

## Break-Even Analysis

### Definitions:

1. **FIXED COSTS** - are costs which do **not change** as the level of production changes (*in the short term*). Fixed costs **per unit** decrease/increase as the level of production increases/decreases. Eg Rent expense.
2. **VARIABLE COSTS** – are costs which **change** as production changes. Variable costs **per unit** do not change as levels of production changes. Eg raw materials.
3. **TOTAL COSTS** = Fixed costs + Variable costs
4. **BREAK EVEN POINT** – the point at which the firm makes neither a profit nor a loss.
5. **BREAK –EVEN VOLUME** – the number of products to be sold so that neither a profit nor a loss is made
6. **MARGIN OF SAFETY** – the level of sales **above** the Break -even point up to the expected level of production. Formula:  $\frac{\text{profit}}{\text{Contribution/sales ratio}} \times 100$

### CALCULATIONS AND BREAK-EVEN CHARTS

#### Formula: Calculation of the Break Even point:

$$\text{BEP} = \frac{\text{Total Fixed Costs}}{\text{Contribution (selling price per unit – variable cost per unit)}}$$

#### Charts:

The break-even point is where the Total cost line and the Revenue line intersect.

#### Factors which will change the Break-even Point:

1. Increase or decrease the selling price per unit
2. An increase or decrease in fixed costs
3. An increase or decrease in the variable cost per unit
4. An increase in the volume of production and sales

#### Limitations of Break-Even Charts:

1. A change in one factor is likely to produce a change in other factors as well eg an increase or decrease in the selling price will affect the volume of goods sold. The changes in factors should be studied together rather than separately.
2. A firm selling more than one product, each having different combinations of fixed and variable costs is not considered. When changes to each individual products' sales occurs this will have a large effect on costs and profit even though total overall sales figures remain the same.