

MANAGERIAL ACCOUNTING

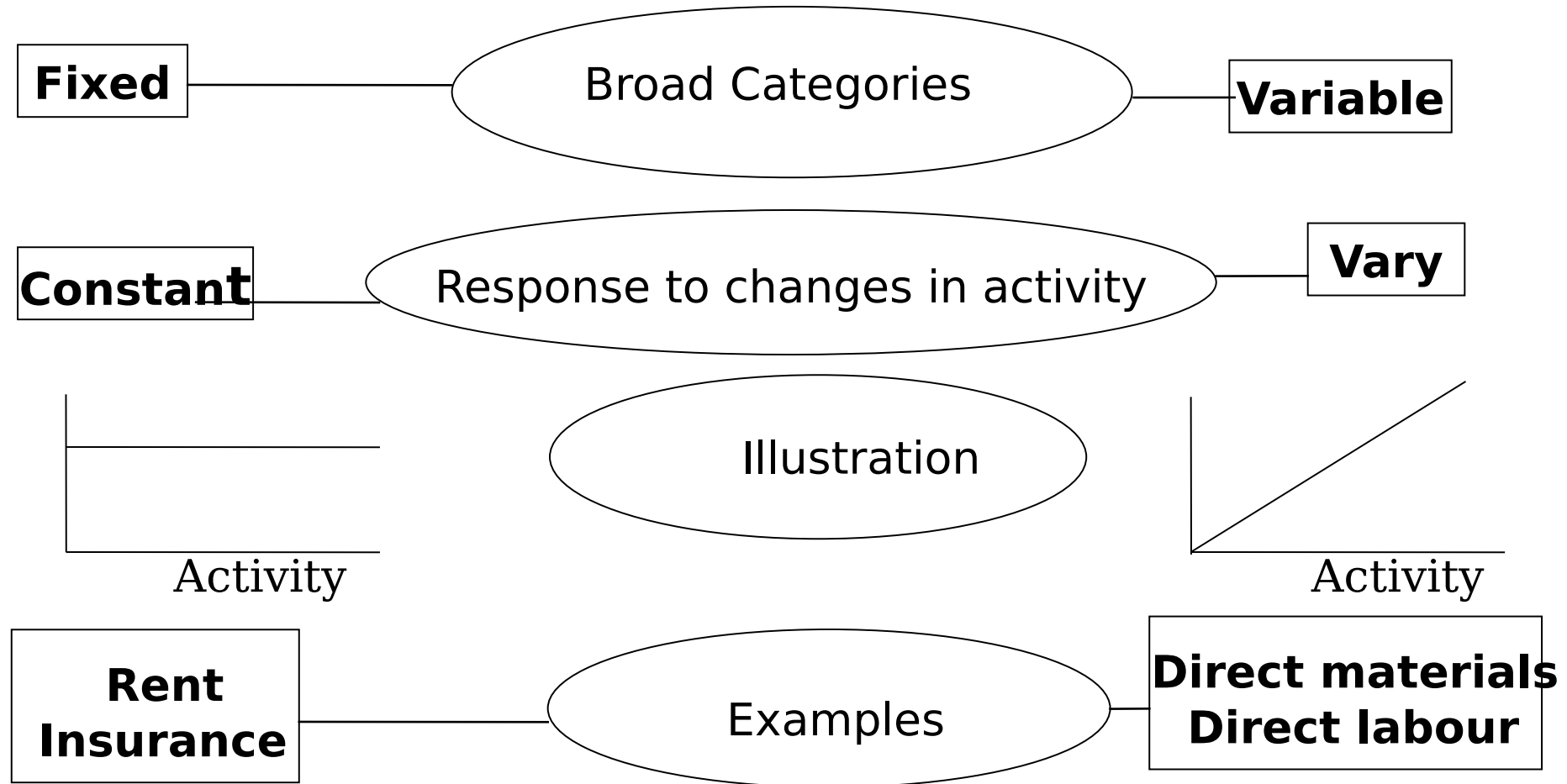


COST VOLUME PROFIT (CVP) ANALYSIS

Learning Outcomes

1. Distinguish fixed costs and variable costs.
2. Understand how managerial accountants use CVP to make decisions.
3. Identify the important CVP concepts and terms.
4. Calculate and interpret break-even point.

The Behaviour of Costs

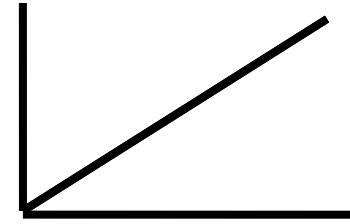


Fixed Costs

- Definition: The cost is not altered by changes in the level of activity
- Fixed costs are likely to be affected by inflation
- Fixed costs are almost always time-based i.e. they vary with the length of time involved

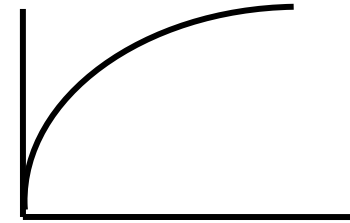
Variable Costs

Definition: These costs vary with the level of activity

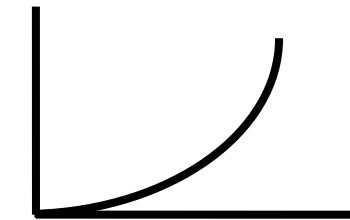


Not all variable costs are linear

For example:



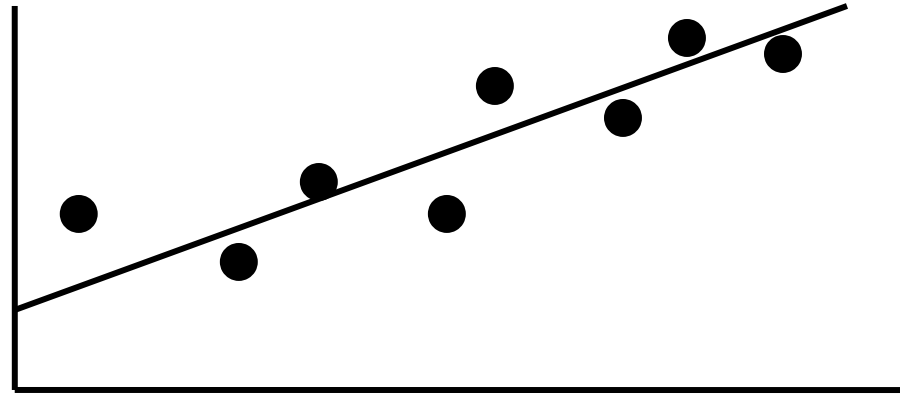
Economies of scale
(eg labour effectiveness; bulk discounts)



Semi-variable costs

- Definition : They have both fixed and variable components

- Illustration :



- Determination : Graph actual changes at different activity levels
: Use 'best squares regression'
- Examples : Electricity; Depreciation

CVP: Definition

Cost-volume-profit (CVP) analysis examines the behaviour of

- total revenues,
- total costs, and
- operating income

as changes occur in the output level, selling price, variable costs per unit, or fixed costs.

Importance of CVP

Analysis

- **Cost-Volume Profit or CVP analysis** is a powerful tool that helps managers make important business decisions.
- **Cost-volume-profit** expresses the relationships among costs, volume and profit. For example, managers of a company need to determine how many of its products can be sold each month just to cover costs or break-even. CVP can provide the answers.
- CVP also helps the managers decide how sales volume would need to change to achieve the same profit level. However, to use CVP, managers need certain data. They must also make sure the data are consistent with the assumptions underlying CVP analysis.

Data required for effective CVP Analysis

CVP analysis relies on the interdependency of **five** components, or pieces of information:

- **Sales price**
- **Volume**
- **Variable costs**
- **Fixed costs**
- **Profit or loss**

CVP helps managers discover how changes in any of these components will affect their business. Because business conditions are always changing, CVP helps managers prepare for and respond to economic changes.

CVP Assumptions

CVP analysis assumes that:

- A change in volume is the only factor that affects costs.
- Managers can classify each cost (or the components of mixed costs) as either variable or fixed. These costs are linear throughout the relevant range of volume.
- Revenues are linear throughout the relevant range of volume.
- Inventory levels will not change.

Break Even Analysis

- Is a marginal costing technique which is used to identify how total costs, revenues and profit are related to sales volume.
- Most common tool for evaluating the economic feasibility of businesses and products
- BEP is the point at which revenue is exactly equal to costs.
- At this point no profit is made and no losses are

Break-even Point

The **breakeven point** is that quantity of output where total revenues equal total costs – that is,

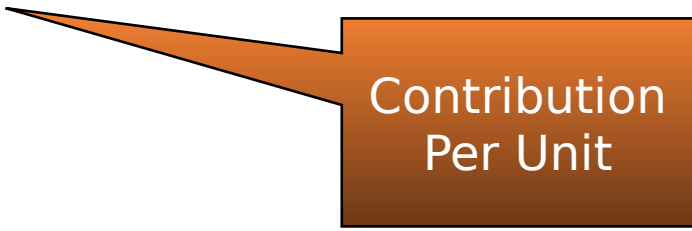
where the operating income is zero. Why would managers be interested in the break even point? Mainly because they want to avoid operating losses.

There are **three** ways to calculate the breakeven point:

- **Equation Method**
- **Contribution Margin Method**
- **Graph Method**

Break-Even Formula - Units

$$\frac{\text{Total Fixed Costs}}{\text{Sales Price (per unit) - Variable Cost (per unit)}}$$

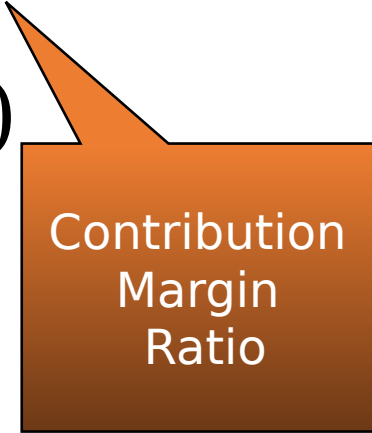


Contribution
Per Unit

Break-Even Formula - Value

$$\frac{\text{Total Fixed Costs}}{\text{Sales Price (per unit) - Variable Cost (per unit)}}$$

Sales Price (per unit)



Contribution
Margin
Ratio

Break-Even Formula - Units

- Setting a target profit
 - Enter profit in numerator

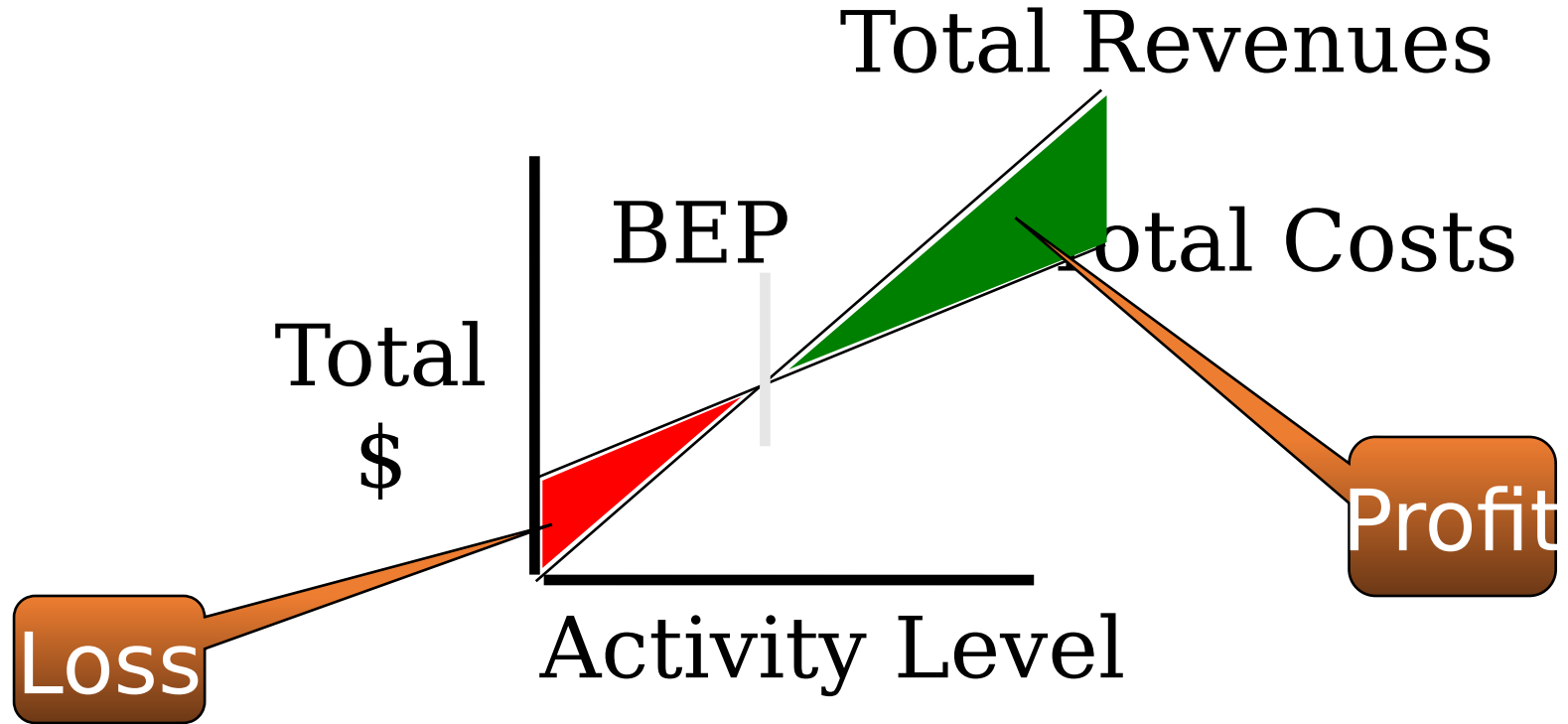
$$\frac{\text{Total Fixed Costs} + \text{Target Profit}}{\text{Sales Price (per unit)} - \text{Variable Cost (per unit)}}$$

Break-Even Formula - Value

- Setting a target profit
 - Enter profit in numerator

$$\frac{\text{Total Fixed Costs} + \text{Target Profit}}{\text{Sales Price (per unit)} - \text{Variable Cost (per unit)}} \\ \text{Sales Price (per unit)}$$

Traditional CVP Graph



Cost-Volume-Profit Analysis

- Using Cost-Volume-Profit (CVP) Analysis allows a manager to graphically analyse the relationship between Costs, Volume and Profit.
- The Break-Even Point is the volume of activity where the company's revenues are equal to expenses.

