

## UNIT-I

### MANAGERIAL ECONOMICS AND DEMAND ANALYSIS

#### *Meaning of managerial economics:*

**Managerial economics is a part of economics and it is concerned with decision making.** It is a science which deals with the application of economic theories, techniques, principles and concepts to business management in order to solve business and managerial problems. In short 'economics applied in decision making is known as managerial economics'.

#### *Definitions:*

**"The use of economic analysis in the formulation of business policies is known as managerial economics."**

----- Joel Dean.

**"Business Economics consists of the use of economic modes of thought to analyze business situations."**

----- Mc Nair and Merriam

#### ➤ **Nature of Managerial Economics:**

**1. Managerial Economics is Micro Economics in Nature:** Managerial economics studies about the individual firm. It studies how an individual firm can use scarce resources to produce more output with minimum cost and maximum profit.

**2. Managerial Economics is concerned with Normative Economics:** Managerial economics tells a business firm to do certain things which will benefit them and not to do certain things which leads to losses. Therefore, managerial economics is normative economics because it prescribes.

**3. Managerial Economics is Application Oriented:** Managerial economics tries to solve some complicated business problems. Decision making skills can be improved by applying some principles and concepts.

**4. Managerial Economics Takes the Help of Macro Economic Concepts:** It takes the help of macro economics, which is helpful to understand the external environment which is relevant for the business.

**5. Managerial Economics Offers Scope to Evaluate Each Alternative:** Managerial Economics gives an opportunity to evaluate each alternative depending on its cost and profit.

**6. Interdisciplinary:** The contents, tools and techniques of managerial economics are drawn from different subjects such as economics, management, statistics, accountancy, psychology, mathematics, etc.

**7. Assumptions and limitations:** Every concept and theory of managerial economics is based on certain assumptions. Where there is a change in assumptions, the theory may not hold good at all.

**8. Managerial Economics is dynamic in nature:** Managerial Economics deals with human-beings (i.e. human resource, consumers, producers etc.). The nature and attitude differs from person to person. Thus to cope up with dynamism and vitality managerial economics also changes itself over a period of time.

➤ **Scope of Managerial Economics:**

The scope of managerial economics refers to its area of study. It deals with demand analysis and forecasting, cost analysis, production analysis, pricing policies, profit management, and capital management etc.

**1. Demand Analysis and Forecasting:** A business firm convert raw material into finished products and these products are sold in the market. Hence the firm has to estimate and forecast the demand before starting production. The firm will prepare production schedule on the basis of demand forecast.

**2. Cost Analysis:** Every firm wants to reduce cost. A study of economic costs and their estimates are useful for management decisions. Estimation of cost is essential for decision making.

**3. Production Analysis:** Production analysis refers to the physical terms while cost analysis refers to monetary terms. Production analysis deals with different production functions and their managerial uses.

**4. Pricing Policies:** Pricing is an important area of managerial economics. Price is the basic thing for the revenue of a firm, and the success of the price decisions taken by it.

**5. Profit Management:** The primary aim of any firm is to maximize profits. Their existence an uncertainty in the estimation of profits, because of difference in the costs and revenues, and the effects of its internal and external factors. Therefore, profit management is the difficult area in managerial economics.

**6. Capital Management:** Capital management implies planning, acquisition, disposition and control of capital. Long term investment decisions need a careful analysis of expected returns, risk and uncertainty.

➤ **Managerial Economics Relationship with Other Subjects:**

Managerial economics is closely linked with many other disciplines such as economics, accountancy, mathematics, statistics, operation research, psychology and organizational behavior. The management executive makes use of the concepts and methods form all these disciplines.

**1. Managerial Economics and Micro-Economic Theory:** Managerial economics is mainly microeconomic in nature. Microeconomic theory provides all important concepts and analytical tools to managerial economics. Managerial economic makes use of such microeconomic concepts as the elasticity of demand, marginal cost, market structures, and so on in decision making.

**2. Managerial Economics and Macro-Economic Theory:** Macroeconomic theory has comparatively less concern with the managerial economics. It is useful to managerial economics mainly in the area of forecasting.

**3. Managerial Economics and Mathematics:** Managerial is concerned with estimating and predicting the relevant economic factors for decision making and forward planning. In this process,

he extensively makes use of the tools and techniques of mathematics such as algebra, exponentials and such other.

4. **Managerial Economics and Statistics:** Managerial economics needs the tools of statistics in more than one way. A successful businessman must correctly estimate the demand for his product. The statistical tools are used in collecting data and analyzing them to help in the decision making process.
5. **Managerial Economics and Accountancy:** The accountant provides accounting information relating to costs, revenues, receivables, payables, profits/losses etc. and this forms the basis for the managerial economist to act upon.
6. **Managerial Economics and Psychology:** Consumer psychology is the basis on which managerial economist acts upon. How the customer reacts to a given change in price or supply and its consequential effect on demand or profits is the main focus of study in managerial economics.
7. **Managerial Economics and Organizational Behaviour:** It enables the managerial economist to study and develop behavioural models of the manager's behavior with that of the owner. This further analyses the economic rationality of the firm in a focused way.
8. **Managerial Economics and Operations Research:** Decision making is the main focus in operations research and managerial economics. If managerial economics focuses on 'problems of decision making', operations research focuses on solving the managerial problems.

➤ **Role/Responsibilities of Managerial Economist:**

Managerial economist plays a very important role in an organization. He has to gather economic data, analyze all crucial information. His responsibilities towards his job are:

1. Sales forecasting.
2. Industrial market research.
3. Environmental forecasting.
4. Identify new business opportunities.
5. Economic analysis of competing companies.
6. Investment analysis and forecasting.
7. Production scheduling.
8. Pricing and the related decisions.
9. Advice on trade and Public relations.

## **DEMAND ANALYSIS**

### ***Meaning and Definition of Demand:***

In common parlance demand means the desire for an object. But in economics demand is something more than this.

According to *Stonier* and *Hague* demand means **"Effective desire or want for a commodity, which is backed up by ability and willingness to pay for it."**

**In short:**

**Demand = Desire + Ability to pay (i.e., Money or Purchasing Power) + Will to spend**

According to *Benham* demand means **"The quantity of the products the buyers are willing to purchase at a given price and over a given period of time."**

Demand is always related to price and time. Economist always mentions the amount of demand for a commodity with reference to particular price and specific time period, such as per day, per week, or per year.

➤ **Demand Distinctions / Types of Demand / Nature of Demand:**

**1. Producers' Goods Demand:** Producers' goods demand means demand for goods, which are used for the production of other goods such as machines, tools, looms, etc.

**2. Consumers' Goods Demand:** Consumers' goods demand means demand for goods, which are use for final consumption. Ex: ready- made clothes, prepared food etc.

**3. Durable Goods Demand:** It means demand for goods are those which go on being used over a period of time. Ex: cars, refrigerators, umbrellas, etc.

**4. Non-Durable Goods Demand:** It means demand for goods which are cannot be consumed more than once, for example sweets, bread, milk, etc. They are also called as single usage goods.

**5. Derived Demand:** When the demand for a product is tied to the purchase of some parent products, its demand is called as derived demand. Ex: TV-stabilizer, Gun-bullets.

**6. Autonomous Demand:** If the demand for a product is wholly independent of all others, it is known as autonomous demand. For example, demand for TV is autonomous but demand for stabilizer is derived demand.

**7. Company Demand:** The term company demand denotes the demand for the products of a particular company. Ex: demand for steel produced by TISCO.

**8. Industry Demand:** Industrial demand means demand for the products of a particular industry. Ex: total demand for steel in the country.

**9. Market Segment Demand:** Demand for a certain product has to be studied not only in its totality but also by breaking it into different segment viz., geographical areas, sub-products etc. Demand for a product in that particular segment is called market segment demand.

**10. Total Market Demand:** The aggregate demand for a product in all market segments is called as total market demand.

**11. Short-Run Demand:** Short-run demand refers to the demand with its immediate reaction to price changes, income fluctuations etc.

**12. Long-Run Demand:** Long-run demand is that which will ultimately exist as a result of the changes in pricing, promotion or product improvement, after enough time has been allowed to let the market adjust itself to the new situation.

## DEMAND FUNCTION

Demand function is a mathematical expression of relation between the quantity demanded and its determinants. It can be expressed as follows

$$QD = F( P, I, Psc, T, A)$$

Where

Qd = quantity demand

F = functional relational between input P

= price of the product

I = income of the consumer

Psc= price of substituted or complementary

T = taste and preference

A = advertisement

## LAW OF DEMAND

### Introduction:

The relation of price to sales is known in economics as the '**Law of Demand**'. This law simply expresses the relation between quantity of commodity and its price. This concept was developed by **Alfred Marshall and Samuelson**.

### Definitions:

According to Prof. Samuelson "**Law of Demand states that people will buy more at lower prices and buy less at higher prices, other things remaining the same**".

According to Alfred Marshall "**A rise in the price of a commodity or service is followed by a decrease in demand, and a fall in the price of a commodity is followed by an increase in demand, if conditions of demand remains constant**".

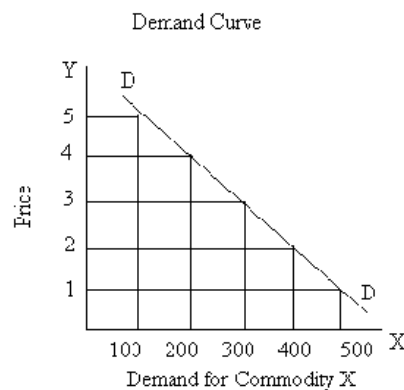
### ➤ Explanation of the Law of Demand:

A market demand schedule (imaginary data)

Price of Commodity X (In Rs.)	Quantity Demanded (Units per Week)
5	100
4	200
3	300
2	400

1	500
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The market demand schedule can be obtained by adding up if all the individual demand schedules. The table states the relationship between quantity demanded of commodity 'X' and its price. When price of commodity 'X' per unit is Rs.5 quantity demanded are 100 units. As price fall to Rs.4 quantity demanded increases to 200 units. This is shown in the following. z



The above diagram represents price of commodity 'X' on 'Y-axis and quantity demanded on the X-axis. The curve DD shows the mkt. demand for commodity X which slopes downwards from left to right. When the price is falling, the demand (for commodity X) is increasing. When the price increases, the demand for it decreases.

➤ **Exceptions to the Law of Demand:**

- **Giffen paradox:** The Giffen goods are inferior goods is an exception to the law of demand. When the price of inferior good falls, the poor will buy less and vice versa. When the price of maize falls, the poor will not buy it more but they are willing to spend more on superior goods than on maize. Thus fall in price will result into reduction in quantity. This paradox is first explained by Sir Robert Giffen.

**Veblen or Demonstration effect:** According to Veblen, rich people buy certain goods because of its social distinction or prestige. Diamonds and other luxurious article are purchased by rich people due to its high prestige value. Hence higher the price of these articles, higher will be the demand.

- **Speculation:** When people speculate about changes in the price of a commodity in the future, they may not act according to the law of demand. If the price of a commodity is increasing and it is expected to still further, the consumer will buy more of them at higher prices, than they did at lower price.

- **Consumer's Psychological Bias:** When the consumer is wrongly biased against the quality of a commodity with the price change, he may not act according to law of demand.
- **Necessaries:** In the case of necessities like rice, vegetables etc, people buy more even at a higher prices.
- **Fear of shortage:** During the time of emergency of war people may expect shortage of a commodity. At that time, they may buy more at a higher price to keep stocks for the future.
- **Ignorance:** Sometimes customers do not consider the price of the product. Although price changes they can buy the same quantity of products.
- **Brand Loyalty:** When consumer is brand loyal to particular product or psychological attachment to particular product, they will continue to buy such products even at a higher price

## ELASTICITY OF DEMAND

### Introduction:

The concept elasticity of demand is developed by Alfred Marshall in his book "**Principles of Economics.**"

The concept '*law of demand*' explains that the demand for a commodity increases when its price falls and vice versa. But the law does not explain the extent of change in demand. In order to measure the extent of change in demand Prof. Alfred Marshall developed the concept of elasticity of demand. In measuring the elasticity of demand two variables are considered. There are:

- a) Demand
- b) The determinants of Demand.

### Definition:

**"The percentage change in quantity demanded is caused by the percentage change in demand determinants is known as elasticity of demand."**

$$\text{Elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in determinant of demand}}$$

➤ **Types of Elasticity of Demand:** There are four important kinds of elasticity of demand. These are:

1. Price Elasticity of Demand.
2. Income Elasticity of Demand.
3. Cross Elasticity of Demand.
4. Advertising or Promotional Elasticity of Demand.



- 1. Price Elasticity of Demand:** It can be defined as “*the percentage change in quantity demanded to the percentage change in price.*” .To measure the price elasticity of demand the following formula can be applied.

$$\text{Price Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price.}}$$

Symbolically:

$$E_p = \frac{\Delta Q/Q}{\Delta P/P} \quad \text{or} \quad \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

Where,

$E_p$  = Price elasticity of demand.  
 $Q$  = the original or old demand (say  $Q_1$ )  
 $Q_2$  = new demand  
 $P$  = the original or old price (say  $P_1$ )  
 $P_2$  = new price  
 $\Delta Q$  = the change in demand. (i.e.,  $\Delta Q = Q_2 - Q_1$ )  
 $\Delta P$  = the change in price. (i.e.,  $\Delta P = P_2 - P_1$ )

- 2. Income Elasticity of Demand:** It is defined as “*the percentage change in the quantity demanded to the percentage change in income.*”

$$\text{Income Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Symbolically:

$$E_y = \frac{\Delta Q/Q}{\Delta Y/Y} \quad \text{or} \quad \frac{(Q_2 - Q_1)/Q_1}{(Y_2 - Y_1)/Y_1}$$

Where,

$E_y$  = Income elasticity of demand  
 $Q$  = original demand ( $Q_1$ )  
 $Q_2$  = new demand  
 $Y$  = original income ( $Y_1$ )  
 $Y_2$  = new income  
 $\Delta Q$  = change in demand ( $Q_2 - Q_1$ )  
 $\Delta Y$  = change in income ( $Y_2 - Y_1$ )

- 3. Cross Elasticity of Demand:** The term cross elasticity of demand may be defined as “*the proportionate change in quantity demanded of a commodity to a given proportionate change in the price of the related goods.*”

This type of elasticity arise in case of inter related goods such as substitutes and complementary



goods.

$$\text{Cross Elasticity of Demand} = \frac{\text{Percentage change in Demand for X}}{\text{Percentage change in Price of Y}}$$

Symbolically:

$$E_{xy} = \frac{\Delta Q_x / Q_x}{\Delta P_y / P_y} \quad \text{or} \quad \frac{(Q_{x2} - Q_{x1}) / Q_{x1}}{(P_{y2} - P_{y1}) / P_{y1}}$$

Where,

$E_{xy}$  = cross elasticity of demand.  
 $\Delta Q_x$  = change in demand of commodity X  
 $\Delta P_y$  = change in price of commodity Y  
 $Q_x$  = old demand of commodity X  
 $P_y$  = old price of commodity Y.

4. **Advertising or Promotional Elasticity of Demand:** *“The proportionate change in quantity demanded to the proportionate change advertisement expenditure is known as advertising elasticity of demand”*

$$\text{Advertising elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in advertisement expenditure.}}$$

Symbolically:

$$E_a = \frac{\Delta Q / Q}{\Delta A / A} \quad \text{or} \quad \frac{(Q_2 - Q_1) / Q_1}{(A_2 - A_1) / A_1}$$

Where,

$E_a$  = Advertising elasticity of demand  
 $Q$  = original demand ( $Q_1$ )  
 $A$  = original expenditure on advertising ( $A_1$ )  
 $\Delta Q$  = change in demand ( $Q_2 - Q_1$ )  
 $\Delta A$  = change in expenditure ( $A_2 - A_1$ )

➤ **TYPES OF PRICE ELASTICITY OF DEMAND:**

Price elasticity of demand can be defined as *“the percentage change in quantity demanded to the percentage change in price.”* To measure the price elasticity of demand the following formula can be applied.

$$\text{Price Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price.}}$$

Symbolically:

$$E_p = \frac{\Delta Q/Q}{\Delta P/P} \quad \text{or} \quad \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

Where,

$E_p$  = Price elasticity of demand.

$Q$  = the original or old demand (say  $Q_1$ )

$Q_2$  = new demand

$P$  = the original or old price (say  $P_1$ )

$P_2$  = new price

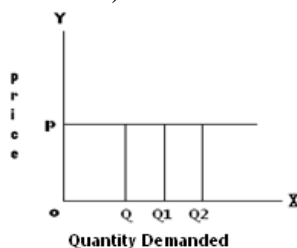
$\Delta Q$  = the change in demand. (i.e.,  $\Delta Q = Q_2 - Q_1$ .)

$\Delta P$  = the change in price. (i.e.,  $\Delta P = P_2 - P_1$ .)

### ➤ Types / Degrees of Price Elasticity of Demand:

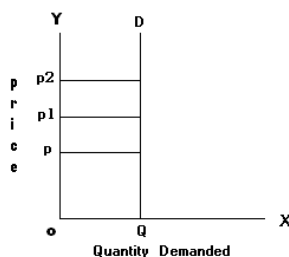
Price elasticity of demand is generally classified into five categories. These are:

1. **Perfect Elasticity of Demand:** Consumers have infinite demand at a particular price and none at all at an even slightly higher than this given price is known as perfect elasticity of demand. Here the slope of the curve is horizontal. ( $E = \infty$ )



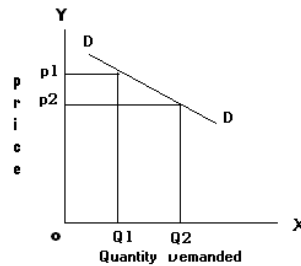
In the diagram, the quantity demanded increases from  $OQ$  to  $OQ_1$ , from  $OQ_1$  to  $OQ_2$ , even though there is no change in price. The price is fixed at  $OP$ .

2. **Perfect Inelasticity of Demand:** Where a change in price howsoever large, causes no change in quantity demanded is called as perfect inelasticity of demand. Here the slope of the curve is vertical. ( $E = 0$ )



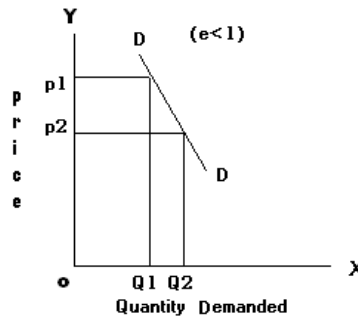
In the figure, it is shown that there is no change in the quantity demanded even though the price is changing (increasing). Even though there is an increase in price from  $OP$  to  $OP_1$ , from  $OP_1$  to  $OP_2$  there is no change in demand.

3. **Relative Elasticity of Demand:** The percentage change in quantity demanded is greater than the percentage change in price is termed as relative elasticity of demand. In this case, the elasticity of demand is said to be greater than one. ( $e > 1$ )



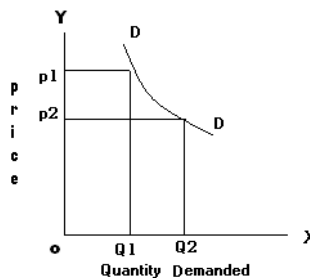
The figure shows that the quantity demanded increases from  $OQ_1$  to  $OQ_2$  as there is a decrease in price from  $OP_1$  to  $OP_2$ . The amount of the increase in the quantity demanded is greater than the amount of decrease in the price.

4. **Relative Inelasticity of Demand:** The percentage change in quantity demanded is less than that of the percentage change in price is known as relative inelasticity of demand. In this case the elasticity of demand is said to be less than one. ( $e < 1$ ).



In the figure, the demand increases from  $OQ_1$  to  $OQ_2$  as there is a decrease in price from  $OP_1$  to  $OP_2$ . The amount of increase in the quantity demanded is lesser than the amount of decrease in the price.

5. **Unitary Elasticity of Demand:** The percentage change in quantity demanded is equal to the percentage in price is known as unitary elasticity of demand. ( $e = 1$ )



The figure shows that the quantity demanded increases from  $OQ_1$  to  $OQ_2$ , as there is a decrease in price from  $OP_1$  to  $OP_2$ . The amount of increase in the quantity demanded is equal to the amount of fall in the price.

➤ **INCOME ELASTICITY OF DEMAND:**

Income elasticity of demand can be defined as “a percentage or proportional change

*in the quantity demanded to the percentage or proportional change in income.”*

$$\text{Income Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Symbolically:

$$E_y = \frac{\Delta Q/Q}{\Delta Y/Y} \quad \text{or} \quad \frac{(Q_2 - Q_1)/Q_1}{(Y_2 - Y_1)/Y_1}$$

Where,

$E_y$  = Income elasticity of demand

$Q$  = original demand ( $Q_1$ )

$Q_2$  = new demand

$Y$  = original income ( $Y_1$ )

$Y_2$  = new income

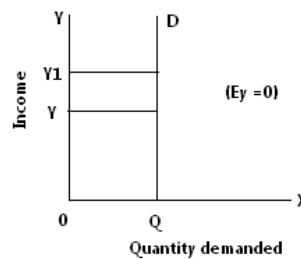
$\Delta Q$  = change in demand ( $Q_2 - Q_1$ )

$\Delta Y$  = change in income ( $Y_2 - Y_1$ )

➤ **Types of Income Elasticity of Demand:** Income elasticity of demand mainly of three types:

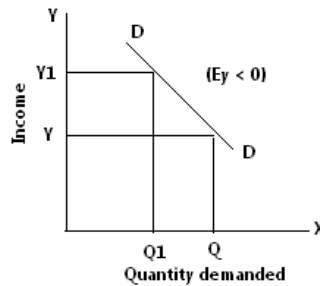
- 1) Zero income Elasticity.
- 2) Negative income Elasticity
- 3) Positive income Elasticity

**1. Zero income elasticity:** Where a change in consumer's income howsoever large causes no change in quantity demanded is known as zero income elasticity of demand. (Eg. salt, sugar etc). Here income elasticity ( $E_y$ ) = 0



It shows zero income elasticity of demand. Although an income increases from  $OY$  to  $OY_1$ , Quantity demanded constant.

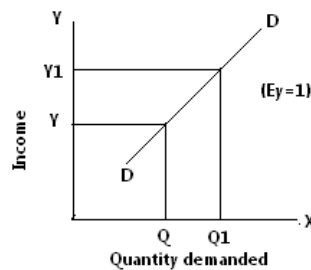
**2. Negative income elasticity:** Where an increase in come leads to decrease in demand is termed as negative income elasticity of demand. Eg, Inferior Goods. Here  $E_y < 0$



It shows negative income elasticity of demand. When income increases from  $OY$  to  $OY_1$ , Quantity demanded decreases from  $OQ$  to  $OQ_1$ .

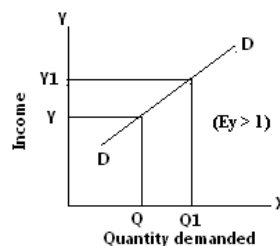
**3. Positive income Elasticity:** In this case, an increase in income may lead to an increase in the quantity demanded. i.e., when income rises, demand also rises. ( $E_y \geq 0$ ) This can be further classified in to three types:

- a) **Unitary Income Elasticity of Demand:** The percentage change in quantity demanded of a commodity is equal to the percentage in consumer's income is known as unitary income elasticity of demand. Unitary income elasticity is equal to one i.e., ( $E_y = 1$ )



It shows unitary income elasticity of demand. When income increases from  $OY$  to  $OY_1$ , Quantity demanded also increases from  $OQ$  to  $OQ_1$ . But the increase in quantity demanded is exactly equal to the increase in income.

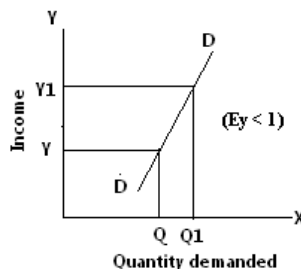
- b) **High-Income Elasticity of Demand:** High income elasticity of demand means the percentage change in quantity demanded of a commodity is greater than the percentage change in the consumer's income. High income elasticity of demand is greater than one i.e.,  $E_y > 1$ .



It shows high-income elasticity of demand. When income increases from  $OY$  to  $OY_1$ , Quantity demanded also increases from  $OQ$  to  $OQ_1$ . But the increase in quantity demanded is greater than the

increase in income.

- c) **Low-Income Elasticity of Demand:** Low income elasticity of demand means the percentage change in quantity demanded of a commodity is less than the percentage change in the consumer's income. Low income elasticity of demand is less than one i.e.,  $E_y < 1$ .



It shows low-income elasticity of demand. When income increases from OY to OY1, Quantity demanded also increases from OQ to OQ1. But the increase in quantity demanded is smaller than the increase in income.

#### Difference between Income Elasticity and Price Elasticity of Demand:

	Price Elasticity of Demand		Income Elasticity of Demand
1	In this elasticity of demand, when price of product is less then, quantity demanded is high and if the price increases the quantity demand decreases.	1	In this elasticity of demand, the demand changes for a product with the change in consumer's income.
2	Elasticity of demand completely relies on price of the product	2	Elasticity of demand completely relies on income of the consumer
3	Price of the product and quantity demanded are inversely related.	3	Income of the consumer and quantity demanded are directly related to each other
4	For Giffen goods, as price of product increases, quantity demanded also increases	4	For inferior goods, as income of the consumer increases, quantity demanded decreases.
5	While defining law of demand, price of the product is considered.	5	While defining law of demand, consumer's income is kept constant.

#### MEASUREMENTS OF 'ELASTICITY OF DEMAND'

Price elasticity of demand can be defined as **"the percentage change in quantity demanded to the percentage change in price."** To measure the price elasticity of demand the following formula can be applied.

$$\text{Price Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price.}}$$

Symbolically:

$$E_p = \frac{\Delta Q/Q}{\Delta P/P} \quad \text{or} \quad \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

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$\Delta Q$  = the change in demand. (i.e.,  $\Delta Q = Q_2 - Q_1$ .)

$\Delta P$  = the change in price. (i.e.,  $\Delta P = P_2 - P_1$ .)

- **Measurements of Price Elasticity of Demand:** To measure price elasticity of demand broadly three methods are there. They are:

1. Total Outlay Method
2. Point Method
3. Arc Method

**1. Total Outlay Method:** Under this method, the change in the price of a product and their resultant change in the outlay (or expenditure) on the purchase of the product are taken into account to measure the price elasticity of demand.

- When the price falls and total outlay increases, the elasticity of demand is greater than one ( $e > 1$ ).
- When the price falls and total outlay decreases, the elasticity of demand is less than one ( $e < 1$ ).
- When the price falls and the total outlay remains the same, the elasticity of demand is equal to one ( $e = 1$ ).

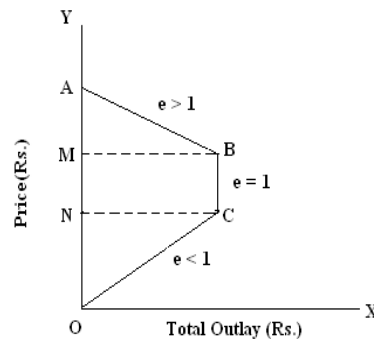
These three relations illustrated in the following table:

Price of Product and Change in Outlay			
Price (Rs.)	Quantity Demanded (units)	Total Outlay (Rs.)	Elasticity of demand



10	1000	10,000	(e > 1)
8	1500	12,000	
10	1000	10,000	(e < 1)
8	1100	8,800	
10	1000	10,000	(e = 1)
8	1250	10,000	

This is clearly shown in following Figure:



**2. Point Method:** When elasticity is measured at a point on a straight line demand curve, it is known as 'point elasticity of demand'. Elasticity at any one point is 'the ratio of the lower part of the straight line demand curve to the upper part of the straight line demand curve. In symbol,

$$e_p = \frac{L}{U}$$

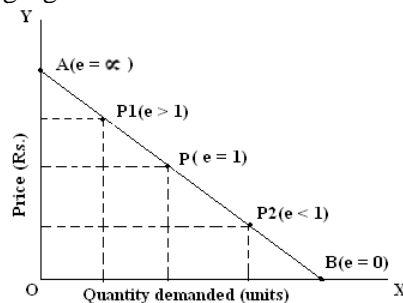
Where,

$E_p$  = Price elasticity of demand

L = Lower part of the straight line demand curve

U = Upper part of the straight line demand curve.

It can be explained in the following figure.



$$\text{Elasticity at Point P} = \frac{PB}{PA}$$

By applying this formula, we can come to the following conclusions:

At point P1 =  $\frac{P1B}{P1A}$  , elasticity is greater than one, i.e.,  $e > 1$

At point P2 =  $\frac{P2B}{P2A}$  , elasticity is less than one, i.e.,  $e < 1$

At point P =  $\frac{PB}{PA}$  , elasticity is equal to one, i.e.,  $e = 1$

At point A =  $\frac{AB}{O}$  , elasticity is infinite, i.e.,  $e = \infty$

At point B =  $\frac{O}{BA}$  , elasticity is zero, i.e.,  $e = 0$

**3. Arc Method:** When elasticity is measured between two finite (countable) points on a demand curve, it is known as 'arc elasticity of demand.' The formula used for measuring arc elasticity of demand is thus:

$$e_p = \frac{\Delta Q}{\Delta P} \times \frac{P + P1}{Q + Q1}$$

Where,

$E_p$  = Arc elasticity of demand

$Q$  = Initial quantity of demand

$Q1$  = New quantity of demand

$\Delta Q$  = Change in quantity demanded

$P$  = Initial price

$P1$  = New price

$\Delta P$  = Change in price

### ➤ FACTORS AFFECTING THE ELASTICITY OF DEMAND:

#### **Introduction:**

The concept elasticity of demand is developed by Alfred Marshall in his book "**Principles of Economics.**"

The concept 'law of demand' explains that the demand for a commodity increases when its price falls and vice versa. But the law does not explain the extent of change in demand. In order to measure the extent of change in demand Prof. Alfred Marshall developed the concept of elasticity of demand in his book principles of economics.

In measuring the elasticity of demand two variables are considered. There are:

- a) Demand
- b) The determinants of Demand.

**Definition:**

**"The percentage change in quantity demand is caused by the percentage change in demand determinants is known as elasticity of demand."**

$$\text{Elasticity of demand} = \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in determinant of demand}}$$

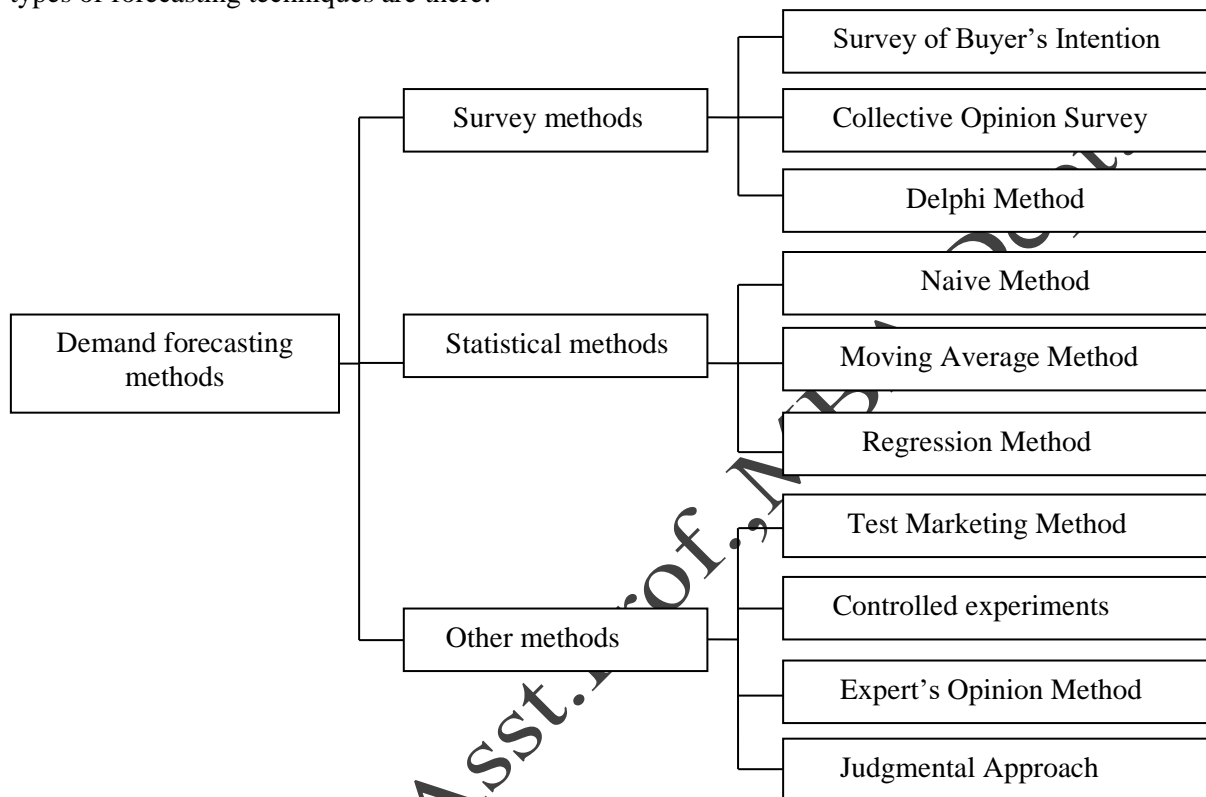
➤ **Factors Influencing the Elasticity of Demand:**

1. **Nature of Goods:** Goods can be classified into three categories. These are: Essentials, Comforts, and Luxuries. The demand for essentials goods is generally inelastic as the consumption of a necessary good does not change much with the change in price. Ex: Salt or Rice. The demand for comfort and luxuries changes much due to a price change and is therefore elastic. Ex: Luxury cars or Silk saris.
2. **Availability of Substitutes:** A commodity having different substitutes will have elastic demand, because if its price rises its consumption can be diverted to its substitutes. On the other hand a commodity with weak substitutes will have relatively inelastic demand.
3. **Extent of Use:** A commodity having variety of uses will have elastic demand.  
Ex: Steel (it is used for many purposes). A commodity having limited use will have inelastic demand.
4. **Consumer's Income:** People with high income are less affected by price changes than people with low income.
5. **Amount of money spend:** Items that constitute a smaller amount of expenditure in a consumer's family budget tend to have relatively inelastic demand. Ex: Match box, Salt etc. Thus, cheap or small, expensive or large expenditure items tend to have more demand inelasticity than expensive or large expenditure items.
6. **Range of Prices:** Range of prices exerts an important influence on elasticity of demand. At a very high price, demand is inelastic because a slight fall in price will not induce the people buy more.
7. **Influence of Habit and Customs:** There are certain articles which have demand on account of conventions, customs or habit and in their cases, elasticity is less.
8. **Time:** Elasticity of demand varies with time. Generally demand is inelastic during short period and elastic during the long period.

➤ **DEMAND FORECASTING FOR EXISTING PRODUCT:**

Demand Forecasting refers to an estimate of future demand for the product. Accurate demand forecasting is essential for a firm to enable it to produce the required quantities at the right time and to arrange well in advance for the various factors of production.

- **Demand Forecasting Methods for Existing Product:** In the demand forecasting the following types of forecasting techniques are there:



**1) Survey of Buyer's intentions:** It involves the selection of a sample of potential buyers and then getting information on their likely purchase of the production in future. It is more suited to industrial products.

**2) Collective Opinion Survey:** In this method sales forecast is done by sales force. The territory-wise forecasts are consolidated at branch, area or regional level and the aggregate is taken.

**3) Delphi Method:** In this method, a group of experts and a Delphi coordinator will be selected. The experts give their written opinion / forecasts individually to the coordinator. The coordinator processes, compiles and refers them back to the panel members for vision, if any.

**4) Naive Method:** In this approach, the sales of the future period are forecasted as the value of the sales for the previous period. This method ignores the irregular components, and assumes that seasonality and cyclicalities do not exist and the trend is flat.

**5) Moving Average method:** In this method, the forecaster estimates sales based on an average of previous time period.. The period for moving averages, such as 3-yearly, 5-yearly, etc., will depend usually on the length of the cycle. The formula for computing the 3-yearly moving average will be:

$$(a + b + c) / 3, (b + c + d) / 3, \dots\dots$$

6) **Regression Analysis:** It reveals the average relationship between two variables and this make estimate possible. Two or more variables are used to estimate the tendency of sales to vary. One variable required is the dependent.

7) **Test Marketing:** In this method companies select a limited number of cities populations which are representative of the target customers in terms of demographic factors that include age, income, lifestyle and shopping behaviour. A product is made available at the retail outlets without any promotional campaign.

8) **Controlled Experiments:** In this method an effort is made to vary separately certain determinants of demand which can be manipulated, e.g., price, advertising, etc.

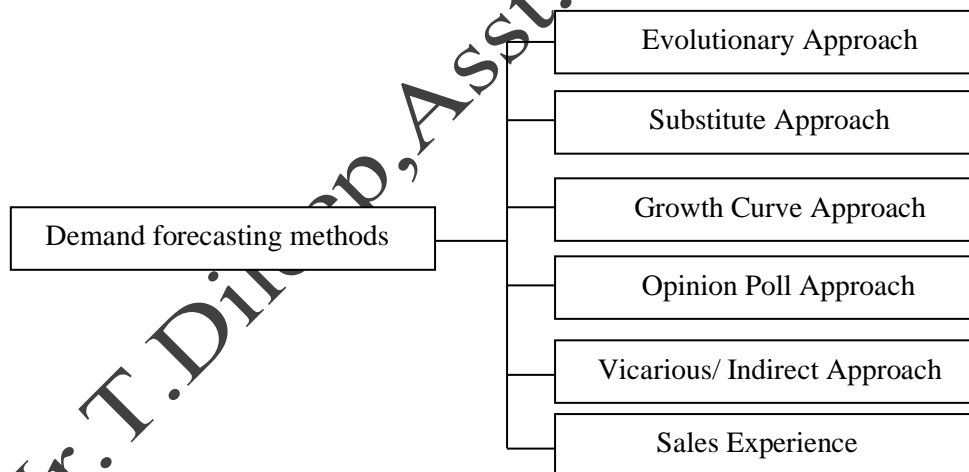
9) **Expert's Opinion:** An approach to demand forecasting is to ask experts in the field to provide their own estimates of likely sales. Experts may include executives directly involved in the market, such as dealers, distributors and suppliers.

10) **Judgmental Approach:** Management may have to use its own judgment when other methods are not feasible to apply.

➤ **DEMAND FORECASTING NEW PRODUCT:**

Demand Forecasting refers to an estimate of future demand for the product. Accurate demand forecasting is essential for a firm to enable it to produce the required quantities at the right time and to arrange well in advance for the various factors of production.

➤ **Demand Forecasting Methods for New Product:**



1. **Evolutionary Approach:** In this approach the demand conditions of the existing product in the company should be taken into account while assessing the demand for the new product. E.g. 3D-TV from colour TV.

2. **Substitute Approach:** In this approach the demand conditions of the existing product of competing companies should be taken into account while assessing the demand for the new product.

3. **Growth Curve Approach:** By this approach the demand for the new product will be established on the basis of some growth patterns of an already established product. Ex: the

average sales of Ponds powder will give an idea as to how a new cosmetic will be received in the market.

4. **Opinion Poll Approach:** Under this method, demand will be estimated by making direct enquires from the ultimate consumers.
5. **Vicarious/indirect Approach:** By this method, the consumer's reactions for a new product are found out indirectly through the specialized dealers who are able to judge the consumer's needs tastes and preferences.
6. **Sales Experience Approach:** According to this method the demand for the new product is estimated by offering the new product for sale in a sample market.

➤ **DEMAND FUNCTION:**

The functional relationship between the demand for the product and its various demand determinants expressed in mathematical terms is called as '**demand function**'. Thus, the demand function for commodity **X** can, symbolically, be stated as follows:

$$D_x = f(I, P_x, P_s, P_c, T, u)$$

Where,

$D_x$  = demand for commodity X

$f$  = depends on

$I$  = consumer's Income

$P_x$  = price of commodity X

$P_s$  = prices of substitutes of X

$P_c$  = prices of complements of X

$T$  = consumers' tastes

$u$  = other determinants of demand for X (like population, future expectations

etc.)

➤ **DEMAND SCHEDULE:**

A tabular representation (statement) of price and quantity relationship is called as '**the demand schedule**'. There are, two types of demand schedule:

1. The Individual Demand Schedule.
2. The Market Demand Schedule.

- ☐ **The Individual Demand Schedule:** It shows the quantities of a commodity that will be purchased by an individual at each alternative conceivable price in a given period of time.

Individual demand scheduled.

Price	Demand per week
80	2
70	4
60	6
50	10
40	16

- **The Market Demand Scheduled:** It is tabular statement narrating the quantities of a commodity demanded in aggregate by all the buyers in the market at different prices over a given period of time.

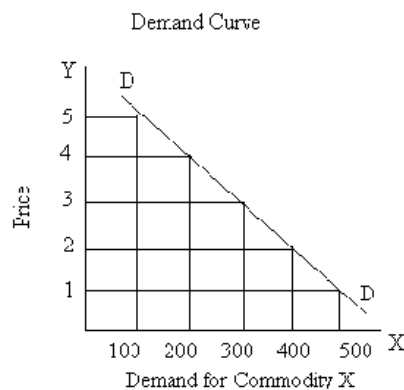
A Market Demand Scheduled (Hypothetical data)

Price	Units of commodity X demanded per day by individuals			Total market demand
	A	B	C	
4	1	1	3	5
3	2	2	5	9
2	3	5	7	15
1	5	9	10	24

### ➤ DEMAND CURVE:

A graphical representation of price and quantity relationship is called as '**the demand curve**'. By using the following demand schedule graphically we can represent the relation between price of a commodity and its demand.

Price of Commodity X (In Rs.)	Quantity Demanded (Units per Week)
4	100
3	200
2	300
1	400
	500



The demand curve shows the negative relationship between price and quantity demanded. It means if the price falls, the demand will increase and vice versa.



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## Unit - 2

### PRODUCTION AND COST ANALYSIS

#### Meaning of Production:

Production refers to the transformation of inputs into outputs (i.e., goods and services). Inputs are the resources used in production of goods and services and are generally classified into four broad categories. These are:

1. Land or Natural Resources.
2. Labour
3. Capital
4. Organization

### PRODUCTION FUNCTION

#### *Definition:*

Production Function is defined as **"mathematical representation of the functional relationship between physical inputs (factors of production) and physical outputs (the quantity of goods produced)"**.

To get a certain amount of output what combination of inputs are required will be given out by the production function. Mathematically production function can be written as: \_\_\_\_\_

$$Q = f(a, b, c, d, \dots, n)$$

Where

**Q** represents quantity of output

**f** represents depends on

**a, b, c, d, & n** represent various production factors such as land, labour, capital and organisation.

Here output becomes dependent variable and inputs becomes independent variables

➤ **Managerial use of Production Function:** The production function is very much helpful to managers. The following are the managerial uses of production.

- Helpful in determining least cost combination.
- Helpful in taking cost control decisions.
- It helps to determine optimum level of output.
- Useful in drafting plans.

➤ **Types of Production Function:** The production functions are classified as:

- i. Iso-Quants or Production Function with Two Variable Inputs.
- ii. Law of Returns.
- iii. Law of Returns to Scale.
- iv. Statistical Production Function.

**Note:** The above production functions explained in detail in the following questions.

### ISO-QUANTS

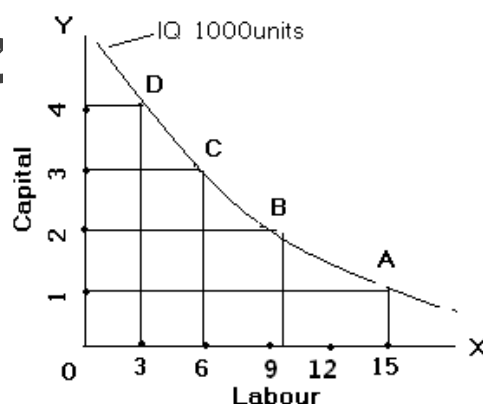
The term 'Iso' means *equal* and 'Quant' means *quantity*. Iso-quant means *equal quantity*. Iso-quants are a geometric representation of the production function.

Iso-quant may be defined as **"a curve which shows the different combinations of the two inputs producing the same level of output"**.

Iso-quants are called as Iso-product curves, equal product curves or production indifference curves. The concept of iso-quant is explained in the following table.

Combination	Capital (in units)	Labour (in units)	Total output (in units)
A	1	15	1000
B	2	10	1000
C	3	6	1000
D	4	3	1000

In this above table, it shows by increase one input and decreasing another inputs in any of two inputs give you same output. For example 1unit capital and 15units of labour, 2units capital and 10units of labour gives you same output of 1000units.



The Iso-quant curve is convex to origin. The above diagram shows the different combination of output factor (i.e., capital and labour) to produce an amount of 1000 units. The combination of A shows 1unit of capital and 15units of labour to produce 1000units. Similarly, B,C and D employs 2C + 10L, 3C + 6L, and 4C + 3L respectively to produce the same amount of output i.e., 1000 units.

**Properties of Iso-Quants:** Iso-quants have the following features:

1. **Iso-quants have a negative slope:** Iso-quants always slope downwards from left to right. It implies that if one of the factor inputs is decreased, the other has to be increased so that the total output remains the same.
2. **Iso-Quants are convex to origin:** Iso-quants must be convex to origin because of the Diminishing Marginal Rate of Technical Substitution (DMRTS). If we observe the above table, when the firm is employing the second unit of capital, it is withdrawing 5 units of labour, for the 3 units of capital, it is withdrawing 4 units of labour and so on. This is due to the fact as more units of one factor are employed the marginal productivity of the factor decreases and vice-versa. This is called DMRTS. Due to the DMRTS Iso-quants take a convex shape.
3. **Non-Intersecting:** Iso-quants representing different levels of output never intersect or touch each other.

### ISO-COST

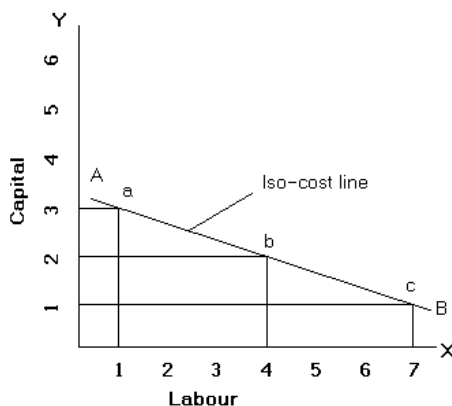
An Iso-cost curve is a curve or line representing equal cost. It shows all combinations of inputs having equal total cost.

To draw an Iso-cost line, we require the information about unit prices of the two factors and total outlay.

Example: Total outlay is Rs.100.  
Labour cost is Rs.10. per unit.  
Capital cost is Rs.30 per unit.

Combination	Capital@30/-	Labour@10/-	Total outlay
A	3	1	$3*30+1*10=100$
B	2	4	$2*30+4*10=100$
C	1	7	$1*30+7*10=100$

In the above table 3units of capital and 1unit labour total outlay is Rs.100. and 2units of capital and 4units of labour total outlay and 1unit of capital and 7units of labour total outlay is also Rs.100.



The iso-cost line AB is derived by joining the loci of points **a, b** and **a, c** represents alternative factor combination.

### LAW OF VARIABLE PROPORTIONS

The affect of output of variations in factor proportions is called '*The Law of Variable Proportions*'. This law examines the production function with one factor input variable, while other factor inputs remain unchanged.

#### Definition:

The law of variable proportion is defined as **"The quantity of one input is increased, keeping the quantity of other inputs fixed; the output increased in the beginning and afterwards decreases"**.

#### Tabular Representation:

Suppose a former has one acre of land to cultivate. The amount of land and capital are supposed to fixed factors. The former can vary the number of labour to be employed on its cultivation. The changes in the number of labours will change the output also.-

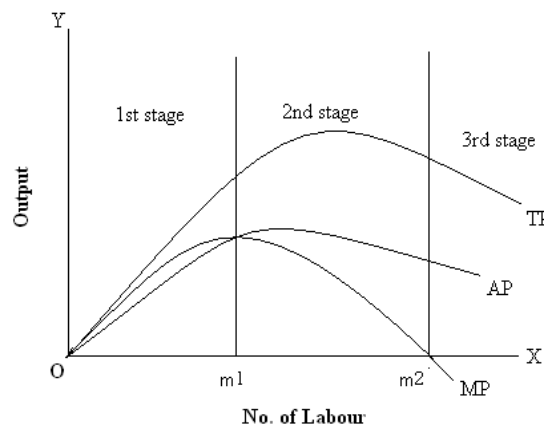
No. of Labour	Total Product (TP)	Average Product (AP)	Marginal Product (MP)
1	5	5	5
2	12	6	7
3	21	7	9
4	28	7	7
5	30	6	2
6	30	5	0
7	28	4	-2
8	24	3	-4

In the above table we assume that the land is fixed and successive units of labour are employed. It can be seen that there are three different stages of law of diminishing returns.

**1. The Law of Diminishing Total Returns:** In the total output the returns begin to diminish from the 7<sup>th</sup> labour. Every successive labour employed does make some addition to the total output but 6<sup>th</sup> adds nothing and 7<sup>th</sup> unit of labour causes diminishing output.

**2. Law of Diminishing Average Returns:** The average product reaches maximum at the 3<sup>rd</sup> labour. The marginal product and average product are equal at the point at where 4<sup>th</sup> labour is employed. It starts diminishing from 5<sup>th</sup> labour.

**3. Law of Diminishing Marginal Returns:** The marginal Product is increasing up to 3<sup>rd</sup> labour employed. The additional return is falling from the 4<sup>th</sup> labour onwards till it drops down to zero, at the 6<sup>th</sup> labour and after negative.



In the above diagram output is shown on Y-axis and No. of labour shown on X-axis. The curves TP, AP and MP represent the Total Product, Average Product, and Marginal Product respectively. This diagram shows three stages of returns.

**1<sup>st</sup> Stage – Increasing Returns:** In the 1<sup>st</sup> stage the average product of labour increases, which reflects the increase in efficiency of labour. Hence, this stage is known as increasing returns.

**2<sup>nd</sup> Stage – Constant Returns:** In the second stage it shows decreasing average and marginal product of labour. Since the total output goes on increasing, the marginal product is positive. This stage shows the decreasing efficiency of labour but the efficiency of land continues to increase.

**3<sup>rd</sup> Stage – Diminishing Returns:** In this stage, the average product decreases still further. The MP becomes negative and the TP starts decreasing. Hence, in this stage both labour and land efficiency has been used inefficient.

**Assumptions or conditions of Law of Variable Proportions:** The Law of Diminishing Returns is based on the following assumptions:

- Constant Technology
- Short-run
- Homogeneous factors
- Factor Proportions

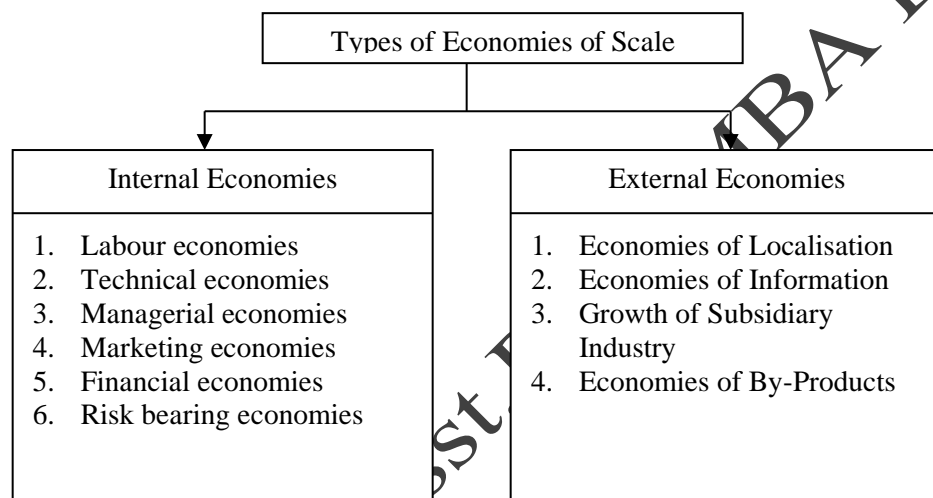
## Economies of Scale:

As a result of the large scale production the production cost is low, and it is known as economies of scale.

### Definition:

*“As long as the output is increased in the long-run, the cost of production will be at minimum level; this is known as economies of scale”.*

Alfred Marshall divided the economies of scale into two groups. They are:



### A. Internal Economies:

Internal economies are those benefits or advantages enjoyed by an individual firm if it increases its size and the output.

- 1. Labour economies:** A large firm can attract specialist or efficient labour and due to increasing specializations the efficiency and productivity will be increased, leading to decrease in the labour cost per unit of output.
- 2. Technical Economies:** A large firm can adopt and implement the new and latest technology which helps in reducing the cost of manufacturing process, whereas the small firm may not have the capability to implement latest technologies.
- 3. Managerial Economies:** The managerial cost per unit will decrease due to mass scale production. Like the salary of general manager which remains the same whether the output is high or low. Moreover, a large firm can recruit the skilled professionals by paying them much of capacity to pay high salaries. Thus, mass scale of production will decrease the managerial cost per unit.
- 4. Marketing Economies:** A large firm can purchase their requirements on a bulk scale therefore, they get a discount. Similarly the advertisement cost will be reduced because a large firm produces



a variety of different types of products. Moreover, a large firm can employ scale professional for marketing their products effectively.

5. **Financial Economies:** A large firm can raise their financial requirements easily from different sources than a small one. A large firm can raise their capital easily from the capital market because the investor has more confidence on the large firm than in small firm.
6. **Risk Bearing Economies:** The large firm can minimize the business risk because it produces a variety of products. The loss in one product line can be balanced by the profit in other product line.

#### B. External Economies:

External economies are those benefits which are enjoyed by all the firms in an industry irrespective of their increased size and output.

1. **Economies of Localization:** When all the firms are situated at one place, all the firms will be enjoying the benefits of skilled labour, infrastructure facilities and cheap transport thereby reducing the manufacturing cost.
2. **Economies of Information:** All the firms in an industry can have a common research and development centre through which the research work can be undertaken jointly. They can also have the information related to market and technology.
3. **Growth of Subsidiary Industry:** The production function process can be divided into different components. Each component can be manufactured by specialized firms at a low cost.
4. **Economies of By-Products:** The waste materials released by a particular firm can be used as an input by the other firm to manufacture a by-product.

#### COBB-DOUGLAS PRODUCTION FUNCTION

The American economists C.W.Cobb and P.H.Douglas have undertaken an extensive survey in some manufacturing industries in America from 1899 to 1922 to find out the relationship between the physical input and physical output and formed an empirical production function, popularly known as 'Cobb-Douglas Production Function'. The general form of Cobb – Douglas production may be described as:

$$P = b (L^a C^{1-a})$$

Where,

P = Total Output

b=Positive constant.

L = Quantity of Labour

C = Quantity of Capital

The exponents 'a' and '1-a' are the elasticity of production.

According to this they were observed that  $1/4^{\text{th}}$  proportion of capital and  $3/4^{\text{th}}$  proportion of labour contributed towards the improvement of productivity. Therefore, productivity function can be written like this:

$$P = b (L^{3/4} C^{1/4})$$

OR

$$P = b (L^{0.75} C^{0.25})$$

Thus for a given change in labour and capital factor the productivity will change. 0.75 labour factor together with 0.25 capital factor results in productivity 1 ( $0.25 + 0.75$ ). Thus for every one percent change in labour as well as capital factors result in one percent change in productivity. According to Cobb-Douglas if the output has to increase by 1% the input has to increase in the same proportion.

## COST CONCEPTS

Cost is expenses incurred in producing a commodity. In producing a commodity, a firm has to employ an aggregate of various factors of production such as land, labour, capital and entrepreneurship. The producer should pay compensation to these different factors of production. This compensation is called as cost.

### ➤ Types of Cost:

#### 1. Actual Costs Vs Opportunity Costs:

Cost of inputs to produce a product. Example, wages paid, expenses of raw material, machinery etc., these are called as actual cost or outlay cost.

Opportunity cost refers to the "*cost of next best alternative foregone*". Opportunity cost is said to exist when the resources are scarce and there are alternative uses for these resources. If there is no alternative, there is no opportunity cost.

Eg: A company has deposited Rs.1 lakh in bank at 10% p.a. interest. If the company decides to withdraw deposit in bank to invest in a new project, it will have to forego bank interest of Rs.10,000 p.a. which is the opportunity cost.

#### 2. Incremental Costs Vs Sunk Costs:

Incremental costs are the added costs of the change in the level of production or nature of activity. Example adding new machinery, adding new product, changing distribution channel and so on.

Sunk costs are cannot be altered or changed by changing in the level or nature of business activity; they will remain same whatever the level or activity. For example, factory building constructed, cost has

already been incurred. It cannot be altered or changed when operations are increased or decreased.

### **3. Past Costs Vs Future Costs:**

Past costs are actual costs incurred in the past. These costs are mentioned in financial accounts. The management cannot rectify the past cost.

Future cost are those costs are which are to be incurred in the near future. If the management considered the future costs are very high it can reduce them or postponed the use of them.

### **4. Historical Costs Vs Replacement Costs:**

Historical costs are those costs that have been originally spent to acquire the assets. In contradiction, replacement costs are those costs that are to be paid currently if the assets were to be replaced.

For example, if the price of equipment in 2005 was Rs.10,000 and which is replaced by the same equipment now cost Rs.13,000 (i.e., 2014), then we can say the historical cost if equipment is Rs.10,000 and the replacement cost will be Rs.13,000.

### **5. Fixed Costs Vs Variable Costs:**

Fixed costs are those costs that do not vary with the size of its output. These costs associated with the fixed factors like rent, salaries, buildings, machinery and so on.

Variable costs are those costs which change with the changes in the volume of output. These costs associated with the variable factors like raw-material, power and so on.

### **6. Short run Costs Vs Long run Costs:**

This cost distinction is based on the time element. Short run is a period during which the physical capacity of the firm remains fixed. Any increase in output during this period is possible only by using the existing physical capacity more intensively.

Long run is a period during which it is possible to change the firm's physical capacity. All the inputs are variable in the long run cost.

### **7. Direct Costs Vs Indirect Costs:**

When the cost can be easily identified with a unit of operation it is called as direct cost. Ex: if the cost of raw material is Rs.20000 and if 5,000 units are produced, it may be said that the cost of raw material per unit is Rs.4.

When the cost cannot be easily identified with a unit of operation it is called as indirect cost. Ex: salary of GM cannot be traced unit wise.

### **8. Explicit Costs Vs Implicit Costs:**

Explicit costs are those expenses that involve cash payments. These costs include payment of wages & salaries, payment for raw materials etc. These are the actual costs that appear in the accounting books.

Implicit costs are the costs of the input factors that are owned by the employer himself. It does not involve cash payment and hence does not appear in the accounting books. Ex: cost of depreciation, interest on capital, rent unclaimed on own buildings, salary undrawn for entrepreneur's services etc.

### 9. Out of Pocket Costs Vs Imputed Costs:

Out of pocket costs also known as explicit costs are those costs that involve cash payments to outsiders. Ex: payment of electricity bill, the purchase prices of a new equipment etc.

Imputed costs also called implicit costs do not involve cash payment. Even though such costs do not involve any cash payment but are taken into consideration while making managerial decisions. Ex: depreciation, interest on capital, rent unclaimed on own buildings, salary of owner etc.

**10. Marginal Cost:** The additional cost incurred to produce an additional unit of product is called marginal cost.

### 11. Semi-fixed or Semi-variable Costs:

Those costs refer to such costs that are fixed to some extent beyond which they are variable. Ex: telephone charges or electricity charges.

## COST-VOLUME-PROFIT ANALYSIS

### Definition:

*"CVP analysis is the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix."*

----- CIMA London

The intention of every business activity is to earn the profit. Profits of business firms are the result of many factors such as i). Selling Prices, ii). Volume of Sales, iii). Unit Variable Cost, iv). Total Fixed Cost, etc. To do an effective job, Cost-Volume-Profit (CVP) analysis is useful to management for studying the relationship between volume, cost, prices and profits. Within these factors, there is a cause and effect relationship. For example: profit depends upon sales, selling price to a large extent depends upon cost and cost depends to a large extent upon volume of production, as it is only the variable cost that varies directly with production.

A CVP analysis is extremely useful to the management in budgeting and profit planning. It

explains the impact of the following on the net profit:

- a) Changes in Selling Price
- b) Changes in Volume of Sales
- c) Changes in Variable Cost
- d) Changes in Fixed Cost

CVP analysis uses the techniques of (i) Profit-Volume Analysis and (ii) Break-even Analysis.

## BREAK - EVEN ANALYSIS

Break-even analysis refers to analysis of break-even point (BEP). It is also called the Cost-Volume-Profit analysis.

The break-even is defined as **"a point at which firm has no profit and no loss. Cost is equal to revenue."** Before a firm plans for profit maximization it has to determine the Break-Even Quantity or value of output it should produce.

**Significance of Break-even Analysis:** Break-even Analysis has a lot of practical importance to decision makers. They are:

- To understand the Break-even Quantity
- To know the impact of changes in fixed costs on the Break-even Quantity and profits.
- To know the impact of changes in variable costs on the Break-even Quantity and profits.
- To get target profits.
- To understand the margin of safety.
- To initiate changes in prices.
- Add or Drop decision.
- Make or Buy decision.

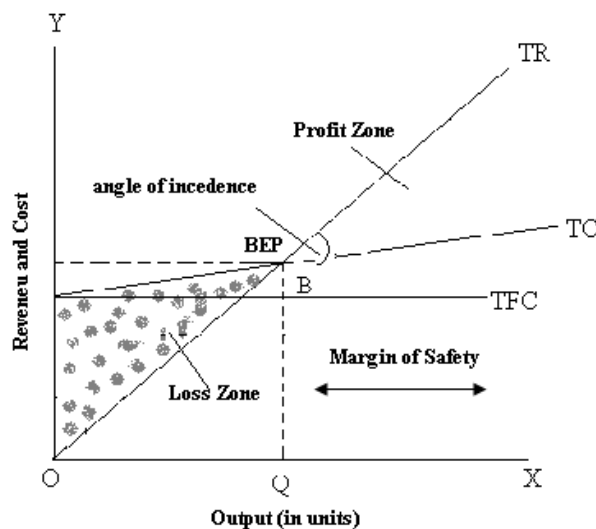
### Limitations of Break-even Analysis:

- It assumes price to remain constant.
- Separability of costs into Fixed and Variable.
- It has limited use in case of Multi-product firms.
- There is no change in government policies.
- Availability of Cost-Volume-Profit data.

**CALCULATION OF BREAK-EVEN POINT:** Break-even point can be calculated in two methods. They are:

1. Graphical Method
2. Mathematical Method.

## 1. Graphical Representation of BEP:



In the above graph, at output level of 'OQ' the total revenue is equal to total cost i.e., BQ, where the firm is neither getting profit nor loss. Hence OQ is the break-even quantity of output. At output level less than OQ the firm is suffering losses and beyond that it is reaping profits.

**2. Mathematical Method:** In this method by applying the following formulas BEP can be calculated.

### BEP formulas

#### When Per Unit data is Given

1. Contribution Per Unit = Selling Price Per Unit - Variable Cost Per Unit

2. P/V Ratio or Contribution Ratio =  $\frac{\text{Selling Price Per Unit} - \text{Variable Cost Per Unit}}{\text{Selling Price Per Unit}} \times 100$

3. BEP (Units) =  $\frac{\text{Fixed Cost}}{\text{Selling Price Per Unit} - \text{Variable Cost Per Unit}}$

4. BEP (Sales) =  $\frac{\text{Fixed Cost}}{\text{Selling Price Per Unit} - \text{Variable Cost Per Unit}} \times \text{Selling Price Per Unit}$

5. Number of Units Sale to Get Target Profit =  $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Selling Price Per Unit} - \text{Variable Cost Per Unit}}$

6. Sales to Get Target Profit =  $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Selling Price Per Unit} - \text{Variable Cost Per Unit}} \times \text{Selling Price Per Unit}$

7. Change in Price:

$$\text{New Sales Volume} = \frac{\text{Fixed Cost}}{\text{New Selling Price} - \text{Variable Cost Per Unit}}$$

$$\text{New Sales Value} = \frac{\text{Fixed Cost}}{\text{New Selling Price} - \text{Variable Cost Per Unit}} \times \text{New Selling Price}$$

8. Margin of Safety = -----No formula-----

When Overall Data is Given

Mr.T.Dileep,Asst.Prof.,MBA Dep.,



1. Contribution = Sales - Variable Cost

2. P/V Ratio or Contribution Ratio =  $\frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}} \times 100$  Or  $\frac{\text{Contribution}}{\text{Sales}} \times 100$

3. BEP ( Units) = ----- No Formula -----

4. BEP (Sales) =  $\frac{\text{Fixed Cost}}{\text{P/V Ratio}}$

5. Number of Units Sale to Get Target Profit = ----- No Formula -----

6. Sales to Get Target Profit =  $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P/V Ratio}}$

7. Change in Price:

----- No Formulas -----

8. Margin of Safety:

i. Margin of Safety in Units = Actual Sales in Units - BEP Sales in Units

ii. Margin of Safety in Rupees = Actual Sales - Break-even Sales

iii. Margin of Safety in Percentage =  $\frac{\text{Actual Sales} - \text{Break-even Sales}}{\text{Actual Sales}} \times 100$

When two years data is given P/v ratio formula is:

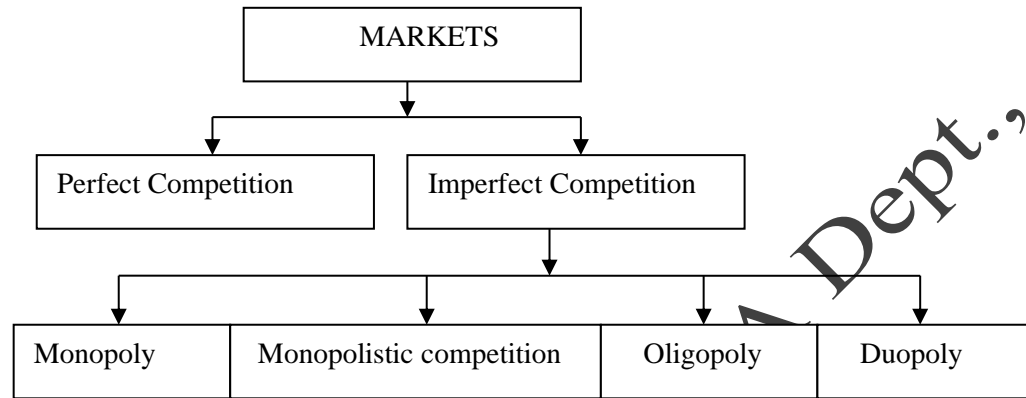
$$\text{P/v ratio} = \frac{\text{Change in Profit}}{\text{Change in Sales}} \times 100$$

Mr.T.Dile

## MARKET STRUCTURE

### Introduction:

Differences in the competition for a product or service in the market is called as market structure. Based on the competition markets can be classified into two broad categories. They are:



### A) PERFECT COMPETITION MARKET

#### Definition:

“The market, where the large number of buyers and sellers are existed and the product dealt with all the firms is homogeneous it is called as perfect competition”.

➤ **Features of Perfect Competition Market:** Perfect competition markets are characterized by the following features.

1. **Large number of buyers and sellers:** An important feature of the perfect competition is the existence of large number of buyers and sellers in the market. Each buyer purchases so little and each seller sells so little, that none of them is in a position to influence existing price in the market.
2. **Homogeneous Product:** The product being sold by various firms must be homogeneous. Since the product is homogeneous no seller can change a price slightly above the ruling market price.
3. **Freedom to enter or exit the market:** Another feature of perfect competition is that there should be complete freedom for firms to enter into or to leave the industry whenever they choose to do so.
4. **Perfect Knowledge about the market:** All buyers and sellers have perfect knowledge about the market for the commodity.
5. **Existence of Single Price:** There should be only one price for the product. They should not take selling costs into account.
6. **No-existence of Transport Cost:** In a perfect competitive market, it is assumed that there are no transport costs. If transport costs are incurred, Prices should be different sectors of the market.

7. **Perfect Mobility of Production Factors:** The existence of perfect competition depends on perfect mobility of Production factors. The factor should be free to move from one firm to another easily depending on the remuneration they get.

➤ **Price and Output Determination Under Perfect Competition**

**Definition:**

“The market, where the large number of buyers and sellers are existed and the product dealt with all the firms is homogeneous it is called as perfect competition”.

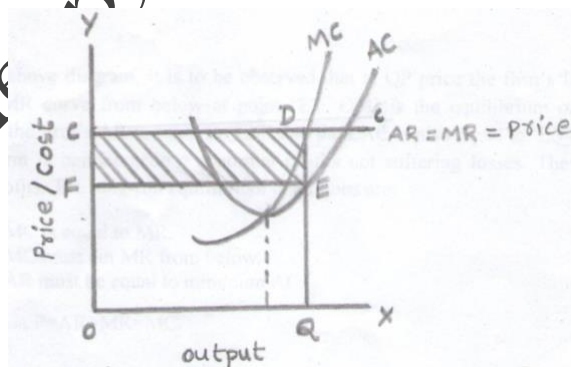
**Features of Perfect Competition Market:**

1. Large number of buyers and sellers
2. Homogeneous Product
3. Freedom to enter or exit the market
4. Perfect Knowledge on the part of buyers and sellers
5. Existence of Single Price
6. No-existence of Transport Cost
7. Perfect Mobility of Production Factors

**Price and Output determination:**

The price and output of the firm are determined under perfect competition, based on the industry price and its own costs. The industry price has greater say in this process because the firm's own sales are very small. The process of price and output determination in case of perfect competition is as follows.

**SHORT RUN:**



The firm's marginal revenue curve is horizontal at the price determined in the industry ( $MR=AR=Price$ ). This curve is also known as average revenue curve.

When the average revenue is constant, it will coincide with the marginal revenue curve. Thus CC curve representing the price, average revenue curve, and also the marginal revenue curve ( $MR=AR=Price$ ). Curves AC, MC represents firm's average cost and marginal cost respectively.

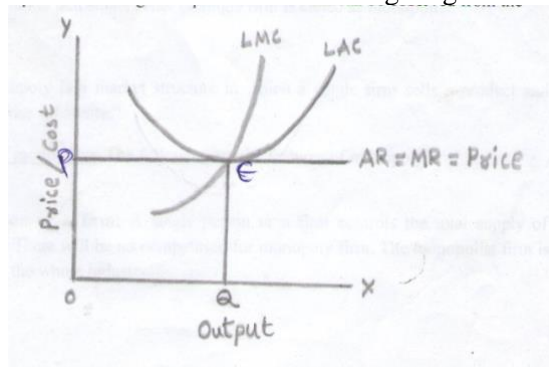
In the above diagram the firm satisfies both conditions:

- i)  $MR=MC$ ; and

- ii) MC curve must cut the MR curve from below. The firm attains equilibrium at point D where  $MR=MC$ .

### LONG-RUN:

In the long run new firms enter into the industry, because, they are attracted by high profits. So, there will be a huge demand for scarce inputs among the competing firms pushing the input prices. Hence, the average cost increases. The entry of more firms will expand the supply pulling down the market price. As a result, in the long-run firms will be in a position to enjoy only normal profits. The long-run equilibrium of a firm can be observed from the following diagram.



From the above diagram, it is to be observed that at  $OP$  price, the firm's LMC curve is intersecting the MR curve from below at point 'E'. 'OQ' is the equilibrium output. At the equilibrium level the firm's AR is equal to 'EQ' and the LAC is also equal to 'EQ'. Since LAC equals AR the firm is neither getting abnormal profits nor suffering losses. The firm is only getting normal profits. The long-run equilibrium conditions are:

1. MC is equal to MR.
2. MC must cut MR from below.
3. AR must be equal to minimum AC.

Thus in the long-run  $P=AR=MR=MC$ .

### B) IMPEEFFECT COMPETITION MARKET

If there are imperfections in the market conditions, it is known as imperfect market that i.e. no single price, no equal number of buyers and sellers, etc. Ex: Monopoly, Monopolistic competition, oligopoly and duopoly competition.

#### ➤ Monopoly.

The word monopoly is derived from two words. They are '**Mono**' and '**Poly**'. The word '**Mono**' means single and '**Poly**' means seller. Thus monopoly means **single seller**. In the monopoly market that single seller or single firm is called as monopolist.

#### Definition:

"Monopoly is a market structure in which a single firm sells a product and for which there is no close substitute."

- **Features of monopoly:** The following are the features of monopoly.

1. **Single person or a firm:** A single person or a firm controls the total supply of the commodity. There will be no competition for monopoly firm. The monopolist firm is the only firm in the whole industry.
2. **No close substitute:** The goods sold by the monopolist shall not have closely competition substitutes. Even if price of monopoly product increase people will not go in for substitute. For example: If the price of electric bulb increase slightly, consumer will not go in for kerosene lamp.
3. **Large Number of Buyers:** Under monopoly, there may be a large number of buyers in the market who compete among themselves.
4. **Price Maker:** Since the monopolist controls the whole supply of a commodity, he is a price-maker, and then he can alter the price.
5. **Supply and Price:** The monopolist can fix either the supply or the price. He cannot fix both. If he charges a very high price, he can sell a small amount. If he wants to sell more, he has to charge a low price.
6. **Downward Sloping Demand Curve:** The demand curve (average revenue curve) of monopolist slopes downward from left to right. It means that he can sell more only by lowering price.
7. **Restrictions to the entry of new firms:** Under monopoly there are restrictions to the entry of new firms in to the industry. These restrictions may take the form of legal or natural restrictions.

➤ **Price and Output determination under Monopoly**

The word monopoly is derived from two words. They are '**Mono**' and '**Poly**'. The word '**Mono**' means single and '**Poly**' means seller. Thus monopoly means **single seller**.

**Definition:**

“Monopoly is a market structure in which a single firm sells a product and for which there is no close substitute.”

➤ **Features of monopoly:**

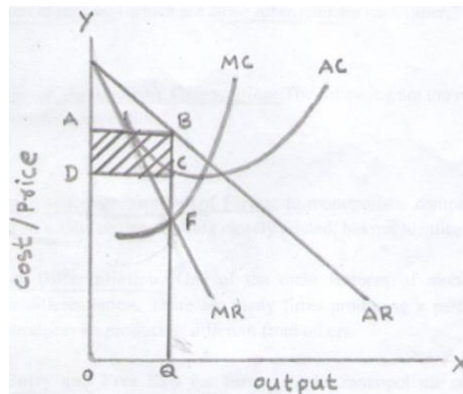
1. Single person or a firm.
2. No close substitute.
3. Large number of Buyers.
4. Price Maker.
5. Supply and Price.
6. Downward Sloping Demand Curve.
7. Restrictions to the entry of new firms.

### ➤ Price and Output Determination under Monopoly:

Under monopoly, the average revenue curve for a firm is a downward sloping one. It is because, if the monopolist reduces the price of his product, the quantity demanded increases and vice versa. In monopoly, marginal revenue is less than the average revenue.

The monopolist always wants to maximize his profits. To achieve maximum profits, it is necessary that the marginal revenue should be more than the marginal cost.

He can continue to sell as long as the marginal revenue exceeds marginal cost. At the point F, where  $MR=MC$ , profits will be maximized. Profits will diminish if the production is continued beyond this point. It can be shown in the following figure.



In the above figure we can see that the demand curve or average revenue curve is represented by AR, marginal revenue curve is represented by MR, average cost by AC, and marginal cost curve by MC. OQ is the equilibrium output, OA is the equilibrium price, QC is the average cost, and BC is the average profit.

Up to OQ output, MR is greater than MC and beyond OQ, MR is less than MC. Therefore, monopolist will be in equilibrium at output OQ where  $MR=MC$  and profits are maximum. OA is the corresponding price to the output level of OQ. The rectangle ABCD represents the profits earned by the monopolist in the equilibrium position in the short-run.

### ➤ Monopolistic Competition:

The concept Monopolistic competition was developed by **Edward.H.Chamberlain**. According to him monopolistic competition means “a large number of firms produce somewhat different products which are close substitutes for each other.”

➤ **Features of Monopolistic Competition:** The following are the main features of monopolistic competition.

1. **Existence of Large Number of Firms:** In monopolistic competition must have a large number of sellers or firms selling closely related, but not identical products.
2. **Product Differentiation:** One of the main features of monopolistic competition is product differentiation. There are many firms producing a particular product, but each firm introduces its product as different from others.
3. **Free Entry and Free Exit for Firms:** Under monopolistic competition, there are no entry barriers. Firms can enter or exit freely from industry.
4. **Selling Cost:** Since the products are close substitute much effort is needed to retain the existing consumers and to create new demand. So each firm has to spend a lot on selling cost, which includes cost on advertising and other sale promotion activities.
5. **Large Number of Buyers:** There are a large number of buyers in this type of market. However each buyer has a preference for a specific brand of the product.
6. **Close Substitutes:** Under monopolistic markets firms produce goods that are close substitutes to each other's product.

➤ **Oligopoly:**

The term 'oligopoly' is derived from the two Greek words '**oligos**' meaning 'a few' and '**pollen**' meaning 'to sell'.

**Definition:**

"Oligopoly is a market structure, in which a few large firms produce either homogeneous or differentiated products and which are close substitutes for each other."

Simply Oligopoly means competition among a few firms. Oligopoly markets can be classified into two categories. They are

- ❖ Pure Oligopoly Market
- ❖ Differentiated Oligopoly Market

**Pure Oligopoly:** In this market firms producing homogeneous product.

**Differentiated Oligopoly:** In this market firms producing differentiated products, which are close substitutes of each other.

➤ **Features of Oligopoly:**

1. **Existence of Few Sellers:** There is small number of large sellers supplying either homogeneous products or differentiated products.

2. **Homogeneous or Distinctive Product:** The oligopoly firm may be selling either homogeneous product like steel or distinctive product like automobile-passenger cars.



**3. Blockaded Entry and Exit:** Firms in the oligopoly market face strong restrictions on entry or exit.

**4. Imperfect Dissemination of Information:** Detailed market information relating to cost, price and product quality are usually not published.

**5. Interdependence:** The firms have a high degree of interdependence in their business policies about fixing of price and output determination.

**6. Advertising:** Advertising and selling costs have strategic importance to oligopoly firms. Each firm tries to attract consumers towards its product by incurring excessive expenditure on advertising.

**7. Price Rigidity:** In an oligopolistic market, each firm sticks to its own price. This is because it is in constant fear of relation from rivals if it reduces the price.

### Q7. What is Duopoly? What are the features of Duopoly?

“Duopoly is a market structure, in which there are only two firms produce either homogeneous or differentiated products and which are close substitutes to each other”

#### ➤ Features of Duopoly:

**1. Two sellers or firms:** In the duopoly market only two sellers or firms are existed in the market.

**2. Large number of buyers:** : Under duopoly, there may be a large number of buyers in the market.

**3. Homogeneous or Distinctive Product:** It is may be of two types-duopoly without product differentiation and with product differentiation.

**4. Close Substitutes:** Under duopoly markets firms produce goods that are close substitutes to each other's product.

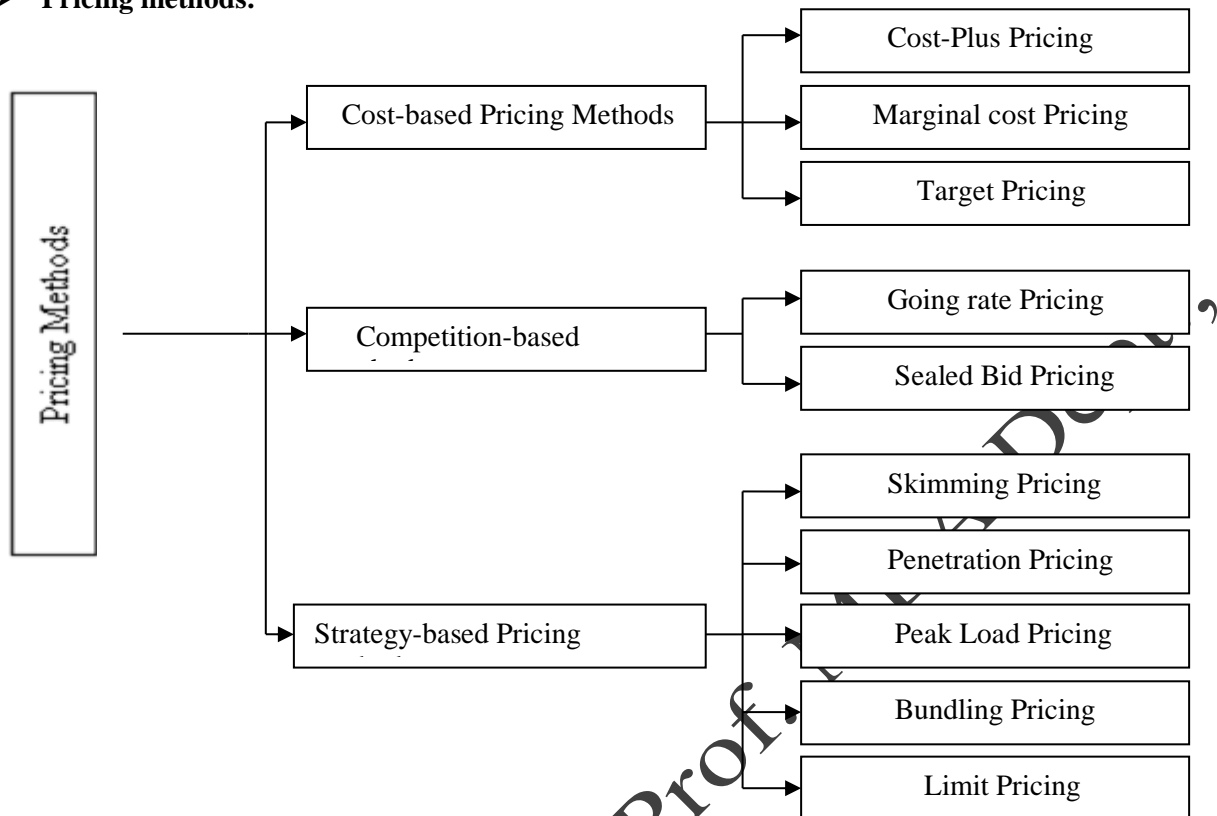
### PRICING POLICIES

Pricing strategies/methods will depend on the pricing objectives of the company. The strategy must be suitable for achieving the desired objectives. Generally, the following are the pricing objectives:

1. To maximize profits
2. To increase sales
3. To increase the market share
4. To satisfy customers and
5. To meet the competition.



➤ **Pricing methods:**



**A. COST-BASED PRICING METHODS:**

**1. Cost-Plus Pricing Method:** This is also called full-cost or mark-up pricing. Under this method, required margin adds to production cost by using the following formula.

$$\text{Mark-up Price} = \frac{d}{1-r}$$

Where,

d=cost per unit (both fixed & variable)  
r=required rate of return.

**2. Marginal Cost Pricing:** Marginal cost means additional cost to produce an additional unit of product. In this method price of a product determined on the basis of marginal cost or variable cost. Fixed costs are totally ignored.

**3. Pricing:** In this method, the manufacturer considers a pre-determined target rate of return on capital invested. The following formula is used to calculate the desired rate of return.

$$\text{Desired rate of return} = \frac{\text{Capital employed}}{\text{Total annual cost}} \times \text{Planned Rate of Return}$$

**B. COMPETITION BASED PRICING METHODS:**

1. **Going rate Pricing:** In this method firms adopt a price ruling in the market rather than independently determining the price on their own.
2. **Sealed Bid Pricing:** This method is more popular in tenders and contracts. To win a contract firm quote price less than the competitors in a sealed cover.

### C. STRATEGY BASED PRICING METHODS:

**1. Skimming Pricing:** When the product is introduced for the first time in the market, the company follows this method. In this method, the companies launching the new product at a higher price. There are two ways of skimming.

They are:

- i) Rapid skimming Strategy: In this method the marketers launch the new product at a high price and high promotion strategies.
- ii) Slow skimming Strategy: : In this method the marketers launch the new product at a high price and low promotion strategies.

**2. Penetration Pricing:** This is exactly opposite to the market skimming method. In this method, the companies launching the new product at a low price. There are two ways of penetration.

- i) Rapid Penetration Strategy: In this method the marketers launch the new product at a low price and high promotion strategies.
- ii) Slow Penetration Strategy: In this method the marketers launch the new product at a low price and low promotion strategies.

**3. Peak Load Pricing:** In this method firms fix higher price during the peak times and low prices in the off-peak times.

**4. Bundling Pricing:** It refers to the practice of bundling two or more different products together and selling them at a single 'bundle price'.

**5. Limit Pricing:** In this method all existed firms determines prices by combined together in such a way that they do not allow the entry or survival of new competitors.

#### ➤ **Internet**

providers adopt a most pricing following are internet pricing various ISPs.

Flat-rate Pricing

Non Flat-rate Pricing

Modern Pricing

#### **Pricing Models**

The most challenging job to the internet service

(ISPs) is to appropriate strategy. The the basic pricing access models practiced by

Usage-sensitive Pricing

Transaction Based

Priority Pricing

Social Cost Pricing

Precedence Model

Smart Market

- A. Flat-rate Pricing:** In this method, a flat fee for a certain period of time. The user does not pay for any additional amount for usage on any new applications. Ex: BSNL Home Plan Rs.500 per month.
- B. Non Flat-rate Pricing:** This pricing is further divided into following types:
- I. Usage-sensitive Pricing: In this model the fee paid by the user is divided in to two portions. The first portion of the fee is for the connection and the second portion of fee is for the usage of each bit sent or received.
  - II. Transaction Based Pricing: Like usage sensitive pricing in this model also first portion of fee is for connection and the second portion of fee is charged on the characteristics of traction not by the volume of bits sent/ received.
  - III. Priority Pricing: In this model the user choose the quality of services that they want and pay a fee for the same. This pricing allows the ISPs to charge more for important items by depends on the paying capacity of users.
  - IV. Social Cost Pricing: It is similar to peak load pricing. In this method the ISPs charge the amount on the basis of social cost by differentiating rural and urban areas. Ex. BSNL Home Plan Rs.750 pm in urban, and Rs.500 in rural areas.
- C. Modern Pricing:** This pricing is further divided into following types:
- I. Precedence Model: In this model a process is set to priorities the different applications in the precedence field of the different data packets.
  - II. Smart Market Mechanism Model: In this method, by depends on the level of network congestion, the price changes from minute to minute.

## MANAGERIAL THEORIES OF A FIRM

- **Marris Managerial Theory of Firm:**

According to R.Marris, the managers seek to maximize balanced growth rate of the firm. It means maximization of the growth rate of demand for the products of firm and growth rate of capital supply.

$$G = G_d = G_c$$

Where,

G = Balanced growth rate

G<sub>d</sub> = Growth rate of demand for the product.

G<sub>c</sub> = Growth rate of capital supply.

In seeking to maximize the balanced growth rate, a manager faces the following two constraints. They are:

1. Managerial Constraints.
2. Financial Constraints.

**1. Managerial Constraints:** It refers to the strength of the managerial team and their skills. There is a ceiling to the growth of the firm set by the capacity of its managerial team. The managerial capacity can be increased by hiring new managers, but there is a definite limit to the rate at which management can expand and they are main competent.

A new manager requires time before he is fully ready to join the teamwork necessary for the efficient functioning of the organization. Ex: The work in the R&D dept. is "teamwork" and such it cannot be expanded quickly, simply by hiring more personnel for this section. New scientists require time before they can efficiently contribute to the teamwork of R&D.

**2. Financial Constraints:** Marries suggests that job-security is attained by adopting a proper financial policy. If the management fail in taking prudent policies it leads to financial failure. So the management takes best financial plans like:

a). **Non-involvement with risky investments:** The managers choose projects which guaranty steady performance rather than risky ventures.

b). **Choosing a Prudent financial Policy:** It includes three ratios. They are:

- i. The leverage or debt ratio.
- ii. The liquidity ratio.
- iii. The retention ratio.

i) **The Leverage or Debt Ratio:** The leverage or debt ratio indicates the long-term stability of a firm. According to Marris theory, managers should take care while go to debt. Debts should not exceed the assets.

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Capital Employed}}$$

ii) **The Liquidity Ratio:** It measures the firm's ability to meet current obligations. The management should maintain the sufficient liquid assets in the firm.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

iii) **Retention Ratio:** The management should retain some amount of profits within the company for the purpose future requirements such as business expansion, starting a production of new product etc.

$$\text{Retention Ratio} = \frac{\text{Retained Profits}}{\text{Total Profits.}}$$

The managers aim at the maximization of their own utility which is a function of the

growth of demand for the products of the firm.

➤ **Significance of Williamson's Managerial Theory of Firm.**

**Williamson's Managerial Theory of the firm:**

A full-fledged managerial theory of the firm has been put forward by **O.E. Williamson** who emphasizes that managers are motivated by self-interest and they maximize their own utility function.

According to Williamson, utility function of the self-seeking managers depends on the following factors. They are:

1. **Salary and other forms of monetary compensation:** According to the Williamson, salary and other monetary compensation are not the total reward received by the manager's from their firms and also these are not the only factor determining the utility of the managers.
2. **Number of Staff under the Control of a manager:** The greater the number of staff under the control of a manager, the greater the status and prestige of a manager and also the greater the power wielded by him.
3. **Management Slack:** This consists of those non-essential management prerequisites such as company cars, furniture offices etc which are not necessary for effective operation of a firm. The management slack also enters into the cost of production of a firm.
4. **Magnitude of Discretionary investment Expenditure by the Manager:** This refers to the amount of resources which manager can spend according to his discretion.

**Managerial Utility Maximization:** Williamson clubs the first two variables. They are:

- a) Salary and other monetary compensation received by the manager.
- b) Number of staff under his control in to a single variable.

Utility of manager in his model is a function of the following three variables.

Where,

$$U = f(S, M, Id,)$$

U = Utility Function

f = dependence on

S = Salary & Monetary Expenditure on Staff

M = Management Slack

Id = Amount of Discretionary investment.

Concepts of Actual discretionary and Reported Profits: Williamson identified three concepts of Profits. They are:

- **Actual Profits:** These are the difference between total revenue earned less the production costs and expenditure on staff.
- **Reported Profits:** It is the difference between actual profits and nonessential managerial expenditure as represented by management slack.
- **Minimum Profits:** These are the amount of profits (after tax) which are required to be paid as acceptable dividends to satisfy the shareholders who are the owners of the firm.

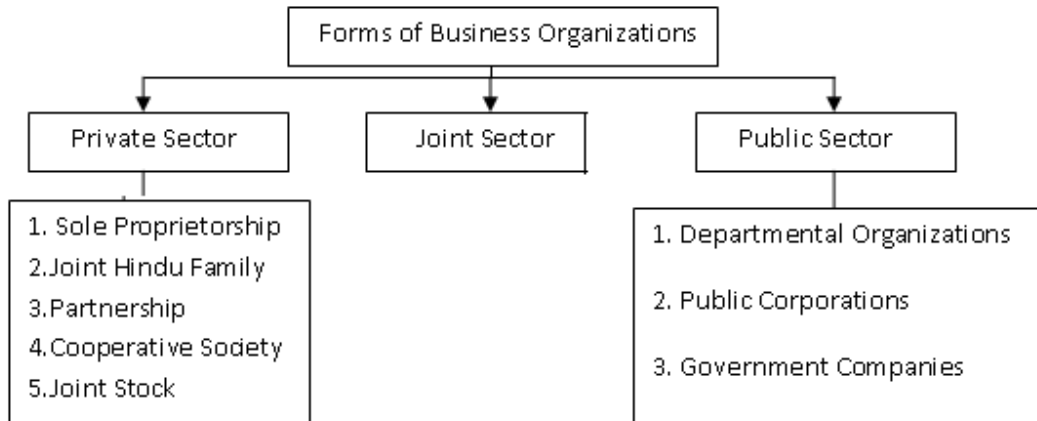
**Unit-4**

**BUSINESS ORGANISATIONS**

**Meaning:**

A business undertaking is an organization through which business activities are carried out. Different terms are used to denote the idea of a business undertaking. Ex: a business concern, firm, enterprise, company, mill, factory, plant, shop etc.

**Types of Business Organizations:** On the basis of ownership business organizations are broadly classified into three categories. They are:



- A. Private Sector Enterprises:** A private sector enterprise is a form of business that is owned, managed, and controlled by an individual or a group. Private sector enterprises are different types such as sole proprietorship, joint Hindu family, partnership, cooperative society, and Joint Stock Company.
- B. Public Sector Enterprises:** A public sector enterprise is one which is owned, managed and controlled by the central government or state government or any local authority. In a public enterprise, government contributes the whole or major part of the capital. Ex: Postal, Railways, FCI, LIC, BHEL etc.
- C. Joint Sector Enterprises:** This type of enterprise is one which is owned, managed and controlled jointly by the private entrepreneurs and the government. Ex: Maruti Udyog Limited.

## SOLE-PROPRIETORSHIP

### Definition:

*“A sole proprietorship is a form of private sector enterprise that is owned, managed and controlled by an individual entrepreneur”.* Such individual entrepreneur is called as sole-proprietor. The sole proprietor arranges the finance, manages the business affairs, takes the profits or bears the losses.

### ➤ Features of Sole Proprietorship:

- 1. Individual ownership:** Solo-Proprietorship form of organization is owned by an individual.
- 2. Individual Management and Control:** It is managed and controlled by the sole proprietor.
- 3. Individual Financing:** Such organization is financed by an individual person.
- 4. Unlimited Liability:** The liability of sole proprietor is unlimited. If the business assets are not sufficient to meet the business liabilities, his private assets are to be used to discharge the business liabilities.
- 5. Minimum Government Regulations:** There are minimum government regulations to set up such form of organization. Ex: we can start a fruit stall without much legal formalities.

➤ **Advantages of Sole Proprietorship:**

1. **Easy to Start and Easy to Close:** Formation of sole proprietorship is very easy. Even closing the business is also easy.
2. **Personal Touch with Customer:** It is possible for the sole-proprietorship to have personal contact with the customer and understand his tastes and preferences and maintain required stock.
3. **Quick Decisions:** Sole proprietor is the owner of the business. So there is no need to consult any other person before taking any decision regarding his business. Therefore, quick decisions can be taken by him.
4. **Business Secrecy:** Full secrecy can be maintained since business secrets are known to proprietor only.
5. **Total Control:** The ownership, management and control are in the hands of the sole proprietor and hence it is easy to maintain the hold on business.
6. **Sole Beneficiary of Profits:** All the profits of the business belong to the sole-proprietor. This motivates the proprietor to work hard and develop the business to get more profits.
7. **Suitable for Small Scale Operations:** The sole proprietorship is very suitable for small scale operations.

➤ **Disadvantages or Limitations of Sole Proprietorship:**

1. **Unlimited Liability:** The sole proprietor has an unlimited liability. If the business assets are not sufficient to meet the business liabilities, his private assets are to be used to discharge the business liabilities.
2. **Limited Financial Resources:** The sole proprietor has a limited capital and has limited capacity to raise funds because of limited personal assets. This limitation reduces the scope for expansion and growth of business.
3. **No Division of Labour:** Sole proprietor being the only person handling the business, will not enjoy the benefits of dividing the work among specialized labours. Anyhow, a sole proprietor can appoint people to help him, but the number of such people could be less taking into account.
4. **Uncertainty:** A sole trade business will exist only till the existence of the sole trader. In case of his death, insanity, the business may come to an end.
5. **More Competition:** Because it is easy to start small business, there is a high degree of competition among the small business men.



## PARTNERSHIP

### Introduction:

Partnership form of organization is an improved version of sole proprietorship. Where there are like-minded persons with resources, they can come together to do business and share the profits/losses of the business in an agreed ratio. Persons who have entered into such an agreement are individually called 'partners' and collectively called 'firm'. The relationship among partners is called a 'partnership'.

### Definition:

*"The relationship between two or more persons who agree to share the profits of the business carried on by all or any one of them acting for all is called as partnership".*

— The Indian Partnership Act 1932(Section 4)

### Features of Partnership:

1. **Two or More Persons:** There should be two or more number of persons.
2. **Agreement:** There must be an agreement to form a partnership. This agreement may be whether written or oral.
3. **Business:** There should be a business. For example when two or more persons agrees to share income of a joint property, it is not partnership because, there is no business.
4. **Carried on by All or Any one of Them Acting for All:** In this form of business, the business can be carried on by all or any one of the persons acting for all.
5. **Sharing of Profits:** In this form of business partners should share the profits or losses derived from the business.

### ➤ Merits / Advantages of Partnership:

1. **Easy to Form:** A partnership form of organization can be started with an agreement between the partners. No legal formalities are required.
2. **More Financial Resources:** A partnership facilitates pooling of financial resources of its entire partner. Therefore the financial resources available are large, when compared to sole-trade business.
3. **Sharing of Risk:** The burden of loss, if any borne by all the partners, which make partnership less risky, when compared to sole proprietorship.
4. **Better Decision Making:** The decisions taken by a partnership firm can be better because, opinion of all the partners is taken into account. Unlike sole-proprietorship where only one person takes a decision with the limited knowledge he has.
5. **Democratic Management:** All the partners, irrespective of their contribution to the capital of the organization, will have equal right in the management of the business.



6. **Flexibility:** The operations of a partnership firm are flexible because, there is no need for any prior permission from the government before making any change in the business activity, capital etc.

➤ **Disadvantages of Partnership:**

1. **Unlimited Liability:** As in the case of sole proprietorship, the liability of partners, in a partnership firm, is unlimited. It implies that the private property of the partner's can also be assigned for obligations of business.
2. **Limited Resources:** The resources of a partnership business are more when compared to sole proprietorship. But they are very less as compared to a joint stock company.
3. **Mutual Distrust:** The differences between partners may become failure for a partnership firm. Lack of confidence in each other may be the cause of these differences.
4. **Limitation on Transfer of Share:** No partner has the right to transfer his share to any other party, without the permission of the other partners.
5. **Instability:** A partnership firm can be dissolved at the death, insolvency or insanity of a partner. This makes it very instable.

➤ **Partnership Deed**

**Introduction:**

Partnership form of organization is an improved version of sole proprietorship. Where there are like-minded persons with resources, they can come together to do business and share the profits/losses of the business in an agreed ratio. Persons who have entered into such an agreement are individually called 'partners' and collectively called 'firm'. The relationship among partners is called a 'partnership'.

**Definition:**

*"The relationship between two or more persons who agree to share the profits of the business carried on by all or any one of them acting for all is called as partnership".*

\_\_\_\_\_ The Indian Partnership Act 1932(Section 4)

➤ **Partnership Deed:**

The written agreement among the partners is called 'the partnership deed'. It contains the terms and conditions governing the working of partnership. The following are the contents of the partnership deed:

1. Name of the Firm
2. Names and Addresses of partners
3. Nature of the Business
4. Duration
5. Total amount of capital and contributions by each partner
6. Profit sharing ratio among the partners
7. Procedure for dissolution of the firm
8. Procedure to be followed while admitting a new partner
9. Rate of interest to be allowed on capital

10. The amount of salary or commission payable to any partner
11. Allocation of responsibilities of the partners in the firm

### ➤ Types of Partners.

#### Introduction:

Partnership form of organization is an improved version of sole proprietorship. Where there are like-minded persons with resources, they can come together to do business and share the profits/losses of the business in an agreed ratio. Persons who have entered into such an agreement are individually called 'partners' and collectively called 'firm'. The relationship among partners is called a 'partnership'.

#### Definition:

*"The relationship between two or more persons who agree to share the profits of the business carried on by all or any one of them acting for all is called as partnership".*

\_\_\_\_\_ The Indian Partnership Act 1932(Section 4)

### ➤ Kinds/ Types of Partners:

1. **Active Partner:** An active partner is one who takes active part in the day-to day operations of the business. He is also called working partner.
2. **Sleeping Partner:** Sleeping partner does not take part in working of the business. But he contributes capital, shares profits and losses.
3. **Nominal Partner:** A nominal partner does not bring capital into the business, but only lends his name for name sake.
4. **Partner by Estoppels or holding out:** Estoppels means bahaviour or conduct. Partner by estoppels gives an impression to outsiders that he is the partner in the firm. In fact he neither contributes capital, nor takes any role in the affairs of the partnership.
5. **Secret Partner:** The membership of a secret partner is not disclosed to the public. But, a secret partner can take part in the working of the business.
6. **Minor Partner:** A minor is person who is below the age of 18years. Minor can be admitted as a partner can also be given a share in the profits of the business. But, he cannot be asked to bear the losses.

### ➤ Rights of Partners.

#### Introduction:

Partnership form of organization is an improved version of sole proprietorship. Where there are like-minded persons with resources, they can come together to do business and share the profits/losses of the business in an agreed ratio. Persons who have entered into such an agreement are individually called

‘partners’ and collectively called ‘firm’. The relationship among partners is called a ‘partnership’.

**Definition:**

*“The relationship between two or more persons who agree to share the profits of the business carried on by all or any one of them acting for all is called as partnership”.*

—The Indian Partnership Act 1932(Section 4)

➤ **Rights of Partners:** Every partner has rights. They are:

- (a) To take part in the management of business
- (b) To express his opinion
- (c) Of access to and inspect and copy and book of accounts of the firm
- (d) To share equally the profits of the firm in the absence of any specific agreement to the contrary
- (e) To receive interest on capital at an agreed rate of interest from the profits of the firm
- (f) To receive interest on loans, if any, extended to the firm.
- (g) To be indemnified for any loss incurred by him in the conduct of the business
- (h) To receive any money spent by him in the ordinary and proper conduct of the business of the firm.

## COMPANY / JOINT STOCK COMPANY

The drawbacks of sole-proprietorship and partnership gave rise to company form of organization. The first joint stock company was started in Italy in 13<sup>th</sup> Century. In India the first companies Act was passed in 1850. In 1956, a comprehensive act was passed, which is still in existence.

**Definition:**

*“A joint stock company is a voluntary association of persons for profits whose capital is divided into transferable shares and ownership is required for its membership”*

—Honey

➤ **Features of Joint Stock Company:**

1. **Artificial Person:** A company is an artificial person created by law. It has its own name and seal. It can perform all the activities of business like purchase and sale of goods etc.
2. **Voluntary association of persons:** It is a voluntary association of persons who want to carry on business for profit. To carry on business, they need capital. So they invest in the share capital of the company.
3. **Capital is divided into shares:** In this form of business total capital is divided into a certain number of units. Each unit is called a share.
4. **Common Seal:** It is an artificial person created by law has no physical shape, it can not sign its name on a paper. So, it has a common seal on which its name is engraved.
5. **Management and Ownership in separate hands:** Shareholders are the owners of the business. But they do not manage the business. The board of directors appointed by them to manage the company.

6. **The name of the company ends with 'limited':** It is necessary that the name of the company ends with limited (Ltd.) to give an indication to the outsiders that they are dealing with the company with limited liabilities.

➤ **Advantages of Joint Stock Company:**

1. **Limited Liability:** The shareholders have limited liability i.e., liability limited to the face value of the shares held by him.
2. **Transferability of shares:** When in need of money, a shareholder can transfer his share in the company to any persons by following the procedure laid down for such a transfer.
3. **Availability of Large resources:** As the capital is collected from the public by selling the shares in the primary market, a company enjoys the benefit of large resources.
4. **Stability of Existence:** The Company has perpetual existence. Its existence is not affected by death, insolvency of any of its members.
5. **Efficient Management:** The affairs of the company can be managed efficiently since the company is in a position to employ experts as professional managers due to availability of large amount of funds.
6. **Economies of Large Scale Production:** With the availability of huge capital and management expertise, a joint stock company enjoys economies of marketing, production, specialization, etc.

➤ **Disadvantages of Joint Stock Company:**

1. **Difficulty in Formation:** In order to start a company many legal formalities are to be fulfilled. These formalities can be very expensive.
2. **Delay in Decision Making:** In a company form of organization decision making will be very lengthy. No single individual can take any decision. Only the board of the director's can take decisions, which can be ratified by the shareholders in the annual meeting.
3. **Lack of Secrecy:** When compared to other form of business, a company form of organization may not be able to maintain secrecy. Every matter has to be informed to the shareholders, which may not remain secret thereafter.
4. **Separate Ownership and Management:** The management and the owners of the company are not directly related. Management unlike sole proprietorship and partnership may not take personal interest in the growth of the company.

## PUBLIC SECTOR ENTERPRISES

A public sector enterprise is one which is owned, managed and controlled by the central government or state government or any local authority. In a public enterprise, government contributes the whole or major part of the capital. Ex: Postal, Railways, FCI, LIC, BHEL etc.

➤ **Features of Public Sector Enterprises:**

- **Managed by the government:** All public enterprises are owned and managed by the government. Management is either through some department or by appointment of officials.
- **Provision of Public Utilities:** The basic aim of these enterprises is to provide minimum necessities to the citizens at a reasonable price.
- **Implementation of Government Plans:** Economic plans of the government, intended, for the welfare of the people, can be implemented using these enterprises.
- **Large Scale Industries:** Industries, which are of great importance to the public at large and require huge capital investment, are set up in public sector.

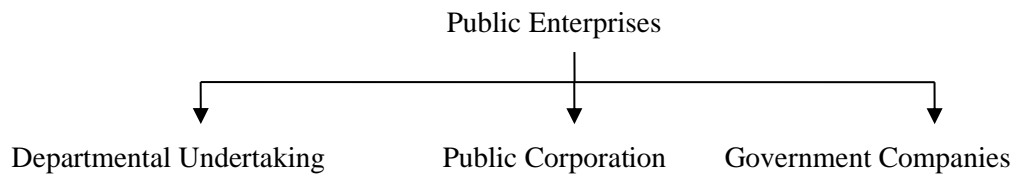
➤ **Need for the Public Enterprises:**

- **Economic Growth:** Economically under developed countries need public sector to grow and improve the standard of living of their citizens.
- **Creating Employment Opportunities:** By starting these public enterprises, employment can be provided to a large number of people.
- **Utilization of Natural Resources:** Large stocks of natural resources can be better utilized by public enterprises.
- **Government Revenue:** Public enterprise gets a lot of revenue for the government, which can again be utilized for public welfare.
- **Avoiding Exploitation:** Public utilities are the necessities of life. If the private individuals are allowed to trade in these products, the common man gets exploited.

➤ **Problems of Public Enterprises:**

- **Political Interference:** Political parties try to influence the functioning of public enterprises, which may affect the efficiency of the enterprises.
- **Accountability:** Lack of accountability becomes a hindrance to these enterprises.
- **Delay in Completion:** Due to the lack of attention paid, it may take long time to complete the projects. This may increase the cost of the project.
- **Over Staffing:** These enterprises, due to political interference, may hire or recruit employees, much more than the required number.
- **Less Return:** The rate of return on capital is low due to inefficient management, political interference etc.

➤ **Types of Public Sector Enterprises:** Public enterprises can be classified into three categories:



## I. DEPARTMENTAL ORGANISATION:

This is the earliest form of public enterprise. Under this form, each department has a minister, who controls the operations of these enterprises. Normally a managing director is appointed to control these enterprises. IAS officers are posted as the managing directors. Ex: Railway Department.

### ➤ Features :

1. These departmental organizations are controlled and managed by the government through IAS officers.
2. The capital or finance is provided from the government revenue.
3. The budgets of these undertakings are approved and passed by the legislature.

### ➤ Advantages:

1. **Efficiency:** These undertakings can work efficiently because they are controlled by the minister of the department.
2. **Accountability:** Accountability becomes possible because the budget of the undertaking is passed by the legislature.
3. **Source of Finance:** It is a direct source of revenue for the government.

### ➤ Disadvantages:

1. **Reactive Decisions:** The decisions taken by these undertakings, with regard to market changes, are reactive. They do not normally, take a pro-active approach.
2. **Excessive Government Control:** Government does not allow adequate freedom to these undertakings, which hinders their growth.
3. **Inefficient Staff:** These undertakings lack competent staff, which may be because of the recruitment policy, monetary benefits offered to the employees etc.
4. **Slow response to market conditions:** Since there is no competition, there is no profit motive; there is no incentive to move quickly to market needs.

## II. PUBLIC CORPORATION (Statutory Corporation):

Public Corporation is a body, which is formed by the government, by passing an act in the legislature. The main aim of creating these corporations is to simplify the process of governance. These bodies are autonomous. It means they have their own sources of income and the liberty to spend it, according to their requirements.

➤ **Features of Company:**

- **Own Sources of Revenue:** Unlike departmental undertaking, public corporations have their own sources of revenue. It means they enjoy financial autonomy.
- **Minimum Government Interference:** Government does not interfere in the day-to-day activities of the corporations. They are free to function without any excessive pressure.
- **Separate Entity:** Corporations have their own identity. They have a seal and are capable to deal with third parties in its own name.
- **Management:** The heads of the corporations are appointed by the government. Ex: APSRTC managing director is appointed by the government.

➤ **Advantages of Companies:**

- **Autonomous Body:** Being an autonomous body, a corporation is free to operate in the best possible manner.
- **Service Motive:** Corporations do not work for profits. They are formed to serve the society.
- **No Political Pressure:** There is very less scope of political interference in these corporations. Being as independent body it can ignore political pressures, if any.

➤ **Disadvantages of Companies:**

- **Misuse of Financial Autonomy:** Corporations, which are financially autonomous, may misuse the money on unnecessary projects.
- **Government Intervention:** Technically government cannot interfere in the functioning of these corporations. But the reality is that the decisions are taken by the corporations only after getting the approval of the government.
- **Burden on the Government:** When the corporation suffers losses due to inefficient management, the government has to help it financially. This may be huge burden on the government.

### III. GOVERNMENT COMPANY:

**Definition:**

According to Indian Companies Act "**Government Company means a company, which is started by government and of which majority of capital (at least 51%) is**



subscribed by the central and/or state government(s)." Ex: Bharat Heavy Electricals Limited.

➤ **Features of Government Company:**

1. Majority of the shares in a government company are held by the government. Normally it is 51% at least.
2. Government Company, like any other company, is registered under the companies act.
3. It has a common seal and can sue (take legal action against a person or institution) and gets sue by others.
4. The directors of a government company are nominated by the government.

➤ **Advantages:**

1. **Commercial Management:** Government Company tries to earn surplus (profits) which can be utilized to start new projects or expand the existing one.
2. **Flexibility:** Like any other company, a government company can function as per the market requirements.
3. **Private Partnership:** The minority share holding is in the hands of the private persons. This brings greater efficiency in these organizations.
4. **Capacity to Compete:** With private persons being a part of the management, these companies can compete with other private companies.

➤ **Disadvantages:**

1. **Political Interference:** This happens when the directors of these companies are appointed when the party in power changes so will the directors.
2. **Government Control:** As 51% of shares held by the government these companies are controlled by the government. Private persons, being the minority share holders, have very little say in the functioning of the company.
3. **Inefficiency:** Due to government control and political interference it becomes very difficult for these companies to function efficiently.

## BUSINESS CYCLE

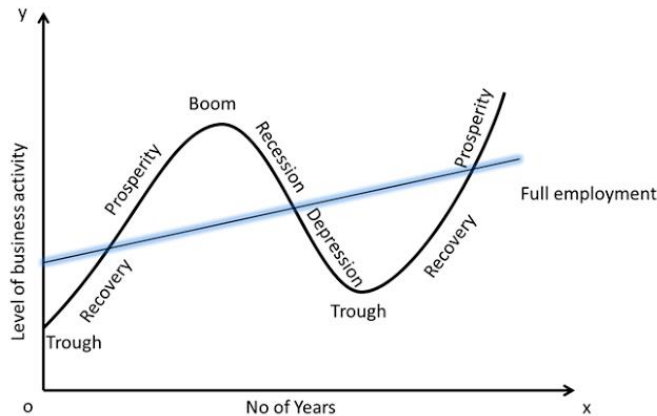
The term **business cycle** (or **economic cycle**) refers to economy-wide fluctuations in production or economic activity over several months or years.

**Business Cycle** (or Trade Cycle) is divided into the following four phases:-

1. **Prosperity Phase:** Expansion or Boom or Upswing of economy.
2. **Recession Phase:** From prosperity to recession (upper turning point).
3. **Depression Phase:** Contraction or Downswing of economy.
4. **Recovery Phase:** From depression to prosperity (lower turning Point).



The four phases of business cycles are shown in the following diagram:-



**1. Prosperity Phase:** When there is an expansion of output, income, employment, prices and profits, there is also a rise in the standard of living. This period is termed as Prosperity phase. The features of prosperity are:

1. High level of output and trade.
2. High level of effective demand.
3. High level of income and employment.
4. Rising interest rates.
5. Inflation.
6. Large expansion of bank credit.
7. Overall business optimism.
8. A high level of MEC (Marginal efficiency of capital) and investment.

Due to full employment of resources, the level of production is Maximum and there is a rise in **GNP** (Gross National Product). Due to a high level of economic activity, it causes a rise in prices and profits. There is an upswing in the economic activity and economy reaches its **Peak**. This is also called as a **Boom Period**.

**2. Recession Phase:** The turning point from prosperity to depression is termed as **Recession Phase**. During a recession period, the economic activities slow down. When demand starts falling, the overproduction and future investment plans are also given up. There is a steady decline in the output, income, employment, prices and profits. The businessmen lose confidence and become pessimistic (Negative)

**3. Depression Phase:** When there is a continuous decrease of output, income, employment, prices and profits, there is a fall in the standard of living and depression sets in. The **features of depression** are:-

1. Fall in volume of output and trade.
2. Fall in income and rise in unemployment.
3. Decline in consumption and demand.
4. Fall in interest rate.
5. Deflation.
6. Contraction of bank credit.
7. Overall business pessimism.
8. Fall in MEC (Marginal efficiency of capital) and investment.

In depression, there is under-utilization of resources and fall in GNP (Gross National Product). The aggregate economic activity is at the lowest, causing a decline in prices and profits until the economy reaches its **Trough** (low point).

**4. Recovery Phase:** The turning point from depression to expansion is termed as Recovery or Revival Phase. During the period of revival or recovery, there are expansions and rise in economic activities. When demand starts rising, production increases and this causes an increase in investment. There is a steady rise in output, income, employment, prices and profits.

## 5<sup>th</sup> Unit DOUBLE ENTRY SYSTEM

### Introduction and Meaning:

Double entry system was introduced in 1494 by an Italian merchant 'Luca Pacioli'. According to double entry system, every business transaction has two aspects. One aspect is receiving and the other aspect is giving. The receiving aspect is termed as "debit" and the giving aspect is termed as "credit".

When we receive something, we give something else in return also. For example, when we sell goods for cash, we receive cash and give goods in return. Thus, on any date, the total of all debits must be equal to the total of all credits, because every debit has a corresponding credit. This is known as the fundamental principle of double entry system.

➤ **Advantages of Double Entry System:** The following are the advantages of double entry system:

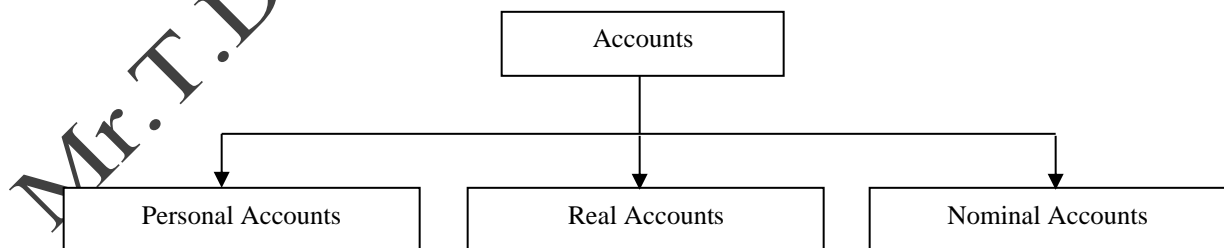
- 1. Complete and Scientific Record:** The main advantage of the double entry system is that it helps to maintain a complete and scientific record of business transactions as both the aspects of each and every transaction are recorded in it.

2. **Full Information:** Full and authentic information can be had about all transactions as the trader maintains the ledger with all types of accounts.
3. **Assessment of Profit or Loss:** The businessman will be able to know correctly whether he had earned profit or sustained loss.
4. **Assessment of Financial Position:** The businessman will be able to know fully about the financial position of the firm by prepare the balance sheet.
5. **Helpful in Comparison:** This system is helpful in making comparison of current year business result those of previous years.
6. **Helpful in preventing Errors and Frauds:** The systematic and scientific recording of business transactions on the basis of this system minimizes the chances of errors and frauds. These can be easily detected by vouching, verification and auditing of accounts.
7. **To Meet Legal Requirements:** Proper maintenance of books will satisfy the tax authorities and facilitates accurate assessment. In India joint stock companies should maintain accounts under double entry system.

➤ **Classification of Accounts:**

All the business transactions are broadly classified into three categories: (i) those relating to persons, (ii) those relating to property (assets), and (iii) those relating to income and expenses. Thus, three classes of accounts are maintained for recording all business transactions. They are:

- A) Personal Accounts
- B) Real Accounts, and
- C) Nominal Accounts



- A) **Personal Accounts:** Accounts relating to names of persons, firms or companies are called as 'Personal Accounts'. Ex: Rama Account, Gopal Account, Nagarjuna Finance Limited Account, Andhra Bank Account etc.

→ **Debit-Credit Rule:**

Debit the receiver  
and  
Credit the giver

**B) Real Accounts:** Accounts relating to properties or assets are known as 'Real Accounts'. Ex: Machinery Account, Furniture Accounting, Cash Account etc.

→ **Debit-Credit Rule:**

Debit what comes in and Credit what goes out
--

**C) Nominal Accounts:** Accounts relating to expenses, losses, incomes and gains are known as 'Nominal Accounts'. Ex: Salaries Account, Commission Received Account, Interest paid Account etc.

→ **Debit-Credit Rule:**

Debit all expenses and losses and Credit all incomes and gains
--

## ➤ JOURNAL

The word "Journal" is derived from the Latin word 'Journ' which means a day. Therefore, journal means a **day book** where in day-to-day business transactions are recorded in chronological order (in order of dates).

Journal is treated as the book of original entry of first entry or prime entry. All the business transactions are first entered in this book before they are posted in the ledger. The process of recording a transaction in the journal is called 'journalizing'. The entries made in the books are called 'journal entries'.

### Journal Proforma

Date	Particulars	L.F.	Debit (Rs.)	Credit (Rs.)
	Name of the account to be debited Name of the account to be credited (Narration or Explanation)			

- 1. Date:** The year is written at the top of the date column of each page of the journal. Thereafter on the next line of the date column, the month and date of the first entry are written.
- 2. Particulars:** The name of the account to be debited is entered on the extreme left of the particulars 'column' and "Dr" is written at the right end. The name of the account to be credited is entered on the next line with a prefix "To". A short explanation of the transaction (i.e., narration) is given immediately below the account credited. The narration should be adequate to explain the transaction and should always appear within brackets. It always starts with the word 'Being'. At the end, a thin line is drawn to indicate that the entry of a transaction is complete from all aspects.
- 3. Ledger Folio (L.F):** In this column, the page number of the ledger on which the debit and credit accounts are posted is recorded. Practically this column is not used, because the page number of ledger is not known beforehand.
- 4. Debit (Rs.):** The amount to be debited is entered in this column.
- 5. Credit (Rs.):** The amount to be credited is entered in this column.

## ➤ LEDGER

After recording a transaction in the journal, the next stage is the transfer of transactions in

the respective accounts in the form of ledger.

Ledger is the principal book of accounts. It contains all the accounts of a business whether personal, real or nominal. It is also called the book of final entry.

### Definition:

A ledger may be defined as “**a summary statement of all transactions relating to a person, asset, expense or income, which have taken place during a given period of time and shows their net effect.**”

Dr.				Proforma of Ledger				Cr.	
Date	Particulars	J.F	Amount (Rs.)	Date	Particulars	J.F	Amount (Rs.)		
	To the name of credit account				By the name of debit account				

In ledger, each account is prepared in ‘T’ shape. Each account is divided into two equal parts by a vertical line. The left hand side of the account is known as debit (Dr.) and the right hand side is known as credit (Cr.). Each of the two sides is further divided into four columns. They are: date, particulars, journal folio, and amount.

- 1. Date:** This column records year, month and date of transaction
- 2. Particulars:** This column records the name of the account to be credited on the debit side and the name of the account to be debited on the credit side. The names of the account in particulars column on the debit and credit sides are preceded by words ‘To’ and ‘By’.
- 3. Journal Folio:** It records page number of the journal from which the posting to the ledger takes place.
- 4. Amount:** Amount columns on the Dr. and Cr. Sides of the account record the amount of each and every transaction.

**Exercise:** From the following transactions pass Journal entries and post them in the appropriate Ledger Accounts in the books of Avinash & Co.

2014 May 1	Started business with	Rs.100000
May 5	Purchased goods from Rahul & Co.	Rs. 10000
May 7	Sold goods worth	Rs. 20000
May 10	Salaries paid	Rs. 1500
May 11	Purchased Stationery worth	Rs. 1000
May 15	Bought furniture worth	Rs. 20000
May 18	Cash deposited into bank	Rs. 9000

May 20 Paid wages	Rs. 5000
May 24 Cash withdrawn from bank	Rs. 3000
May 28 Paid rent by cheque	Rs. 1800

Mr. T. Dileep, Asst. Prof., MBA Dept.,

#### ➤ FINAL ACCOUNTS

Final accounts are prepared by an organization at the end of the financial year to know the operational efficiency and financial position of the business. Financial accounts for a trading firm refer to:

1. Trading and Profit and Loss Account
2. Balance Sheet

Trail balance is the basis for preparing of final accounts.

- **Trading Account:** This account is prepared by those concerns, which deal in the purchase and sale of goods. It is prepared to find out the amount of gross profit or gross loss in a particular period. Gross profit or gross loss is the amount of difference between the cost of goods sold and the selling price. Gross profit or loss can be ascertained with the help of the following equations:

Gross profit = Sales – Cost of goods sold.

Gross loss = Cost of goods sold – Sales.

When the amount of sales is more than the cost of goods sold, the result is gross profit. If the amount of sales is less than the cost of goods sold, the result is gross loss. The gross profit or gross loss earned in this account is transformed to profit and loss account.

Dr. **Trading Account of ----- for the year ending-----** Cr.

Particulars		Amount (Rs.)	Particulars		Amount (Rs.)
To Opening stock		xxxx	By Sales	xxxx	
To Purchases	xxxx		Less: Sales returns	xx	xxxx
Less: Purchase returns	xx	xxxx	(or) return inward		
(or) return outward			By Closing stock		xxxx
<u>Direct expenses:</u>			By Gross loss c/d		xxxx
To Carriage inward		xxxx	(Transferred to P&L		
To Coal, Gas and Water etc		xxxx	a/c)		
To Power or Motive power		xxxx			
To Octroi		xxxx			
To Import duty		xxxx			
To Custom duty		xxxx			
To Wages or wages & salaries		xxxx			
To Factory expenses		xxxx			
To Manufacturing expenses		xxxx			
To Royalty		xxxx			
To Consumable Stores		xxxx			
To Salary of foreman/works		xxxx			
manager					
To Gross Profit c/d		xxxx			
(Transferred to P&L a/c)		xxxx			xxxx

- **Profit And Loss Account:** This account is prepared to calculate the net profit of the business. The trading accounts simply depict the gross profit or gross loss made by a businessman on the sale and purchase of goods. It does not take into account the other operating or indirect expenses incurred by him during the course of running the business. Hence, the P&L account is prepared to find out the indirect amount of net profit or net loss of the firm in a particular period.

Dr.		P&L Account of -----for the year ending-----		Cr.	
Particulars		Amount (Rs.)	Particulars		Amount (Rs.)
To Gross loss b/d		xxxx	By Gross profit b/d		xxxx

<b><u>To Administrative &amp; Office expenses:</u></b>			<b><u>By Income received:</u></b>		
To Rent, rates and taxes	xxxx		By Interest received		xxxx
To Office salaries	xxxx		By Discount		xxxx
To Printing and stationery	xxxx		By Commission		xxxx
To Postage and telegram	xxxx		By Dividends		xxxx
To Heating and lighting	xxxx		By Income from investments		xxxx
To Insurance	xxxx		By Rent from tenants		xxxx
To Audit fee	xxxx		By Apprenticeship premium		xxxx
To Legal charges	xxxx		By Insurance claims		xxxx
To Repairs and maintenance	xxxx		By Miscellaneous receipts		xxxx
To General expenses	xxxx		By Bad debts recovered		xxxx
To Depreciation	xxxx		By Net loss transferred to capital account c/d		xxxx
<b><u>To Selling and distribution expenses:</u></b>					
To Advertising and publicity	xxxx				
To Salesmen's salaries	xxxx				
To Packing expenses	xxxx				
To Bad debts	xxxx				
To Godown rent	xxxx				
To Export expenses	xxxx				
To Salesmen's commission	xxxx				
To Delivery van's expenses	xxxx				
To Carriage outwards	xxxx				
To Travelling expenses	xxxx				
To Agents' commission	xxxx				
To Brokerage	xxxx				
To Provision for bad debts	xxxx				
<b><u>To Financial expenses:</u></b>					
To Interest on capital	xxxx				
To Interest on debentures	xxxx				
To Interest on loans	xxxx				
To Discount on bills	xxxx				
To Discount allowed	xxxx				
To Bank charges	xxxx				
<b><u>To Extraordinary Expenses:</u></b>					
To Loss by fire (not covered by insurance)	xxxx				
To Loss on sale of fixed assets	xxxx				
To Loss by theft	xxxx				
To Cash defalcations	xxxx				
To Net profit transferred to capital account c/d.					
	<u>xxxx</u>				<u>xxxx</u>

- **Balance Sheet:** The third part of the final accounts is called the balance sheet. After ascertaining the net profit or net loss of the business, a trader wants to know the financial position of his



business. He prepares a statement of assets and liabilities which is popularly known as the balance sheet. Balance sheet explains the financial position of business as on particular date.

**Balance sheet of ----- as on -----**

Liabilities	Amount (Rs.)	Assets	Amount (Rs.)
<b><u>Current Liabilities:</u></b>		<b><u>Current Assets:</u></b>	
Sundry creditors	xxxx	Cash in hand	xxxx
Bills payable	xxxx	Cash in bank	xxxx
Bank over draft	xxxx	Bills receivable	xxxx
Short-term loans	xxxx	Sundry debtors	xxxx
Outstanding expenses		Prepaid expenses	xxxx
<b><u>Long-term Liabilities:</u></b>		Closing stock	xxxx
Debentures	xxxx	Stock-in-trade	xxxx
Long-term loans	xxxx	Short-term investments	xxxx
<b><u>Fixed Liabilities:</u></b>		<b><u>Fixed Assets:</u></b>	xxxx
Capital		Investments	
xxxx		Land and building	xxxx
<b>Add/less:</b> Net Profit/loss	—	Plant and machinery	xxxx
xxx	xxxx	Furniture and fittings	xxxx
		Vehicles	xxxx
xxxx		Goodwill	xxxx
<b>Add:</b> Interest on capital		Trademark	xxxx
xxx		Copy rights	xxxx
<b>Less:</b> Drawings	xxxx	Patents	xxxx
xxx	xxxx		xxxx
<b>Less:</b> Income tax			xxxx
xxx			xxxxx

**Adjustments:**

- A. Closing Stock:** Closing stock is the stock of unsold at the end of the accounting year. It involves raw-materials, semi-finished goods, and finished goods. The valuation of stock is done at the cost price or the market price whichever is less.
  1. Shown on the credit side of the trading account as “By Closing stock”.
  2. Shown as an asset in the balance sheet
- B. Outstanding Expenses:** Outstanding expenses are those expenses which have incurred during the accounting period but are not paid yet. Eg: Outstanding salaries, rent yet to be paid, etc.
  1. Shown in the concerned account on the debit side of the trading or P&L a/c.
  2. Shown on the liabilities side of the balance sheet.
- C. Prepaid (or Unexpired) Expenses:** Prepaid expenses are those expenses, the payment of which are made in advance in the current accounting period but which relate to the next accounting period. Eg: Insurance pre-paid.
  1. Deducted from those particular expenses on the debit side of the P&L a/c.
  2. Shown on the assets side of the balance sheet.

**D. Accrued Income (or Outstanding Income):** Accrued income is that which has been earned or has become due but not received till the end of an accounting period. Eg: Rent receivable, Interest receivable etc.

1. Added to the concerned account on the credit side of P&L a/c.
2. Shown as an Asset in the balance sheet.

**E. Income Received in Advance (or Unearned Income):** Income received during an accounting period, which belongs to the next accounting period are called as income earned in advance.

1. Deducted from the concerned income on the credit side of P&L a/c
2. Shown as a liability in the balance sheet.

**F. Depreciation:** It is the reduction in the value of an asset due to usage, wear and tear, or obsolescence. It is an expense.

1. Shown on the debit side of the P&L a/c.
2. Deducted from the concerned asset on the assets side of the balance sheet.

**G. Bad Debts:** When goods are sold on credit basis, the buyer of the goods is called as “debtor”. If the debtor does not pay the amount payable, such an amount is considered to be a “Bad debt”.

1. Shown on debit side of P&L a/c
2. Deduct the amount from sundry debtors on the assets side of balance sheet.

**H. Provision for Bad and Doubtful Debts:** Sometimes a businessman feels, at the end of the year, that certain debts may not be recoverable or doubtful of recovery. So he creates a provision to cover such debts, which is known as ‘provision for bad and doubtful’.

1. It will appear on the debit side of the P&L a/c or will be added to bad debts, and old provision for doubtful debts at the beginning of the year will be deducted.
2. It will appear on the assets side of the balance sheet by way of deduction from sundry debtors (after deduction of further bad debts, if any).

**I. Interest on Capital:** It is the interest charged by the proprietor from business on the amount invested by him.

1. Shown on the debit side of P&L a/c.
2. Added to capital in the liabilities side of the balance sheet.

**J. Interest on Drawings:** It is the interest charged by the business from the proprietor on the amount with drawn by the proprietor from the business for his personal use.

1. Shown on the credit side of the P&L a/c.
2. Deducted from capital in the liabilities side of the balance sheet.

**Exercise:** From the following Trail Balance of Surya & Sons' Co prepare Trading and P&L a/c for the year ended 31-03-2014 and a Balance Sheet as on that date:

	Debit (Rs.)	Credit (Rs.)
Sales		1,80,000
Purchases	1,15,000	
Sales Returns	6,000	
Purchase Returns		4,000
Opening Stock	13,000	
Freight	1,200	
Salaries	18,000	
Interest Received		830
Wages	3,250	
Office Expenses	2,650	
Discount	650	450
Rent	9,300	
Drawings	2,800	
Bills Payable		5,550
Bills Receivable	8,560	
Furniture	26,000	
Machinery	76,000	
General Expenses	1,500	
Postage & Telegrams	850	
Capital		1,01,500
Sundry Debtors	19,000	
Cash in hand	1,250	
Cash at bank	3,950	
Sundry Creditors		13,630
<b>Total</b>	<b>3,05,960</b>	<b>3,05,960</b>

**Adjustments:**

Closing Stock Rs.27, 500

Outstanding Wages Rs.750

Prepaid Rent Rs.800

Depreciate Machinery by 10% and Furniture by 5%.

Write off bad debts Rs.1000 and provide 3% reserve for doubtful debts

Interest on Capital to be @10% per annum.

**Ans:** GP 72,300, NP 23,840, B/s 1,52,620

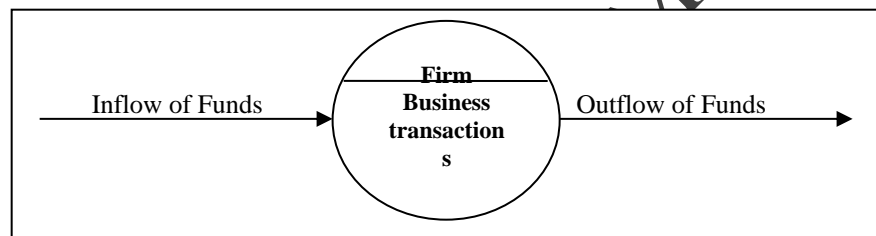
## FUNDS FLOW ANALYSIS

### Introduction:

In a narrow sense the term '**fund**' means cash only. In a broad sense the term '**fund**' means working capital. Working capital indicates the difference between current assets and current liabilities. The term working capital may be:

- Grass Working Capital – it represents total of all Current Assets.
- Net Working Capital – it refers to excess of Current Assets over Current Liabilities.

The term '**flow**' means change and therefore the term 'flow of funds' means '*change of funds*' or '*change in working capital*' in the normal course of business transactions.



### Definition:

*"A statement of sources (inflows) and applications (outflows) of funds is a technical device designed to analyze the changes in the financial condition of a business enterprise between two dates (accounting periods)".*

----- Foulke.

### Objectives / Importance of Funds Flow Statement:

- 1. Analysis of Financial Position:** Funds flow statement analyses how the funds were obtained and used in the past.
- 2. Evaluation of Firm's Financing:** It reveals how the firm financed its developments projects in the past i.e., from internal sources or from external sources.
- 3. An Instrument for Allocation of Resources:** The amount of funds to be available for projects shall be estimated by the financial manager with the help of funds flow statement. Based on the funds availability they can take decision to financing.
- 4. Future Guide:** An analysis of funds flow statements of several years reveals certain valuable information for the financial manager for planning the future financial requirements of the firm.
- 5. Control Device:** The statement compared with the budgeted figures will show to what extent, the funds were utilized according to plan on this basis; the financial manager can take remedial steps if there is any deviation.

- **Components of Flow of Funds:** In order to analyze the sources and application of funds, it is essential to know the meaning and components of flow of funds given below :

- (1) Current Assets
- (2) Non-Current Assets (Fixed or Permanent Assets)
- (3) Current Liabilities
- (4) Non-Current Liabilities (Capital & Long-Term Liabilities)
- (5) Provision for Tax
- (6) Proposed Dividend

**(1) Current Assets:** The term "Current Assets" refer to the assets of a business of a transitory nature which are intended for resale or conversion into different form during the course of business operations. For example, raw materials are purchased and the amount unused at the end of the trading period forms part of the current as stock on hand. Materials in process at the end of the trading period and the labour incurred in processing them also form part of current assets.

**(2) Non-Current Assets (Permanent Assets):** Non-Current Assets also refer to as Permanent Assets or Fixed Assets. This class of asset includes those of tangible and intangible nature having a specific value and which are not consumed during the course of business and trade but provide the means for producing saleable goods or providing services. Land and Building, Plant and Machinery, Goodwill and Patents etc. are the few examples of Non-Current ~assets.

**(3) Current Liabilities:** The term Current Liabilities refer to amount owing by the business which are currently due for payment. They consist of amount owing to creditors, bank loans due for repayment, proposed dividend and proposed tax for payment and expenses accrued due.

**(4) Non-Current Liabilities:** The term Non-Current Liabilities refer to Capital and Long-Term Debts. It is also called as Permanent Liabilities. Any amount owing by the business which are payable over a longer period time, i.e., after a year are referred as Non-Current Liabilities. Debenture, long-term loans and loans on mortgage etc., are the few examples of non-current liabilities.

**(5) Provision for Taxation:** Provision for taxation may be treated as a current liability or an appropriation of profit. When it is made during the year it is not used for adjusting the net profit, it is advisable to treat the same as current liability. Any amount of tax paid during the year is to be treated as application of funds or non-current liability. Because it is used for adjusting the net profit made during the year.

**(6) Proposed Dividend:** Like provision for taxation, it is also treated as a current liability and noncurrent liability, when dividend may be considered as being declared. And thus, it will not be used for adjusting the net profit made during the year. If it is treated as an appropriation, i.e., an non-current liability when the dividend paid during the year.

**(7) Provisions Against Current Assets and Current Liabilities:** Provision for bad and doubtful debts, provision for loss on inventories, provision for discount on creditors and provision made against investment etc. are made during the year, they may be treated separately as current assets or current liabilities or reduce the same from the respective gross value of the assets or liabilities.

The list of Current Accounts and Non-Current Accounts are given below:

Current Accounts	
Current Liabilities	Current Assets
(1) Bills Payable	(1)Cash in Hand
(2) Sundry Creditors	(2)Cash at Bank

(3) Outstanding Expenses	(3) Bills Receivable
(4) Dividends Payable	(4) Sundry Debtors
(5) Bank Overdraft	(5) Short-Term Investments
(6) Short-Term Loans	(6) Marketable Securities
(7) Provisions against Current Assets	(7) Stock of Raw Materials, Work-in-Progress & Finished Goods
(8) Provision for Taxation	(8) Prepaid Expenses
(9) Proposed Dividend	(9) Accrued Incomes
(May be Current or Non-Current Liabilities)	

### Non-Current Accounts

Non-Current or Permanent Liabilities	Non-Current or Permanent Assets
(1) Equity Share Capital	(1) Good will
(2) Preference Share Capital	(2) Land
(3) Debentures	(3) Building
(4) Long-Term Loans	(4) Plant and Machinery
(5) Share Premium	(5) Furniture and Fittings
(6) Share forfeited	(6) Trade Marks
(7) Profit and Loss Account	(7) Patent Right~
(8) Capital Reserve	(8) Long-Term Investments
(9) Capital Redemption Reserve	(9) Discount on Issue of Shares and Debentures
	(10) Preliminary Expenses
	(11) Other Deferred Expenses

➤ **Preparation of Funds Flow Analysis Statements:** Funds flow analysis involves the following important three statements such as:

- A. Funds from Operations
- B. Statement of Changes in Working Capital
- C. Funds flow Statement.

**A. Funds from Operations:** The main source of fund for an enterprise is the funds from operation. A fund from operation means the actual amount of profit is generated by the business operations such as purchase and sales.

#### Statement of Funds from Operations

Particulars	Amount (Rs.)	Amount (Rs.)
Net profit or Retained earnings (Closing balance of P/L A/c as given in the balance sheet)		xxxx
<b>Add: Non-fund &amp; non-operating items which have been debited to P&amp;L A/c:</b>	xxxx	
1. Depreciation on fixed assets	xxxx	
2. Goodwill written off	xxxx	
3. Patents	xxxx	
4. Trademarks	xxxx	
5. Discount on issue of shares	xxxx	
6. Preliminary expenses written off	xxxx	
7. Transfer to reserves	xxxx	xxxx
8. Loss on sales of fixed assets		xxxx
9. Proposed dividend		

<b>Less: Non-fund or Non-operating items which have been credited to P&amp;L A/c:</b>	XXXX	
1. Profit on sale of fixed assets	XXXX	
2. Profit on revaluation of asset	XXXX	
3. Profit on redemption of shares & debentures.	XXXX	
4. Rent received	XXXX	
5. Dividend received	XXXX	
6. Refund of income tax	XXXX	
7. Net profit or retained earnings (Opening balance of P/L A/c)		<b>XXXXX</b>
<b>Funds from operations</b>		
<b>Note:</b> If the P/L a/c shows a <i>net loss</i> , the above procedure will be reversed.		

**Alternative Specimen Format:** The following is the specimen of adjusted profit and loss account to calculate fund from operations:

<b>Adjusted Profit and Loss Account</b>			
<b>Particulars</b>	<b>Amount Rs.</b>	<b>Particulars</b>	<b>Amount Rs.</b>
To Depreciation on Fixed Assets	XXXX	By Opening Balance of P & L Alc	XXXX
To Loss on Sale of Fixed Assets	XXXX	By Profit on Sale of Fixed Assets	XXXX
To Loss on Sale Investments	XXXX	By Excess provision written back	XXXX
To Goodwill written off	XXXX	By Dividend received on investment	XXXX
To Discount on shares written off	XXXX	By Revaluation of fixed assets	XXXX
To Transfer to reserve	XXXX	By Fund From Operations (Balancing Figure)	XXXX
To Preliminary expenses written off	XXXX		
To Provision for Tax			
To Proposed Dividend			
To Closing Balance of P & L Alc			

**Exercise 1:** From the following information of the ABC Company Ltd., calculate funds from operations:

<b>Profit and Loss Account</b>			
<b>Particulars</b>	<b>Amount Rs.</b>	<b>Particulars</b>	<b>Amount Rs.</b>
To Expenses:		By Gross profit	230000
Operations	120000	By Gain on sale of plant	22000
Depreciation	50000		
To Loss on sale of building	12000		
To Advertisement suspense A/c	6000		
To Discount allowed to customers	1000		
To Discount on issue of shares written off	1000		
	15000		



To Goodwill	47000		
To Net profit	252000		252000

**Ans: Rs. 109000**

**Exercise 2:** From the following information of 'Z' Company Ltd. On 31-03-2014, calculate 'funds from operations'.

1. Net profit for the year ended 31-03-2014 Rs. 700000
2. Gain on the sale of building Rs. 40000
3. Goodwill appears in the books Rs. 200000 out of that 10% has been written off during the year
4. Old machinery worth Rs. 10000 has been sold for Rs. 8000 during the year.
5. Rs.140000 have been transferred to the general reserved fund
6. Depreciation at 10% has been provided during the year on machinery cost Rs. 400000.

**Ans: Rs. 862000**

**Exercise 3:** The following are the extracts from the balance sheet of the company as on 31-12-2013 and 2014. You are required to calculate "Funds from Operations".

Particulars	2013	2014
Profit and loss appropriation a/c.	30000	40000
General reserves	20000	25000
Goodwill	10000	5000
Preliminary expenses	6000	4000
Provision for depreciation on machinery	10000	12000

**Ans: Rs.24000**

**Exercise 4:** From the following balance sheet prepare funds flow statement.

Liabilities	2012	2013	Assets	2012	2013
Share capital	10000	15000	Fixed assets	10000	20000
P&L a/c	4000	6000	Current assets	13000	14500
Provision to tax	2000	3000			
Proposed dividend	1000	1500			
Sundry creditors	4000	6000			
Outstanding expenses	2000	3000			

**Other information:**

Tax paid during the year Rs.2500  
Dividend paid Rs.1000

**Ans: Rs. 7000**

**B. Statement of Changes in Working Capital:** This statement is prepared from current assets and current liabilities in order to calculate the increase or decrease in working capital. This statement prepare with the help of current assets and current liabilities of two periods.



❖ **Rules of Preparing Statement of Changes in Working Capital:**

Items	Effect on Working Capital
1. Increase in current assets	Increase (+)
2. Decrease in current assets	Decrease (-)
3. Increase in current liabilities	Decrease (-)
4. Decrease in current liabilities	Increase (+)

**Proforma of Statement of Changes in Working Capital**

Particulars	End of the year		Working capital changes	
	Previous Year (Rs.)	Current Year (Rs.)	Increase (Rs.)	Decrease (Rs.)
<b><u>Current Assets:</u></b>				
Cash in hand	-----	-----		
Cash in bank	-----	-----		
Bills receivables	-----	-----		
Sundry debtors	-----	-----		
Stock	-----	-----		
Prepaid expenses	-----	-----		
	-----	-----		
<b>Total Current Assets (A)</b>	<b>XXXX</b>	<b>XXXX</b>		
<b><u>Current Liabilities:</u></b>				
Bills payable	-----	-----		
Sundry creditors	-----	-----		
Outstanding expenses	-----	-----		
Bank Over Draft	-----	-----		
Short-term loans	-----	-----		
Dividends payable	-----	-----		
	-----	-----		
<b>Total Current Liabilities (B)</b>	<b>XXXX</b>	<b>XXXX</b>		
<b>Net working capital (A-B)</b>	<b>-----</b>	<b>-----</b>		
<b>Net increase/decrease in working capital</b>	<b>XXXX</b>	<b>XXXX</b>	<b>XXXX</b>	<b>XXXX</b>

**Exercise 1:** From the following balance sheet of Bharat Company, prepare a schedule of working capital changes.

	Ending on 31 <sup>st</sup> December	
	1996	1997
Sundry creditors	70,000	80,000
Sundry debtors	1,30,000	1,50,000
Bills receivables	10,000	8,000
Bills payables	7,000	5,000
Prepaid expenses	1,000	1,500
Outstanding expenses	5,000	6,500
Stock	1, 80,000	1, 70,000
Investment in Govt. Securities	-----	30,000

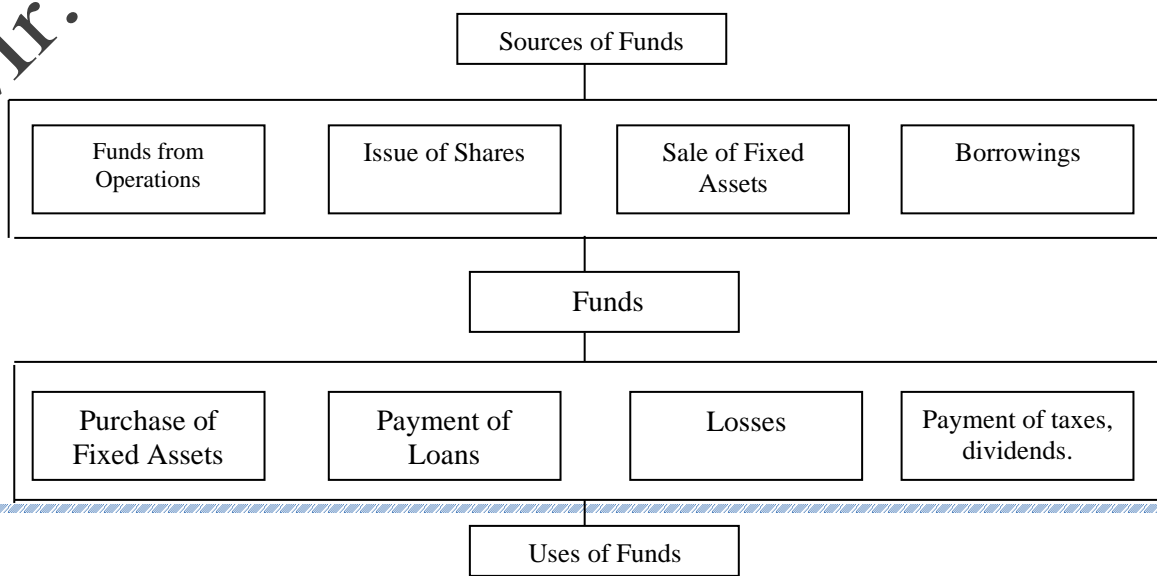
**Ans: Total --- 2, 68,000 — 2, 68,000 ---- 52,500 --- 52,500**

**Exercise 2:** From the following balance sheet you are require to prepare a schedule of change in working capital.

Liabilities	2013	2014	Assets	2013	2014
Share capital	50000	50000	Cash	40000	45000
12% Debentures	20000	30000	Inventory	15000	10000
Sundry creditors	20000	40000	Account receivables	20000	25000
Outstanding expenses	20000	20000	Land	20000	30000
Tax payable	15000	20000	Plant	60000	70000
Retained earnings	30000	20000			
	<b>155000</b>	<b>180000</b>		<b>155000</b>	<b>180000</b>

**Ans: 20000---20000---30000---30000**

**C. Funds Flow Statement:** Funds flow statement is a statement which represents various sources from which funds are obtained and used to which during a particular period. The different sources and applications of funds are:



**Proforma of Funds Flow Statement:** Generally, this statement is prepared in two formats. They are:

- i) Report form
- ii) Account form

**Report Form of Funds-Flow Statement**

Particulars	Amount (Rs.)
<b>Sources of Funds:</b>	
Profits from operations	XXXX
Issue of share capital	XXXX
Issue of debentures	XXXX
Long-term loans	XXXX
Sale of fixed assets	XXXX
Non-trading receipts i.e., dividends or donations	XXXX
Increase in working capital (as per schedule)	XXXX
<b>Total sources</b>	<b>XXXX</b>
<b>Applications of Funds:</b>	
Paying Losses (If any)	
Redemption of preference share capital/ debentures	XXXX
Payment of long-term debts	XXXX
Purchase of any fixed asset	XXXX
Non-trading payments	XXXX
Increase in working capital (as per schedule)	XXXX
<b>Total Applications</b>	<b>XXXXX</b>

**Account Form of Funds-Flow Statement**

Sources	Amount (Rs.)	Application	Amount (Rs.)
Profits from operations	XXXX	Paying Losses (If any)	XXXX
Issue of share capital	XXXX	Redemption of preference share capital/ debentures	XXXX
Issue of debentures	XXXX	Payment of long-term debts	XXXX
Long-term loans	XXXX	Purchase of any fixed asset	XXXX
Sale of fixed assets	XXXX	Non-trading payments	XXXX
Non-trading receipts i.e., dividends or donations	XXXX	Increase in working capital (as per schedule)	XXXX
Increase in working capital (as per schedule)	XXXX		<b>XXXXX</b>

**CASH FLOW STATEMENT**

According to this concept, the word 'fund' is used as cash only and does not include even most liquid current assets.

**Definition:**

***"A cash flow statement explains the changes in cash position between the two periods"***

Cash flow statement is a statement which indicates sources of cash inflows and transactions of cash out flows of a firm during an accounting period.

➤ **Advantages of Cash Flow Statement:**

1. **Planning and Coordination of Financial Operations:** It is useful in evaluating financial policies and current cash position. The management comes to know – how much cash is needed in the future and – at what time needed – how can it be arranged – how much can be generated internally – how much can be generated externally.
2. **A Control Device:** A comparison of cash flow statement of previous year with the budget for the year would indicate to what extent the resources of the firm were raised and applied according to the plan.
3. **Useful in Internal Financial Management:** Since it gives a clear picture of cash inflows from operations it is very useful to internal financial management in considering the possibility of retiring long-term debts, in planning replacement of plant facilities or in formulating dividend policies.
4. **Profit and Cash Position:** It enables the management to account for situation when business has earned huge profits yet run without money or when it has suffered a loss and still has plenty of money at the bank.
5. **Short-run Financial Decisions:** It helps the management in taking short-term financial decisions. Suppose, if firm wants to know its state of solvency after one month from to-date, it is possible only from cash flow analysis and not from funds flow statement.

➤ **Distinction between Funds Flow Statement and Cash Flow Statement:**

**Distinction between Funds Flow Statement and Cash Flow Statement**

Basis	Funds Flow	Cash Flow
<b>Subject Matter</b>	Funds flow statement is concerned with changes in working capital position between two balance sheet dates	Cash flow statement is concerned only with the changes in cash position between two balance sheet dates
<b>Concept of Fund</b>	It is based on a wider concept of funds i.e., working capital	It is based on the narrow concept of funds i.e., cash only, which is only one component of working capital.
<b>Schedule of Working Capital Change</b>	A schedule of working capital changes is prepared in the case of funds flow statement	No such schedule is prepared in the case of cash flow statement
<b>Nature of Statement</b>	It deals with the changes in working capital	It deals with the changes in cash position only
<b>Opening and Closing Balance</b>	The statement does not start with any opening of balance of any account and does not end with any such closing balance of any account	The statement starts with the opening cash and bank balances and ends with the closing cash and bank balances in most of the cases.
<b>Difference of Sides</b>	Difference of both sides of funds flow statement is either the increase or	Difference of both the sides of cash flow statement is the closing balance

	decrease in working capital	of cash.
<b>Current Liabilities</b>	It shows the changes in the current liabilities like sundry creditors, bills payable etc.	It does not show the changes in the current liabilities of the enterprise
<b>Utility</b>	Fund flow is helpful in long-term planning.	Cash flow is useful in short-term planning
<b>Period</b>	It is prepared for longer period	It is prepared for shorter period

## RATIO ANALYSIS

### Introduction:

The term 'Ratio' refers to the mathematical relationship between two items expressed in quantitative form. These ratios can be expressed by as i). Percentages ii) Fractions iii) Proportion of number ex: 1:4. Computing ratios, it is easy to understand the financial position of the firm.

### Definition:

*"Ratio is a yardstick used to evaluate the financial condition and performance of a firm, relation to two pieces of financial data to each other".*

-----James C. Van Horne.

### ➤ Advantages of Ratio Analysis:

1. **Aid to measure liquidity position:** Ratios are helpful in assessing liquidity position and profitability of a firm.
2. **Long-Term Solvency:** Ratio Analysis is equally useful for assessing the long-term financial viability of a firm. The long-term solvency is measured by the leverage and profitability ratios which focus on earning power and operating efficiency.
3. **Operating Efficiency:** Yet another dimension of the usefulness of the ratio analysis is that it throws light on the degree of efficiency of management and utilization of its assets.
4. **Overall Profitability:** The management is constantly concerned about the overall profitability of the firm. That is, they are concerned about the ability of the firm to meet its short-term and long-term obligations to its creditors, to ensure a reasonable return to its owners and secure optimum utilization of the assets of the firm. This is possible if an integrated view is taken and all the ratios are concerned together.
5. **Inter-firm Comparison:** Ratio analysis not only throws light on the financial position of a firm but also serves as a stepping stone to remedial measures. This is made possible due to inter-firm comparison and comparison with industry averages.
6. **Aid in Forecasting and Planning:** Ratio analysis helps in forecasting and planning. Over a period of time a firm develops certain norms that may indicate future success or failure.

### ➤ Limitations of Ratio Analysis:

1. Financial ratios of a firm have meaning only when they are compared with same standards.

2. The comparison of the ratios of two companies becomes difficult and meaningless when they are operating in different situations.
3. The financial ratios are generally calculated from the historical financial statements. The concerned parties of concern are interested in the concern's future than its past.

➤ **Types of Ratios:** Based on their nature, the ratios can broadly be classified into four categories.

- A. Liquidity Ratios
- B. Turnover Ratios
- C. Solvency Ratios
- D. Profitability Ratios

#### **A. Liquidity Ratio:**

Liquidity Ratios means the firm's ability to meet its current obligations such as payment of taxes, wages and salaries and so on. The liquidity ratios are calculated by comparing cash and other current assets with current liabilities. Liquidity ratios can be classified into two types.

- i). **Current ratio:** It is also known as working capital ratio. It measures the short-term debt payment ability of the firm. Current ratio is the ratio between current assets and current liabilities. The standard norm of current ratio is 2:1 and may vary from industry to industry.

$$1. \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

- ii). **Quick ratio:** It also called as 'acid test ratio' or 'liquid ratio'. Quick assets refer to all those current assets which are quickly converted into cash without a loss of value. The standard norm of current ratio is 1:1.

$$2. \text{ Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

Where, Quick assets = Current assets – (stock + prepaid expenses)

Quick liability = Current liability – bank overdraft.

#### **B. Activity ratio/ Efficiency ratio/ Turnover ratio:**

Activity ratios measure the operational efficiency of the firm. These ratios measure how efficiently the assets are employed by the firm. Some of the important turnover ratios are:

- i). **Inventory Turnover Ratio:** it is also called as stock turnover ratio. It indicates whether investment in inventory is efficiently used or not.

$$1. \text{ Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Avg. Inventory}} \text{ (or) } \frac{\text{Credit Sales}}{\text{Avg. Inventory}}$$

From the inventory turnover ratio, we can determine the inventory holding period. It is determined as given below.

$$2. \text{ Inventory Holding Period} = \frac{\text{Number of Days in a Year}}{\text{Inventory Turnover Ratio}}$$

- ii). **Debtors Turnover Ratio:** It establishes the relationship between credit sales of the year and

average receivables. It measures the number of times the receivables rotate in a year in terms of sales. It shows how quickly debtors are converted into cash.

$$3. \text{ Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Avg. Debtors}}$$

**iii). Creditors Turnover Ratio:** It is also known as accounts payable turnover ratio. It reveals the number of times the average creditors are paid during a given accounting period. In other words, it shows how promptly the firm is in a position to pay its credits.

$$4. \text{ Creditors Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Avg. Creditors}}$$

**iv). Fixed Assets Turnover Ratio:** It helps in assessing the contribution of investment in fixed assets in the growth of sales.

$$5. \text{ Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Fixed Assets}}$$

**v). Current Assets Turnover Ratio:** This ratio attempts to measure the utilization and effectiveness of the use of current assets.

$$6. \text{ Current Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Current Assets}}$$

**vi). Total Asset Turnover Ratio:** It reveals the relationship between total assets of the firm and sales or cost of sales.

$$7. \text{ Total Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}} \text{ (or) } \frac{\text{Cost of Sales}}{\text{Total Assets}}$$

### **C. Solvency Ratios/ Capital Structure Ratios/ Leverage Ratios:**

This ratio establishes relationship between owned and borrowed capital. These ratio are reflect the firm's ability to periodic payment of interest and repayment of a long-term loan on maturity. The important solvency ratios are:

**i). Debt-Equity Ratio:** It establishes the relationship between long-term debt and shareholders' funds. The standard form of debt equity ratio is 2:1

$$1. \text{ Debt Equity Ratio} = \frac{\text{Long-term debt}}{\text{Shareholders Fund}} \text{ (or) } \frac{\text{Debt}}{\text{Equity}}$$

**ii). Interest Coverage Ratio:** It is calculated to know the firm's ability to pay the interest on debt it borrows.

$$2. \text{ Interest Coverage Ratio} = \frac{\text{Profit Before Interest and Tax}}{\text{Fixed Interest Charges}}$$

**iii). Equity Ratio:** It is also called as proprietary ratio. It establishes the relationship between shareholders funds and total assets of the firm.

$$3. \text{ Equity Ratio or Proprietary Ratio} = \frac{\text{Shareholders Fund}}{\text{Total Assets}} \text{ (or) } \frac{\text{Equity}}{\text{Total Assets}}$$

**iv). Solvency Ratio:** It establishes the relationship between the total liabilities to outsiders and total assets of a firm.



$$4. \text{ Solvency Ratio} = \frac{\text{Total Liabilities to Outsiders}}{\text{Total Assets}}$$

#### **D. Profitability Ratios:**

Profitability ratios are measure the degree of operating success of a business firm in an accounting period. The following are important profitability ratios.

**i). Gross Profit Ratio:** It indicates the efficiency of the production or trading operations. Gross profit reflects the efficiency with which management produces each unit of product.

$$1. \text{ Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

**ii). Net Profit Ratio / Profit Margin Ratio:** This ratio is used to measure overall profitability of the firm.

$$2. \text{ Net Profit Ratio/ Profit Margin Ratio} = \frac{\text{Net Profit after Taxes}}{\text{Net Sales}} \times 100$$

**iii). Operating Ratio:** This ratio measures the relationship between operating cost and net sales.

$$3. \text{ Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$

**iv). Operating Profit Ratio:** This ratio measures the relationship between operating profit and net sales.

$$4. \text{ Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

**v). Return on Investment Ratio:** It is measure of overall profitability of the firm. It indicates the rate of return earned on the investment made in the business. The term investment refers to total assets or capital employed or shareholders funds. Therefore return on investment can be calculated as:

$$5. \text{ Return on Investment} = \frac{\text{Net Profit after Tax}}{\text{Shareholder's Fund}} \times 100$$

$$6. \text{ Return on Capital Employed} = \frac{\text{Profit Before Interest and Tax}}{\text{Capital Employed}} \times 100$$

$$7. \text{ Return on Equity} = \frac{\text{Net Profit- Preferred Dividend}}{\text{Equity Share Capital}} \times 100$$

$$8. \text{ Return on Total Assets} = \frac{\text{Profit before Interest and Tax}}{\text{Total Assets}} \times 100$$

**vi). Earnings Per Share:** This ratio measures the earnings available to an equity shareholders on a per share basis.

$$9. \text{ Earning Per Share(in Rs.)} = \frac{\text{Net Profit after Tax and Preferred Dividend}}{\text{Number of Equity Shares}}$$

**vii). Dividend-yield Ratio:** It shows the rate of return to shareholders in the form of dividends based on the market price of the share.

$$10. \text{ Dividend Yield Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100$$

### **RATIO ANALYSIS FORMULAS**

#### **I. Liquidity Ratios:**



$$1. \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad 2. \text{ Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

Quick Assets = Current Assets – (Stock + Prepaid Expenses)

Quick Liabilities = Current Liabilities – Bank Overdraft.

## II. Solvency Ratio/ Leverage Ratio/ Capital Structure Ratio:

$$2. \text{ Interest Coverage Ratio} = \frac{\text{Profit Before Interest and Tax}}{\text{Fixed Interest Charges}}$$

$$3. \text{ Equity Ratio or Proprietary Ratio} = \frac{\text{Shareholders Fund}}{\text{Total Assets}} \text{ (or) } \frac{\text{Equity}}{\text{Total Assets}}$$

$$4. \text{ Solvency Ratio} = \frac{\text{Total Liabilities to Outsiders}}{\text{Total Assets}}$$

## III. Profitability Ratios:

$$1. \text{ Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

- Gross Profit = Net Sales – Cost of Goods sold (or)
- Cost of Goods Sold = Opening Stock + Net Purchases + Manufacturing expenses – Closing Stock.
- Net Sales = Total Sales – Sales Returns
- Net Purchases = Total Purchases – Purchase Returns.

$$2. \text{ Net Profit Ratio/ Profit Margin Ratio} = \frac{\text{Net Profit after Taxes}}{\text{Net Sales}} \times 100$$

$$3. \text{ Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$

- Operating Cost = Cost of Goods Sold + Administrative Expenses + Selling & Distribution Expenses

$$4. \text{ Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

- Operating Profit = Net Sales – (Cost of Goods Sold + Net Operating Expenses)

$$5. \text{ Return on Investment} = \frac{\text{Net Profit after Tax}}{\text{Shareholder's Fund}} \times 100$$

$$6. \text{ Return on Capital Employed} = \frac{\text{Profit Before Interest and Tax}}{\text{Capital Employed}} \times 100$$

$$7. \text{ Return on Equity} = \frac{\text{Net Profit - Preferred Dividend}}{\text{Equity Share Capital}} \times 100$$

$$8. \text{ Return on Total Assets} = \frac{\text{Profit before Interest and Tax}}{\text{Total Assets}} \times 100$$

$$9. \text{ Earning Per Share (in Rs.)} = \frac{\text{Net Profit after Tax and Preferred Dividend}}{\text{Number of Equity Shares}}$$

$$10. \text{ Dividend Yield Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100$$

$$11. \text{ Price Earning Ratio or P/E Ratio} = \frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$$

## IV. Activity Ratio/ Efficiency Ratio/ Turnover Ratio:

$$1. \text{ Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Avg. Inventory}} \text{ (or) } \frac{\text{Credit Sales}}{\text{Avg. Inventory}}$$

$$\text{----- Avg. Inventory} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$2. \text{ Inventory Holding Period} = \frac{\text{Number of Days in a Year}}{\text{Inventory Turnover Ratio}}$$

$$3. \text{ Debtors Turnover Ratio/ Receivables Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Avg. Debtors}}$$

$$\text{-----Net Credit Sales} = \text{Debtors} + \text{Bills Receivables}$$

$$\text{-----Avg. Debtors} = \frac{\text{Opening balance of Debtors} + \text{Closing balance of Debtors}}{2}$$

$$* \text{ Debtors Holding Period} = \frac{\text{Number of Days in a Year}}{\text{Debtors Turnover Ratio}}$$

$$4. \text{ Creditors Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Avg. Creditors}}$$

$$\text{-----Net Credit Purchases} = \text{Creditors} + \text{Bills Payable}$$

$$\text{----- Avg. Creditors} = \frac{\text{Opening balance of Creditors} + \text{Closing balance of Creditors}}{2}$$

$$5. \text{ Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Fixed Assets}}$$

$$6. \text{ Current Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Current Assets}}$$

$$7. \text{ Total Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}} \text{ (or) } \frac{\text{Cost of Sales}}{\text{Total Assets}}$$

$$8. \text{ Working Capital Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Avg. Working Capital}}$$

### STANDARDS OF RATIOS

To interpret the ratio, it is necessary to know the standard ratio. The following are the standards of ratios.

S.NO.	RATIOS	STANDARD
1	Current Ratio	2:1
2	Quick Ratio	1:1
3	Debt-Equity Ratio	2:1
4	Equity Ratio	1:3
5	Interest Coverage Ratio	6 to 7 times
6	Operating Ratio	75 to 80%
7	Fixed Assets Ratio	Less than 1:1
8	Total Assets Ratio	1:1

### Unit-6

#### CAPITAL BUDGETING

#### Meaning:

Investment decisions of a firm are generally known as capital budgeting decisions.

Capital budgeting is a combination of two terms they are '**capital**' and '**budgeting**'. The word capital refers to long-run sources of funds and budgeting refers to allocation of such funds towards profitable projects. Capital budgeting includes raising and utilization of long-term funds.

**Definition:**

*“Capital budgeting is long-term planning for making and financing proposed capital outlays.”*

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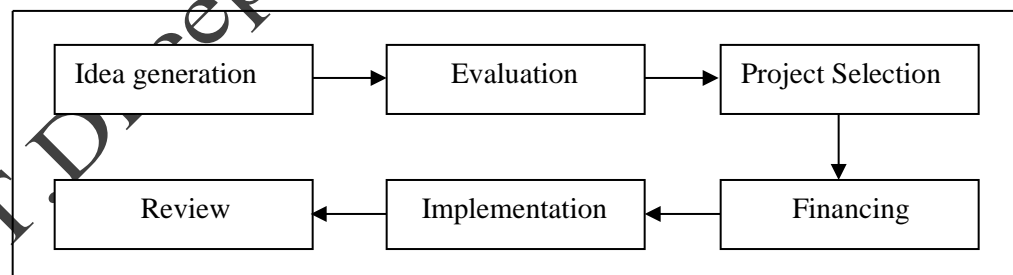
**Features:**

- The exchange of current funds for future benefits.
- The funds are invested in long-term assets
- Future benefits will occur to the firm over a series of years.

**Significance/ Need/ Importance of capital budgeting:**

1. **Involvement of Heavy Funds:** Capital budgeting decisions involves large amount of funds. In such cases, the firm should carefully plan its investment program. Wrong decisions can damage the survival of the firm.
2. **Long-term influence:** A firm's investment decisions have a strong impact on its growth rate. Unwanted or unprofitable expansion of assets will result in heavy operating costs to the firm.
3. **Capital budgeting decisions are irreversible:** Most investment decisions are irreversible. It is difficult to find a market for such capital items once they have been acquired. The firm will incur heavy losses if such assets are scrapped.
4. **Most difficult in Making:** These decisions require an assessment of future events which are uncertain. It is really a difficult task to estimate that probable future events, benefits and costs accurately.

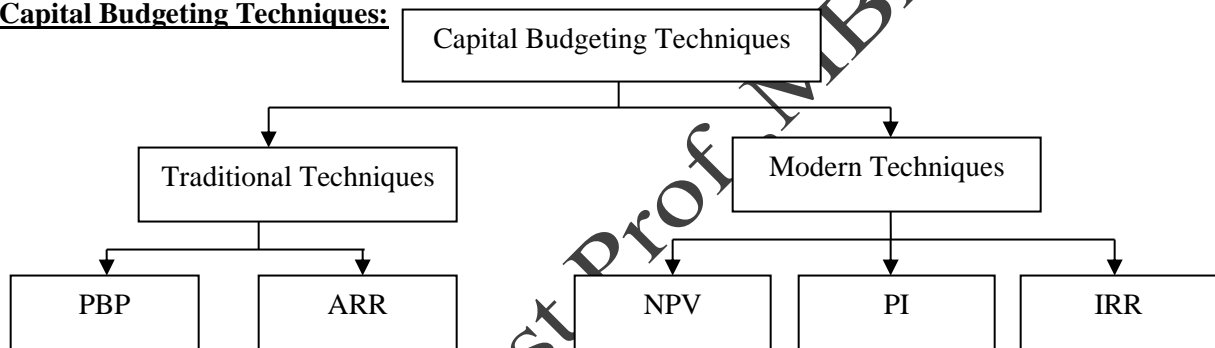
➤ **Process of capital budgeting decisions:**



1. **Idea Generation:** Various types of investment proposals may originate at different levels within a firm. They are:
  - a) Expansion of existing business.
  - b) Expansion of new business.
  - c) Replacement
  - d) Modernization.
2. **Project Evaluation:** Project evaluation involves two steps. They are i) estimation of benefits and cost. The benefits and costs must be measures in terms of cash flows.
  - ii) Selection of appropriate criteria to judge the usefulness of the project.

3. **Project Selection:** Selection or rejection of a project depends on the technique used to evaluate and its acceptance rule. Projects are screened at multiple levels, but final decisions are taken by the top management.
4. **Financing the selected project:** After the selection of the project, the next step is financing. Generally after selecting the project amount is required. So under this phase financing arrangements have to be made.
5. **Implementation:** Planning is a paper work and implementation is physically implementing the selected project. This includes arrangement of capital, training of personnel and other relevant works like engineering design, constructing, etc.
6. **Project review:** Once the project is converted from paper work into concrete work, and then there is need to review the project. Performance review should be done periodically, in which phase actual performance is compared with the predetermined performance.

➤ **Capital Budgeting Techniques:**



A) **Traditional Techniques:** These techniques are also known as ‘non-discounted cash flow techniques.’ Under this method broadly two types of techniques are there. They are:

1. **Pay Back Period Method:** It can be defined as “the number of years required to recover the original cash outlay invested in a project”. It can calculate by using the following formulas.

i) Payback period formula when cash inflows are even:

$$\text{Payback Period} = \frac{\text{Original investment}}{\text{Constant Annual Cash inflows}}$$

ii) Payback period formula when cash inflows are uneven:

$$\text{PBP} = \text{Year before full recovery of investment} + \frac{\text{Uncovered amount of investment}}{\text{Cashflows during the year}}$$

➤ **Acceptance Rule:**

**Accept:** Calculated PBP < Standard PBP.

**Reject:** Calculate PBP > Standard PBP.

❖ **Advantages of PBP:**

- a. It is easy to understand and compute.
- b. It saves in cost; it requires lesser time and labour with comparison of modern methods.

❖ **Disadvantages of PBP:**

- a. It ignores cash flows after payback period.
- b. It does not take into consideration time value of money.

2. **Accounting Rate of Return:** It is also known as '*average rate of return method*' or '*return on investment method*' or '*unadjusted rate of return method*'. Average rate of return is found out by dividing the average annual earnings after depreciation and tax, by the average investment. It measures in terms of percentage. The various projects are ranked in order of the rate of return. The project with the higher rate of return is accepted.

$$ARR = \frac{\text{Average Annual Earnings}}{\text{Average Investment}} \times 100$$

$$\text{Average Annual Earnings} = \frac{\text{Total of Anticipated Annual Earnings}}{\text{Number of Years}}$$

Average Investment:

$$\text{Average Investment} = \frac{\text{Total Investment} - \text{Scrap value}}{2} + \text{Scrap value} + \text{Additional Working Capital}$$

$$\text{Depreciation} = \frac{\text{Original investment} - \text{Scrap value}}{\text{Life period}}$$

➤ **Decision Rule:**

**Accept:** Calculated ARR > Predetermined ARR or Cut off rate.

**Reject:** Calculated ARR < Predetermined ARR or Cut off rate.

❖ **Advantages:**

- a) It is very simple to understand and compute.
- b) Cost involvement in Calculating ARR is very less with the comparison of modern methods.
- c) It takes into account all profits of the project life period.

❖ **Disadvantages:**

- a) It ignores time value of money.
- b) It does not allow the fact that the profits can be reinvested.

**B. Modern Techniques:** This is also known as discounted cash flow techniques. Under this method different techniques are there. There are:

1. **Net Present Value Method:** It is modern method of evaluating investment proposals. Under this method, all cash flows (cash outflows and cash inflows) are discounted at a given rate (using cost of capital as an appropriate rate of discount) and their present values are computed. The present value of the cash outflow is subtracted from the sum of present values of various cash inflows. The surplus is net present value.

$$NPV = \text{Total Present Value of Cash inflows} - \text{Initial investment}$$

(or)

$$NPV = \text{Total Present Value of Cash inflows} - \text{Total Present Value of Cash out flows}$$

- **Decision Rule:** Accept = NPV > Zero  
Reject = NPV < Zero

If there is more than one project with positive NPV, the project with the maximum positive NPV should be chosen.

❖ **Advantages of NPV:**

- It takes into account the time value of money.
- It uses all cash inflows occurring over the entire life period of the project.
- It takes into consideration the changing discount rate.

❖ **Disadvantage of NPV:** It is difficult to understand when compared with PBP and ARR.

- Profitability Index Method:** Profitability index is also called as *benefit-cost ratio*. It is similar to NPV method. Profitability index is the relationship between present value of cash inflows and the present value of cash out flows.

$$PI = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}} \quad (\text{or}) \quad PI = \frac{\text{Present value of cash inflows}}{\text{Initial cash outlay}}$$

➤ **Decision Rule:**

Accept: PI > 1  
Reject: PI < 1  
May accept PI = 1.

- Internal Rate of Return Method:** This method is introduced by Joes Dean. Under this method discount rate is determined internally, so this method is called as the internal rate of return method. It is found by “trial and error method”.

The internal rate of return can be defined as “the rate of discount at which the present value of cash inflows are equal to present value of cash outflows”.

❖ **Advantages:**

- It considers time value of money.
- The earnings over the entire life of the project are considered.

❖ **Disadvantage:** This method is tedious and difficult to calculate.

➤ **Process of calculation of IRR:**

I. Determination of IRR when annual cash inflows are even over the life period of the project:

- Firstly, find out PV factor by dividing initial outlay (cost of the investment) by annual cash flow i.e.,

$$PV \text{ factor} = \frac{\text{Initial Outlay}}{\text{Annual Cash Inflows}}$$

- Then, consult present value annuity tables with the number of years equal to the life of the asset and find out the rate at which calculated PV factor is equal to the present value given in the table.

II. Determination of IRR when annual cash inflows are uneven over the life period of the project: If the

cash inflows are uneven, the IRR can be found only through Trail & Error method.

**Procedure:** 1. Calculate total present value of cash inflows by using an arbitrary assumed discount rate. 2. Find out the NPV. 3. If the NPV is positive, apply higher rate of discount. 4. If the higher discount rate still gives a positive NPV, increase the discount rate further until the NPV becomes negative. 5. If the NPV is negative at this higher rate, the IRR must be between these two rates. 6. Finally the actual IRR is calculated by apply the following formula.

$$IRR = LR + \left[ \frac{P1 - Q}{P1 - P2} \times D \right]$$

Where, LR = lower discount rate.

P1 = total present value of cash inflows at lower discount rate.

P2 = total present value of cash inflows at higher discount rate.

Q = Initial investment

D = difference between two discount rates.

### PROBLEMATIC PART.

#### ➤ Pay-back Period Problems

**Exercise.1:** A Project cost Rs.1,00,000 and yield an annual cash inflow of Rs.20,000 for 8 years. Calculate its pay back period.

**Exercise.2:** Determine the pay-back period for a project which requires a cash outlay of Rs.10,000 and annual cash inflows after tax and before depreciation for 4 years are as follows:

Year	Rupees.
1	2000
2	4000
3	3000
4	2000

#### ➤ ARR Problems

**Exercise.1:** Determine the accounting rate of return from the following data of two machines A&B.

Particulars	Machine-A	Machine-B
Original Cost	56,125	56,125
Additional investment in net working capital	5,000	6,000
Estimated Life	5Years	5Years
Estimated Scrap Value	3,000	3,000
Tax rate	55%	55%

Annual estimated income after depreciation and tax are as follows:

Year	Machine-A	Machine-B
1	3375	11375
2	5375	9375
3	7375	7375
4	9375	5375
5	11375	3375
	<b>36875</b>	<b>36875</b>

Depreciation has been charged on Strait line basis.



➤ **NPV Problems**

**Exercise1:** Assume that project-A costs Rs.2500 now and is expected to generate yearend cash inflows of Rs.900, 800, 700, 600, and 500 in years one to five. The opportunity cost of capital may be assumed to be 10%. Calculate Net Present Value.

**Exercise2:** You are required to find out the net present worth of the following projects, assuming that the cost of capital is 10% and the initial investment is Rs.1600 each.

The profits after tax and before depreciation are as follows:

Year	Project-A Net cash flows (Rs.)	Project-B Net cash flows (Rs.)
1	800	200
2	800	400
3	400	400
4	200	400
5	----	600
6	----	800

**Exercise3:** From the following information calculate the net present value of the two projects and suggest which of the two projects should be accepted assuming a discount rate of 10%.

	<u>Project- X</u>	<u>Project- Y</u>
Initial investment	20,000	30,000
Estimated Life	5 Years	5 Years
Scrap value	1000	2000

The profits after tax but before depreciation are as follows:

Years	1	2	3	4	5
Project – X	5000	10000	10000	3000	2000
Project – Y	20000	10000	5000	3000	2000

**Exercise4:** No project is accepted unless the yield is 10%. Cash inflows of certain project along with cash outflows are given below:

<u>Years</u>	<u>Out flows (Rs.)</u>	<u>Inflows (Rs.)</u>
0	1,50,000	-----
1	30,000	20000
2	-----	30000
3	-----	60000
4	-----	80000
5	-----	30000

The salvage value at the end of the 5<sup>th</sup> year is Rs.40000. Calculate NPV.

➤ **PI Problems**



**Exercise:** The initial cash outlay of a project is Rs.50000 and it generates cash inflows of Rs.10000, 20000, 30000, 10000 respectively. Assume 10% rate of discount. Find out Profitability Index.

### ➤ PROBLEMS ON IRR

**Exercise1:** Equipment requires an initial investment of Rs.6000 and the annual cash flows is estimated Rs.2000 for 5 years. Calculate the IRR.

**Exercise2:** From the following data calculate IRR.

Initial Investment                      Rs.60000  
Life of the asset                        4years

Estimated net annual cash flows:

Year	Amount
1	15000
2	20000
3	30000
4	20000

**Exercise 3:** A company has to select one of the following two projects.

Particulars	Project- A	Project-B
Cost of Investment	11000	10000
Cash inflows are:		
1 <sup>st</sup> year	6000	1000
2 <sup>nd</sup> year	2000	1000
3 <sup>rd</sup> year	1000	2000
4 <sup>th</sup> year	5000	10000

By using the IRR method suggest which project is preferable?

**Exercise 4:** A Project initial investment is Rs.10 lakhs and cash inflows for 5years are as follows:

Year	Cash Inflows
2010	200000
2011	240000
2012	300000
2013	360000
2014	400000

The cost of capital is 12%. Compute NPV and IRR of the project.

**Table A.1 Present Value of Re. 1**

Years	5%	6%	8%	10%	12%	14%	15%	16%	18%	20%	22%	24%	25%	28%	30%
1	0.952	0.943	0.926	0.909	0.893	0.877	0.870	0.862	0.847	0.833	0.820	0.806	0.800	0.781	0.769
2	0.907	0.890	0.857	0.826	0.797	0.769	0.756	0.743	0.718	0.694	0.672	0.650	0.640	0.610	0.592
3	0.864	0.840	0.794	0.751	0.712	0.675	0.658	0.641	0.609	0.579	0.551	0.524	0.512	0.477	0.450
4	0.823	0.792	0.735	0.683	0.636	0.592	0.572	0.552	0.516	0.482	0.451	0.423	0.410	0.373	0.350
5	0.784	0.747	0.681	0.621	0.567	0.519	0.497	0.476	0.437	0.402	0.370	0.341	0.328	0.291	0.269
6	0.746	0.705	0.630	0.564	0.507	0.456	0.432	0.410	0.370	0.335	0.303	0.275	0.262	0.227	0.207
7	0.711	0.665	0.583	0.513	0.452	0.400	0.376	0.354	0.314	0.279	0.249	0.222	0.210	0.170	0.159
8	0.677	0.627	0.540	0.467	0.404	0.351	0.327	0.305	0.266	0.233	0.204	0.179	0.118	0.139	0.123
9	0.645	0.592	0.500	0.424	0.361	0.308	0.284	0.263	0.225	0.193	0.167	0.144	0.134	0.108	0.094
10	0.614	0.558	0.463	0.386	0.322	0.270	0.247	0.227	0.191	0.162	0.137	0.116	0.107	0.085	0.073
11	0.585	0.527	0.429	0.350	0.287	0.237	0.215	0.195	0.162	0.135	0.112	0.094	0.087	0.066	0.056
12	0.557	0.497	0.397	0.319	0.257	0.208	0.187	0.168	0.137	0.112	0.092	0.076	0.069	0.032	0.043
13	0.530	0.469	0.368	0.290	0.229	0.182	0.163	0.145	0.116	0.093	0.075	0.061	0.055	0.040	0.033
14	0.505	0.442	0.340	0.263	0.205	0.160	0.141	0.125	0.099	0.078	0.062	0.049	0.044	0.032	0.025
15	0.481	0.417	0.315	0.239	0.183	0.140	0.123	0.108	0.084	0.065	0.051	0.040	0.035	0.025	0.020
16	0.458	0.394	0.292	0.218	0.163	0.123	0.107	0.093	0.071	0.054	0.042	0.032	0.028	0.019	0.015
17	0.436	0.371	0.270	0.198	0.146	0.108	0.093	0.080	0.060	0.045	0.034	0.026	0.023	0.015	0.012
18	0.416	0.350	0.250	0.180	0.130	0.095	0.081	0.069	0.051	0.038	0.028	0.021	0.018	0.012	0.009
19	0.396	0.331	0.232	0.164	0.116	0.083	0.070	0.060	0.043	0.031	0.023	0.017	0.014	0.009	0.007
20	0.377	0.312	0.215	0.149	0.104	0.073	0.061	0.051	0.037	0.026	0.019	0.014	0.012	0.007	0.005

**Table A.2 Present Value of Re. 1 Received Annually for N Years**

Years	5%	6%	8%	10%	12%	14%	15%	16%	18%	20%	22%	24%	25%	28%	30%
1	0.952	0.943	0.926	0.909	0.893	0.877	0.870	0.862	0.847	0.833	0.820	0.806	0.800	0.781	0.769
2	1.859	1.833	1.783	1.736	1.690	1.647	1.646	1.605	1.566	1.528	1.492	1.457	1.440	1.392	1.361
3	2.723	2.676	2.577	2.487	2.402	2.322	2.283	2.246	2.174	2.016	2.042	1.981	1.952	1.868	1.816
4	3.546	3.465	3.312	3.170	3.037	2.914	2.855	2.798	2.690	2.589	2.494	2.404	2.362	2.241	2.166
5	4.330	4.212	3.993	3.791	3.605	3.433	3.352	3.274	3.127	2.991	2.864	2.745	2.689	2.532	2.346
6	5.076	4.917	4.623	4.335	4.111	3.889	3.784	3.685	3.498	3.326	3.167	3.020	2.951	2.759	2.643
7	5.786	5.582	5.206	4.868	4.564	4.288	4.160	4.039	3.812	3.605	3.416	3.242	3.161	2.937	2.802
8	6.463	6.210	5.747	5.335	4.968	4.639	4.487	4.344	4.078	3.837	3.619	3.421	3.329	3.076	2.925
9	7.109	6.802	6.247	5.759	5.328	4.946	4.772	4.607	4.303	4.031	3.786	3.566	3.463	3.184	3.019
10	7.722	7.360	6.710	6.145	5.650	5.216	5.019	4.833	4.494	4.192	3.923	3.682	3.571	3.269	3.092
11	8.306	7.887	7.139	6.495	5.937	5.453	5.234	5.029	4.656	4.327	4.035	3.776	3.656	3.335	3.147
12	8.863	8.384	7.536	6.814	6.194	5.660	5.421	5.197	4.793	4.439	4.127	3.851	3.725	3.387	3.190
13	9.394	8.853	7.904	7.103	6.424	5.842	5.583	5.342	4.910	4.533	4.203	3.912	3.780	3.427	3.223
14	9.899	9.295	8.244	7.367	6.628	6.002	5.724	5.468	5.008	4.611	4.265	3.962	3.824	3.459	3.249
15	10.380	9.712	8.559	7.606	6.811	6.142	5.847	5.575	5.092	4.675	4.315	4.001	3.859	3.483	3.268
16	10.838	10.106	8.851	7.824	6.974	6.265	5.954	5.669	5.162	4.730	4.357	4.033	3.887	3.503	3.283
17	11.274	10.477	9.122	8.022	7.120	6.373	6.047	5.749	5.222	4.775	4.391	4.059	3.910	3.518	3.295
18	11.690	10.828	9.372	8.201	7.250	6.467	6.128	5.818	5.273	4.812	4.419	4.080	3.928	3.529	3.304
19	12.085	11.158	9.614	8.365	7.366	6.550	6.198	5.877	5.316	4.844	4.442	4.097	3.942	3.539	3.311
20	12.462	11.470	9.818	8.514	7.469	6.623	6.259	5.929	5.353	4.870	4.460	4.110	3.954	3.546	3.316