

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

III B.Tech I semester

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UNIT-I

INTRODUCTION TO MANAGERIAL ECONOMICS & DEMAND ANALYSIS

ECONOMICS

Economics is a study of human activity both at individual and national level. The economists of early age treated economics merely as the science of wealth. The reason for this is clear. Every one of us involved in efforts aimed at earning money and spending this money to satisfy our wants such as food, Clothing, shelter, and others. Such activities of earning and spending money are called “Economic activities”.

According to Adam Smith

“Economics as the study of nature and uses of national wealth”.

According to Dr. Alfred Marshall

“Economics is a study of man’s actions in the ordinary business of life: it enquires how he gets his income and how he uses it”.

MICRO AND MACRO ECONOMICS

Micro Economics

The study of an individual consumer or a firm is called Micro Economics. It is also called the theory of Firm.

Micro means one millionth. Micro Economics deals with behaviour and problems of single individual and of micro organisation.

Managerial Economics

Managerial Economics has its roots in micro economics and it deals with the micro or individual enterprises.

It is concerned with the application of concepts such as Price Theory, Law of Demand and Theories of market structure and so on.

Macro Economics

The study of aggregate or total level of economic activity in a country is called Macro Economics.

It studies the flow of economic resources or factors of production (such as land, labour, capital, organization and technology) from the resource owner to the business firms and then from the business firms to the households.

INTRODUCTION TO MANAGERIAL ECONOMICS

Managerial Economics as a subject gained popularity in USA after the publication of book “Managerial Economics” by Joel Dean in 1951.

Managerial Economics refers to the firm’s decision making process. It could be also interpreted as “Economics of Management”.

Managerial Economics is also called as “Industrial Economics” or “Business Economics”. Joel Dean observes managerial economics shows how economic analysis can be used in formulating policies.

DEFINITIONS OF MANAGERIAL ECONOMICS

1. M.H.SPENCER AND L. SIEGELMAN

Managerial Economics defined as “the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by management”.

2. BRIGHAM AND PAPPAS

believe that managerial economics is “The application of economic theory and methodology to business administration practice”.

3. C.I.SAVAGE AND T.R.SMALL

therefore believes that managerial economics is concerned with business efficiency.

4. HAGUE observes that

“Managerial Economics is a fundamental academic subject which seeks to understand and to analyze the problems of business decision-making”.

5. In the words of PAPPAS AND HIRSHEY

“Managerial Economics applies economic theory and methods to business and administrative decision-making. .

6. MICHAEL R.BAYE defines

Managerial Economics as “the study of how to direct scarce resources in a way that most efficiently achieves a managerial goal”.

7. HAYNES, MOTE AND PAUL define

Managerial Economics as “economics applied in decision-making. They consider this as a bridge between the abstract theory and the managerial practice”.

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MANAGERIAL ECONOMICS:

Managerial Economics refers to the firm's decision making process. It could be also interpreted as "Economics of Management". Managerial Economics is also called as "Industrial Economics" or "Business Economics".

Managerial Economics bridges the gap between traditional economics theory and real business practices in two ways. First it provides a number of tools and techniques to enable the manager to become more competent to take decisions in real and practical situations. Secondly it serves as an integrating course to show the interaction between various areas in which the firm operates.

NATURE / CHARACTERISTICS OF MANAGERIAL ECONOMICS

(a) **Close to microeconomics:** Managerial economics is concerned with finding the solutions for different managerial problems of a particular firm. Thus, it is more close to microeconomics.

(b) **Operates against the backdrop of macroeconomics:** The

macroeconomics conditions of the economy are also seen as limiting factors for the firm to operate. In other words, the managerial economist has to be aware of the limits set by the macroeconomics conditions such as government industrial policy, inflation and so on.

(c) **Normative statements:** A normative statement usually includes or implies the words „ought“ or „should“. They reflect people's moral attitudes and are expressions of what a team of people ought to do. For instance, it deals with statements such as

„Government of India should open up the economy. Such statement are based on value judgments and express views of what is „good“ or „bad“, „right“ or „wrong“. One problem with normative statements is that they cannot to verify by looking at the facts,

because they mostly deal with the future. Disagreements about such statements are usually settled by voting on them.

- (d) **Prescriptive actions:** Prescriptive action is goal oriented. Given a problem and the objectives of the firm, it suggests the course of action from the available alternatives for optimal solution. It does not merely mention the concept, it also explains whether the concept can be applied in a given context or not. For instance, the fact that variable costs are marginal costs can be used to judge the feasibility of an export order.
- (e) **Applied in nature:** „Models“ are built to reflect the real life complex business situations and these models are of immense help to managers for decision-making. The different areas where models are extensively used include inventory control, optimization, project management etc. In managerial economics, we also employ case study methods to conceptualize the problem, identify that alternative and determine the best course of action.

(f) Offers scope to evaluate each alternative:

Managerial economics provides an opportunity to evaluate each alternative in terms of its costs and revenue. The managerial economist can decide which is the better alternative to maximize the profits for the firm.

(g) Interdisciplinary: The contents, tools and techniques of managerial economics are drawn from different subjects such as economics, management, mathematics, statistics, accountancy, psychology, organizational behaviour, sociology and etc.

(h) Assumptions and limitations: Every concept and theory of managerial economics is based on certain assumption and as such their validity is not universal. Where there is change in assumptions, the theory may not hold good at all.

SCOPE OF MANAGERIAL ECONOMICS

The main focus in managerial economics is to find an optimal solution to a given managerial problem, the problem may related to production, reduction or control of cost, determination of price of a given product or service, make or decisions, inventory decisions, capital management or profit planning and management, investment decisions or human resource management. While all these are the problems, the managerial economics makes use of the concepts, tools and techniques of economics and other related discipline to find an optimal solution to a given managerial problem.

The main Areas of Managerial Economics

1. Demand Decision:

- The analysis and forecasting of demand for a given product and service is the first task of the managerial economist.
- The behavioral implications such as the needs of the customers responses to a given change in the price or supply are analyzed in a scientific manner.

- The impact of changes in prices, income levels and prices of alternative products / services are assessed and accordingly the decisions are taken to maximize the profits.
- Demand at different price levels at different points of time is forecast to plan the supply accordingly and initiate changes in price, if necessary, to enlarge the customer base and gain more profits.
- Determination elasticity of demand and demand forecasting constitute the strategic issues that the managerial economist handles in a scientific way.

2. **Input-Output Decision:**

- Here, the costs of inputs in relation to output are studied to optimize the profits.
- Production function and cost function are estimated given certain parameters.
- The behavior of costs at different levels of production is assessed here. some costs are fixed, some are semi-variable and others are perfectly variable.
- The quantity of production increases remains constant or decreases with additional increase in outputs.
- This decision deals with changes in the production following changes in inputs which could be substitutes or complementary.
- The entire focus of this decision is to optimize(maximize) the output at minimum cost.

- If it is necessary for the manager to know the relationship between the cost and output both in the short-run and long-run to position his products amidst the competitive environment.

2. Price-Output Decision:

- ┌ Here, the production is ready and the task is to determine the price these in different market situations such as perfect market and imperfect markets ranging from monopoly, monopolistic competition, duopoly and oligopoly.
- ┌ The features of these markets and how price is determined in each of these competitive situations is studied here.
- ┌ The pricing policies, methods, strategies and practices constitute crucial part of the study of managerial economics.

□ Profit -related Decisions:

- Here we employ the techniques such as Break even analysis, cost reduction and cost control and ratio analysis to ascertain the level of profits.
- We determine break-even point beyond which firm start getting profits.
- In other words, if the firm produces less than break- even point, it loses.
- We can also plan the production needed to attain a given level of profits in short-run.
- Cost reduction and cost control deal with the strategies to reduce the wastage and thereby reduce the costs.
- These indirectly enhance the level of profits.
- Ratio analysis helps to determine the liquidity, solvency, profitability of the activities of the firm.
- There are certain ratios used to analyses and interpret the profitability of the firm given a set of accounting data.

4. Investment Decisions

- Investment decisions are also called capital budgeting decisions.
- These involve commitment of large funds, which determine the fate of the firm.
- These decisions are irreversible.
- Hence the manager needs to be more attentive while committing his scarce funds, which have alternative uses.
- The allocation and utilization of investments is paramount importance.
- Capital has a cost. It is expensive. Hence, it is to be utilized in such a way as to maximize the return on capital invested.

- It is necessary to study the cost of capital structure and investment projects before the funds are committed.

6. Economic Forecasting and Forward Planning

- Economic forecasting leads to forward planning.
- The firm operates in an environment which is dominated by the external and internal factors.
- The external factors include major forces such as government policy, competition, employment, labour, price and income levels and so on.
- These influence its decision relating to production, human resources, finance and marketing.
- The internal factors include its policies and procedures relating to finance, people, market and products.
- It is necessary to forecast the trends in the economy to plan for the future in terms of investments, profits, products and markets. This will minimize the risk and uncertainty about the future.

DEMAND ANALYSIS

Demand

Demand in common parlance means the desire for an object. But in economics demand is something more than this. According to Stonier and Hague, “Demand in economics means demand backed up by enough money to pay for the goods demanded”. This means that the demand becomes effective only if it is backed by the purchasing power in addition to this there must be willingness to buy a commodity.

Every want supported by the willingness and ability to buy constitutes demand for a particular product or services. In other words, if I want a car and I cannot pay for it, there is no demand for the car from my side.

A product or services is said to have demand when three conditions are satisfied:

- Desire on the part of the
- buyer to buy Willingness
- to pay for it
- Ability to pay the specified price for it.

DETERMINANTS OF DEMAND

- └ There are so many factors on which the demand for a
- └ commodity depends. These factors are Economic, Social as well as Political factors.
- └ The affect of all these factors on the amount of demanded for the commodity is called Demand Function.
- └ The following are some of the factors that cause a change in demand other than price factor.

1. PRICE OF THE COMMODITY:

- └ The most important factor affecting on demand is the price of the commodity.
- └ The amount of the commodity demanded at a particular price is more popularly called price demand. The relation between price

and demand is called the Law of Demand.

It is not only the existing price but also expected changes in price, which affect demand.

2. PRICES OF RELATED GOODS

i) CHANGE IN THE PRICES OF SUBSTITUTES:

- └ In case of substitutes like tea and coffee an increase in price of one commodity leads to an increase in the demand for other commodity and vice versa.
- └ The rise in price of coffee shall raise the demand for tea.

ii) CHANGE IN THE PRICES OF COMPLEMENTARIES:

- In case of complementariness like car and petrol a fall in price of one commodity leads to an increase in the demand for other commodity and vice versa.
- If the price of pens goes up, their demand is less as a result of which the demand for ink is also less. The price and demand go in opposite direction. The effect of changes in price a commodity on amounts demanded of related commodities is called cross demand.

3. INCOME OF THE CONSUMER

- └ The third most important factor influencing demand is consumer income.
- └

In fact we can establish a relationship between the consumer income and demand at different levels of income, price and other things remaining same.

- ┆ The demand for a normal commodity goes up and falls down
- ┆ when income rises and falls down.
- ┆ But in case of Giffen goods the relationship is opposite.
- ┆ Demand always changes with a change in the incomes of the
- ┆ people.
- ┆ When income increases the demand for several commodities
- ┆ increases and vice versa.

4. **TASTES AND FASHIONS OF CONSUMERS**

- ┆ The fourth most important factor influencing demand is
- ┆ consumers' tastes and fashions. The demand also depends on
- ┆ consumer's taste. Tastes include fashion, habit, customs etc.
- ┆ A customer taste is also affected by advertisement.
- ┆ If the taste for a commodity goes up, its amount demanded is
- ┆ more even at the same price. This is called increase in
- ┆ demand. The opposite is called decrease in demand.
- ┆ A change in the tastes and fashions brings about a change in
- ┆ demand for a commodity. When commodity goes out of
- ┆ fashion, the demand for it will decrease even though the
- ┆ price remains the same. Demand curve shifts to the left.

5. **AFFECT OF WEALTH**

- ┆ The amount demanded of the commodity is also affected by
- ┆ the amount of wealth as well as its distribution.
- ┆ When the wealth of the people is more, demand for the
- ┆ normal commodities is also more. If wealth is more equally
- ┆ distributed, the demand for necessities and comforts is more.
- ┆ On the other hand, if some people are rich, while the
- ┆ majorities are poor, the demand for luxuries is generally
- ┆ higher.

6. **CHANGE IN POPULATION**

- ┆ Increase in population increases demand
- ┆ for necessities of life. The compositions of
- ┆ population also affect demand.
- ┆ Composition of population means the proportion of young and
- ┆ old and children as well as the ratio of men and women.
- ┆ A change in composition of population has an affect on the nature
- ┆ of demand for different commodities.

┆ A change in size as well as composition of population will affect the demand for certain commodities.

For example: An increase in size of population will increase the demand for food grains. Similarly, an increase in percentage of women increases the demand for bangles and sarees.

7. CHANGES IN CLIMATE AND WEATHER

┆ Demand always changes with a change in weather or climate even though price remains unchanged.
┆ In summer the demand for cool drinks increases and in winter it decreases.

┆ The climate of an area and the weather prevailing there has a decisive effect on consumer's demand.

In cold areas woollen cloth is demanded. During hot summer days, ice is very much in demand. On a rainy day , ice cream is not so much demanded.

8. CHANGES IN GOVERNMENT POLICY

┆ Government policy affects the demand for commodities through taxation. Taxing a commodity increases its price and demand goes down.

Similarly, financial help from government increases the demand for a commodity while lowering its price.

9. EXPECTATIONS REGARDING THE FUTURE

- ┆ If consumers expect changes in price of commodity in future, they will change the demand at present even when the present price remains the same.

Similarly, if consumers expect their incomes to rise in the near future they may increase the demand for a commodity just now.

10. STATE OF BUSINESS:

- ┆ The level of demand for different commodities also depends upon the business conditions in the country.
- ┆ If the country is passing through boom conditions, there will be a marked increase in demand. On the other hand, the level of demand goes down during depression conditions.

11. ADVERTISEMENT:

- ┆ Advertisement has become the most popular means in changing the demand for a commodity in the modern world.
- By a regular advertisement the preference of the consumers can be influenced.

12. TECHNICAL PROGRESS

- ┆ Due to technical progress new commodities will enter into the market and demand for the old commodities will decrease.
- For example, Due to the introduction of electronic watches the demand for ordinary watches has decreased.

Demand function

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

$$QD = F(P, I, P_{sc}, T, A)$$

Where

Qd = quantity demand

F = functional relational

between input P = price of
the product

I = income of the consumer

P_{sc} = price of substituted or
complementary T = taste and
preference

A = advertisement

DEMAND ANALYSIS

INTRODUCTION OF DEMAND:

- ┌ Demand in common practice / ordinary language means the
- ┌ desire for an object. Suppose a person desires to have a car. It is called demand in ordinary usage.
- ┌ But in economics demand has a separate meaning which is
- ┌ quite distinct from the above meaning.
- ┌ A mere desire cannot become demand in Economics.
- ┌ A desire which is backed up by (i) ability to buy and (ii) willingness to pay the price, is called demand. Unless the desire is accompanied by ability to buy and willingness to pay, it cannot be called demand in Economics.

DEFINITIONS OF DEMAND

1. According to Stonier and Hague,

- ┌ “ Demand in economics means demand backed up by enough
- ┌ money to pay for the goods demanded”.
- ┌ This means that the demand becomes effective only if it is
- ┌ backed by purchasing power in addition to this there must be willingness to buy a commodity.
- ┌ Thus demand in economics means the desire backed by the willingness to buy a commodity and the purchasing power to pay.

2. In the words of Benham,

- ┌ “The demand for anything at a given price is the amount of it which will be bought per unit of time at that price ”. (Thus
- ┌ demand is always at a price for a definite quantity at a specified time.)
- ┌ Thus demand has three essentials i.e., price, quantity and time.
- ┌ Without these three demand has no significance in economics.

DEFINITIONS OF LAW OF DEMAND

1. ALFRED MARSHALL stated that Law of Demand as

- ┌ “a rise in the price of commodity or service is followed by a reduction in demand and fall in price is followed by an increase
- ┌ in demand, if the conditions of demand remain constant.”

- Marshall stated that the Law of Demand basing on the law of Diminishing Marginal utility
2. **In the words of SAMUELSON**
 - ┌ the Law of Demand may be stated as
 - ┌ “Other things being equal, the quantity demanded increases with a fall in price and decreases with a rise in price.”

Law of Demand

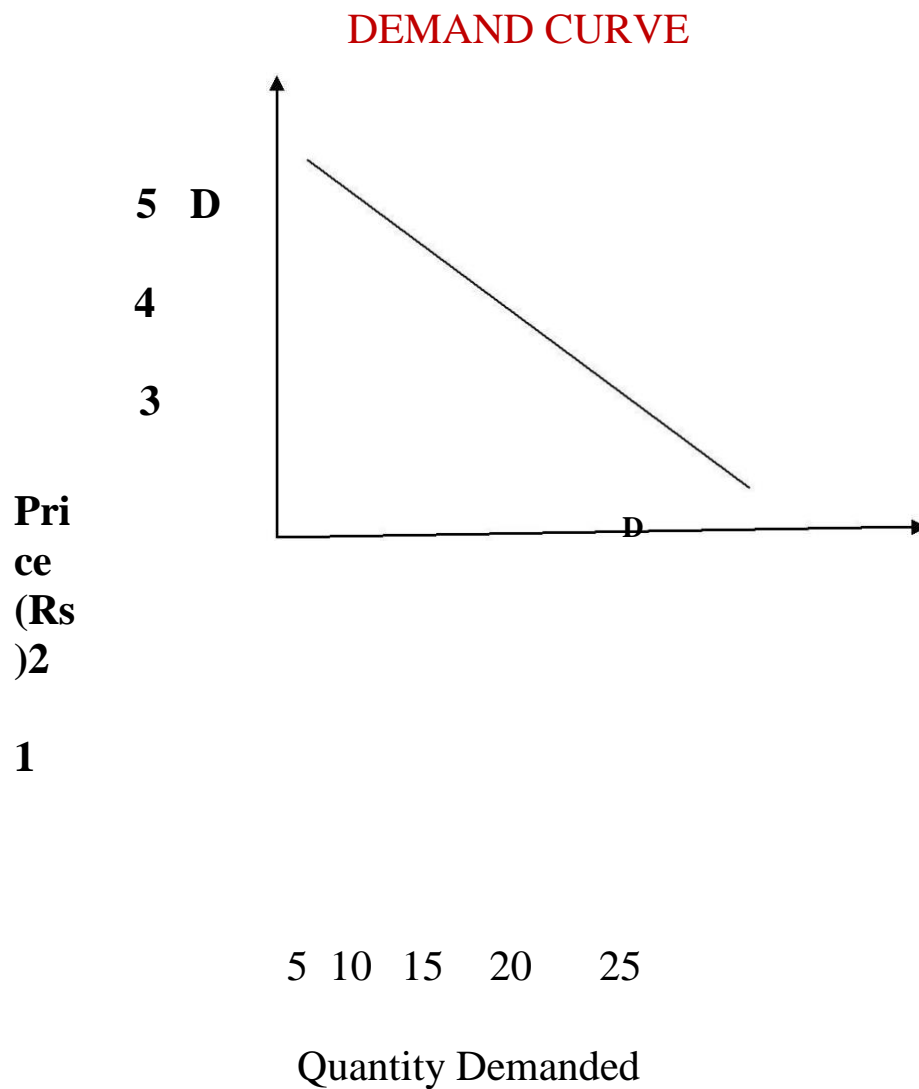
Law of demand states the relationship between price and quantity demanded. As per the law when price is increased demand will decrease, and similarly, when price is decrease demand will increase, this law assumed that, other things remaining constant, the change in price will inversely affect demand, thus the relationship between price and demand is inverse.

A rise in the price of a commodity is followed by a fall in demand and a fall in price is followed by a rise in demand, if a condition of demand remains constant.

DEMAND SCHEDULE

┌ The Law of Demand may be explained with the help of the following Demand Schedule.

| Price of Mangoes (Rs.) | Quantity Demanded |
|----------------------------|----------------------|
| 1 | 25 |
| 2 | 20 |
| 3 | 15 |
| 4 | 10 |
| 5 | 5 |



- ┌ From the above table it is clear that as price of Mangoes rises
- ┌ from Rs.1 to Rs.2 demand falls from 25 to 20.
- ┌ When the price of Mangoes rises to Rs.5 quantity demand falls to 5
- ┌ Mangoes.
- ┌ In the same way as price rises , quantity demand falls on
- ┌ the basis of demand schedule. We can draw a demand
- ┌ curve from the above Demand Schedule as follows.

In the above Diagram, demand is shown on OX –axis and price is shown on OY-axis. DD is the demand curve.

The demand curve DD shows the inverse relation between price and quantity demand of Mangoes.

The demand curve slopes downward from left to right.

ASSUMPTIONS OF LAW OF DEMAND

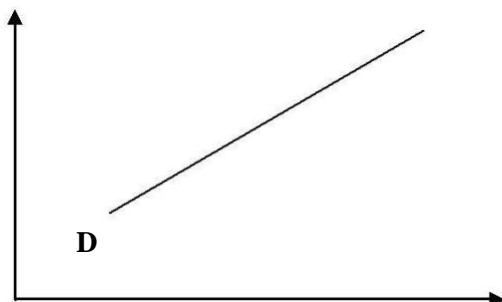
Law of Demand is based on the following assumptions. The Law will hold good only if the following assumptions are fulfilled.

1. That the tastes and fashions of the people remain unchanged.
2. That the people's income remains unchanged / constant.
3. That the prices of related goods remain unchanged / same.
4. That there are no substitutes for the commodity in the market.
5. That the commodity is not the one which has prestige value such as diamonds etc.
6. That the demand for the commodity should be continuous.
7. That the people should not expect any change in the price of the commodity.

EXCEPTIONS TO THE LAW OF DEMAND

- Some times in case of some commodities demand curve slopes upwards from left to right.
- It shows that when price rises demand also rises and when price falls demand also falls.
- In this case the demand curve has a positive slope.
- We can draw the Exceptional Demand Curve as follows.

D



Price (Rs.)

Quantity Demanded

- In the above Diagram, demand is shown on OX –axis and price is shown on OY-axis.
- DD is the demand curve.
- When price increases from OP to OP1 quantity demand also increases from OQ to OQ1 and the price falls down from OP1 to OP quantity demand also falls down from OQ1 to OQ.
- Hence the exceptional demand curve slopes upwards from left to right in this diagram.

The following are the important exceptions to the Law of Demand.

1. Giffen Paradox
2. Prestige goods
3. Speculation
4. Trade Cycles
5. Changes in Expectations.

1. GIFFEN PARADOX

- In the early part of the 19th Century, Sir Robbert Giffen, a British Economist observed that the Low paid British workers were purchasing more bread, when its price increased.
- This is some thing contrary to the law of demand.
- He observed that the people spend a major portion of their incomes on bread only a small part on meat.
- Meat is more costly but less essential than bread.
- When the price of the bread increased, they reduced the expenditure on meat.
- With the money thus saved they purchased more bread to compensate for the loss of meat.
- Thus where the price of bread is increases, its demand is also increased. This is the against law of demand.
- This paradox was stated by Sir Robbert Giffen. Therefore, it is called Giffen Paradox.
- Marshall could not explain this. It appeared to be a paradox to him.
- The Demand Curve for Giffen goods(Inferior goods) goes upward from left to right as shown in the above diagram.

2. PRESTIGE GOODS:

- ┌ This exception is explained by Veblen. Costly goods like
- ┌ Diamonds, cars etc., are called prestige goods or as Veblen goods.
- ┌ Generally rich people purchase those goods for
- ┌ the sake of prestige. The use of such articles increases the prestige of owners.
- ┌ So rich people may buy more of such goods when their prices rise.

- ┆ Thus the amount demanded rises instead of falling; when the prices fall they do not purchase them because their value is reduced.
 - ┆ Therefore the demand decreases
 - ┆ when the price falls. This is against to the Law of Demand.
- Since this exception is stated by Veblen, it is called Veblen effect.

3. SPECULATION:

- ┆ When the price of a commodity rises and people expect
 - ┆ that it will rise still further. Hence they buy more of that commodity.
- Similarly, if they expect that there is going to be a further fall in
- ┆ the price, demand may not expand.
- This is contrary to the Law of Demand.

4. TRADE CYCLES:

- ┆ During the periods of economic prosperity, people buy
 - ┆ more even when the prices rise. This happens because the incomes of the people have gone up.
- During times of depression, people buy less and less even when prices fall.

5. CHANGES IN EXPECTATIONS:

- ┌ When people expect a further rise in prices, people
- ┌ buy more when prices rise. They want avoid paying more in future.
- ┌ Similarly, when people expect the prices to fall in further, they buy less and less as prices fall. They may be expecting a further in prices.

ELASTICITY OF DEMAND

Elasticity of demand explains the relationship between a change in price and consequent change in amount demanded. “Marshall” introduced the concept of elasticity of demand. Elasticity of demand shows the extent of change in quantity demanded to a change in price.

In the words of “Marshall”, “The elasticity of demand in a market is great or small according as the amount demanded increases much or little for a given fall in the price and diminishes much or little for a given rise in Price”

Elastic demand: A small change in price may lead to a great change in quantity demanded. In this case, demand is elastic.

In-elastic demand: If a big change in price is followed by a small change in demanded then the demand is “inelastic”.

Types of Elasticity of Demand:

There are three types of elasticity of demand:

1. Price elasticity of demand
2. Income elasticity of demand
3. Cross elasticity of demand
4. Advertising elasticity of demand

Price elasticity of demand:

Elasticity of demand in general refers to price elasticity of demand.

In other words, it refers to the quantity demanded of a commodity in response to a given change in price. Price elasticity is always negative which indicates that the customer tends to buy more with every fall in the price, the relationship between the price and the demand is inverse.

$$\text{Price elasticity} = \frac{\text{Proportionate change in the quantity demand of commodity}}{\text{Proportionate change in the price of commodity}}$$

$$E_{dp} = \frac{Q_2 - Q_1 / Q_1}{P_2 - P_1 / P_1}$$

Where:

Q1 = quantity demand price
before change Q2 = quantity
demand price after change
P1 = price before change
P2 = price after change

Income elasticity of demand:

Income elasticity of demand refers to the quantity demand of a commodity in response to a given change in income of the consumer.

$$\text{Income Elasticity} = \frac{\text{Proportionate change in the quantity demand of commodity}}{\text{Proportionate change in the income of the people}}$$

$$EdI = \frac{Q2 - Q1 / Q1}{I2 - I1 / I1}$$

Where:

Q1 = quantity demand price
before change Q2 = quantity
demand price after change

I1 = income
before change I2
= income after
change

Cross elasticity of demand:

Cross elasticity of demand refers to the quantity demanded of a commodity in response to a change in the price of a related good, which may be substitute or complement.

$$\text{Cross elasticity} = \frac{\text{Proportionate change in the quantity demand of commodity "X"}}{\text{Proportionate change in the price of related commodity "Y"}}$$

Proportionate change in the price of commodity “Y”

$$Ed_P = \frac{Q_2 - Q_1 / Q_1}{P_2 - P_1 / P_1}$$

Where:

Q1 = quantity demand price
before change Q2 = quantity
demand price after change

P1 = price before
change P2 =
price after
change

Advertising elasticity of demand:

It refers to increase in the sales revenue because of change in the advertising expenditure. In other words, there is a direct relationship between the amount of money spent on advertising and its impact on sales. Advertising elasticity is always positive.

Proportionate change in the quantity
demand of product “X” Advertising elasticity = ..
Proportionate change in advertisement costs.

$$Ed_P = \frac{Q_2 - Q_1 / Q_1}{A_2 - A_1 / A_1}$$

Where:

Q1 = quantity demand price
before change Q2 = quantity
demand price after change

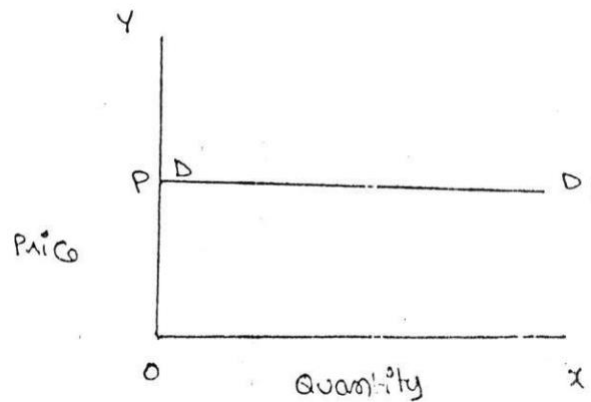
A1 = advertising
before change A2 =
advertising after
change

Measurement Elasticity of Demand

1. Perfectly elasticity of demand
2. Perfectly inelasticity of demand
3. Relatively elasticity of demand
4. Relatively inelasticity of demand
5. Unity elasticity of demand

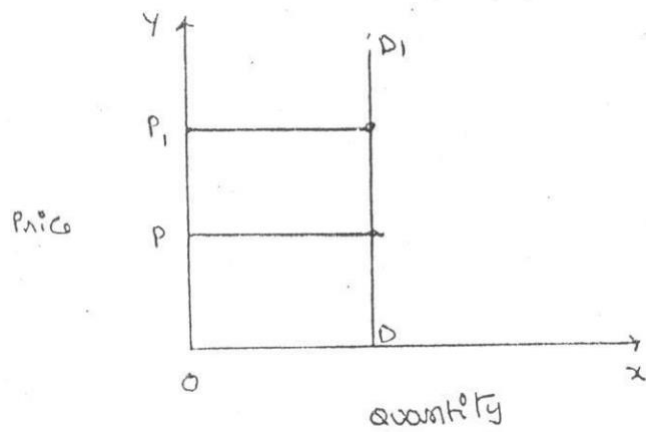
Perfectly elasticity of demand:

When any quantity can be sold at a given price, and when there is no need to reduce price, the demand is said to be perfectly elastic. In such cases, even a small increase in price will lead to complete fall in demand.



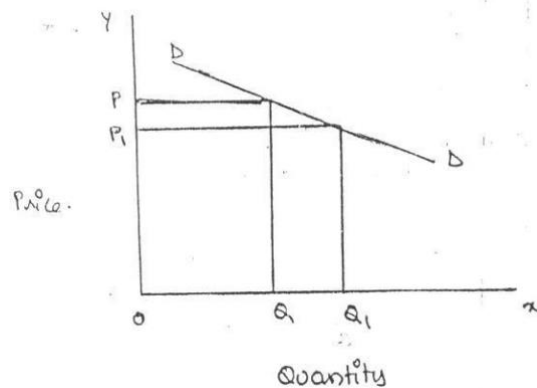
Perfectly inelasticity of demand:

When a significant degree of change in price leads little or no change in the quantity demanded, then the elasticity is said to be perfectly inelasticity. In other words, the demand is said to be perfectly inelasticity when there is no change in the quantity demanded even though there is a big change in the price.



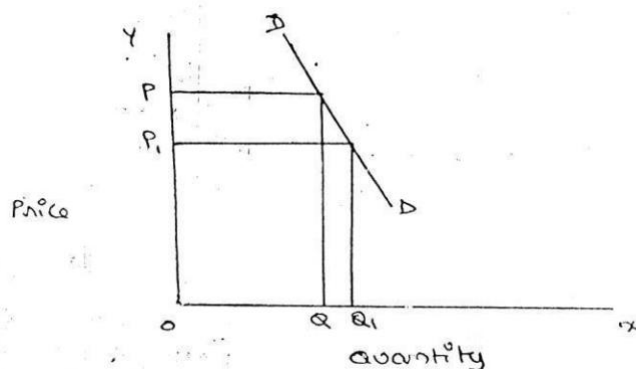
Relatively elasticity of demand:

The demand is said to be relatively elasticity when the change in demand is more then the change in the price.



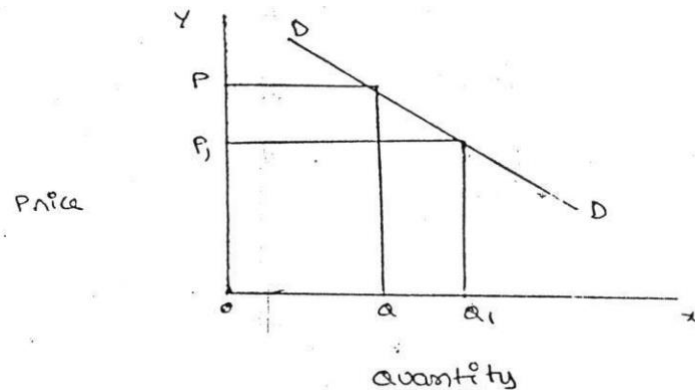
Relatively inelasticity of demand:

The demand is said to be relatively inelasticity when the change in demand is less than the change in the price.



Unity elasticity:

The elasticity in demand is said to be unity when the change in demand is equal to the change in price.



Significance of Elasticity Of Demand

a. Price of factors of production:

The factors of production are land, labour, capital, organizations and technology. These have a cost; we have to pay rent, wages, interest, profits and price for these factors of production.

b. Price fixation:

The manufacturer can decide the amount of price that can be fixed for his product based on the concept of elasticity, if there is no competition, in other words in the case of a monopoly, the manufacture is free to fix his price as long as it does not attract the attention of the government, when there are close substitutes, the product is such that its consumption can be postponed, it cannot be put to alternative uses and so on, then the price of the product cannot be fixed very highly.

c. Government policies

1. **Tax policies:** government extensively depends on this concept to finalize its policies relating to taxes and revenues. Where the product is such that the people cannot postpone its consumptions, the government tends to increase its price, such as petrol and diesel, cigarettes, and so on.
2. **Raising bank deposits:** if the government wants to mobilize larger deposits from the consumer it proposes to raise the rates of fixed deposits marginally and vice versa.
3. **Public utilities:** government uses the concept of elasticity in fixing charges for the public utilities such as electricity tariff, water charges, ticket fare in case of road or rail transport .

d. **Forecasting demand:**

Income elasticity is used to forecast demand for a particular product or services. The demand for the products can be forecast at a given income level.

The trader can estimate the quantity of goods to be sold at different income levels to realize the targeted revenue.

e. Planning the levels of output and price:

The knowledge of price elasticity is very useful to producers. The producer can evaluate whether a change in price will bring in adequate revenue or not. In general, for items whose demand is elastic, it would benefit him to charge relatively low price. On the other hand, if the demand for the product is inelastic, a little higher price may be helpful to him to get huge profits without losing sales.

DEMAND FORECASTING

Demand forecasting refers to an estimate of future demand for the product. It is an objective assessment of the future course of demand, in recent times, forecasting plays an important role in business decision – making. The survival and prosperity of a business firm depend on its ability to meet the consumer’s needs efficiently and adequately. Demand forecasting has an important influence on production planning. It is essential for a firm to produce the required quantities at the right time.

It is also essential to distinguish between forecasting of demand and forecast of sales, sales forecasts are important for estimating revenue, cash requirements and expenses whereas, demand forecasting relate to production, inventory control, timing, reliability of forecast etc. however, there is not much difference between these terms.

METHODS OF DEMAND FORECASTING

1. Survey methods
2. Statistical methods
3. Expert opinion methods
4. Test marketing
5. Controlled experiments
6. Judgmental approach

STATISTICAL METHODS

Statistical method is used for long run forecasting. In this method, statistical and mathematical techniques are used to forecast demand. This relies on past data.

1. Trend projection method: these are generally based on analysis of past sales patterns.

These methods dispense with the need for costly market research because the necessary information is often already available in company files. This method is used in case the sales data of the firm under consideration relate to different time periods, i.e., it is a time – series data. There are five main techniques of mechanical extrapolation.

- a. **Trend line by observation:** this method of forecasting trend is elementary, easy and quick. It involves merely the plotting of actual sales data on a chart and then estimating just by observation where the trend line lies. The line can be extended towards a future period and corresponding sales forecast is read from the graph.

- b. **Least squares methods:** this technique uses statistical formulae to find the trend line which best fits the available data. The trend line is the estimating equation, which can be used for forecasting demand by extrapolating the line for future and reading the corresponding values of sales on the graph.
- c. **Time series analysis:** where the surveys or market tests are costly and time – consuming, statistical and mathematical analysis of past sales data offers another methods to prepare the forecasts, that is, time series analysis.
- d. **Moving average method:** this method considers that the average of past events determine the future events. In other words, this method provides consistent results when the past events are consistent and unaffected by wide changes.
- e. **Exponential smoothing:** this is a more popular technique used for short run forecasts. This method is an improvement over moving averages method, unlike in moving averages method, all time periods here are given varying weight, that is , value of the given variable in the recent times are given higher weight and the values of the given variable in the distant past are given relatively lower weights for further processing.
- f. **Barometric Technique:** Simple trend projections are not capable of forecasting turning points. Under Barometric method, present events are used to predict the directions of change in future. This is done with the help of economics and statistical indicators. Those are (1) Construction Contracts awarded for building materials (2) Personal income (3) Agricultural Income. (4) Employment (5) Gross national income (6) Industrial Production (7) Bank Deposits etc.
- g. **Simultaneous equation method:** in this method, all variable are simultaneously considered, with the conviction that every variable influence the other variables in an economic environment. Hence, the set of equations equal the number of dependent variable which

is also called endogenous variables.

- h. **Correlation and regression methods:** correlation and regression methods are statistical techniques. Correlation describes the degree of association between two variable such as sales and advertisement expenditure. When the two variable tend to change together, then they are said to be correlated.

Expert opinion methods:

Well informed persons are called experts; experts constitute yet another source of information. These persons are generally the outside experts and they do not have any vested interest in the results of a particular survey. As expert is good at forecasting and analysis the future trend in a give product or service at a given level of technology. The service of an expert could be advantageously used when a firm uses general economic forecasting or special industry fore casting prepared outside the firm.

Test marketing:

It is likely that opinions given by buyers, salesman or other experts may be, at times, misleading. This is the reason why most of the manufactures favour to test their product or service in a limited market as test – run before they launch their product nationwide.

Controlled experiments:

Controlled experiment refer to such exercise where some of the major determinants of demand are manipulated to suit to the customers with different tastes and preferences, income groups, and such others, it is further assumed that all other factors remain the same.

Judgmental approach:

When none of the above methods are directly related to the given product or service, the management has no alternative other than using its own judgment. Even when the above methods are used, the forecasting process is supplemented with the factor of judgment for the following reasons

- Historical data for significantly long period is not available
- Turning point in terms of policies or procedures or causal factors cannot be precisely determined
- Sale fluctuation are wide and significant
- The sophisticated statistical techniques such as regression and so on, may not cover all the signing.

Factors Governing Demand Forecasting

- a) **Functional nature of demand:** market demand for a particular product or service is not a single number but it is a function of a number of factors, for instance, higher volumes of sales can be realized with higher levels of advertising or promotion efforts.
- b) **Types of forecasting:** based on the period under forecast, the demand forecast can be of two types 1) short – run forecasting and 2) long – run forecasting. Short run forecasts cover a period of one year whereas long- run forecasting any period ranging from one year to 20 years.
- c) **Forecasting level:** the forecasting demand at the firm level, industry level, national level or at the global level.
 1. **Firm level:** Firm level means estimating the demand for the products and services offered by a single firm
 2. **Industry level:** The aggregate demand estimated for the good and service of all the firms constitutes the industry level forecast.

The total estimate of different trade associations can also be view as industry level forecast.

3. **National level:** National level forecasting is for the whole economy, national level forecasts are worked out based on the levels of income, savings of the consumers.
 4. **Global level:** Globalization and deregulation, the entrepreneurs have started exploring the foreign markets for which the global level forecasts are utilized.
-
- d) **Degree of orientation:** demand forecasts can be worked out based on total sales or product or service wise sales for a given time period. Forecasting in terms of total sales can be viewed as general forecast whereas product or service – wise or region or customer segment – wise forecast is referred is referred to as specific forecast.
 - e) **New product:** it is relatively easy to forecast demand for established products or products which are currently in use. The new product in consideration can be analyzed as a substitute for some existing product. Assess the demand through a sampled or total survey of consumers“ intentions over the new product features and price.
 - f) **Nature of good:** The goods are classified into producer goods, consumer goods, consumer durables and services. The patterns of forecasting in each of these differ.
 - g) **Degree of competition:** there may be a single trader or a few traders depending upon the nature of goods and services.

UNIT – II

THEORY OF PRODUCTION AND COST ANALYSIS

Introduction to Production Function:

Samuelson define the production function as “the technical relationship which reveals the maximum amount of output capable of being produced by each and every set of inputs”

Michael define production function as “that function which defines the maximum amount of output that can be produced with a given set of inputs”.

The production function expresses a functional relationship between physical inputs and physical outputs of a firm at any particular time period. The output is thus a function of inputs. Mathematically production function can be written as
$$Q = F(L_1, L_2, C, O, T)$$

Where Q is the quantity of production, F explains the functions, that is, the type of relation between inputs and outputs , L_1, L_2, C, O, T refer to land, labour, capital, organization and technology respectively. These inputs have been taken in conventional terms. In reality, material also can be included in a set of inputs.

A manufacturer has to make a choice of the production function by considering his technical knowledge, the process of various factors of production and his efficiency level to manage. He should not only select the factors of production but also should work out the different permutations and combinations which will mean lower cost of inputs for a given level of production.

In case of an agricultural product, increasing the other factors of production can increase the production, but beyond a point, increase output can be had only with increased use of agricultural land, investment in land forms a significant portion of the total cost of production for output, whereas, in the case of the software industry, other factor such as technology , capital management and others become significant. With change in industry and the requirements the production function also needs to be modified to suit to the situation.

Production Function with One Variable Input

The laws of returns states that when at least one factor of production is fixed or factor input is fixed and when all other factors are varied, the total output in the initial stages will increase at an increasing rate, and after reaching certain level or output the total output will increase at declining rate. If variable factor inputs are added further to the fixed factor input, the total output may decline. This law is of universal nature and it proved to be true in agriculture and industry also. The law of returns is also called the law of variable proportions or the law of diminishing returns.

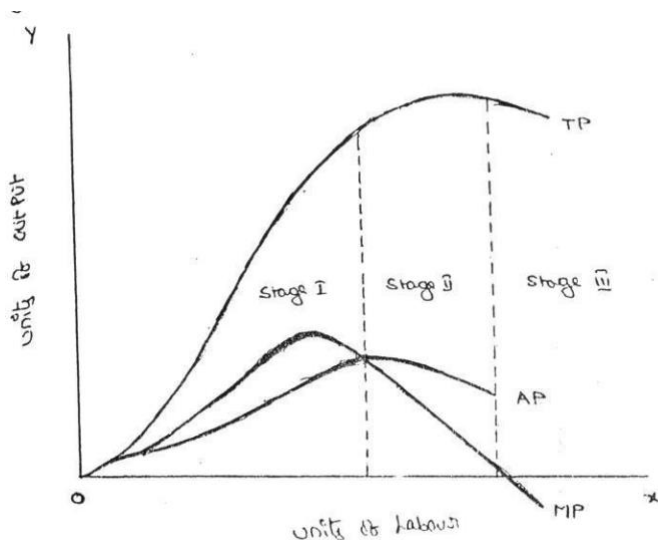
Definition According to **G. Stigler**

“If equal increments of one input are added, the inputs of other production services being held constant, beyond a certain point the resulting increments of product will decrease i.e. the marginal product will diminish”.

According to **F. Benham**

“As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish”.

| Units of labour | Total production(tp) | Marginal product (mp) | Average product (ap) | Stages |
|-----------------|----------------------|-----------------------|----------------------|----------|
| 0 | 0 | 0 | 0 | Stages 1 |
| 1 | 10 | 10 | 10 | |
| 2 | 22 | 12 | 11 | |
| 3 | 33 | 11 | 11 | Stages 2 |
| 4 | 40 | 7 | 10 | |
| 5 | 45 | 5 | 9 | |
| 6 | 48 | 3 | 8 | Stages 3 |
| 7 | 48 | 0 | 6.85 | |
| 8 | 45 | -3 | 5.62 | |



From the above graph the law of variable proportions operates in three stages. In the first stage, total product increases at an increasing rate. The marginal product in this stage increases at an increasing rate resulting in a greater increase in total product. The average product also increases. This stage continues up to the point where average product is equal to marginal product. The law of increasing returns is in operation at this stage. The law of diminishing returns starts operating from the second stage onwards. At the second stage total product increases only at a diminishing rate. The average product also declines. The second stage comes to an end where total product becomes maximum and marginal product becomes zero. The marginal product becomes negative in the third stage. So the total product also declines. The average product continues to decline.

Production Function With Two Variable Inputs And Laws Returns

Production process that requires two inputs, capital (C) and labour (L) to produce a given output (Q). There could be more than two inputs in a real life situation, but for a simple analysis, we restrict the number of inputs to two only. In other words, the production function based on two inputs can be expressed as

$$Q = f(C, L)$$

Where C = capital, L = labour,

Normally, both capital and labour are required to produce a product. To some extent, these two inputs can be substituted for each other. Hence the producer may choose any combination of labour and capital that gives him the required number of units of output, for any one combination of labour and capital out of several such combinations. The alternative combinations of labour and capital yielding a given level of output are such that if the use of one factor input is increased, that of another will decrease and vice versa. However, the units of an input foregone to get one unit of the other input changes, depends upon the degree of substitutability between the two input factors, based on the techniques or technology used, the degree of substitutability may vary.

ISO - QUANTS

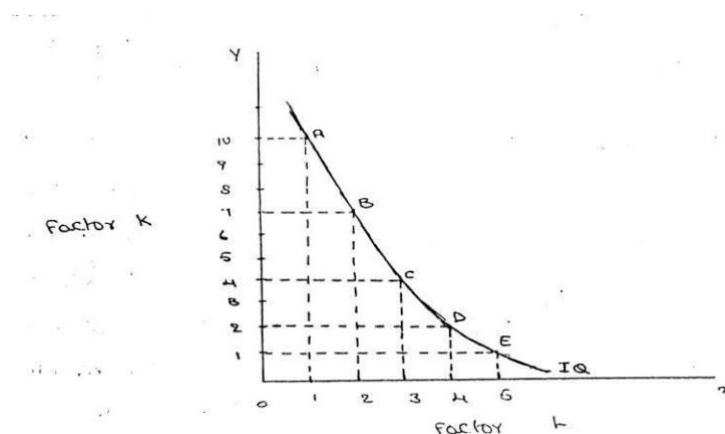
The term Isoquants is derived from the words „iso“ and „quant“ – „Iso“ means equal and „quant“ implies quantity. Isoquant therefore, means equal quantity. Isoquant are also called isoproduct curves, an isoquant curve shows various combinations of two input factors such as capital and labour, which yield the same level of output.

As an isoquant curve represents all such combinations which yield equal quantity of output, any or every combination is a good combination for the manufacturer. Since he prefers all these combinations equally, an isoquant curve is also called product indifferent curve.

An isoquant may be explained with the help of an arithmetical example

| Combinations | Labour (units) | Capital (Units) | Output (quintals) |
|---------------------|-----------------------|------------------------|--------------------------|
| A | 1 | 10 | 50 |
| B | 2 | 7 | 50 |
| C | 3 | 4 | 50 |
| D | 4 | 4 | 50 |
| E | 5 | 1 | 50 |

Combination „A“ represents 1 unit of labour and 10 units of capital and produces „50“ quintals of a product. All other combinations in the table are assumed to yield the same given output of a product say „50“ quintals by employing any one of the alternative combinations of the two factors labour and capital. If we plot all these combinations on a paper and join them, we will get a continuous and smooth curve called Iso-product curve as shown below.



Labour is on the X-axis and capital is on the Y-axis. IQ is the ISO-Product curve which shows all the alternative combinations A, B, C, D, E which can produce 50 quintals of a product

Features of isoquant

1. Downward sloping: isoquant are downward sloping curves because , if one input increase, the other one reduces. There is no question of increase in both the inputs to yield a given output. A degree of substitution is assumed between the factors of production. In other words, an isoquant cannot be increasing, as increase in both the inputs does not yield same level of output. If it is constant, it means that the output remains constant through the use of one of the factor is increasing, which is not true, isoquant slope from left to right.
2. Convex to origin: isoquant are convex to the origin. It is because the input factors are not perfect substitutes. One input factor can be substituted by other input factor in a diminishing marginal rate. If the input factors were perfect substitutes , the isoquant would be a falling straight line. When the inputs are used infixed proportion, and substitution of one input for the other cannot take place, the isoquant will be L shaped
3. do not intersect: two isoquant do not intersect with each other. It is because, each of these denote a particular level of output. If the manufacturer wants to operate at a higher level of output, he has to switch over to another isoquant with a higher level of output and vice versa.
4. do not axes: the isoquant touches neither X-axis nor Y- axis, as both inputs are required to produce a given product.

ISO COST

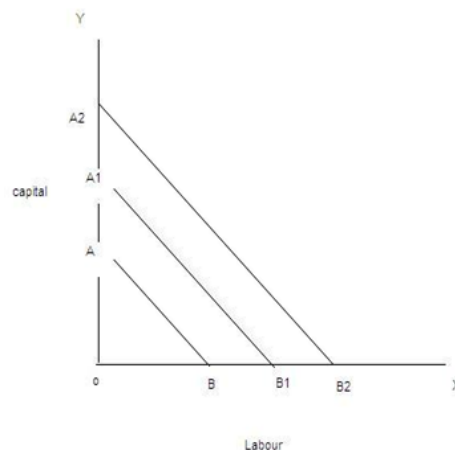
Iso cost refers to that cost curve that represent the combination of inputs that will cost the producer the same amount of money. In other words, each isocost denotes a particular level of total cost for a given level of production. If the level of production changes, the total cost changes and thus the isocost curve moves upwards, and vice verse.

Isocost curve is the locus traced out by various combinations of L and K, each of which costs the producer the same amount of money (C) Differentiating equation with respect to L, we have $dK/dL = -w/r$ This gives the slope of the producer's budget line (isocost curve). Iso cost line shows various combinations of labour and capital that the firm can buy for a given factor prices. The slope of iso cost line $= PL/Pk$. In this equation , PL is the price of labour and Pk is the price of capital. The slope of iso

cost line indicates the ratio of the factor prices. A set of isocost lines can be drawn for different levels of factor prices, or different sums of money. The iso cost line will shift to the right when money spent on factors increases or firm could buy more as the factor prices are given.

With the change in the factor prices the slope of iso cost line will change. If the price of labour falls the firm could buy more of labour and the line will shift away from the origin. The

slope depends on the prices of factors of production and the amount of money which the firm spends on the factors. When the amount of money spent by the firm changes, the isocost line may shift but its slope remains the same. A change in factor price makes changes in the slope of isocost lines as shown in the figure.

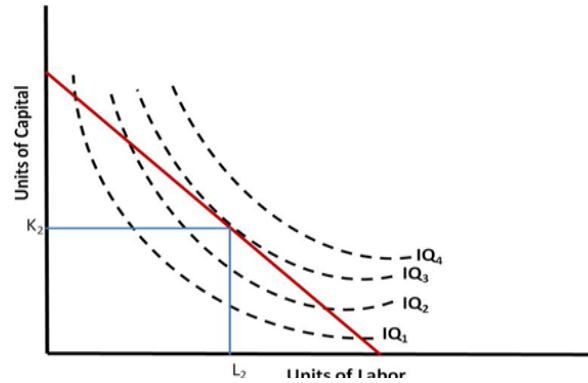


Least Cost Combination Of Inputs

The manufacturer has to produce at lower costs to attain higher profits. The isocost and isoquants can be used to determine the input usage that minimizes the cost of production. Where the slope of isoquant is equal to that of isocost, there lies the lowest point of cost of production. This can be observed by superimposing the isocosts on isoproduct curves. It is evident that the producer can, with a total outlay.

The firm can achieve maximum profits by choosing that combination of factors which will cost it the least. The choice is based on the prices of factors of production at a particular time. The firm can maximize its profits either by maximizing the level of output for a given cost or by minimizing the cost of producing a given output. In both cases the factors will have to be employed in optimal combination at which the cost of production will be minimum. The least cost factor combination can be determined by imposing the isoquant map on iso-cost line. The point of tangency between the isocost and an isoquant is an important but not a necessary condition for producer's equilibrium. The essential condition is that the slope of the isocost line must equal the slope of the isoquant. Thus at a point of equilibrium marginal physical productivities of the two factors must be equal to the ratio of their prices. The marginal physical

product per rupee of one factor must be equal to that of the other factor. And isoquant must be convex to the origin. The marginal rate of technical substitution of labour for capital must be diminishing at the point of equilibrium.



Marginal Rate Of Technical Substitution

The marginal rate of technical substitution (MRTS) refers to the rate at which one input factor is substituted with the other to attain a given level of output. In other words, the lesser units of one input must be compensated by increasing amounts of another input to produce the same level of output.

Isoquants are typically convex to the origin reflecting the fact that the two factors are substitutable for each other at varying rates. This rate of substitutability is called the “marginal rate of technical substitution” (MRTS) or occasionally the “[marginal rate of substitution](#) in production”. It measures the reduction in one input per unit increase in the other input that is just sufficient to maintain a constant level of production. For example, the marginal rate of substitution of labour for capital gives the amount of capital that can be replaced by one unit of labour while keeping output unchanged.

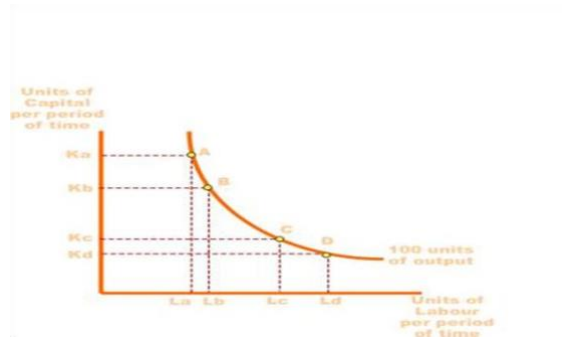
To move from point A to point B in the diagram, the amount of capital is reduced from K_a to K_b while the amount of labour is increased only from L_a to L_b . To move from point C to point D, the amount of capital is reduced from K_c to K_d while the amount of labour is increased from L_c to L_d . The marginal rate of technical substitution of labour for capital is equivalent to the absolute slope of the isoquant at that point (change in capital divided by change in labour). It is equal to 0 where the isoquant becomes horizontal, and equal to infinity where it becomes vertical.

The opposite is true when going in the other direction (from D to C to B to A). In this case we are looking at the marginal rate of technical substitution capital for labour (which is the reciprocal of the marginal rate of technical substitution labour for capital).

It can also be shown that the marginal rate of substitution labour for capital, is equal to the marginal physical product of labour divided by the marginal physical product of capital.

In the unusual case of two inputs that are perfect substitutes for each other in production,

the isoquant would be linear ([linear](#) in the sense of a function $y = a - bx$). If, on the other hand, there is only one production process available, factor proportions would be fixed, and these zero- substitutability isoquants would be shown as horizontal or vertical lines.



LAW OF RETURNS TO SCALE

There are three laws of returns governing production function. They are

1. Law of increasing returns to scale

This law states that the volume of output keeps on increasing with every increase in the inputs,. Where a given increase in inputs leads to a more than proportionate increase in the output, the law of increasing returns to scale is said to operate. We can introduce division of labour and other technological means to increase production. Hence, the total product increases at an increasing rate.

2. Law of constant returns to scale

When the scope for division of labour gets restricted, the rate of increase in the total output remains constant, the law of constant returns to scale is said to operate, this law states that the rate of increase/decrease in volume of output is same to that of rate of increase/decrease in inputs.

3. Law of decreasing returns to scale

Where the proportionate increase in the inputs does not lead to equivalent increase in output, the output increases at a decreasing rate, the law of decreasing returns to scale is said to operate. This results in higher average cost per unit.

These laws can be illustrated with an example of agricultural land. Take one acre of land. If you till the land well with adequate bags of fertilizers and sow good quality seeds, the volume of output increases the following table illustrates further

| Capital (in units) | Labor(in units) | % of increase in both inputs | Output(in units) | % of increase in output | Law applicable |
|-----------------------|------------------------|---------------------------------|---------------------|-------------------------------|----------------------------------|
| 1 | 3 | --- | --- | --- | --- |
| 2 | 6 | 100 | 120 | 140 | Law of increase returns to scale |
| 4 | 12 | 100 | 240 | 100 | Law of constant returns to scale |
| 8 | 24 | 100 | 360 | 50 | Law of decrease returns to scale |

INTERNAL AND EXTERNAL ECONOMIES OF SCALE

INTERNAL ECONOMIES refer to the economies introduction costs which accrue to the firm alone when it expands its output. The internal economies occur as a result of increase in the scale of production.

- a. **Managerial Economics:** as the firm expands, the firm needs qualified managerial personnel to handle each of its functions marketing, finance, production, human resources and others in a professional way. Functional specialization ensure minimum wastage and lowers the cost of production in the long –run.
- b. **Commercial Economics:** the transaction of buying and selling raw material and other operating supplies such as spares and so on will be rapid and the volume of each transaction also grows as the firm grows, there could be cheaper savings in the procurement, transportation and storage cost, this will lead to lower costs and increased profits.
- c. **Financial Economics:** The large firm is able to secure the necessary finances either for block capital purposes or for working capital needs more easily and cheaply. It can barrow from the public, banks and other financial institutions at relatively cheaper rates. It is in this way that a large firm reaps financial economies.
- d. **Technical Economies:** Technical economies arise to a firm from the use of better machines and superior techniques of production. As a result, production increases and per unit cost of production falls. A large firm, which employs costly and superior plant and equipment, enjoys a technical superiority over a small firm. Another technical economy lies in the mechanical advantage of using large machines. The cost of operating large machines is less than that of operating mall machine. More over a larger firm is able to reduce it's per unit cost of production by linking the various processes of production. Technical economies may also be associated when the large firm is able to utilize all its waste materials for the development of by-products industry. Scope for specialization is also available in a large firm. This increases the productive capacity of the firm and reduces the unit cost of production.
- e. **Marketing Economies:** The large firm reaps marketing or commercial economies in buying its requirements and in selling its final products. The large firm generally has a separate marketing department. It can buy and sell on behalf of the firm, when the market trends are more favorable. In the matter of buying they could enjoy advantages like preferential treatment, transport concessions, cheap credit, prompt delivery and fine relation with dealers. Similarly it sells its products more effectively for a higher margin of profit.
- f. **Risk Bearing Economies:** The large firm produces many commodities and serves wider areas. It is, therefore, able to absorb any shock for its existence. For example, during business depression, the prices fall for every firm. There is also a possibility for market fluctuations in a particular product of the firm. Under such circumstances the risk-bearing economies or survival economies help the bigger firm to survive business crisis.
- g. **Economics Of Larger Dimension:** large – scale production is required to take advantage of bigger size plant and equipment. For example, the cost of a 1.00.000 units capacity plant will not be double that of 50.000 units capacity plant. Likewise the cost of a 10.000 ton oil tanker will not be double that of a 5000 ton oil tanker. Engineers go by what is called two by three rule wherein when the volume is increase by 100%, the material required will increase only by two –

thirds. Technical economies are available only from large size, improved methods of production processes and when the products are standardized.

- h. **Economics Of Research And Development:** large organizations such as Dr.Reddy's labs, Hindustan Lever spend heavily on research and development and bring out several innovative products. Only such firms with a strong research and development base can cope with competition globally.

EXTERNAL ECONOMICS:

External economics refer to all the firms in the industry, because of growth of the industry as a whole or because of growth of ancillary industries, external economics benefit all the firms in the industry as the industry expands. This will lead to lowering the cost of production and thereby increasing the profitability. The external economics can be grouped under three types:

A). Economies of Concentration: When an industry is concentrated in a particular area, all the member firms reap some common economies like skilled labour, improved means of transport and communications, banking and financial services, supply of power and benefits from subsidiaries. All these facilities tend to lower the unit cost of production of all the firms in the industry.

B) Economics Of Research And Development: all the firms can pool resources to finance research and development activities and thus share the benefits of research. There could be a common facility to share journals, newspapers and other valuable reference material of common interest.

C) Economics Of Welfare: there could be common facilities such as canteen, industrial housing, community halls, schools and colleges, employment bureau, hospitals and so on, which can be used in common by the employees in the whole industry.

COST ; the institute of cost and management accountants (ICMA) has defined cost as “ the amount expenditure, actual or notional, incurred on or attributable to a specified thing or activity”. It is the amount of resources sacrificed to achieve a specific objective. A cost must be with reference to the purpose for which it is used and the conditions under which it is computed. To take decision, managers wish to know the cost of something.

Cost refers to the expenditure incurred to produce a particular product or services. All costs involve a sacrifice of some kind or other to acquire some benefit. For example, if I want to eat food, I should be prepared to sacrifice money.

Cost refers to the amount of expenditure incurred in acquiring something. In business firm, it refers to the expenditure incurred to produce an output or provide service. Thus the cost incurred in connection with raw material , labour, other heads constitute the overall cost of production.

COST CONCEPTS:

A managerial economist must have a clear understanding of the different cost concepts for clear business thinking and proper application. The several alternative bases of classifying cost and the relevance of each for different kinds of problems are to be studied. The various relevant concepts of cost are:

OPPORTUNITY COST:

In simple terms, it is the earning from the second is alternative. It represents the maximum possible alternative income that was have been earned if the resources were put to alternative use. Opportunity cost can be distinguished from outlay costs based on the nature of sacrifice. Outlay costs are those costs that involve cash outflow at sometime and hence they are recorded in the book of account. Opportunity cost refers to earnings/profits that are foregone form alternative ventures by using gives limited facilities for a particular purpose.

FIXED COST VS VARIABLE COST

Fixed cost is that cost which remains constant for a certain level to output. It is not affected by the changes in the volume of production. But fixed cost per unit decrease, when the production is increased. Fixed cost includes salaries, Rent, Administrative expenses depreciations etc.

Variable is that which varies directly with the variation is output. An increase in total output results in an increase in total variable costs and decrease in total output results in a proportionate decline in the total variables costs. The variable cost per unit will be constant. Ex: Raw materials, labour, direct expenses, etc

EXPLICIT AND IMPLICIT COSTS:

Explicit costs are those expenses that involve cash payments. These are the actual or business costs that appear in the books of accounts. These costs include payment of wages and salaries, payment for raw-materials, interest on borrowed capital funds, rent on hired land, Taxes paid etc.

Implicit costs are the costs of the factor units that are owned by the employer himself. These costs are not actually incurred but would have been incurred in the absence of employment of self – owned factors. The two normal implicit costs are depreciation, interest on capital etc. A decision maker must consider implicit costs too to find out appropriate profitability of alternatives.

SHORT – RUN AND LONG – RUN COSTS:

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 extensively. So short run cost is that which varies with output when the plant and capital equipment in constant. Long run costs are those, which vary with output when all inputs are variable including plant and capital equipment. Long-run cost analysis helps to take investment decisions.

OUT-OF POCKET AND BOOKS COSTS:

Out-of pocket costs also known as explicit costs are those costs that involve current cash payment. Book costs also called implicit costs do not require current cash payments. Depreciation, unpaid interest, salary of the owner is examples of back costs. But the book costs are taken into account in determining the level dividend payable during a period. Both book costs and out-of-pocket costs are considered for all decisions. Book cost is the cost of self- owned factors of production.

BREAKEVEN ANALYSIS

A business is said to break even when its total sales are equal to its total costs. It is a point of **no profits no loss**. Break even analysis is defined as analysis of costs and their possible impact on revenues and volume of the firm. Hence, it is also called the cost – volume- profit analysis. A firm is said to attain the bep when its total revenue is equal to total cost.

Assumptions:

1. All costs are classified into two – fixed and variable.
2. Fixed costs remain constant at all levels of output.
3. Variable costs vary proportionally with the volume of output.
4. Selling price per unit remains constant in spite of competition or change in the volume of production.
5. There will be no change in operating efficiency.
6. There will be no change in the general price level.
7. Volume of production is the only factor affecting the cost.
8. Volume of sales and volume of production are equal. Hence there is no unsold stock.
9. There is only one product or in the case of multiple products. Sales mix remains constant.
10. All the goods produced are sold. There is no closing stock.

Significance of BEA

- └ To ascertain the profit on a particular level of sales volume or a given capacity of production
- └ To calculate sales required to earn a particular desired level of profit.
- └ To compare the product lines, sales area, methods of sales for individual company
- └ To compare the efficiency of the different firms
- └ To decide whether to add a particular product to the existing product line or drop one from it
- └ To decide to “make or buy” a given component or spare part
- └ To decide what promotion mix will yield optimum sales
- To assess the impact of changes in fixed cost, variable cost or selling price on BEP and profits during a given period.

Limitations of BEA

- └ Break – even - point is based on fixed cost, variable cost and total revenue.
- └ A change in one variable is going to affect the BEP
- └ All cost cannot be classified into fixed and variable costs. We have semi-variable costs also
- └ In case of multi-product firm, a single chart cannot be of any use. Series of charts have to be made use of..
- └ It is based on fixed cost concept and hence holds good only in the short – run.
- └ Total cost and total revenue lines are not always straight as shown in the figure. The quantity and price discounts are the usual phenomena affecting the total revenue line.
- └ Where the business conditions are volatile, BEP cannot give stable results

Merits:

1. Information provided by the Break Even Chart can be understood more easily than those contained in the profit and Loss Account and the cost statement.
2. Break Even Chart discloses the relationship between cost, volume and profit. It reveals how changes in profit. So, it helps management in decision-making.
3. It is very useful for forecasting costs and profits long term planning and growth

4. The chart discloses profits at various levels of production.
5. It serves as a useful tool for cost control.
6. It can also be used to study the comparative plant efficiencies of the industry.
7. Analytical Break-even chart present the different elements, in the costs – direct material, direct labour, fixed and variable overheads.

Demerits:

1. Break-even chart presents only cost volume profits. It ignores other considerations such as capital amount, marketing aspects and effect of government policy etc., which are necessary in decision making.
2. It is assumed that sales, total cost and fixed cost can be represented as straight lines. In actual practice, this may not be so.
3. It assumes that profit is a function of output. This is not always true. The firm may increase the profit without increasing its output.
4. A major drawback of BEC is its inability to handle production and sale of multiple products.
5. It is difficult to handle selling costs such as advertisement and sale promotion in BEC.
6. It ignores economics of scale in production.
7. Fixed costs do not remain constant in the long run.
8. Semi-variable costs are completely ignored.
9. It assumes production is equal to sale. It is not always true because generally there may be opening stock.
10. When production increases variable cost per unit may not remain constant but may reduce on account of bulk buying etc.
11. The assumption of static nature of business and economic activities is a well-known defect of BEC.

Determination of break even point

1. Fixed cost
2. Variable cost
3. Contribution
4. Margin of safety
5. Angle of incidence
6. Profit volume ratio

Fixed cost: Expenses that do not vary with the volume of production are known as fixed expenses. Eg. Manager's salary, rent and taxes, insurance etc. It should be noted that fixed changes are fixed only within a certain range of plant capacity. The concept of fixed overhead is most useful in formulating a price fixing policy. Fixed cost per unit is not fixed

Variable Cost: Expenses that vary almost in direct proportion to the volume of production of sales are called variable expenses. Eg. Electric power and fuel, packing materials consumable stores. It should be noted that variable cost per unit is fixed.

Contribution: Contribution is the difference between sales and variable costs and it contributed towards fixed costs and profit. It helps in sales and pricing policies and measuring the profitability of different proposals. Contribution is a sure test to decide whether a product is worthwhile to be continued among different products.

$$\text{Contribution} = \text{Sales} - \text{Variable cost}$$

$$\text{Contribution} = \text{Fixed Cost} + \text{Profit.}$$

Margin of safety: Margin of safety is the excess of sales over the break even sales. It can be expressed in absolute sales amount or in percentage. It indicates the extent to which the sales can be reduced without resulting in loss. A large margin of safety indicates the soundness of the business. The formula for the margin of safety is:

$$\frac{\text{Present sales} - \text{Break even sales}}{\text{Present sales}} \times 100 = \text{P. V. ratio}$$

Margin of safety can be improved by taking the following steps.

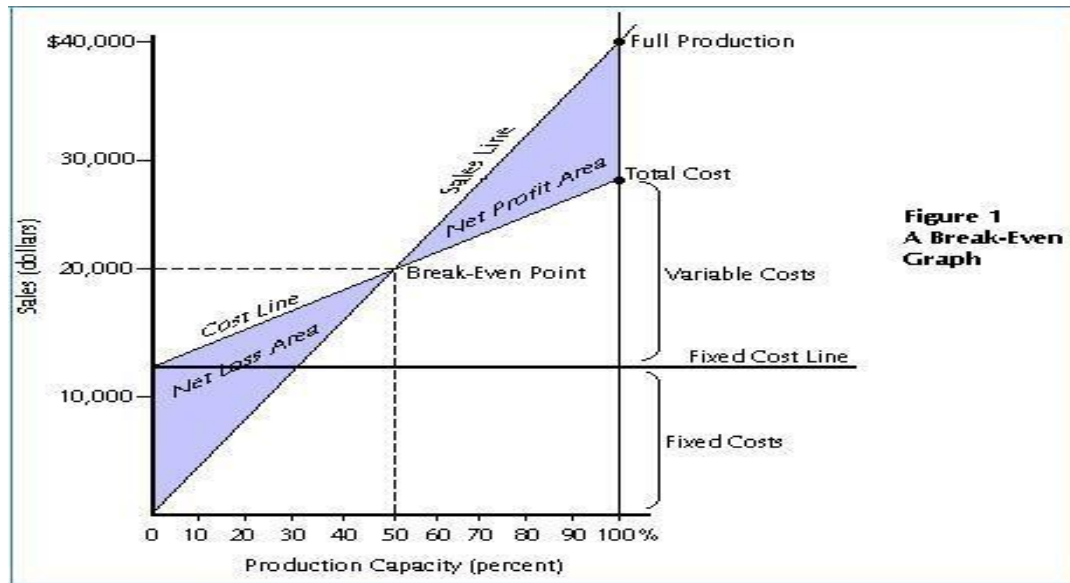
1. Increasing production
2. Increasing selling price
3. Reducing the fixed or the variable costs or both
4. Substituting unprofitable product with profitable one.

Angle of incidence: This is the angle between sales line and total cost line at the Break-even point. It indicates the profit earning capacity of the concern. Large angle of incidence indicates a high rate of profit; a small angle indicates a low rate of earnings. To improve this angle, contribution should be increased either by raising the selling price and/or by reducing variable cost. It also indicates as to what extent the output and sales price can be changed to attain a desired amount of profit.

Profit Volume Ratio is usually called P. V. ratio. It is one of the most useful ratios for studying the profitability of business. The ratio of contribution to sales is the P/V ratio. It may be expressed in percentage. Therefore, every organization tries to improve the P. V. ratio of each product by reducing the

variable cost per unit or by increasing the selling price per unit. The concept of P. V. ratio helps in determining break even-point, a desired amount of profit etc.

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**Figure 1
A Break-Even
Graph**

UNIT – III

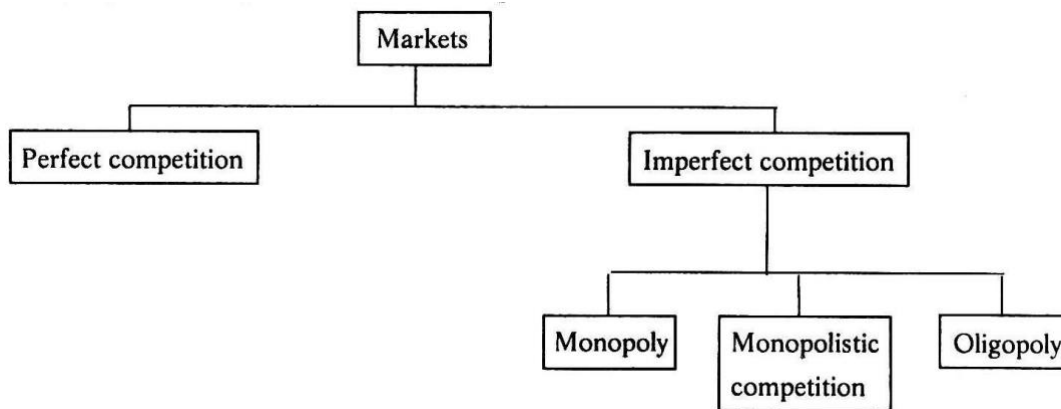
INTRODUCTION TO MARKETS

Market is a place where buyer and seller meet, goods and services are offered for the sale and transfer of ownership occurs. A market may be also defined as the demand made by a certain group of potential buyers for a good or service. The former one is a narrow concept and later one, a broader concept. Economists describe a market as a collection of buyers and sellers who transact over a particular product or product class (the housing market, the clothing market, the grain market etc.). For business purpose we define a market as people or organizations with wants (needs) to satisfy, money to spend, and the willingness to spend it. Broadly, market represents the structure and nature of buyers and sellers for a commodity/service and the process by which the price of the commodity or service is established. In this sense, we are referring to the structure of competition and the process of price determination for a commodity or service. The determination of price for a commodity or service depends upon the structure of the market for that commodity or service (i.e., competitive structure of the market). Hence the understanding on the market structure and the nature of competition are a pre-requisite in price determination.

MARKET STRUCTURES

Market structure describes the competitive environment in the market for any good or service. A market consists of all firms and individuals who are willing and able to buy or sell a particular product. This includes firms and individuals currently engaged in buying and selling a particular product, as well as potential entrants.

The determination of price is affected by the competitive structure of the market. This is because the firm operates in a market and not in isolation. In making decisions concerning economic variables it is affected, as are all institutions in society by its environment.



PERFECT COMPETITION

Perfect competition refers to a market structure where competition among the sellers and buyers prevails in its most perfect form. In a perfectly competitive market, a single market price prevails for the commodity, which is determined by the forces of total demand and total supply in the market.

A market structure in which all firms in an industry are price takers and in which there is freedom of entry into and exit from the industry is called perfect competition. The market with perfect competition conditions is known as perfect market.

Features of perfectly competition

1. **A large number of buyers and sellers:** The number of buyers and sellers is large and the share of each one of them in the market is so small that none has any influence on the market price.

There should be significantly large number of buyers and sellers in the market. The number should be so large that it should not make any difference in terms of price of quantity supplied even if one enters the market or one leaves the market.

2 .Homogenous products or services: the products and services of each seller should be homogeneous. They cannot be differentiated from that of one another. It makes no difference to the buyer whether he buys from firm X or firm Z. in other words, the buyer does not have any particular preference to buy the goods from a particular trader or supplier. The price is one and the same in every firm. There are no concessions or discounts.

3 .Freedom to enter or exit the market: there should not be restrictions on the part of the buyers and sellers to enter the market or leave the market. There should not be any barriers. The buyers can enter the market or leave the market whenever they want.

4 .Perfect information available to the buyers and sellers: each buyer and seller has total knowledge of the prices prevailing in the market at every given point of time, quantity supplied, costs, demand, nature of product, and other relevant information. There is no need for any advertisement expenditure as the buyers and sellers are fully informed.

5. Perfect mobility of factors of production: there should not be any restrictions on the utilization of factors of production such as land , labour, capital and so on. In words, the firm or buyer should have free access to the factors of production. Whenever capital or labor is required, it should instantly be made available.

6.Each firm is a price taker: an individual firm can alter its rate of production or sales without significantly affecting the market price of the product, a firm in a perfect market cannot influence the market through its own individual actions. It has no alternative other than selling its products at the price prevailing in the market. It cannot sell as much as it wants at its own set price.

Monopoly

The word monopoly is made up of two syllables, Mono and poly. Mono means single while poly implies selling. Thus monopoly is a form of market organization in which there is only one seller of the commodity. There are no close substitutes for the commodity sold by the seller. Pure monopoly is a market situation in which a single firm sells a product for which there is no good substitute.

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 far 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. He cannot sell as much as he wishes for any price he pleases.
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.

Monopolistic competition

Monopolistic competition is said to exist when there are many firms and each one produces such goods and services that are close substitutes to each other. They are similar but not identical. Product differentiation is the essential feature of monopolistic. Products can be differentiated by means of unique facilities, advertising, brand loyalty, packaging, pricing, terms of credit, superior maintenance services, convenient location and so on.

Features of Monopolistic

1. **Existence of Many firms:** Industry consists of a large number of sellers, each one of whom does not feel dependent upon others. Every firm acts independently without bothering about the reactions of its rivals. The size is so large that an individual firm has only a relatively small part in the total market, so that each firm has very limited control over the price of the product. As the number is relatively large it is difficult for these firms to determine its price- output policies without considering the possible reactions of the rival forms. A monopolistically competitive firm follows an independent price policy.
2. **Product Differentiation:** Product differentiation means that products are different in some ways, but not altogether so. The products are not identical but the same time they will not be entirely different from each other. IT really means that there are various monopolist firms competing with each other. An example of monopolistic competition and product differentiation is the toothpaste produced by various firms. The product of each firm is different from that of its rivals in one or more respects. Different toothpastes like Colgate, Close-up, Forehans, Cibaca, etc., provide an example of monopolistic competition. These products are relatively close substitute for each other but not perfect substitutes. Consumers have definite preferences for the particular varieties or brands of products offered for sale by various sellers. Advertisement, packing, trademarks, brand names etc. help differentiation of products even if they are physically identical.

3. **Large Number of Buyers:** There are large number buyers in the market. But the buyers have their own brand preferences. So the sellers are able to exercise a certain degree of monopoly over them. Each seller has to plan various incentive schemes to retain the customers who patronize his products.
4. **Free Entry and Exist of Firms:** As in the perfect competition, in the monopolistic competition too, there is freedom of entry and exit. That is, there is no barrier as found under monopoly.
5. **Selling costs:** 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.
6. **Imperfect Knowledge:** Imperfect knowledge about the product leads to monopolistic competition. If the buyers are fully aware of the quality of the product they cannot be influenced much by advertisement or other sales promotion techniques. But in the business world we can see that though the quality of certain products is the same, effective advertisement and sales promotion techniques make certain brands monopolistic. For examples, effective dealer service backed by advertisement-helped popularization of some brands through the quality of almost all the cement available in the market remains the same.
7. **The Group:** Under perfect competition the term industry refers to all collection of firms producing a homogenous product. But under monopolistic competition the products of various firms are not identical though they are close substitutes. Prof. Chamberlin called the collection of firms producing close subset.

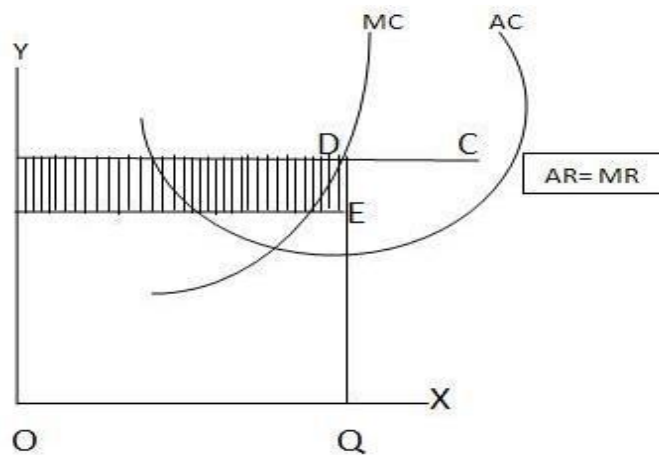
1. PRICE OUTPUT DETERMINATION IN CASE OF PERFECT COMPETITION

2. SHORT RUN:

3. 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 and insignificant. The process of price output determination in case of perfect competition.

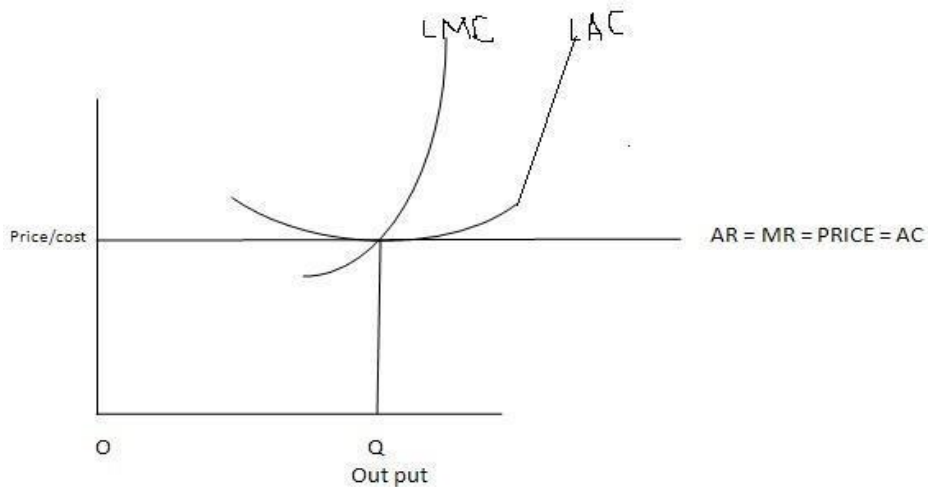
4. The firm's demand curve is horizontal at the price determined in the industry ($MR = AR = \text{price}$). This demand curve is also known as average revenue curve. This is because if all the units are sold at the same price, on an average, the revenue to the firm equals its price.



LONG RUN UNDER PERFECT COMPETITION

Having been attracted by supernormal profits, more and more firms enter the industry. With the result, there will be a scramble for scarce inputs among the competing firms pushing the input prices. Hence, the average cost increases. The entry of more and more firms will expand the supply pull

down the market price. The entry of the firms into the industry continues till the supernormal profit is completely eroded. In the long run, the firms will be in the position to enjoy only normal profits but not supernormal profit. Normal profits are the profit that is just sufficient for the firms to stay in the business.



PRICE OUT PUT DETERMINATION IN MONOPOLY

Under monopoly the average revenue curve for a firm is a downward sloping one. It is because, of the monopolist reduces the price of his product, the quantity demanded increase 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.

