

- (b) **Preparation Phase:** In this phase the management prepare a programme of education at all levels in the enterprise to appraise the employees of the importance of the role of materials in man's life and the problems that surround it.
- (c) **Diagnostic Phase:** In this phase management shall be concerned with gathering information and carrying out diagnostic studies of material usage, process, procurement, waste and other product cost and to identify areas that require detailed investigations, that promise substantial economy.
- (d) **Programming Phase:** In this phase the priorities are fixed and a detailed programme with time targets of the work to be undertaken are drawn.
- (e) **Objective Phase:** The main objective of this phase is one of cost reduction. Management in this phase, set the objectives for each of the programmed items and fix tentative; financial targets to be reached by the individuals undertaking various aspects of the work.
- (f) **Action Plan Phase:** In this phase the management set the employees on their tasks with definite time plans tied to a reporting system. In this phase various management techniques will be used.
- (g) **Implementation Phase:** In this phase the findings of the action phase would be implemented. At this step management must bear in mind the long term aspects of the enterprise by gearing the products to a much quicker cycle of change.
- (h) **Follow up Phase:** In this phase the management takes the necessary steps to ensure that there is an organisation to constantly look at present materials management arrangements against the arrival on the scene of new improvements and new materials.

Once the organisation is set, the advantages of using the techniques and tools would accrue to the organisation by effectively managing of materials and contributing to Profit Improvement Plans.

Chapter 13

MAKE OR BUY DECISIONS

Introduction

This is an important policy decision of management and purchase department has a role to play in both cases. After preliminary investigation of cost a detailed study may be needed which can involve engineering, design, production planning, costing as well as purchasing. The final decision on a make-or-buy question is made by the joint efforts of several departments, the purchasing department will always have an important part in the determination. It needs no emphasize that no simple rule can be applied to all cases of make or buy. Some decisions are major, such as a paper manufacturing firm deciding whether to build or buy a pulp mill to supply its own raw materials or a pharmaceutical company to manufacture or buy the basic bulk drug from an outside. Each such case must be decided on its merits, but the important issues may be different in the two cases. In broad terms four relevant considerations are the elements in all purchasing decisions: Quality; Quantity; Cost; and Service aspects.. Make or Buy decisions are taken at the top level and the position of materials manager in the organisation hierarchy determine whether he is to play a key role or supporting role to deal with the problem of Make or Buy. Few organisations have formed committees to analyse and to recommend proposals. Make or Buy decisions arise due to a variety of reasons. Mostly such situations arise due to consistent failures on the part of the suppliers in the supply of items. The management then decides to make the item. Sometimes availability of items from outside suppliers in the supply of items. The management then decides to make the item. Sometimes availability of items form outside suppliers may not be adequate owing to staff competition from many end users.

Importance of Make, Buy or Lease

Every organisation has a choice of following three basic decisions in sourcing a new product:

- (i) Purchase the product complete from a contract manufacturer.
- (ii) Purchase some components and manufacture the balance.
- (iii) Manufacture the product completely starting with the extraction of basic raw materials.

In practice no company can seriously consider the third alternative. Normally large companies rely on outside suppliers for at least some components and materials. Some companies choose the first alternative and obtain a new product completely from an outside supplier. The general rule, however is that an organi-

- (ii) Machines can be kept busy most of the time, low and medium-volume production costs can be kept down.
- (iii) There are no definite physical channels along which work must flow. The results of this are more handling of materials, larger banks of work in process and a more complicated system of production control than with a product layout.
- (iv) Workers and supervisors become skilled in the operation of a single type of machine but require longer training to be able to deal with varied jobs. Thus specialisation can be achieved.
- (v) Machine breakdowns do not hold up a succession of operations; work can be transferred to other similar machines.

Product layout: Advantages and Disadvantages

- (i) The flow of work over direct physical routes cuts out delays: there is less material handling, and the definite sequence of operations over adjacent machines simplifies production control and cuts out forms and records.
- (ii) The total time of production is kept low, less floor space is occupied and the capital tied up in work in process can be kept down. The capital investment in machines may however, be raised by duplication of the same machine on several lines.
- (iii) Manufacturing costs are low at high volume production but rise steeply as it drops. If one or more lines are running light there is considerable machine idleness.
- (iv) It is easier to train workers inexperienced in industry upto a certain level of skill.
- (v) A single machine break down may shut down a whole production line.

Classification of Layout

Layout by fixed position—This type of layout is suitable where—

- (a) Operations require hand tools or simple portable machines.
- (b) Making only one or few pieces.
- (c) Cost of moving the major pieces is high.
- (d) Skill of workmanship lies in the ability of workers or where we wish to fix responsibility for product quality to one workman.

Layout by process—this layout is used where—

- (a) Expensive machinery is involved.
- (b) Variety of products are made.
- (c) Operations are unbalanced or in other words wide variation in time required in different operations are encountered.
- (d) The demand for the product is small or intermittent.

- L = Annual saving in fixed and variable overheads
- U = Annual saving or increase in earnings
- X = Percentage of year the equipment is used
- I = Initial cost of equipment.

The cost of maintaining the equipment (excluding labour) to operation is:

$$Y = I(A + B + C - D)$$

The yearly profit V made from operating the equipment is:

$$(S + L + U - E)X - Y$$

Materials Handling Problems

Following are the various important factors which need to be studied to analyse the handling problems.

Establish the Scope of the study

- (i) What is the degree of thoroughness expected of the study?
- (ii) Should the study includes related functions such as manufacturing, financing, personal relation etc? If not what are should be included?

Pinpoint what Physical boundaries of the study

- (i) What areas in the plant layout should be covered by the study?

Determine Production Forecasts

- (i) What volume of material is expected to be handled by the equipment?
- (ii) What is the expected range of expansion?

Determine the most-handled items

- (i) Which material require the most of the handling work?
- (ii) What is the total handling cost of these items in relation to the others?

Compute the cost of the present handling method

- (i) What are the functional elements of the system?
- (ii) How many man-hours are spent for each element?
- (iii) What are the other costs directly related to the handling operations?

Analysis of Material Handling

Materials handling problems vary from situation to situation. The gravity of the problem varies according to whether production is continuous or intermittent. This in effect means only that a detailed analysis of various aspects of materials movement is necessary.

1. What to Move. Data is collected on what materials are to be moved. The bill of materials coupled with the production schedule would give this information. Additionally all information regarding weight, size, shape, quantity etc., of the materials to be transported is to be collected. The following form could be used.