

### Illustration-I.

Margin of Safety  
Profit  
Fixed Cost

35% of total sales  
14% of total sales  
Rs. 800,000/-

Calculate a) P/U ratio, b) Break-even Sales.

Ans:

$$a) \text{ MOS} = \frac{\text{Profit}}{\text{P/U ratio}}$$

$$\text{or, P/U ratio} = \frac{\text{Profit}}{\text{MOS}}$$

$$= \frac{14\% \text{ of Total Sales}}{35\% \text{ of Total Sales}} = \frac{14}{35} = 0.40 = 40\%$$

$$b) \text{ BE Sales (Rs.)} = \frac{\text{Fixed Cost}}{\text{P/U ratio}} = \frac{\text{Rs. } 800,000}{40\%} = \text{Rs. } 2,000,000/-$$

### Illustration-II.

R. Ltd sold goods for Rs. 30,00,000 in a year. In that year, the variable costs were Rs. 6,00,000 and fixed cost were Rs. 8,00,000.

Find out a) P/U ratio, b) BE Sales, c) BE Sales if selling price was reduced by 10% and Fixed costs were increased by Rs. 1,00,000.

Ans:

$$\text{Contribution} = \text{Sales} - \text{Variable Cost} = \text{Rs. } (30,00,000 - 6,00,000)$$

$$a) \text{ P/U ratio} = \frac{\text{Contri.}}{\text{Sales}} \times 100 = \frac{24,00,000}{30,00,000} \times 100 = 80\%$$

$$b) \text{ BE Sales} = \frac{\text{Fixed cost}}{\text{P/U ratio}} = \frac{\text{Rs. } 8,00,000}{80\%} = \text{Rs. } 10,00,000$$

c) If selling price is reduced by 10%,  
revised sales = Rs. 30,00,000 - 10% of Rs. 30,00,000 = Rs. 27,00,000  
& revised Contribution = S - V = Rs. 27,00,000 - Rs. 6,00,000/-

$$\text{Revised Fixed cost} = \text{Rs. } (8,00,000 + 1,00,000) = \text{Rs. } 9,00,000$$

$$\therefore \text{ Revised P/U ratio} = \frac{\text{Contri.}}{\text{Sales}} \times 100 = \frac{\text{Rs. } 21,00,000}{27,00,000} \times 100 = 77.78\%$$

$$\therefore \text{ BE Sale} = \frac{\text{Revised Fixed Cost}}{\text{Revised P/U ratio}}$$

$$= \frac{\text{Rs. } 9,00,000}{77.78\%} = \text{Rs. } 11,57,110$$

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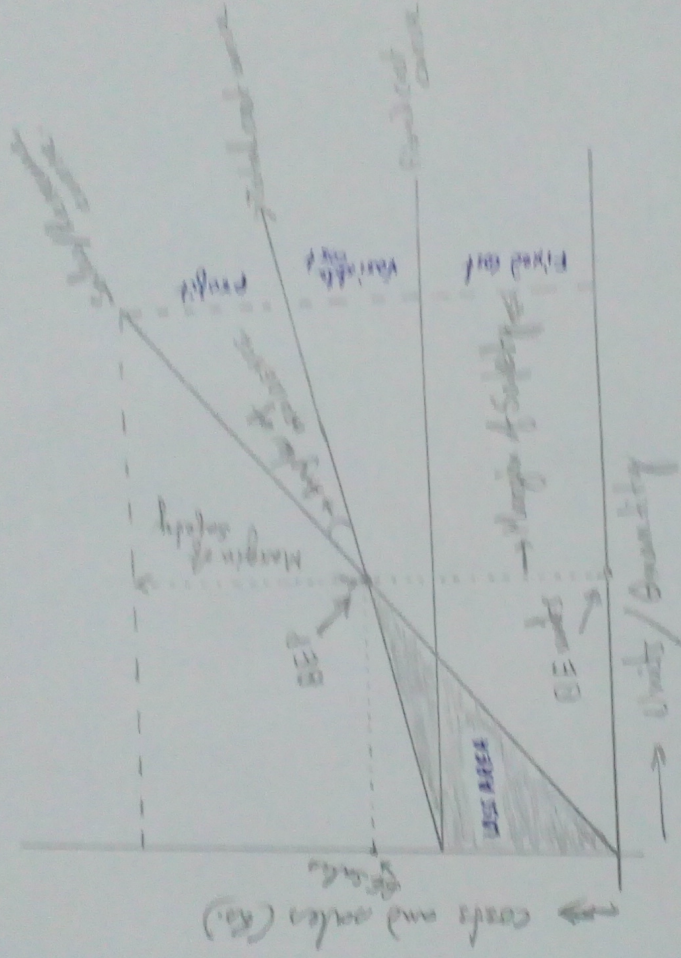


Where, Contribution per Selling price p.u. — Variable cost p.u.  
 $CM = \text{Revenue p.u.} - \text{Variable/Marginal cost p.u.}$

$$\left. \begin{aligned} P/O \text{ ratio} \\ \text{or} \\ C/O \text{ ratio} \end{aligned} \right\} = \frac{\text{Contribution} \times 100}{\text{Sales}}$$

$$CM = \frac{\text{Change in Contribution}}{\text{Change in sales}}$$

$$CM = \frac{\text{Change in profit (or loss)}}{\text{Change in Sales}}$$



### BREAK-EVEN CHART

#### Margin of Safety (MOS)

MOS is the excess of actual sales over the BE sales. MOS can be calculated as follows —

i)  $MOS = \text{Total sales} - \text{BE sales}$

ii)  $MOS = \frac{\text{Profit}}{P/O \text{ ratio}}$



Marginal costing is the ascertainment of marginal cost and the effect on profit due to changes in volume (or type) of output by differentiating fixed costs and variable costs.

Marginal costing technique is also known by other names such as Variable Costing, Direct Costing, Attributable Costing etc. In other words, Marginal cost is the aggregate of all variable costs.

Basic Assumptions of Marginal Costing:

- a) Fixed costs will tend to remain constant.
- b) Price of variable cost factors (i.e. wages, materials etc) will remain unchanged so that variable costs are truly variable.
- c) Semi-variable costs can be segregated into variable & fixed elements.
- d) Selling price per unit remains unchanged up to a certain level of sales.
- e) Operating efficiency will not increase or decrease.
- f) Product-mix will remain unchanged.
- g) Entire productions are sold off during the period. There is no opening or closing stock. (i.e. production = sales).
- h) Finished goods are valued at marginal cost.

Break-even Chart/Analysis:

Break-even Chart <sup>(BEC)</sup> is a graphical presentation of Break-even Analysis. Break-even Chart signifies a chart which shows profit or loss at various levels of activity and the level at which neither profit nor loss is shown being the Break-even point (BEP).

The BEP can be determined from a BEC or can be calculated as follows:

i)  $BEP \text{ (Units)} = \frac{\text{Total Fixed cost (TFC)}}{\text{Contribution per unit.}}$

ii)  $BEP \text{ (Sales value)} = \frac{TFC}{P/O \text{ or } C/S \text{ ratio}}$

OR  $= \frac{TFC}{\text{Contribution p.u.}} \times \text{Selling price p.u.}$