

## **Cost**

In general term, 'cost' means the amount of expenditure (actual or notional) incurred on, or attributable to a given thing. However, the term 'cost' cannot be exactly defined. Its interpretation depends upon:

- (a) The nature of the business or industry and
- (b) the context in which it is used.

## Aims of Costing:

Cost accounting helps in the following types of managerial decisions:

1. Cost determination.
2. Cost Control.
3. for fixing selling price.
4. for filling up Quotations and Tenders.
5. To provide data for planning, budgeting and controlling the cost.
6. for taking specific managerial decisions.
7. To suggest changes in design of the product.

**Methods of Costing.** The method of cost accounting adopted differs according to the nature of the business and types of products manufactured. Generally the following methods of costing are more commonly used:

- (a) Job costing or order costing
- (b) Process costing
- (c) Operating cost method
- (d) Departmental costing
- (e) Unit cost
- (f) Multiple cost
- (g) Batch costing

**Job Costing or Order Costing:** Job costing is concerned with finding the cost of each individual job or contract. This method is adopted in job order industries, ship building, machine manufacturing, fabrication, building contracts etc. In this method each job has to be planned and its cost determined separately on the basis of actual costs incurred or on predetermined costs. Daily record of direct material, direct labour and estimated overhead cost for each order is recorded in production order or a cost sheet. The total cost is then obtained from the cost sheet. It is applicable to industries where costs are usually charged to individual jobs.

The different elements of cost for each job will be ascertained as under:

- (i) Direct Materials
- (ii) Direct labour
- (iii) Manufacturing overheads

(i) Direct materials: The materials are issued to the various jobs from the store room upon the presentation of the authentic material requisition. All the materials issued to particular job during a specific period of time signify the total direct material cost traceable to that particular job. The entries of the materials specifying the date, quantity and amount are recorded in the "production cost sheet" which is prepared for each job.

(ii) Direct labour: Under the job costing it is essential to keep the detailed records relating to the labour time, rate of pay and the number of the jobs on which the employee worked. This is done through the "time cards" which are maintained for each employee. The time card provides the information pertaining to the direct labour time each employee worked on a particular job. At the, time of the completion of the job, the sorting of the time cards according to job number in a summarized statement provide the information about the total amount of the direct labour cost chargeable to that particular job. The total direct labour cost is entered in "the Production cost sheet" maintained for that particular job.

(iii) Manufacturing overheads: The manufacturing overheads are of common nature and hence are not directly traceable to various jobs in a precise manner. The examples are costs of service departments like power plant, storeroom, materials handling cost, rent on factory building, cost of time-keeping office, lighting, supervision, insurance, depreciation etc. So they are allocated to the various jobs on some acceptable predetermined absorption rates which are devised scientifically.

## **Elements of Cost**

There are three following elements of cost

### 1. Material

- (a) Cost of direct materials.
- (b) Cost of indirect materials.

### 2. Labour

- (a) Cost of Direct Labour
- (b) Cost of Indirect Labour

### 3. Expenses

- (a) Direct Expenses
  
- (b) Indirect Expenses (overheads costs.)

## Cost of Material

It consists of:

- (a) Cost of direct materials.
- (b) Cost of indirect materials.

1. Material: It is the cost of materials required for the manufacturing of the product or anything that can be stored, Direct stacked or stockpiled. It refers to all commodities that are consumed in the process of manufacture. Material may be classified as :

- (a) Direct Material
- (b) Indirect Material

(a) **Direct Material:** It is the cost of materials which are processed through various stages to form the main product or a component part of the product. The cost of direct materials includes the purchase price as well as incidental charges (expenses) such as freight, insurance, loading and unloading expenses, octroi, import duties etc. All material which becomes an integral part of the finished product and which can be conveniently assigned to specific physical units is termed as direct material.

Followings are some of the examples of direct material

1. All material or components specifically purchased, produced or requisitioned from stores.
2. Primary packing material (e.g., carton, wrapping, cardboard boxes etc.)
3. Purchased or partly produced components.

(b) Indirect Material: It is the cost of materials which are essentially needed in various shops for helping the direct materials to be converted into finished product.

These are those materials which can not be conveniently identified with individual cost units. These are minor in importance, such as (i) small and relatively inexpensive items which may become a part of the finished products, e.g., pins, screws, nuts and bolts, thread etc. and (ii) those items which do not physically become a part of the finished products, e.g., coal, lubricating oil and Greece and paper used in polishing, soap etc.

2. Labour: It refers to the manpower employed to convert raw material into finished products. It represents human efforts or work force. Manual efforts and mechanical efforts convert materials into finished goods. The word 'labour' includes skilled, unskilled, and semi-skilled labour.

Labour is again of two types, namely direct labour and indirect labour.

(a) Direct labour: Direct labour cost consists of, wages paid to the workers directly engaged in the manufacturing of the product. It also includes the wages paid to the workers engaged in handling the product inside the department. Examples: wages paid-to the machinist, turner, black smith welder, moulder etc.

(b) Indirect labour: The wages paid to the labour who helps the productive labour in performing their duties is known as indirect labour cost. It cannot be charged directly to a particular job, but are charged on the number of products produced in the plant during a particular period.

### **3. Expenses:**

Apart from the direct material cost and direct labour cost in each factory there are several expenditures, which are known as expenses. The cost of indirect materials and indirect labour is also included in the expenses or all expenses other than the cost of material and labour are included under the head expenses. They are specifically incurred.

Expenses can be classified as :

1. Direct Expenses
2. Indirect Expenses (overheads costs.)

(a) Direct expenses: It is defined as expenses which can be identified and allocated to cost centers or units. These are those expenses which are specifically incurred in connection with particular job or cost unit. Direct expenses are also known as chargeable expenses

Examples:

1. Cost of preparing designs, drawings for the manufacture of a particular product.
2. Cost of experimental work done specifically for particular product.
- 3 . Cost of procuring or manufacturing special types of jigs and fixture for the manufacture of a particular product.
4. Cost of special type of patterns, moulding flasks, dies etc.
- 5 .Cost of hiring special tool or equipments for particular product.
6. Cost of consultancy charges for design and manufacture of a specific product.
- 7.Traveling expenses in securing a particular contract.

(b) Indirect Expenses': Indirect expenses are those which cannot be identified and allocated directly to a particular product manufactured or cost centre or cost unit. Such expenses cannot be charged to production directly. They are neither indirect materials nor indirect labour. Indirect expenses should be, apportioned or absorbed by cost centers or cost units. Such expenses are rent, taxes, insurance, depreciation, repairs and maintenance etc.

## Overheads:

are defined as the aggregate of the cost of indirect materials, indirect labour and such other expenses including services, as can not conveniently be charged direct to specific cost units. Thus, over heads are all expenses other than direct expenses. In general terms, overheads comprise all expenses incurred or in connection with the general organization of the whole or part of the undertaking i.e., the cost of operating, supplies and services used by the undertaking and including the maintenance of capital assets. The main groups into which over heads may be sub-divided are

1. Manufacturing overheads
2. Administration overheads
3. Selling overheads
4. Distribution overheads and
4. Research and Development overheads

1. Production or Manufacturing Overhead: Production or manufacturing overheads are also termed as factory overhead, works overhead or manufacturing over head. It includes all indirect expenses which are incurred in connection with manufacture of the products, right from the receipt of the work order till it is completed and ready for dispatch. It is the aggregate of factory indirect material cost, indirect wages and indirect expenses. Unlike direct materials and direct labour, production overhead is an invisible part of the finished product.

Examples:

1. Expenses incurred on indirect materials like lubricating oils, grease, coolants, cotton waste, polishing materials etc.
2. Expenses incurred on indirect labour, i.e. salaries of supervisors, inspectors, sweepers, watchman, Time-keeper, helper etc.
3. Expenses incurred on labour welfare activities.
4. Cost of fuel and power, internal transport etc.
5. Expenses incurred on repairs and maintenance of plant and machinery etc.
6. Rent of factory buildings, expenses incurred on depreciation of plant and machinery etc.

2. Office or Administration overhead: All items of expenses which are not directly related to production are called office or administration overheads. These expenses are incurred in formulating policies, planning, controlling, directions (orders, instructions etc.) and motivating the personnel of an organization. It includes secretarial, accounting and finance, and control. They relate to day-to-day affairs incurred by the administrative office. They are generally constant or fixed, collected and distributed. Examples of such costs are rent, taxes, rates of office building, repairs, depreciation of office building, furniture, fixtures, auditors' fee, legal expenses, printing and postage, telephone etc., incidental to administration.

3. Selling overhead: It is the cost of seeking to create and stimulate demand and of securing orders and comprises the cost of soliciting and recurring orders for the articles or commodities dealt in and of efforts to find and retain customers. It refers to those indirect costs which are associated with marketing and selling (excluding distribution) activities or selling expenses pertain to the marketing of the product. They include all such expenses which are incurred for creating and enhancing the demand for the products.

Examples :

1. Expenses incurred on salaries of sales manager, clerks and attendants in the sales department.
2. Salaries, commissions and traveling expenses of sales representatives or agents.
3. Cost of advertisement and publicity.
4. Expenses incurred for the preparation of tenders and estimates.

**4. Distribution overhead:** These overheads include all the expenses made on execution of orders, holding the finished goods stock and dispatching the customers. They include all types of expenses incurred from production is completed in the works till it reaches its destination. Such expenses are warehouse rent, warehouse staff salaries, expenses on the delivery van, insurance of stock of finished goods, packing expenses, normal loss of finished goods, cost of repairs, empties or containers.

**5. Research & Development overhead:** Research cost is the cost of searching for new and improved products, new applications of materials or products, new applications and improved methods. Development cost is the cost of the process which begins with the implementation of the decision to produce a new or improved method and ends with the commencement of formal production of that product or by that method.

## **FIXED COSTS AND VARIABLE COSTS**

Cost can be classified on the basis of the degree to which they vary in total with changes in the rate of output as: .

1. Fixed Costs

2. Variable Costs

This type of classification is useful for budgeting, for estimating costs of new orders and quoting prices, and for break even analysis.

## Fixed Costs:

These costs remain fixed or constant irrespective of the volume of production. So they are not affected whether the production is large, smaller or standstill. These costs include the salaries of higher officers, interest on capital invested and taxes on property expenses incurred on lighting, insurance, repairs and maintenance, depreciation of building, plant and equipment etc.

### Variable Costs:

Variable costs are those which vary directly with the quantity produced. Prime cost is also called as variable cost. Since, it is clear that if more things are to be produced more raw material more direct labour and more direct expenses will be required. Variable costs are the functions of output. Higher the output larger the variable cost.

These become zero when the production is suspended.

**Standard Cost.** Standard cost is a predetermined or budgeted cost which is calculated from management's standards of efficient operation and the relevant necessary expenditure. Standard costs are built upon theoretical desired standards that are capable of attainment under practical operation conditions. The standards should neither be unattainable nor should be such that which can be attained without any effort.

The standards are decided by using past experience and by taking the help of experiments or previous fixed norms (e.g. using Time and Motion' Study or by adopting standard data for work study).

Standard cost represents the best estimate that can be made of what cost should be for material, labour, and overheads after eliminating inefficiencies and waste. The actual cost is compared with the standard cost and the discrepancies or deviations if any are found out and if the actual cost is more than the standard cost corrective measures are taken to reduce the cost of production.

## Advantages of standard cost:

- It provides a check, on various expenses and serves as a tool for cost control.
- It detects if there is wastage of material, labour etc.
- It helps in budgetary control.
- It helps in price determination.
- It is a measure for arriving at the efficiency of the entire organization.

## **COST CONTROL**

The basic objective of an business is to earn adequate profit, which depends on sales and cost. As already explained profit can be maximized by increasing the sales price, increasing the market or by reducing or controlling the costs. However, increasing profit by increasing sales price or increasing market has certain limitations due to competitive market conditions. As such the business operations are required to control the costs to the maximum possible extent. Thus, the profits can be maximized mainly through cost control. This is the reason why cost control assumes an important and spelled out objective of the cost accounting system.

Cost control is a technique which involves :

- Determination of standards in respect of each item of cost
- Determining the actual cost of each of these items of costs.
- To compare and detecting deviations of actual from the standards lay down.
- To analyze the variances in order to find out the real cause of variations.
- Taking necessary corrective action for future.

## **How to Control Costs**

In order to earn good profit, It is essential to keep control over each and every element of cost, such as

- (i) Control on prime cost.
- (ii) Control on overheads.
- (iii) Control on indirect materials and tools.

**Control on Prime Cost.** The prime cost consists of direct material cost and direct lab cost. The direct material cost is the main component of the total cost of the product. Therefore, it is necessary to pay maximum attention for controlling material cost. Careful and correct recording of the material consumed for producing the product is necessary.

**Control of Overhead Costs.** The prime cost of the article does not differ much from one industry to another for the same product. However the major difference in the cost of production of an article is actually the result of variation in overhead charges from industry to industry. Therefore, overhead expenses must be controlled and minimized for cost reduction and increase of profit.

## **Control on indirect materials and tools :**

The cost of indirect materials and tools can be controlled by allowing a fixed amount for each shop and should be revised at regular intervals according to the needs.

## **Variance Analysis**

The variance is a difference between the standard and the actual (Le.,  $V = S - A$ ). It may be positive or negative. Various types of variances are computed for each element of cost.

Following important variances are explained in brief:

(A) Material cost variance is divided into following two parts:

(i) Price variance. (ii) Usage variance.

(B) Labour cost variance is divided into following two parts:

(i) Rate variance. (ii) Efficiency variance.

(C) Manufacturing overhead variance is explained under the following head:

(i) Overhead variance.

(A) Material cost Variance: The material cost generally consists of two parts: the price of the material multiplied by the usage of the material. So the material cost variance is sub divided into:

(i) Price variance is the difference between Actual Price (AP) and the Standard Price (SP) multiplied by the Actual Quantity (AQ).

Thus Price variance =  $AQ (AP - SP)$

(ii) Usage variance is a difference between the Actual Quantity (AQ) and the Standard (SQ) of the materials used, valued at Standard Price (SP).

Thus Usage variance =  $SP (AQ - SQ)$ .

(B) Labour cost variance: The labour cost is the result of the wage rate and the efficiency of the labour measured in terms of labour hours. So the labour cost variance is made-up of following two sub-variances:

(iii) Rate variance is the difference between the Actual Rate (AR) and the Standard Rate (SR) of the worker employed multiplied by the Actual Hours (AH)

Thus Rate Variance =  $AH (AR - SR)$ .

(iv) Efficiency variance is the difference between the Actual Hours (AH) and Standard Hours (SH) valued at the Standard Rate (SR).

Thus, Efficiency Variance =  $SR (AH - SH)$ .

(C) manufacturing overhead variance is difference between the actual and the standard overhead.

It is ascertained under the overhead variance as under:

(v) Overhead variance is the difference between the Actual overhead (AO) and the Standard overhead (SO).

Thus, Overhead variance = (AO - SO).

**Reasons for the variances:** Various variances are analyzed by reasons for the control purposes.

The possible reasons for certain importance variances are as under:

**I. Reasons for material price variance**

- (i) Change in the price.
- (ii) When quantity discount is considered while setting the standard price and it is not tapped while making the purchases.
- (iii) Similarly, where cash discount is not tapped.
- (iv) Excessive inward transport cost, purchasing and store-keeping expenses which are debited to purchase account.
- (v) Purchase of materials other than standard material.

## **II. Reasons for material usage variance**

- Poor workmanship resulting into greater wastages.
- Purchase of defective or sub-standard materials.
- Greater degree of rejection during inspection.
- Use of materials other than standard material.
- Deviation from the standard material-mix.
- Pilferage, theft etc.

### **III. Reasons for labour rate variance**

(i) Changes in wage rates.

(ii) Employing highly or poorly paid operator than a standard operator.

(iii) Where standards have ignored overtime operations and a part of the production is carried on over-time basis.

#### **IV Reasons for labour efficiency variance**

- (i) Employment of sub-standard operator.
- (ii) Inefficient operations caused by poor working conditions, inefficient supervision, poor machines, equipment and tools, inefficient production planning resulting into waiting and rushing.
- (iii) Idle labour time.

## **V. Reasons for manufacturing overhead variance**

Decrease in the production resulting into the burden of fixed overheads, which arises due to production stoppages caused by:

- (i) Machine break-downs; (ii) Power failures;
- (iii) Materials stockouts; (iv) labour trouble;
- (v) Accidents etc.

## BEA

In a scheme of cost-volume-profit analysis, an attempt is made to study the general effect of the different levels of activity upon total revenue and total cost with the help of revenue-output function and cost-output function respectively. Ultimately, this technique measures profits corresponding to the different levels of output.

The study of cost-volume-profit relationship is frequently referred to as "**Break-even Analysis.**"

In the opinion of some, it is a mere misnomer, since the break-even analysis is just incidental to the cost-volume-profit analysis. Contrary to this view, others interpret the term "break-even-analysis" in two senses, narrow and broad. In its narrow sense, it refers to a system of determining that level of operations where total revenue exactly equals total expenses, i.e., the level of operation where the undertaking neither earns a profit nor incurs a loss. Considered in its broad sense, break-even analysis denotes a system of analysis that can be used to determine the probable profits at any level of activity.

In a nutshell, break-even analysis is a technique that represents the relationship of costs and revenues to output.

## **Assumptions**

- (1) The total cost can be divided into two watertight components - fixed cost and variable cost.
- (2) Fixed cost remains constant for a specified level of activity. Although the total volume of production may vary from zero to the projected full capacity.
- (3) The variable cost varies directly and proportionately with the volume of production. Thus, double the level of activity, the variable cost would be twice that before.
- (4) The selling price does not change with a change in the volume of sales.
- (5) The firm deals in only one product or in the case of multiple products, all the products have the same contribution margin, or the sales mix remains unchanged.
- (6) There is perfect synchronization between production and sales.

## Mechanics of Break-even Analysis

**1. Break-even Point:** The break-even point is at which the total cost line and the sales line (Le., total revenue line) intersect one another on the graph.

**2. Angle of Incidence:** This is the angle at which the sales line cuts the total cost line. The larger the angle, the higher the rate of profit would be. A narrow angle shows that even though fixed overheads are recovered, the profit accrued shows a low rate of return. This indicates a larger part of variable costs in total cost.

**3. Contribution Margin:** Contribution margin refers to the difference between the sales and variable overheads.

**4. Margin of Safety:** This represents the amount by which the volume of sales exceeds one at break-even point.

Algebraically, the margin of safety is,

$(\text{Sales} - \text{Sales at BEP}) / \text{Sales} \times 100$

OR

$(\text{Operating Profit} / \text{Gross Contribution Margin}) \times 100$

Here, Operating profit = Total Revenue - Total Cost

= Total Revenue - Variable Cost - Fixed Cost

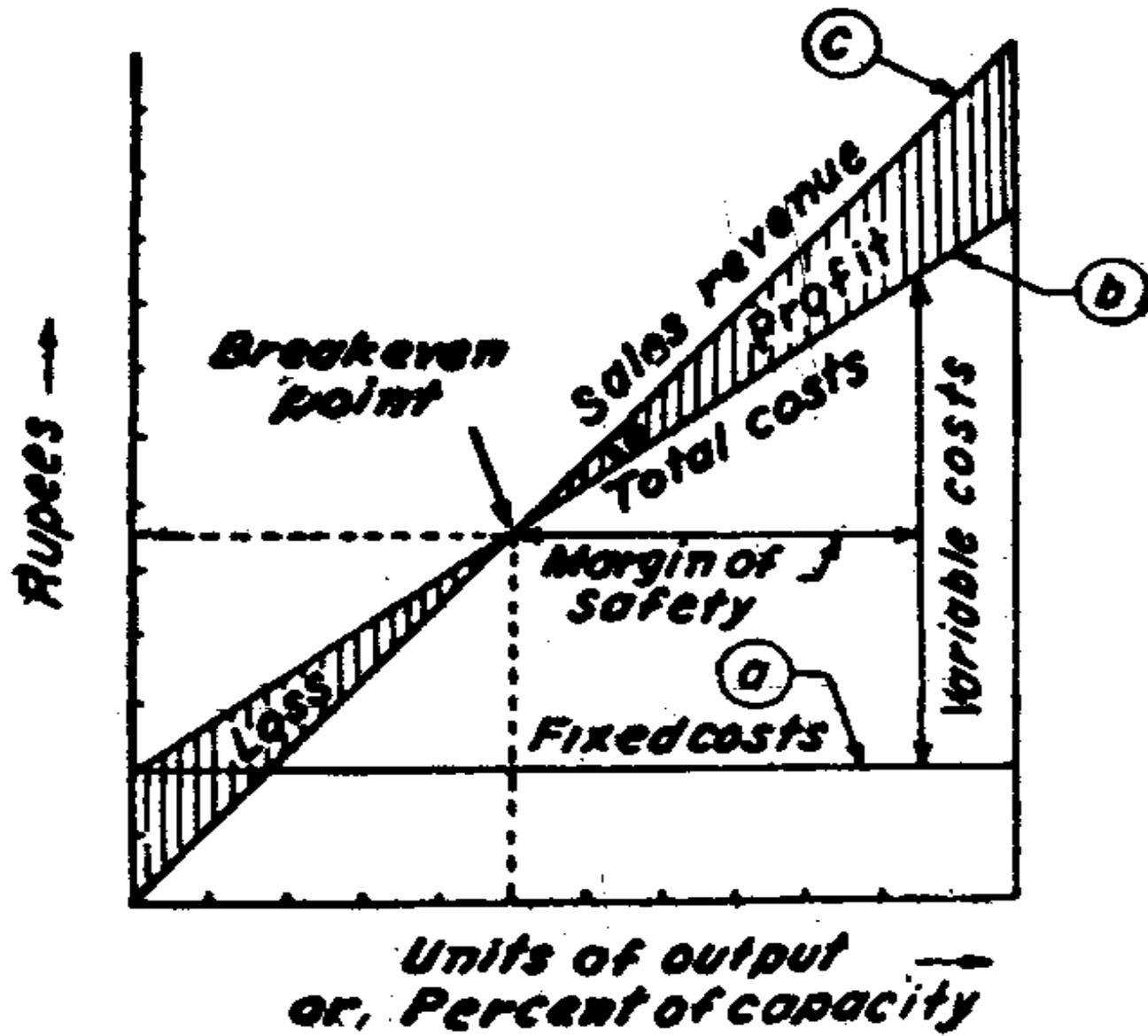
= Gross Contribution Margin - Fixed Cost

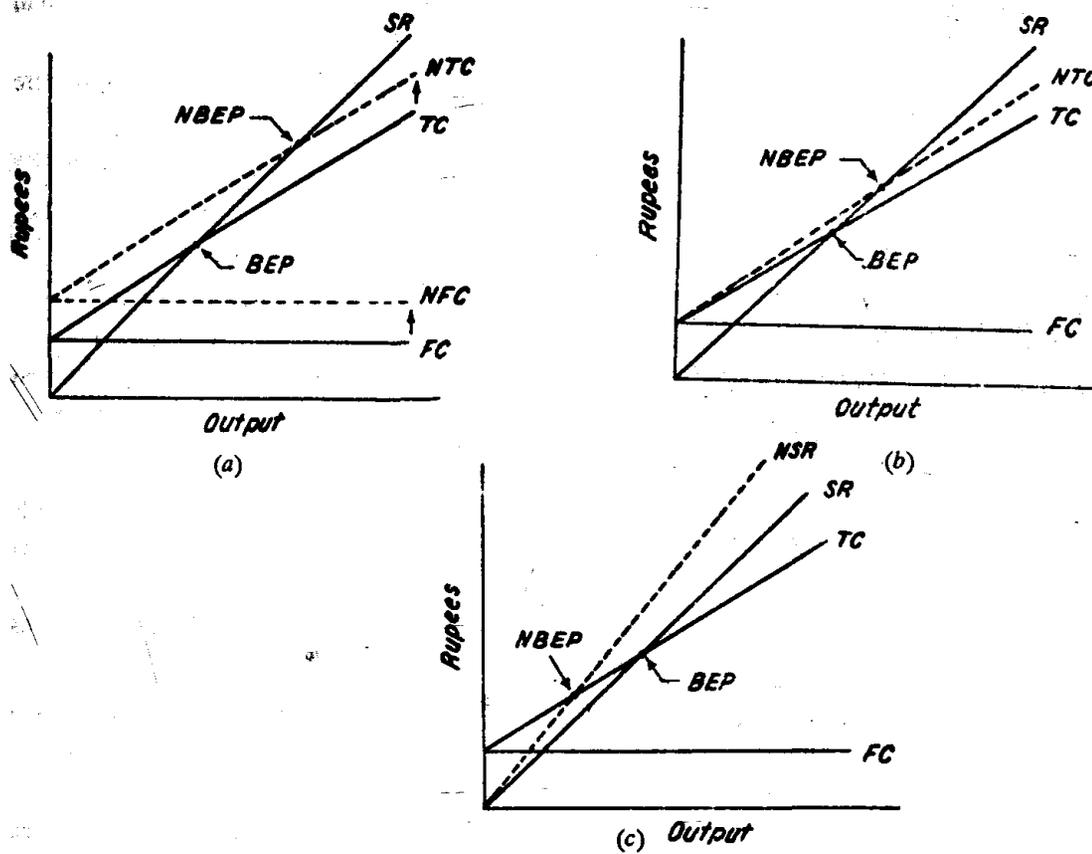
$\therefore \text{Margin of safety} = (\text{Gross Contribution Margin} - \text{FC}) / \text{Gross Contribution Margin}$

**5. P/V Ratio:** Profit Volume Ratio (P/V Ratio) measures the profitability in relation to sales.

So it is a measure to compare profitability of different products. Higher the P/V ratio, the high yielding is the product.

$\text{P/V ratio} = [\text{Contribution (p.u.)} / \text{Sales (p.u.)}] \times 100$





- BEP - Breakeven point
- NBEP - New breakeven point
- FC - Fixed cost
- NFC - New fixed cost
- TC - Total costs
- NTC - New total costs
- SR - Sales revenue
- NSR - New sales revenue

Fig. 27.4. Effect of changing different parameters on breakeven chart.

## **Algebraic Representation of BEA**

Basically, there are two approaches to the break-even analysis:

(1) Equation technique and (2) Contribution margin technique.

(1) Equation Technique:

$$\text{Sales} = \text{Variable Overheads} + \text{Fixed Overheads} + \text{Profits}$$

(2) Contribution Margin Technique:

$$\text{Unit Sales Price} - \text{Unit Variable Overheads} = \text{Unit Contribution.}$$

With this, we compute the break-even point as under:

$$(1) \text{ BEP (units)} = \text{Fixed Overheads} / \text{Per Unit Contribution}$$

$$(2) \text{ BEP (Rs.)} = (\text{Fixed Overheads} / \text{Per Unit Contribution}) \times \text{Per Unit Sales Price}$$

$$\text{Or} \quad \quad \quad = \text{BEP (Units)} \times \text{Sales Price (p.u.)}$$

$$(3) \text{ BEP(Rs.)} = (\text{Fixed overheads} \times \text{Total Revenue}) \times \text{Gross Contribution Margin}$$

$$(4) \text{ BEP(Rs.)} = \text{Fixed Overheads} / \text{PN Ratio (\%)}$$