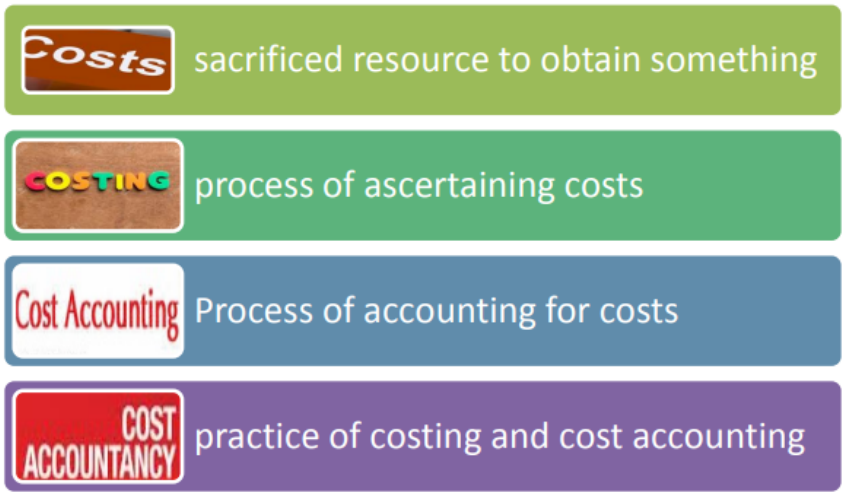
INTRODUCTION TO COST ACCOUNTING

COST, COSTING, COST ACCOUNTING AND COST ACCOUNTANCY

It is important to understand that the terms cost, costing, cost accounting and cost accountancy, which are normally used interchangeably, are not synonyms of each other. The difference can be understood as follows:



As per Chartered Institute of Management Accountants (CIMA) London, cost means ―the amount of expenditure (actual or notional) incurred on, or attributable to, a given thing‖, but the interpretation of the term depends on a number of factors like nature of business or industry. Moreover, it is difficult to determine an exact cost or a true cost because no figure of cost is true under all circumstances and for all purposes.

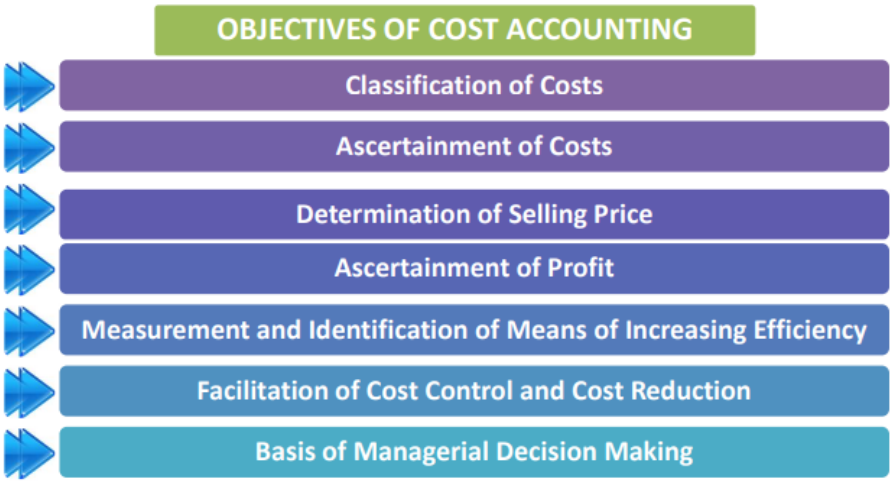
According to Wheldon, costing is, classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services; the relation of these costs to sales values; and the ascertainment of profitability.‖ In general, it is understood as process for determining cost.

Cost Accounting is usually considered as the next step to costing. It involves meticulously accurate analyzing, standardizing, forecasting and comparing relevant costing data so as to interpret and report various concern areas to management. Its scope includes preparation of budgets, determination of standard costs based on technical estimates, identifying variances and reasons thereof, etc.

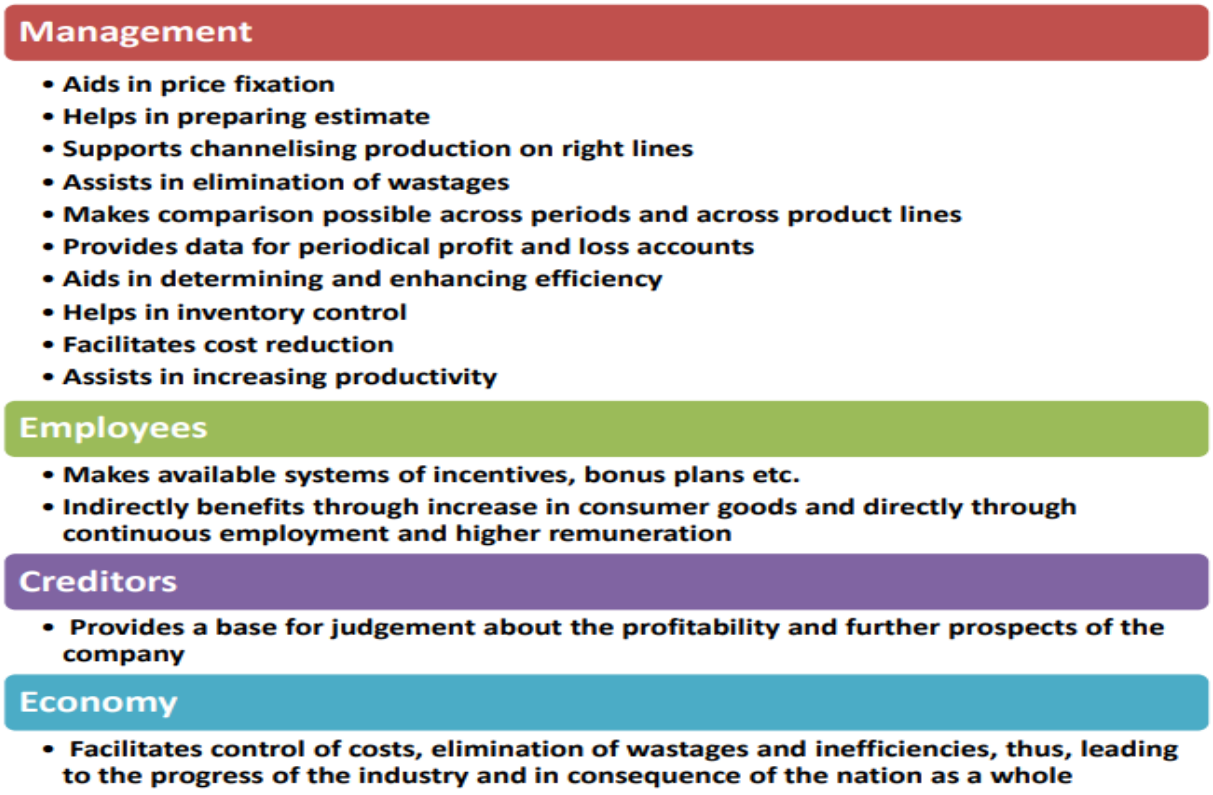
Cost Accountancy envisages application of costing and cost accounting in a business setup. It includes determination of selling price and profitability in addition to forecasting of expenses and future probable incomes. It facilitates management with cost control initiatives, ascertainment of profitability and informed decision making. Besides, costing and cost accounting, the following areas are also covered under cost accountancy: -

- *Cost Reduction* is aimed at achieving real and permanent reduction in the unit cost of goods produced or services rendered without compromising the quality or suitability

- *Cost Control* refers to search for better and more economical ways of completing the current operations. It simply identifies and prevents waste within the existing environment.
- *Cost Audit* includes the verification of cost accounts and a check on their adherence to the cost accounting principles, plans, procedures and objectives.



IMPORTANCE OF COST ACCOUNTING



The management of the company requires detailed information with respect to cost of operations so as to equip the executives with relevant information required for planning, scheduling, controlling and decision making. This is facilitated by Cost Accounting. By cost management, waste elimination, utilization of idle capacity, cost accounting helps to increase the overall productivity of an organization.

CLASSIFICATION OF COSTS

The basis of classification and the respective costs associated under each of the basis have been presented below:

On the basis of Time

• *Historical cost* refers to the original cost at the time of a transaction. The ascertainment of such cost can be done after it has been incurred. It is objective in nature and can be verified after actual operations take place.

• *Pre-determined cost* is the cost computed even before commencement of an operation or activity. It is ascertained either from past data or as per organizational standards.

On the basis of nature of elements:

• Material • Labour • Overheads

On the basis of degree of traceability to product

- *Direct cost* also known as traceable cost, can be directly attributable or traceable to the production of a specific product or service or activity.
- *Indirect cost* also known as common cost, is generally common to several products, thus is either difficult to trace to a certain specific product, service or activity or the process of doing so is uneconomical.

Direct cost can be directly allocated to the cost unit or cost centre while the indirect cost needs to be apportioned to different products

On the basis of association with product

- *Product costs* are costs which become part of the cost of the product rather than expenses of the period in which they are incurred. They are included in inventory values. They become an expense at that time.
- *Period costs* are costs which are not associated with production. They are treated as an expense of the period in which they are incurred. Such costs include general administrative costs, salesmen salaries and commission etc. They are charged against the revenue of the relevant period.

On the basis of changes in activity or volume

- *Fixed cost* remains static or constant irrespective of changes in output. The fixed costs have relationship with time.

- *Variable cost* changes in direct proportion of change in volume of output. Theoretically speaking, variable cost remains constant per unit of output and fixed cost remains constant in total or per unit of time. In the long run, these concepts do not hold true.

A comprehensive definition of variable cost should include those costs which tend to vary with output or those which have a major relation with output and that of fixed cost should include those costs which tend to be constant at different volumes of output or which have no significant relation with output.

- *Semi-variable costs* neither change proportionately nor remain static. Eg. repairs.
- *Step costs* are costs that remain fixed over a range of activity and then jump to a new level as activity changes.

On the basis of function:

A company performs a number of functions and needs to ascertain the cost of each of these functions. A brief explanation of each of the functional costs is as follows: The definitions of the various functional costs as given by Chartered Institute of Management Accountants (CIMA), London are as follows:

- *Manufacturing/Production cost*: The cost of operating the manufacturing division of a company is production cost. It includes costs beginning with supplying materials, labour and services and ends with the primary packing of the product. Thus, it includes the cost of direct material, direct labour, direct expenses and factory overheads.
- *Administration cost*: The cost of formulating the policy, directing the organisation and controlling the operations, which is not related directly to a production, selling, distribution, research or development activity or function are administration costs.
- *Selling cost*. The cost of seeking to create and stimulate demand (sometimes termed as marketing) and of securing orders.
- *Distribution cost*: The expenditure incurred from making the packed product available for dispatch to making the reconditioned returned empty packages, if any, available for-use. Expenditure incurred in moving articles to and from prospective customers as in the case of goods on sale or return basis is also included in distribution cost.
- *Research cost:* The cost of searching for new or improved products, new application of materials, or new or improved methods.
- *Development cost*: The cost of implementation of the decision to produce a new or improved product or to employ a new or improved method till the commencement of formal production of that product or by the method is development cost.
- *Pre-production cost:* That part of development cost incurred in making a trial production run preliminary to formal production is pre-production cost. It is treated as deferred revenue expenditure and charged to future cost of production.

On the basis of relationship with accounting period

- *Capital expenditure* is an expense of a non-recurring nature, where the benefit continues over a long period. It generally results in acquisition of permanent assets.

- *Revenue expense* is of recurring nature, benefits only the current period and is thus, treated as an expense matched with revenues of the current accounting period

On the basis of controllability

- *Controllable costs* are costs which can be influenced by the budget holder.
- *Non-controllable costs* are costs which are not subject to control at any level of managerial supervision.

Analytical and decision making costs

- *Opportunity cost* represents the cost of an alternative given up when a decision is made, i.e. the next best alternative. It is not recorded in books and is used for decision making and comparing alternatives.
- *Sunk costs* are historical or past costs and cannot be changed by any decision that will be made in the future. They are irrelevant for decision making.
- *Differential cost* is the difference in total costs between two alternatives. If the cost of alternative results in increased cost, it is incremental cost and if it is decreased cost, it is decremental cost.
- *Imputed or hypothetical costs* are costs which do not involve cash outlay. They are not included in cost accounts but are important for taking into consideration while making management decisions.
- *Out-of-pocket costs* mean the present or future cash expenditure regarding a certain decision which will vary depending upon the nature of decision made. They involve payment to outsiders and are more relevant for price fixation during recession or when make or buy decision has to be made.

On the basis of Avoidability

- *Avoidable costs* are those costs which will be eliminated, if a segment of the business (e.g. a product or department) with which they are directly related, is discontinued.
- *Unavoidable costs* are those which will not be eliminated with the segments. Such costs are merely reallocated if the segment is discontinued.

METHODS OF COSTING

The fundamental principles of cost ascertainment remain the same but the methods of analysing and presenting theses costs differ from industry to industry. Broadly, there are two main methods used to determine costs viz. Job Cost Method and Process Cost Method. However, the different methods of costing can be further bifurcated and can be explained in detail as follows:

1. *JOB COSTING*: This method is used for tracing specific costs to individual jobs especially where production is not highly repetitive. The cost ascertainment is for specific jobs or orders which are not comparable with each other. Job costing is commonly used in printing press, automobile garage, repair shops, etc.

2. *CONTRACT COSTING*: Principally, there is no difference between job and contract costing but it is convenient to prepare and maintain separate contract accounts when large scale contracts are carried out at different sites like in the case of building construction, ship builders, etc. A contract is a big job while a job is a small contract.

3. *COST PLUS COSTING*: In some contracts, an agreed sum or percentage besides cost to cover overheads and profit is paid to the contractor. This system of costing is termed as cost plus costing. The system is used generally where Government is the contractee.

4. *BATCH COSTING:* In this method of costing, a batch of similar products is considered as one job and the cost of the complete batch is ascertained. Thereafter, the cost of each unit is determined. Pharmaceutical industries, brick manufacturing companies generally use this method.

5. *PROCESS COSTING:* If a product passes through different stages, each distinct and well-defined, with the output of one process becoming the input for the other, it is desirable to know the cost of production at each stage. Process costing is employed to ascertain the same. The system of costing is suitable for the extractive industries, e.g., chemical manufacture, paints, foods, explosives, soap making etc.

6. *OPERATION COSTING:* The procedure of operation costing is broadly the same as for process costing except that cost unit is an operation instead of a process. For large undertakings involving a number of operations, it is important to compute the cost of each operation. For example, the manufacturing of handles for bicycles will make use of operation costing as it involves many operations like cutting steel sheets into proper strips, moulding, machining and finally polishing.

7. *UNIT COSTING (OUTPUT COSTING OR SINGLE COSTING):* Under this method of costing, cost of a single product produced by a continuous manufacturing process is computed in addition to amount of each element of cost. The method is suitable in industries such as flour mills, paper mills, cement manufacturing etc.

8. *OPERATING COSTING:* Also known as service costing, this method is employed to ascertain the cost of services rendered like transport companies, electricity companies, or railway companies. The total expenses regarding operation are divided by the units as may be appropriate (e.g., total number of passenger-kms. in case of bus company) and cost per unit of service is calculated.

9. *DEPARTMENTAL COSTING:* Departmental Costing aims to ascertain the cost of output of each department of the company separately.

10. *MULTIPLE COSTING (COMPOSITE COSTING):* Application of more than one method of costing for the same product is done under multiple costing. Herein, the costs of different sections of production are combined after finding out the cost of every part manufactured. It is applicable where a product comprises of many assembled parts, e.g., motor cars, engines, machine tools, typewriters, radios, cycles etc.

TECHNIQUES OF COSTING

In addition to the above stated methods, the following techniques of costing are used by management for the purpose of managerial decision making and controlling costs.

1. *MARGINAL COSTING:* Marginal costing has been defined as _the accounting system in which variable costs are charged to cost units and the fixed costs of the period are written-off in full against the aggregate contribution. Fixed overheads are excluded on the ground that in cases where production varies, the inclusion of fixed overheads may give misleading results.
2. *UNIFORM COSTING*: Uniform costing refers to a technique of costing wherein standardised principles and methods of cost accounting are employed by a number of different companies and firms, thus, facilitating inter-firm comparisons, establishment of realistic pricing policies etc.
3. *DIRECT COSTING:* The practice of charging all direct costs to operation, process or products, excluding all indirect costs to be written off against profits in the period in which they arise, is referred to as direct costing. Direct costing The technique considers some fixed costs as direct costs in appropriate circumstances, thus differentiating it from marginal costing.
4. *ABSORPTION COSTING:* The Institute of Cost and Management Accountant of India defines absorption costing as ―a method of costing by which all direct costs and applicable overheads are charged in products or cost centers for finding out the total cost of production. Absorbed cost includes production cost as well as administrative and other costs. Absorption costing does not make any difference between variable and fixed cost in the calculation of profits. It charges all costs, both variable and fixed, to operations, products or processes.
5. *ACTIVITY BASED COSTING:* The Chartered Institute of Management Accountants (CIMA), London, defines it as a technique of cost attribution to cost units on the basis of benefits received from indirect activities e.g. ordering, setting up, assuring quality. In other words, it is a method of assigning organization's resource costs through activities (called cost drivers) to the products and services. It is generally used by a company having products that differ in volume and complexity of production for the purpose of apportionment of overhead costs.

SYSTEMS OF COSTING

There are two main systems of costing: 1. Historical Costing. 2. Standard Costing.

***HISTORICAL COSTING*:**

Historical costing also known as conventional or orthodox costing determines cost on the basis of actuals. It may be in the nature of post costing, wherein cost ascertainment is done after the production is completed or in the form of continuous costing, wherein cost ascertainment is done as soon as the job is completed or even when the job is in progress.

Post costing is done by analyzing the financial accounts at the end of the period in such a way as to disclose the cost of the units which have been produced while continuous costing is usually done by charging the job or product with actual expenditure on materials and wages and estimated share of overheads, thus, leading to inexact cost.

Post costing does not help in exercising control over cost as it is based on actuals which can be known only after the activity is over while continuous costing provides prompt cost information to the management thereby facilitating timely, necessary corrective action in time. However, it neither provides

any standard for judging current efficiency nor does it disclose what the cost of the job ought to have been.

STANDARD COSTING:

Standard costing makes use of certain pre-determined standards for cost ascertainment in advance and requires in force a vigorous system of controlling cost and maintaining standard cost.

Cost Sheet. The same can be presented in a tabular manner as follows:

Particulars	Amount	Amount
Opening Stock of Raw Material	***	
Add: Purchase of Raw materials	***	
Less: Closing stock of Raw Materials	***	
Raw Materials Consumed	***	
Direct Labour	***	
Direct Expenses	***	
Prime cost (1)		***
Add :- Factory Over Heads	***	
Less:- Sale of scrap	***	
Gross Works Cost		***
Add: Opening Stock of WIP	***	
Less: Closing Stock of WIP	***	
Net Works cost (2)		***

Add:- Office and Administration Overheads:-	***	
Cost of Production (3)		***
Add: Opening stock of Finished Goods Less: Closing stock of Finished Goods	*** ***	
Cost of Goods Sold		***
Add:- Selling and Distribution Overheads:-	***	
Cost of Sales (Total Cost) (5)		***
Profit		***
Sales		***

Illustration 1

Calculate prime cost from the following information:-

Opening stock of raw material = Rs. 2,50,000

Purchased raw material = Rs. 15,00,000

Expenses incurred on raw material = Rs. 1,00,000

Closing stock of raw material = Rs. 4,50,000

Wages Rs. 9,52,000

Direct expenses Rs. 4,68,000

Solution: -

Particulars	**Details (Rs)**	**Amount (Rs)**
Opening stock of raw material	2,50,000	
Add:- Purchase	15,00,000	
Add:- Expenses incurred on purchases	1,00,000	
Raw material available	18,50,000	
Less :- closing stock of raw material	4,50,000	

Raw material consumed		14,00,000
Add:- Direct wages or labour		9,52,000
Add:- Direct expenses		4,68,000
Prime cost		28,20,000

Illustration 2

Compute factory cost from the following details:-

Raw material consumed	= Rs 50,00,000
Direct wages	= Rs20,00,000
Direct expenses	= Rs 10,00,000
Factory expenses 80% of direct wages	
Opening stock of work in progress	= Rs 15,00,000
Closing stock of work in progress	= Rs 21,00,000

Solution

Particulars	**Amount (Rs)**	**Amount (Rs)**
Direct material consumed	50,00,000	
Add:- Direct wages	20,00,000	
Add:- Direct Expenses	10,00,000	
Prime cost		80,00,000
Add:- Factory expenses		16,00,000
Gross Factory Cost		96,00,000
Add:- Opening stock of work in progress		15,00,000
Total goods processed during the period		1,11,00,000
Less:- Closing sock of work in progress		21,00,000
Factory cost or work cost		90,00,000

BREAK-EVEN ANALYSIS

The main objective of break-even analysis is to find the cut-off production volume from where a firm will make profit. Let

s = selling price per unit
v = variable cost per unit
FC = fixed cost per period
Q = volume of production

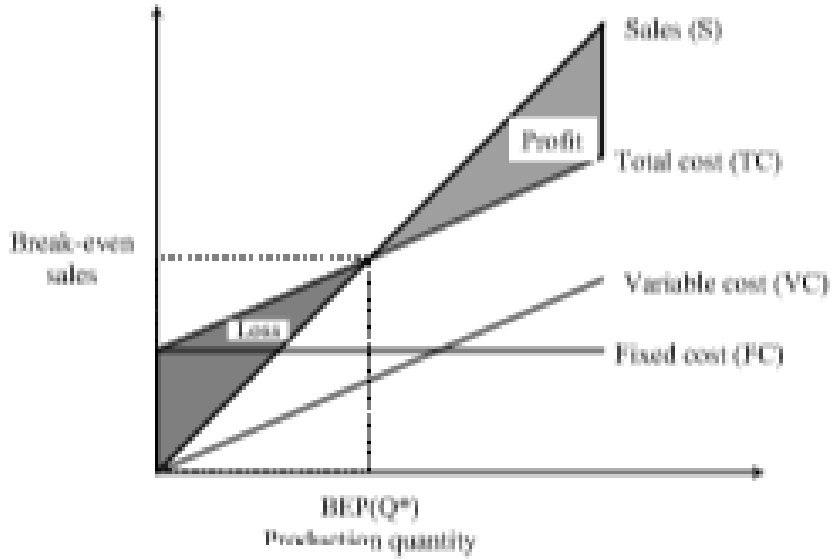
The total sales revenue (S) of the firm is given by the following formula:

$$S = s \times Q$$

The total cost of the firm for a given production volume is given as

$$TC = \text{Total variable cost} + \text{Fixed cost}$$
$$= v \times Q + FC$$

The linear plots of the above two equations are shown in Fig. 1.3. The intersection point of the total sales revenue line and the total cost line is called



Break-even chart.

the break-even point. The corresponding volume of production on the X-axis is known as the break-even sales quantity. At the intersection point, the total cost is equal to the total revenue. This point is also called the no-loss or no-gain situation. For any production quantity which is less than the break-even quantity, the total cost is more than the total revenue. Hence, the firm will be making loss.

For any production quantity which is more than the break-even quantity, the total revenue will be more than the total cost. Hence, the firm will be making profit.

$$\begin{aligned}\text{Profit} &= \text{Sales} - (\text{Fixed cost} + \text{Variable costs}) \\ &= s \times Q - (FC + v \times Q)\end{aligned}$$

The formulae to find the break-even quantity and break-even sales quantity

$$\text{Break-even quantity} = \frac{\text{Fixed cost}}{\text{Selling price/unit} - \text{Variable cost/unit}}$$

$$= \frac{FC}{s - v} \text{ (in units)}$$

$$\text{Break-even sales} = \frac{\text{Fixed cost}}{\text{Selling price/unit} - \text{Variable cost/unit}} \times \text{Selling price/unit}$$

$$= \frac{FC}{s - v} \times s \text{ (Rs.)}$$

The contribution is the difference between the sales and the variable costs. The margin of safety (M.S.) is the sales over and above the break-even sales. The formulae to compute these values are

$$\begin{aligned}\text{Contribution} &= \text{Sales} - \text{Variable costs} \\ \text{Contribution/unit} &= \text{Selling price/unit} - \text{Variable cost/unit} \\ \text{M.S.} &= \text{Actual sales} - \text{Break-even sales} \\ &= \frac{\text{Profit}}{\text{Contribution}} \times \text{sales}\end{aligned}$$

M.S. as a per cent of sales = (M.S./Sales) × 100

EXAMPLE 1.1 Alpha Associates has the following details:

Fixed cost = Rs. 20,00,000
Variable cost per unit = Rs. 100
Selling price per unit = Rs. 200

Find
(a) The break-even sales quantity,
(b) The break-even sales
(c) If the actual production quantity is 60,000, find (i) contribution; and (ii) margin of safety by all methods.

Solution

Fixed cost (FC) = Rs. 20,00,000
Variable cost per unit (v) = Rs. 100
Selling price per unit (s) = Rs. 200

(a) Break-even quantity $= \frac{FC}{s - v} = \frac{20,00,000}{200 - 100}$

$= 20,00,000/100 = 20,000$ units

(b) Break-even sales $= \frac{FC}{s - v} \times s$ (Rs.)

$= \frac{20,00,000}{200 - 100} \times 200$

$= \frac{20,00,000}{100} \times 200 =$ Rs. 40,00,000

(c) (i) Contribution = Sales – Variable cost

$= s \times Q - v \times Q$

$= 200 \times 60,000 - 100 \times 60,000$

$= 1,20,00,000 - 60,00,000$

= Rs. 60,00,000

(ii) Margin of safety

METHOD I

M.S. = Sales – Break-even sales

$= 60,000 \times 200 - 40,00,000$

$= 1,20,00,000 - 40,00,000 =$ Rs. 80,00,000

METHOD II

$$\text{M.S.} = \frac{\text{Profit}}{\text{Contribution}} \times \text{Sales}$$

Profit = Sales – $(FC + v \times Q)$

$= 60,000 \times 200 - (20,00,000 + 100 \times 60,000)$

$= 1,20,00,000 - 80,00,000$

= Rs. 40,00,000

M.S. $= \frac{40,00,000}{60,00,000} \times 1,20,00,000 =$ Rs. 80,00,000

M.S. as a per cent of sales $= \frac{80,00,000}{1,20,00,000} \times 100 = 67\%$

PROFIT/VOLUME RATIO (*P/V* RATIO)

P/V ratio is a valid ratio which is useful for further analysis. The different formulae for the *P/V* ratio are as follows:

$$P/V \text{ ratio} = \frac{\text{Contribution}}{\text{Sales}} = \frac{\text{Sales} - \text{Variable costs}}{\text{Sales}}$$

The relationship between BEP and *P/V* ratio is as follows:

$$\text{BEP} = \frac{\text{Fixed cost}}{P/V \text{ ratio}}$$

The following formula helps us find the M.S. using the *P/V* ratio:

$$\text{M.S.} = \frac{\text{Profit}}{P/V \text{ ratio}}$$

EXAMPLE 1.2 Consider the following data of a company for the year 1997:

Sales = Rs. 1,20,000

Fixed cost = Rs. 25,000

Variable cost = Rs. 45,000

Find the following:

(a) Contribution
(b) Profit
(c) BEP
(d) M.S.

Solution

(a) Contribution = Sales – Variable costs
= Rs. 1,20,000 – Rs. 45,000
= Rs. 75,000

(b) Profit = Contribution – Fixed cost
= Rs. 75,000 – Rs. 25,000
= Rs. 50,000

(c) BEP

$$P/V \text{ ratio} = \frac{\text{Contribution}}{\text{Sales}}$$

$$= \frac{75{,}000}{1{,}20{,}000} \times 100 = 62.50\%$$

$$\text{BEP} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{25{,}000}{62.50} \times 100 = \text{Rs. } 40{,}000$$

$$\text{M.S.} = \frac{\text{Profit}}{P/V \text{ ratio}} = \frac{50{,}000}{62.50} \times 100 = \text{Rs. } 80{,}000$$

EXAMPLE 1.3 Consider the following data of a company for the year 1998:

Sales = Rs. 80,000
Fixed cost = Rs. 15,000
Variable cost = 35,000

Find the following:

(a) Contribution
(b) Profit
(c) BEP
(d) M.S.

Solution

(a) Contribution = Sales – Variable costs
= Rs. 80,000 – Rs. 35,000
= Rs. 45,000

(b) Profit = Contribution – Fixed cost
= Rs. 45,000 – Rs. 15,000
= Rs. 30,000

(c) BEP

$$P/V \text{ ratio} = \frac{\text{Contribution}}{\text{Sales}} = \frac{45{,}000}{80{,}000} \times 100 = 56.25\%$$

$$\text{BEP} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{15{,}000}{56.25} \times 100 = \text{Rs. } 26{,}667$$

(d) $$\text{M.S.} = \frac{\text{Profit}}{P/V \text{ ratio}} = \frac{30{,}000}{56.25} \times 100 = \text{Rs. } 53{,}333.33$$