BREAK EVEN ANALYSIS

- A break-even point defines when an investment will generate a positive return.
- Fixed costs are not directly related to the level of production.
- Variable costs change in direct relation to volume of output.
- Total fixed costs do not change as the level of production increases.

Break-even analysis is a useful tool to study the relationship between fixed costs, variable costs and returns. A break-even point defines when an investment will generate a positive return and can be determined graphically or with simple mathematics. Break-even analysis computes the volume of production at a given price necessary to cover all costs.

Total fixed costs are shown in Fig 1 by the horizontal line parallel to the x-axis. Total fixed costs do not change as the level of production increases. Total variable costs of production are indicated by the broken line sloping upward, which illustrates that total variable costs increase directly as production increases.

The total cost line is the sum of the total fixed costs and total variable costs. The total cost line parallels the total variable cost line, but it begins at the level of the total fixed cost line.

The total income line is the gross value of the output. This is shown as a line, starting at the lower left of the graph and slanting upward. At any point, the total income line is equivalent to the number of units produced multiplied by the price per unit.

The key point (**break-even point**) is the intersection of the total cost line and the total income line (Point P). A vertical line down from this point shows the level of production necessary to cover all costs. Production greater than this level generates positive revenue; losses are incurred at lower levels of production

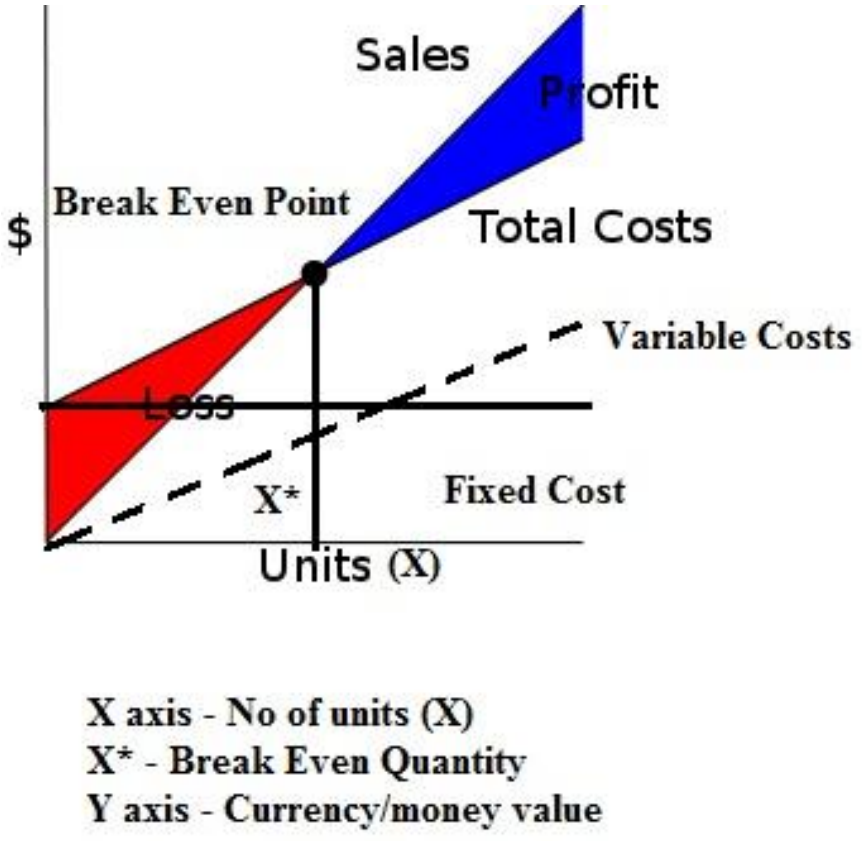

Fig.1. Break Even Analysis

Let,

X* = No. of Units Sold at break even

P = Unit Sales Price

V = Unit Variable Cost

TC = Total Cost = Total Fixed Cost (TFC) + Total Variable Cost (TVC)

At Break Even,

$$\begin{aligned} TR &= TC \\ P \times X^* &= TFC + V \times X^* \\ P \times X^* - V \times X^* &= TFC \\ (P - V) \times X^* &= TFC \\ X^* &= \frac{TFC}{P - V} \end{aligned}$$

NOTE: Unit sale price (P) > Variable Costs/unit (V), to break even.

Hence to reduce Break-even point (BEP),

- TFC and V can be reduced, Or
- Unit Sales Price may be increased

E.g.:

Total fixed cost of a pencil manufacturing unit is Rs.500000. The sales price of the pencils is Rs.10/unit. The variable cost per unit is Rs.2. Find the BEP? Also, if the sales price of the pencil is increased to Rs.12/unit, find the new BEP.

Ans: BEP (X*) = TFC/ (P-V)

= 500000/ (10-2)

= 62,500 pencils

New BEP (X_1*) = 500000/ (12-2)

= 50000 pencils

ASSETS

In financial accounting, an asset is an economic resource. Anything tangible or intangible that is capable of being owned or controlled to produce value and that is held to have positive economic value is considered an asset.

Two major asset classes are

- Tangible assets, and
- Intangible assets

Tangible assets

Are those that have a physical substance. Tangible assets contain various subclasses, including current assets and fixed assets.

- **Current assets**:

Are cash and other assets expected to be converted to cash or consumed either in a year or in the operating cycle (whichever is longer), without disturbing the normal operations of a business

- **Fixed assets**

Also referred to as PPE (property, plant, and equipment), these are purchased for continued and long-term use in earning profit in a business. This group includes as an asset land, buildings, machinery, furniture, tools, IT equipment, e.g., laptops, and certain wasting resources e.g., timberland and minerals

Intangible assets:

Lack of physical substance and usually are very hard to evaluate. They include patents, copyrights, franchises, goodwill, trademarks, trade names, etc.