- steward stores.
Deck stores essentially consist of various items of stores required for navigating ships, and for operating or maintaining the deck. Navigational stores include items such as charts and publications. The stores required for safety equipment are all items concerning personnel safety, fire-fighting equipment and life saving appliances. Items such as cordage, wire ropes etc. are for operating cargo gear, and hawsers are for mooring and berthing of ships. Deck stores also include some chemicals and detergents for cleaning. Paints, for example, are used for routine maintenance, to prevent corrosion and fouling, and to maintain the appearance and seaworthy condition of the hull and machinery of the ship.

Engine stores include various stores required for the engine room such as:

chemicals for fire-fighting equipment; gases, tools, packings, gaskets, etc. required for servicing the machinery and equipment and maintaining cleanliness and hygiene, and electrical stores (fuses, bulbs etc.).

Steward stores consist of saloon stores and food supplies for the ship’s crew. The former consist of items required for furnishing the crew cabins, including equipment such as cutlery, crockery, utensils, cleansers and so on. The latter includes various food provisions required on board for the catering services of the crew, such as vegetables, dairy products, meat, etc.
The arrangement for supplies depends on the policy of the management of each company. Some companies arrange matters through the head office, and others delegate to the ship's staff. It is better, if the provision of supplies is left to the ship staff who are more knowledgeable, but they must be given instructions concerning the limit of the budget and acceptable prices.

Ensuring sufficient equipment in stores requires good organization and skill on the part of the supply manager. It is important to supply the ship economically with quality purchases at the lowest possible prices.

The supply manager must know what equipment and stores each ship has to carry and what it consumes. Inventory and control systems are essential to keep stock levels within reasonable limits. This can be done with the assistance of monthly reports.

Through coordination and interchange between ship, and shore management, store levels can be adequately maintained with computerized data of details for the purposes of proper planning. These can be achieved through the use of various methods, such as the analysis of records, physical inventories and proper data storage.

II.2.1.5 Taxes

Income tax depends on the laws of individual countries. In a general respect it includes two types of taxes:
Professional taxes

These are due annually from each individual or corporate body involved in professional activities. The tax is determined both by the leasing value of the ship and in part by the salaries of the personnel. The whole fleet of the company has to be taken into account regardless of whether the ships are fully owned or chartered.

Various taxes

These include penal fines, indemnities for pollution or damage to third parties, etc.

II.2.1.6 Administration costs of manning

There are various administration costs which relate to the crew and manning of the ship. These administrative costs are incurred in the employment of the ship’s crew and many include administration expenses, for example, wages, pension recruitment etc. These administration costs, because they have to do with the operational manning of the ship, are regarded as part of operational expenses, even though the costs are directly incurred by the management staff onshore.

II.2.2 Capital costs of vessels

II.2.2.1 Depreciation

Depreciation is often defined as “consumption of capital”. In the case of a ship, the asset value normally diminishes through wear and tear or through obsolescence
or aging. There are various methods used for determining depreciation, namely:

- A straight line method and
- A reducing balance method

The most common is the straight line method, whereby the value of the ship can be assessed in two ways, namely:

- Based on the original cost of vessel, or
- Based on current replacement value.

The basis for depreciation in the first case is the historical or original cost of the asset (ship), whereas the latter is based on inflation, as opposed to the historical cost of the asset.

II.2.2.2 Interest on loans

Interest is payable on loans to the financial institution for the ship's purchase. This interest payable on the capital borrowed for the ship's purchase forms part of the capital cost.

II.2.2.3 Leasing

When operating a leased ship, the lease payments also form part of the capital cost.

II.3 - "FLEET MANAGEMENT" AS AN ACCOUNTING PROCEDURE

In order to obtain a breakdown of the ship management costs, it is important in accounting practice
to subdivide the total unit cost per ship into various sections. This subdivision for accounting purposes will be broken down into two main sections, each with further sub-divisions as follows:

- main section, and
- auxiliary section.

II.3.1 Main section

II.3.1.2 Vessels section

a) Direct charges

The vessels section includes all expenses involved in fleet management which directly affect the vessel and are not open to ambiguity. They are easily determined and specifically include:
- Wages and social charges for seafarers' employment,
- insurance,
- depreciation,
- leasing,
- maintenance and drydock, and
- supplies.

b) Indirect charges

These charges are those which are generally incurred by management in the execution of its function of operating the ship, such as expenses for the administration of the crew. These cost are overall expenses for the whole fleet and cannot be directly attributed to a specific vessel. They therefore need a
predetermined method of apportionment among the whole fleet to obtain an administrative cost per unit. For example, if these expenses are 100 francs, this is then divided into the number of vessels in the fleet as a percentage.

II.3.1.3 – Section "seafarers on leave"

This section includes:

a) Direct charges
This means the wages and social services of seafarers on leave.

b) Indirect charges
Every kind of incentive, such as a bonus or subsidy, which exists within the company (merit bonus for management, annual incentive bonus, etc.) are included.

II.3.1.4 Section "social services"

This section includes those charges for social services concerning the seafarers, such as social benefits given to seafarers, percentage contribution for mutual benefit, medical services etc.

II.3.2 Auxiliary section

II.3.2.1 Section "seafarer not in active service"

Under this section is included those costs incurred by seafarers who are employed, but not on active duty.
For example, they are on annual leave, sick leave etc. and make a contribution on a pro rata temporary basis from their wages.

II.3.2.2 Section "supplies to apportion"

In an accounting system, this section is subdivided on a pro rata basis to the vessel for supplies to the individual vessel units.

II.3.2.3 Section "overhead administrative cost" of fleet management

The overhead expenses incurred by the fleet management are apportioned to the individual vessel units as a percentage of the total overhead costs during an accounting period as follows:

Manning portion, pro rata of the total amount of the wages;
Supplies portion, pro rata of the total expenses of the supplies;
Technical portion, pro rata of the total expenses of daily repair and technical breakdowns
General portion (of each one of the above as a percentage contribution to the total accounting expenses).

II.3.2.4 Section "taxes"

Taxes payable on wages and other professional services rendered must also be accounted as a cost.
CHAPTER III

BUDGETARY PROCEDURE

III.1 INTRODUCTION

If a company's activities are not to be aimless, they must be given some direction. This can be done by answering questions such as:
- How much will be the cost involved in running a vessel?
- How can the running of the vessel be competitive in the market?
- What are the devices to limit expenditure?
- What are the devices for keeping ships operational at minimum costs?
- What level of expenditure is to be incurred?
- What is expected to be achieved?
- What is actually achieved?

This is the function of budgetary planning. Budgeting is a management tool used for shorter-term planning and control. Traditionally, it is employed to limit expenditure, but it is much more useful to treat budgeting as a means of obtaining the most effective and profitable use of the company's resources via planning and control.
In this case budgeting means to:
- Analyze alternative solutions to the operation of the vessel in alternative years.
- Provide a basis for the setting of economic objectives,
- Have better control over the ships running expenses, and
- Provide efficient control for management.

The basic principle involved in budgeting is to enable the manager to use the budget procedure for forecasting operational results and for keeping ships operational at a minimum cost.

Otherwise, the budgeting process consists of establishing objectives for the whole organization, and devising plans and standards of performance for every area of activity. Budgeting is not just control, but it is an analysis of comparing actual results with planned results, and the taking of corrective action on the basis of significant variations from planned results.

HOW THE BUDGET SYSTEM WORKS

The components of good budgeting are:

Planning: It is very important to plan. Generally each person in a certain area of operation must follow the approved budget which can only be deviated with the approval of the head office.

Budgeting: Once a plan of action is formulated, one can start to budget. The goal is to convert the plan into different specific budget items.
Reporting: The last step in budgeting is to prepare a report to the head office following management policy. This can be done monthly, quarterly, bi-annually or annually. One part of a control system is performance evaluation and reporting of variations. It serves no purpose to budget expenditures if a comparison between actual expenditures and the budgeted expenditures is not analyzed. For this purpose, reporting of variations is imperative and must be done for each accounting period. Reporting by the responsible section or department is done for the purposes of providing full reasons for variations so that corrective action could be taken.

Through the reporting system, the top management needs:
- To know the significance of the variations and their reasons,
- to have an up-to-date estimate of the annual profit for planning purposes,
- to know the total expected impact of variation when the correction time goes beyond the end of the current budget year, and
- to know criteria for appraising the personal performance of managers.

III.2- BUDGETING PRACTICE IN "FLEET MANAGEMENT" SECTION

For a shipping company, the method of preparing a budget would be determined by the kind of budget to be prepared and the length of the budget period. First of all, a planning meeting must be held by all concerned. During this meeting certain information must be ascertained and certain decisions must be taken, such as
the following:

- What is to be the technical condition of the vessel, the status regarding preventative maintenance and due classification? Inspections should be made in connection with the present state of stocks of relevant spares and consumables.

- What are the requirements of trade in various sectors? What tonnage is to be chartered and what is the allocation of the vessels to each trade?

It is only after all these preliminaries that the actual budget can be determined. The important thing to remember is to convert the plan into different specific budget items. The budget for each of these items is then fixed. Provisional costs of each item are calculated by parameters fixed by each area or department where the cost was incurred within the company.

The "Fleet Management" section collects all the information coming from these sections to proceed in the evaluation of its budget as follows:
- Crew cost for manning services,
- technical services for the maintenance of the vessel,
- supply costs for supply purchases,
- bunker services for oil, lubricants etc,
- accountant section for professional taxes, and
- each section's services and administration fees. The financial section is concerned with depreciation, financial fees and leasing.

The way in which the budget is set up depends on the management policy of the company. In order
to have a better understanding it is necessary now to
define how the budget for fleet management should be made
up. This study will, however, be based and concentrate
specifically on the practical application of the budget in
accounting practice.

III.2.1- Budgeting for crew cost

Wages and overtime are budgeted at the head office.
In general they will be based on previous experience.

Fleet management expenses will have to be
determined for each section, the crew cost for each ship
must, for instance, be estimated. It is dependent on a
variety of circumstances, such as owner's policy,
seafarer's employment contracts, quality of personnel
etc. It is a difficult problem to estimate the whole
spectrum of costs to be considered and it requires
detailed attention. A lot of parameters have to be set
and considered in such a calculation.

First of all, one has to determine the details of
those crew actively employed and this could be calculated
through the number of personnel in service as in the
example below.

<table>
<thead>
<tr>
<th>vessel</th>
<th>watchkeeping</th>
<th>first and 2nd</th>
<th>crew</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>officers</td>
<td>engineer</td>
<td></td>
<td></td>
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<tr>
<td>--------</td>
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</tr>
</tbody>
</table>


The number of off-shore days is equal to vessel days at sea.

Second, we have to calculate the position of those seafarers who are employed but disembarked and not on active duty. This can be done by establishing seafarers' leave on a period of 30 days from embarkation seafarers' sick leave, missions and training. All this information of seafarers' records for disembarkation should be taken from statistical data.

To summarize, the calculation of the total provisional cost of seafarers will be established as follows:

\[(\text{Total of wages of embarked seafarer + embarkation costs}) + (\text{total of wages of seafarer ashore + disembarkation costs})\]

The total provisional cost of manning for each vessel will be calculated as follows:

the average of daily cost multiplied by the number of off-shore days of each vessel.

The provisional cost for disembarkation is apportioned to each vessel in relation to the active duty of the seafarers.

III.2.2- Budgeting for technical costs

First of all it is useful to note that repair and maintenance costs consist of external services/assistance, (travel of repairing team and classification certification fees). Before preparing plans and the budget, the manager
concerned must decide what he intends to do and accomplish during the financial year.

Planned maintenance is a very important factor in budgeting. Planning is a way of controlling maintenance of a ship through regular schedules for examination overhauls, renewals or replacements of all parts of the structure, machinery, equipment, etc. with flexibility, and dependent on the need.

That means, every part of the ship and every mechanical part is listed and allotted a specific time for periodic examination. Without planned maintenance, it will be difficult to set budgets and timetables for maintenance, because the manager concerned will not know when renewals or replacement parts required are to be effected and will not be able to predict the costs involved.

The provisional cost of maintenance will be set up with regard to the historical maintenance record of each vessel. The technical manager shall evaluate:
- the number of technical breakdowns and their duration.
  In this respect he must review the records of technical breakdowns for each vessel,
- the cost of non-technical breakdown expenses;
- submission for inspection to a classification society, to have a good estimation of the state of the vessel

Factors such as inflation and currency charges must be taken into account, as well, when making calculations for budget purposes.
III.2.3 Budgeting for supply costs

In this budget plans have to be made based on assumptions and experience. It must be adjusted to inflation and currency factors. It is calculated by each vessel on the basis of the costs known during the past year (n-1). The importance of a cost budget based on a workplan must be emphasized, because it is only from this result that one is able to determine the most probable purchasing budget possible by categorizing the various items.

a) Safety of navigation
-----------------------------
The concerned manager proceeds in the calculation of his budget in the following manner. The cost incurred in this regard could include expenses for items such as maps, documents, taxes, and communication expenses etc. These costs will be calculated on the basis of their need, importance, and priority. The radio costs for instance could be calculated on the basis of the previous year's cost incurred.

b) Oil and Lubricants
--------------------------
The bunker service determines its budget in collaboration with the technical service for provisional consumption. They will take into account the previous year’s consumption and the age of the vessel. Every cost is estimated on a statistical data basis. This budget for supply costs could then be tabulated as follows:
Table of supplies budget

<table>
<thead>
<tr>
<th>vessels</th>
<th>general</th>
<th>lubricants</th>
<th>safety</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>!-------</td>
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</tr>
</tbody>
</table>

III.2.4 Budgeting for insurance costs

Budgeting for insurance costs is very specific and costs are influenced by the insurance market.

During the period when this budget is estimated, the insurance premiums for the budgeted year are not yet known because the negotiations with the underwriters is usually done at the end of each year, normally in December. The basis for determining the insurance premium is largely dependent on various factors such as the previous year’s damage records, use of the vessel etc.

The insurance premium will be calculated on the basis of the vessels in service, on their agreed values, and on the composition of the crew.

Table of insurance budget

<table>
<thead>
<tr>
<th>vessels</th>
<th>ordinary</th>
<th>war</th>
<th>premium</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>!-------</td>
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</tr>
</tbody>
</table>

65
III.2.5 budgeting for "income tax"

1) Professional tax

The amount of this tax is based on the leasing value of the ship and estimated in relation to the rate of taxation determined by the fiscal authorities. Taxation takes into account the following:

The net value of the ship and the amount of leasing for year n-2, and expenses of crew for year n-1.

Board of tax budget

---

vessels! taxation assets...!

! A ! B ! C ! D ! E ! T !
!
! crew! rental! A + B! Profession! taxes and! O !
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! ! value! ! nal taxe =! various! T !
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! ! ! ! ! C * rate! taxes! A !
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! ! ! ! ! function !
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.........!
III.2.6 Budgeting for "Administration costs of manning" (AC)

The administration costs of manning is a calculation of every cost in every service.

The administration cost of manning = AC manning service + AC technical service + AC supplies service + AC accounting service

Each service calculates its administration cost as follow

\[
\text{AC manning service} = \text{AC manning} \times \frac{\text{cost of manning /ship}}{\text{total of manning cost}}
\]

\[
\text{AC technical service} = \text{AC technic} \times \frac{\text{cost of maintenance/ship}}{\text{total cost of maintenance}}
\]

\[
\text{AC supplies service} = \text{AC supplies} \times \frac{\text{cost of supplies/ship}}{\text{total cost of supplies}}
\]

\[
\text{AC accounting service} = \frac{\text{cost of accountant}}{\text{total manning+maintenance+supplies}}
\]
III.2.7 Budgeting for depreciation

Normally, the duration of the life of a vessel is fixed at:
20 years for new vessels;
15 years for vessel received after this date; and
For second hand vessels, depreciation is calculated following the rest of the duration of life of the vessel.

Usually the straight line method is used in accounting practice. Depreciation is calculated on the basis of the estimated duration of the life of the vessel, that means, for example 5%, for vessels which are 20 years, and 6.67%, for those which are 15 years old. But, these rates, percentages of calculation vary from company to company or in accordance with government policies.

The depreciation fees will be determined on a fixed yearly rate for the vessels belonging to the company. The fleet management takes data budget information and yearly rates applicable from the financial department. It is drafted as follows:
III.2.6 Budgeting for leasing

The leasing charge of fleet management is the real leasing rate per vessel during one year.

III.3 CALCULATION OF PROVISIONAL COST FOR "FLEET MANAGEMENT"

When evaluating the operational efficiency of the fleet management it is necessary to evaluate all costs involved in operating a vessel, or a fleet of ships. To estimate costs and expenses, one needs to know which budget is to be applied and the significance of the cost. With regard to the explanations discussed previously, budgeting is one of the functions of "fleet management" which must be achieved before reaching the "expected daily cost" per vessel or per fleet for a given financial period.

III.3.1 The "expected daily cost"

The "Expected daily cost" is the daily provisional cost estimation based on the ship's value and calculated through the combination of all the provisional operating costs and the capital costs of the vessel (which in this case is the budget). To keep uniformity in all information and factors applied, maintenance presents a peculiarity in setting up the budget required. This peculiarity will be explained in the next paragraph. An explanation of the various factors included in this cost
will also be included.

III.3.2 The peculiarity of maintenance costs

The peculiarity of maintenance costs arises due to the strong variation in charges as a result of the periodicity of technical breakdowns. Usually a vessel drydocks once a year. Maintenance will, however, technically support the vessel for a period of 3 years as maintenance must keep the vessel safe during three successive years and not only for one year. A solution can be found to this problem avoiding unbalanced maintenance costs. One system called the "method of smooth expenses" could be created to maintain average costs included in technical breakdown.

Technical breakdown costs cover every maintenance fee of the vessel such as current maintenance, drydocking etc. The variation between the real days for maintenance and the estimated days will be put into a "provisional account" when technical breakdowns occur, and in "provision used" when they do.

In terms of accounting practices the following serves as an example.
Table for maintenance cost calculation

Assume that the maintenance cost in year 1991 is 1000 USD
The maintenance for year 1992 = 1000 USD
The maintenance for year 1993 is 2000 USD

The total over 3 years = 4000 USD

The average of maintenance costs must be

$$\frac{4000}{3} = 1333 \text{ USD}$$

The real maintenance accounted in 1991 = 1000 USD
The provision unused = 333 USD

Total = 1333 USD

The real maintenance cost accounted in 1992 = 1000 USD
The provision unused = 333 USD

Total = 1333 USD

The real maintenance cost accounted in 1993 = 2000 USD
The provision used (less) = 667 USD

Total = 1333 USD
### III.3.3 Table for provisional cost of "fleet management"

<table>
<thead>
<tr>
<th>Vessel</th>
<th>On shore days</th>
<th>Type</th>
<th>Technical breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ANNUAL COST</th>
<th>DAILY COST</th>
</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

**RUNNING COSTS**

- Manning costs
- Repairs and maintainance
- Victualising
- Stores and miscellaneous
- Insurance
- Income tax
- Administration costs for manning

**TOTAL 1**

**CAPITAL COSTS**

- Depreciation
- Interest of loan
- Leasing

**TOTAL 2**

**TOTAL 1 + 2**
The section "fleet management" is established on the basis of the budget of the table of "provisional cost". The result corresponds to the total expenses or annual costs of one or a successive number of vessels. In reality this result is calculated to cover all charges within the fleet management center.

"Daily cost" is calculated through the result of "fleet management" on the forecast of the number of operational in-service days of the vessels which can be formulated as follows:

\[
\text{Result of annual cost} \times \frac{\text{real number of operational/in service days}}{\text{number of provisional operational/in service days}}
\]

The "daily cost" of each vessel is just an estimation. It will be adjusted when the general accounting of the company is finished or it has closed its accountant period, because, as regards the explanation previously made, all data used in the "fleet management" section comes from general accounting and is transferred automatically by computerisation.
Definition of provisional operational days:

The provisional operational days means the number of operational service days of the fleet deducting:
the technical breakdown days, and
the breakdown days for the transformation of the vessel.

From this perspective, the breakdown days must be more than 48 hours. For a more comprehensive explanation an example can be used as follows:

Assume that: the total of technical breakdown during three years is 12 days.

Vessel X - technical breakdown of 12 days (expected during the current period n+2)

Number of provisional operational days:
365 days - (12 days / 3 period) = 361 days

Daily cost:
Budget / 361

The daily cost is therefore calculated on the basis of 361 days, instead of 365 days.
III-4 THE REPORTING SYSTEM

A system of reporting is vital to any cost control endeavor as a means of bringing information from each level of management so that responsibilities in the organisation may be fulfilled. Top management, therefore, will receive a summary of all costs, comprising of controllable costs at each subordinate level.

Through the reporting system, top management can compare the budget to the actual financial results which can be done periodically and an analysis of the variations can be made. Cost variations should identify the causes of departure from the budget. Such reports can rectify past mistakes and they can prevent mistakes from recurring in the future.

In general terms, how effective a manager is in his job will depend on how much, how relevant, and how good his information is, and how well he interprets and acts upon this information. Generally speaking, a manager needs information to:
- Assist him in decision-making;
- Indicate his performance and achievement.

However, in the case when a manager may not know the precise information he needs or what information is available, it is the responsibility of the accountant to observe the types of information requirements of the manager and to suggest alternative reporting arrangements and procedures.
III-4-1 Characteristics of the reporting system

The contents of a report must be clear and understandable to those who must read it. Readability and clarity require that very careful consideration be given to the volume of information that should be presented in a report.

A report must facilitate a means of follow-up and control; reports are normally used for the following reasons:
- To spot things that are going wrong, that means permitting corrective action to be taken before serious loss results;
- to determine exactly how and why failure has occurred and to suggest the steps that might be taken to prevent its recurrence; and, to find out who is to blame for the failure, which is not a very constructive use of control information.

A report must be simple, too much detail is more likely to cause confusion than to enlighten. Simplicity can be achieved by such means:
- Eliminating unnecessary figures;
- avoiding technicalities that are not essential; and
- rounding figures, for example 25,000 from 25,321.

When considering who should receive control reports, it is important to appreciate that reports are issued to individuals rather than to departments, in order to stimulate action and to keep people informed.
The significance of a report result lies in the interpretation of the information presented; hence, the meaning of a cost report should never be obscure.

III-4-2 Some examples of control reports in shipping

The objectives of fleet management reports are to achieve the plan regarding the performance and the maintenance of the ships and to achieve the budget. This requires definitions of the methods of recording, transmitting, monitoring, storing and analyzing the information. For example, the importance of recording and reporting of purchase consumption lies in the comments of the master/department head to keep the running costs under control.

a) Purchasing consumption

Consumables, other than provisions and lubrication oil and spare parts, should be reported based on purchasing; however, the vessel must have full control over the actual consumption of these categories and a comment should be made in the reports. All recorded purchases must be reported on the ship's running expenses and be sent to the head office with comments.

b) Stocks

An inventory of spares, provisions and lubrication oil and grease should be prepared at least every 6 months. The goods in stock should be priced and
reported under the respective budget items.

Chart of Cost Report

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual</th>
<th>Budget 1</th>
<th>Budget 2</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
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<td></td>
<td>below</td>
</tr>
<tr>
<td>Running Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manning Costs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Repairs &amp; Rep.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Victualising</td>
<td></td>
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</tr>
<tr>
<td>Stores &amp; Misc.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
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</tr>
<tr>
<td>Income Tax</td>
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<td></td>
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</tr>
<tr>
<td>Administration Cost</td>
<td></td>
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<tr>
<td>for Manning</td>
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<tr>
<td>CAPITAL COSTS</td>
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</tr>
<tr>
<td>Depreciation</td>
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<tr>
<td>Interest of Loan</td>
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<td></td>
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<tr>
<td>Leasing</td>
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</tbody>
</table>

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78
CONCLUSIONS

The conclusion which emerges from what was discussed throughout this paper is that a rational way of managing a shipping company is today of prime importance. This is particularly true with regards to shipping companies from developing countries like Madagascar which have an obvious interest in enhancing their competitiveness by implementing an appropriate system of management best suited to their modest organisational structure and to the size of their fleet. Undeniably, this should enable these shipping companies, on the one hand, to make better use of their scarce financial resources, and on the other hand, to achieve better results.

For these reasons, it is desirable that shipping companies in developing countries seek the means to innovate their management system, and to introduce changes and new ideas in the conduct of their business. Among others, it is paramount for these companies to oriente towards the search for an efficient and reliable system of cost control aimed at rationalizing the operational conditions of their vessels in a more profitable way.

For that purpose, the system of "fleet management" is more particularly suggested, since it is deemed to have the merit of being simple, while at the same time enabling the follow-up of the different running costs. Thus, the top-manager should be able to knowingly make the right decisions at the right time. The particularity of the fleet management system (compared with the classical management) mainly lies on the need of setting up a department as a distinct entity within the organisational
structure of the shipping company with a view to focusing keen attention and better control on running costs. It can be reasonably expected that such a control - which so far is routinely missing in management of shipping companies from developing countries - will prevent wastage of financial resources and, by extension, should increase not only the quality of the management, but also the earnings of ships and the company. This is very important, and one cannot emphasize enough the need to develop appropriate fleet management and cost control systems based on reliable accounting support.

Indeed, the fleet management concept, to be successful, requires an innovative approach and a new way of thinking and doing things at all levels. Most importantly, it pre-supposes expertise, skills, and sound judgement from the fleet manager. To sum up, it can be said therefore that a ship is as good as the people (both ashore and sea staff) who manage it.
Please specify items as much as possible. When not space available, please add 'detail' pages as needed - numbering pages 2A, 2B etc.

**SUMMARY - Deck Stores**

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T</th>
<th>2nd T</th>
<th>3rd T</th>
</tr>
</thead>
<tbody>
<tr>
<td>5405.0100  Paints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5405.0200  Ropes/Cables/Gears</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5405.0900  General</td>
<td></td>
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<td></td>
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</tbody>
</table>

**TOTAL DECK STORES**

**DETAILS**

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
Please specify items as much as possible. When not space available, please add 'detail' pages as needed - numbering pages 3A, 3B etc.

**SUMMARY - Engine Stores**

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T</th>
<th>2nd T</th>
<th>3rd T</th>
</tr>
</thead>
<tbody>
<tr>
<td>5410.0100</td>
<td>Paints</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5410.0200</td>
<td>Chemicals</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5410.0300</td>
<td>Packing/Jointings</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5410.0400</td>
<td>Electricals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5410.0900</td>
<td>General</td>
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</tbody>
</table>

**TOTAL ENGINE STORES**

**DETAILS**

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>
Please specify items as much as possible. When not space available, please add 'detail' pages as needed - numbering pages 5A, 5B etc.

### SUMMARY - Cabin Stores

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T</th>
<th>2nd T</th>
<th>3rd T</th>
</tr>
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<tbody>
<tr>
<td>5415.0900</td>
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### TOTAL CABIN STORES

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<thead>
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<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
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<table>
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<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
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<td></td>
</tr>
</tbody>
</table>
Please specify items as much as possible. When not space available, please add 'detail' pages as needed - numbering pages 6A, 6B etc.

SUMMARY - New Equipment

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>ANNUAL BUDGET</th>
<th>1st T</th>
<th>2nd T</th>
<th>3rd T</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>5430.0200</td>
<td>New Equipm. Engine</td>
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<td></td>
</tr>
<tr>
<td>5430.0300</td>
<td>New Equipm. Cabin</td>
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</tbody>
</table>

TOTAL NEW EQUIPMENT

DETAILS

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
</tr>
</thead>
</table>


Please specify items as much as possible. When not space available, please add 'detail' pages as needed - numbering page 7A, 7B etc.

### SUMMARY - Fresh Water

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T</th>
<th>2nd T</th>
<th>3rd T</th>
</tr>
</thead>
<tbody>
<tr>
<td>5430.9900</td>
<td>Water</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TOTAL FRESH WATER</td>
<td></td>
<td></td>
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</tbody>
</table>

### DETAILS


Please specify data below. Your prices will be evaluated by office.

### SUMMARY - Luboil Consumption

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T - 2nd T - 3rd T</th>
</tr>
</thead>
<tbody>
<tr>
<td>5420.0100 Cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5420. Crancase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5420. Generators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5420. Hydr/Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL LUBOIL CONSUMPTION</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DETAILS

MCR: _______  Service Ratio: _____ per cent  
Month Steam Hrs: _______  
ME Cyl Cons: _______ G/HP/HR  
ME C/C Cons: _______ G/HP/HR  

<table>
<thead>
<tr>
<th>Daily Cons</th>
<th>Days/Year</th>
<th>CONSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder Oil</td>
<td>_____ Ltrs</td>
<td>_____ days</td>
</tr>
<tr>
<td>C/C Oil</td>
<td>_____ Ltrs</td>
<td>_____ days</td>
</tr>
<tr>
<td>Generator Oil</td>
<td>_____ Ltrs</td>
<td>_____ days</td>
</tr>
<tr>
<td>Hydr/Other</td>
<td>_____ Ltrs</td>
<td>_____ days</td>
</tr>
</tbody>
</table>

Net Price Estimate USD/Ltr  
Cylinder oil _____ USD/Ltr  
Crankcase oil _____ USD/Ltr  
Generator oil _____ USD/Ltr  
Hydr/Others _____ USD/Ltr
<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
VEssel Budget Proposal

Budget Year: 1992

Vessel:

---

Please transfer respective figures from the other forms to this summary form. Please indicate period/tertial of implementation/purchase if possible - a 'flat' budget also acceptable.

---

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>ANNUAL BUDGET</th>
<th>1st T - 2nd T - 3rd T</th>
</tr>
</thead>
<tbody>
<tr>
<td>5405. Deck Stores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5410. Engine Stores</td>
<td></td>
<td></td>
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<tr>
<td>5440. General Stores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5415. Cabin Stores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5430. New Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5435. Fresh Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Purchasing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5420. Luboil Cons.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5825. Spare Parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Rep. &amp; Maint.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

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13- United Nations economic and Social commission for Asia and the pacific: - Use of Maritime transport, a guide for shippers, freight forwarders and ship operators

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1- Journal de la marine Marchande du 21 janvier 1988

2- Procedure de gestion de flotte C.G.M PARIS

3- V.Ships Norway AS

HANDBOUTS
----------

1- Professor P. Houssim, : - Principles of management
LIST OF APPENDIX

- Appendix I
  Budget form of deck stores : Source, Monaco system
                               V. Ships Norway AS

- Appendix II
  Budget form of engine stores : Source, Monaco system
                                 V. Ships Norway AS

- Appendix III
  Budget form of general stores : Source, Monaco system
                                   V. Ships Norway AS

- Appendix IV
  Budget form of cabin stores : Source, Monaco system
                                 V. Ships Norway AS

- Appendix V
  Budget form of new equipment : Source, Monaco system
                                   V. Ships Norway AS

- Appendix VI
  Budget form of fresh water : Source, Monaco system
                                   V. Ships Norway AS

- Appendix VII
  Budget form of luboil consumption : Source, Monaco system
                                         V. Ships Norway AS