Break-Even Analysis: Nature, Significance and Limitations

Nature of Break-Even Analysis:

Break-even analysis is an analytical technique used to study cost-volume-profit relationship and to determine the point at which revenues and costs agree exactly. Break-even point (BEP) indicates the level of operations that produce neither profit nor loss.

By determining this point the firm can assess precisely how it is actually away from the point. If the firm operating at a level above the BEP, it indicates that the firm is making profit.

Thus, cost revenue relationship at the BEP can be expressed as:

Total fixed costs + Total variable costs = Total sales revenue.

Fixed costs are those costs which do not change with variation in the level of production activity. Rent of factory building, local taxes, insurance, depreciation on plant and machinery are examples of fixed expenses. These costs are unavoidable expenses. They vary only with time. Variable costs include expenses which fluctuate in correspondence with variation in level of output and sales.

Raw materials, direct wages and variable overheads are examples of variable costs. Should the level of output increase by 25 percent, variable costs would shoot up by 25 percent. Accordingly, per unit variable cost will always remain the same.

Semi-variable costs bear some of the features of fixed costs and some features of variable costs. They fluctuate in the same direction as change in volume but in a direct ratio. Salaries of assistant foreman and supervisors, employees insurance, pension plans, maintenance of buildings and grounds, fuel oil are examples of this cost.

Given the amount of sales revenue, a portion must be applied to cover variable cost and the next portion to cover fixed costs. The remainder, if any, is profit. If costs of a firm are at a level at which sales revenue would produce a margin of income, variable costs just sufficient to cover the fixed cost portion, it will be said that the firm is operating at the break-even point.

For example, a firm produces an item selling for Rs. 1, and for each item produced the fixed costs for the year are Rs. 60,000. For the enterprise to break-even it must sell at Rs. 1 per item a sufficient number of items to meet the variable costs of 40 paise and the total fixed costs of Rs. 60,000.

By inspection we can see that the firm receives 60 paise above variable costs for each item sold, which can be applied to fixed costs. And by selling 1,00,000 items at 60 paise above variable costs we arrive at Rs. 60,000 total fixed costs covered.

It emanates from the above discussion that if the firm is to avoid losses it must make break even volume of sales which produces a margin of income above variable costs that equals the amount of fixed costs incurred during the period. Higher the volume of sales in relation to the breakeven level larger would be the volume of profit of the enterprise.

Calculation of Break-Even Point:

Break-even point of a business can be determined by the following simple algebraic formula:

$$\text{Break-even Point} = \frac{F}{1 - \frac{V}{P}} \quad \text{... (10.1)}$$

where

F = Fixed Costs

1 = Whole number

V = Variable cost per unit.

P = Selling price per unit.

$$\text{Units needed to break-even} = \frac{F}{P - V} \quad \text{... (10.2)}$$

where

F = Fixed Costs

P = Selling price per unit.

V = Variable costs per unit

The following example will illustrate how the break-even volume of sales and break-even units of output are arrived at with the help of the above formulae.