Unit - 1 Managerial Economics: An Introduction

Introduction

Managerial Economics is indeed an off-shoot of the Second World War. Before the outbreak of this war, the study of economics was purely an academic exercise, while business was a pure practice based on common practical sense of human mind. The Second World War created a tremendous pressure on scarce economic resources of the world. Thus, the need for optimum utilization of resources intensified further, which ultimately gave birth to a new discipline popularly known as Managerial Economics.

The present business world has become very dynamic, complex, uncertain and risky. Therefore taking appropriate, correct and timely decision has become a challenging and tedious task. The existence/ survival and growth of business basically depends on such decisions. Undoubtedly, Managerial Economics is a friend. philosopher and guide to the business leaders and managers. Further, the growing complexity of decision-making process, the increasing use of economic logic, concepts, theories and tools of economic analysis in the process of decision-making and rapid increase in the demand for professionally trained managerial man power increased the importance of the study of managerial economics as a separate discipline of managerial curriculum. In this unit, we would be studying the meaning, nature and scope of Managerial Economics and its relationship with other branches of knowledge.

Meaning and Definition of Managerial Economics

The terms ‗**Managerial Economics**‘ and ‗**Business Economics**‘ are often synonyms and used interchangeably in managerial studies. It is also known as ‗**Economics for Managers**‟. Basically, Managerial

Economics is an **Applied Economics** in the sphere of business management. It is an application of economic theory and methodology to decision-making problems faced by the business firms. Thus, it is the economics

and tools of economics to solve the managerial problems of business organizations. Some important **definitions of Managerial Economics** are given below :

―Managerial Economics is economics applied in decision-making. It is a special branch of economics bridging the gap between the economic theory and managerial practice. Its stress is on the use of the tools of economic analysis in clarifying problems in organizing and evaluating information and in comparing alternative courses of action.‖   -**W. W. Haynes**

―Managerial Economics is the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management.‖
                         - **Spencer & Siegelman**

―The purpose of Managerial Economics is to show how economic analysis can be used in formulating business policies.‖   **-Joel Dean**

By analyzing the various definitions of managerial economics given above, we come to the conclusion that managerial economics is the study of economic theories, logic, concepts and tools of economic analysis that are used in the process of business decision-making by the business managers in taking rational, correct and timely decisions. Managerial Economics is that part of economic theory which, in general, is concerned with business activities and in particular, concerned with providing solutions to problems arising in decision-making of business organizations. Indeed, it is **an integration of economic theory and business practices**. Therefore, Managerial economics lies on the borderline of Economics and Business Management act as complementarity and bridge between Economics and Management. From this point of view, managerial economics is that branch of knowledge in which the concepts, methods and tools of economic analysis are used for analyzing and solving the practical managerial problems with the purpose of formulating rational and appropriate business policies. **Basically managerial economics concentrates on decision process, decision models and decision variables**.This can be explained by the following **schematic chart**:
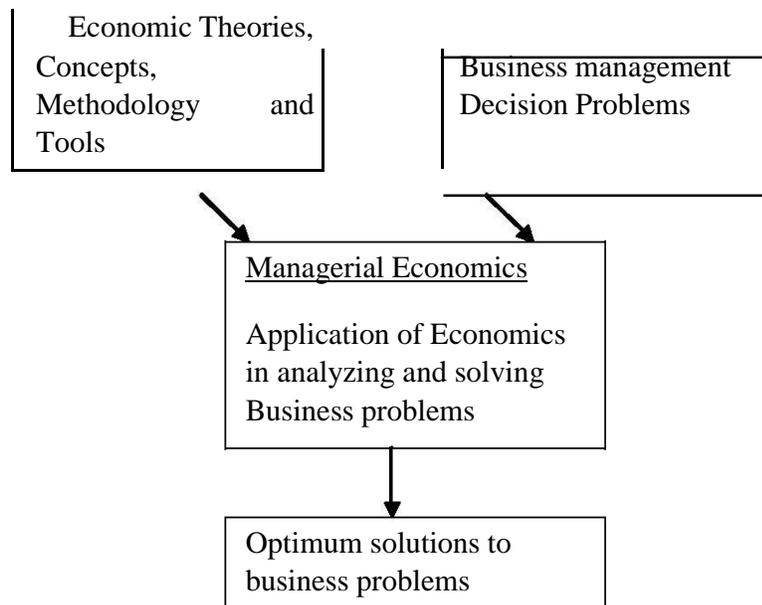
Characteristics of Managerial Economics

Prof. D .M .Mithani has mentioned the following broad salient features of Managerial Economics as a specialized discipline:

- It involves an application of Economic theory – especially, micro economic analysis to practical problem solving in real business life. It is essentially applied micro economics.
- It is a science as well as art facilitating better managerial discipline. It explores and enhances economic mindfulness and awareness of business problems and managerial decisions.
- It is concerned with firm's behaviour in optimum allocation of resources. It provides tools to help in identifying the best course among the alternatives and competing activities in any productive sector whether private or public.
  For the sake of clear understanding of the nature and subject matter of managerial economics, the point-wise analysis of **main characteristics** of managerial economics is given below:
- **Micro economic analysis**: The main part of the study of managerial economics is the behaviour of business firm/s, which is micro economic unit. Therefore, managerial economics is essentially a micro economic analysis. Under the study of managerial economics, the problems of firm are analyzed and solved through the application of economic methods and tools. It does not study the whole economy.
- **Economics of the firm:** According to **Norman F. Dufty,** Managerial Economics includes, that portion of ‒Economics known as the theory of firm, a body of the theory which can be of considerable assistance to the businessman in his decision-making‖. For instance, the study of managerial economics includes the study of the cost and revenue analysis, price and output determination, profit planning, demand analysis and demand forecasting of a firm. As already stated earlier, the another name of managerial economics is ‗Economics of the Firm.'
- **Acceptance of use & utility of macro economic variables:** In understanding the overall economic environment of an economy and its influence on a particular firm, the study and knowledge of macro economic variables or macro economics is a must. For example, the study of Monetary, Fiscal, Industrial, Labor and Employment and EXIM policy, National Income, Inflation etc. is done in managerial economics as to know the influences of these on the business of a firm. The study of macro economic variables helps in understanding the influence of exogenous factors on business activities of a firm. Without the study of important macro economic variables, **proper environmental scanning** is not possible.
- **Normative approach:** Managerial Economics is basically concerned with value judgment, which focusses on ‗what ought to be'**.** It is **determinative rather than descriptive** in its approach as it examines any decision of a firm from the point of view of its good and bad impact on it. It means that a firm takes only those decisions which are favourable to it and avoids those which are unfavourable to it. The emphasis is on ‗**Prescriptive**' models rather than on ‗**Descriptive**' models.
- **Emphasis on case study:** In place of purely theoretical and academic exercise, managerial economics lays more emphasis on case study method. Hence, it is a practical and useful discipline for a business firm. It diagnises and solves the business problems. Therefore, it **serves as lamp post of knowledge** and guidance to business professionals / organizations in arriving at optimum solutions.
- **Sophisticated and developing discipline:** Managerial Economics is more refined and sophisticated discipline as compared to Economics because it **uses modern scientific methods of statistics and mathematics**. Not only this, the **methods of Operational Research** and Computers are also used in it for building scientific and practical models for analyzing and solving the real business
  problems under uncertain and risky environment.

- **Applied/Business Economics:** Managerial Economics is an application of economics into business practices and decision-making process; therefore, it is an applied economics/business economics.

The concepts of economic theory that are widely used in managerial economics are the following:
- Demand and Elasticity of demand
- Demand forecasting
- Production Theory
- Cost Analysis
- Revenue Analysis
- Price determination under different market conditions/structures
- Pricing methods in actual practice
- Break-even analysis
- Linear Programing
- Game Theory
- Product and Project Planning
- Capital Budgeting and Management
- Criteria for public investment decisions

Basic concepts of Managerial Economics/Economic concepts applied to business analysis
- Marginalism / Marginal Principle
- Incrementalism / Incremental Principle
- Equi-Marginalism /Equi- Marginal Principle
- Discounting Principle
- Opportunity Cost principle
- Risk and uncertainty
- Profits
- Firm, Industry and Market
- Economic and Econometric Models

- **Study of business environment:** Business environment in present world has not only become more complex, but also more dynamic. In a very complex and rapidly changing environment, making correct and timely decisions is a tedious task. Managerial Economics helps in understanding the business environment of firm/s.

Nature of Managerial Economics

Generally, it is believed that Managerial Economics is a blend of science and art because on one hand, it is a systematic study of economic concepts, principles, methods & tools, which are used in business decision-making process and on the other hand, it is the study of how these are used and applied in best possible manner in analyzing and solving business problems. In fact, science is a knowledge acquiring discipline, whereas arts is a knowledge applying discipline.

The following basic questions arise about the nature of Managerial Economics:
1. Whether managerial economics is a science or an art or both; and
2. If it is a science- then it is a positive science or a normative science or both

We would examine these issues systematically one by one in the coming paragraphs.

Managerial Economics is **both knowledge acquiring and knowledge applying** discipline. Thus, it can be concluded that managerial economics is **science and arts both**.

The best method of doing a work is an art and managerial economics is also an art as it helps us in choosing the best alternative from among the many available alternatives. Not only this, it also implement best alternative with best possible method.

After knowing the answer of first question, we would examine whether the managerial economics is a positive science or a normative science or a blend of both. Before knowing the answer of this question, we should understand the meaning of positive and normative science.

Positive Science is a systematic knowledge of a particular subject wherein we study the **cause and effect** of an event. In other words, it explains the phenomenon as: **What is, what was and what will be**. Under the study of positive science, principles are formulated and they are tested on the yardstick of truth. Forecasts are made on the basis of them. From this point of view, **managerial economics is also a positive science as it has its own principles/theories/laws by which cause and effect analysis** of business events/activities is done, forecasts are made and their validities are also examined. For instance, on the basis of various methods of forecasting, demand forecasts of a product is made in managerial economics and the element of truth in forecast is also examined/tested.

Normative Science studies things as they ought to be. Ethics, for example, is a normative science. The focus of study is **„What should be"**. In other words, it involves value judgment or good and bad aspects of an event. Therefore, normative science is **perspective** rather than **descriptive**. It cannot not be neutral between ends.

Managerial economics is also a **normative science** as it suggests the best course of an action after comparing pros and cons of various alternatives available to a firm. It also helps in formulating business policies after considering all positives and negatives, all good and bad and all favours and a disfavours. Besides conceptual/theoretical study of business problems, practical useful solutions are also found. For instance, if a firm wants to raise 10% price of its product, it will examine the consequences of it before raising its price. The hike in price will be made only after ascertaining that 10% rise in price will not have any adverse impact on the sale of the firm.

On the basis of the above arguments and facts, it can be said that managerial economics is a **blending of positive science with normative science**. It is positive when it is confined to statements about causes and effects and to functional relationships of economic variables. It is normative when it involves norms and standards, mixing them with cause and effect analysis. Managerial economics is **not only a tool making, but also a tool using science**. It not only studies facts of an economic problem, but also suggests its optimum solution.

Business ethics forms the core of managerial economics as cultural values, social customs and religious sentiments of the people coin the normative aspect of business activities. These things matter in designing production pattern and planning of the business in a country/area. For instance, a modern multi-national corporation has to consider the socio-cultural and religious moods / sentiments of the people before launching its product. The main purpose is not to hurt the sentiments of the people but to promote the well-being of the people along with business. Thus, we can **conclude** by saying:

- **Managerial economics is a science as well as an art.**
- **Managerial economics a positive and normative science both.**
- **Being of the determinative/perspective nature, the focus is on what should be or business decisions are based an value judgment considering the beneficial and harmful aspects of such decisions.**

Scope of Manegerial Economics

Economics has two major branches namely Microeconomics and Macroeconomics and both are applied to business analysis and decision-making directly or indirectly. Managerial economics comprises all those economic concepts, theories, and tools of analysis which can be used to analyze the business environment and to find solutions to practical business problems. In other words, managerial economics is

applied economics

The areas of business issues to which economic theories can be applied may be broadly divided into the following two categories:

- Operational or Internal issues; and
- Environmental or External issues

Micro Economics Applied to Operational Issues

Operational problems are of **internal nature**. They arise within the business organization and fall within the perview and control of the management. Some of the important ones are:

- Choice of business and nature of product, i.e., what to produce;
- Choice of the size of the firm, i.e., how much to produce;
- Choice of technology, i.e., choosing the factor combination;
- Choice of price, i.e. ,how to price the commodity;
- How to promote sales, i.e., sales promotion measures;
- How to face price competition;
- How to decide on new investment;
- How to manage profit and capital;
- How to manage inventory, i.e., stock of both finished goods and raw material

The above mentioned issues fall within the ambit of micro economics, therefore, the following constitute the scope of managerial economics:

Theory of demand

- Consumer behaviour- maximization of satisfaction
- Utility analysis
- Indifference curve analysis
- Demand analysis and elasticity of demand
- Demand forecasting and its techniques/methods

Theory of production and production decisions

- Production function [Inputs and output relationship] in short-run and long-run
- Cost and output relationship in short-run and long-run
- Economies and diseconomies of scale

- Optimum size of firm and determining the size of firm.
- Deployment of resources [labor and capital] for having optimum combination of factors of production.

Analysis of market structure and pricing theory

- Determination of price under different market conditions
- Price discrimination
- Multiple pricing policy
- Advertising in competitive markets
- Different pricing policies and practices

Profit analysis and profit management

- Nature and types of profit
- Profit planning and policies
- Different theories of profit

Theory of capital and investment decisions

- Cost of capital and return on capital-choice of investment projects
- Assessing the efficiency of capital
- Most efficient allocation of capital
- Capital budgeting

Macro Economics Applied to Business Environment

Environmental issues relate to general environment in which business operates. They are related to overall economic, social and political environment of the country. The following are the **main ingredients of economic environment** of a country :

- The type of economic system- capitalist, socialist or mixed economic system.
- General trends in production, employment, income, prices, saving and investment.
- Volume, composition and direction of foreign trade.
- Structure of and trends in the working of financial institutions- Banks, NBFCs, insurance companies an other financial institutions.
- Trends in labour and capital market.
- Economic policies of the government- Fiscal policy, Monetary policy, EXIM-policy, Industrial policy, Price policy etc.
- Social factors- value system, property rights, customs and habits.
- Social organizations- Trade unions, consumer unions and consumer co-operatives and producers unions.
- Political environment is constituted of the following factors:
- Political system-democratic, socialist, communist, authoritarian or any other type.
- State's attitude towards private sector
- Policy, role and working of public sector
- Political stability.
- The degree of openness of the economy and the influence of MNCs on domestic markets-Integrations of nation's economy with rest of the world (Policy of globalization)

The environmental factors have a far reaching influence on the functioning and performance of firm/s. Therefore, business managers have to consider the changing economic, social and political environment before taking any decision. Managerial economics is however, **concerned with only the economic environment and in particular with those which form the business climate.** The study of social and political factors falls out of the perview of managerial economics. It should, however, be borne in mind that economic, social and political factors are inter-dependent and interactive.

The environmental issues mentioned above fall within fourwalls of macro economics, therefore the following constitute the scope of managerial economics:

Issues related to Macro Variables

- General trends in economic activities of the country
- Investment climate
- Trends in output
- Trends in price - level (state of inflation)
- Consumption level and its pattern
- Profitability in business expansion

Issues related to Foreign Trade

- Trade relation with other countries
- Sector and firms dealing in exports and imports
- Exchange rate fluctuations
- Inflow and outflow of capital
- Trends in international trade- volume, composition, and direction
- Trends in international prices of various goods and services
- International monetary mechanism
- Rules, regulations and policies of WTO

Issues related to Government Policies

- Regulation and control of economic activities of private sector business enterprises
- Enforcing the government rules and regulations for imposing of social responsibility
- Striking balance between firm's objective of profit maximization and society's interest
- Policy and regulatory measure for reducing social costs in terms of environmental pollution, congestion and slums in cities, basic amenities of life such as means of transportation and communication, water, electricity supply etc.

Relationship of Managerial Economics with Other Disciplines

By its nature, managerial economics borrows heavily from several other disciplines. The nature and scope of managerial economics can also be understood well by studying its relationship with other disciplines. Managerial economics draws heavily from the following disciplines:

Economics and Econometrics – As stated earlier that managerial economics is an application of economic theory into business practices / management. Managerial economics **uses both micro and macro economics**-their concepts, theories, tools and techniques. In managerial economics, we also use various types of models such **as schematic models** (diagrams) **analog models** (flow charts) and **mathematical models and stochastic models**. The roots of most of these models lie in economic logic. Economics also tells us the art of constructing models. **Empirically estimated functions**, which are being used in managerial economics are basically econometric estimates.

Mathematics and Statistics – Mathematical tools are widely used in model building for exploring the relationship between related economic variables. Most of the decision models are constructed in terms of mathematical symbols. Geometry, trignometry and algebra are different branches of mathematics and they provide various tools & concepts such as logarithms, exponentials, vectors, determinants, matrix algebra, and calculus, differentials and integral.

Similarly, statistical tools are a great aid in business decision-making. Statistical tools such as theory of probability, forecasting techniques, index numbers and regression analysis are used in predicting the future course of economic events and probable outcome of business decisions. Statistical techniques are used in collecting, processing & analyzing business data, and in testing the validity of economic laws.

Operational Research (OR) – OR is used for solving the problems of allocation, transportation, inventory building, waiting line etc.. **Linear programming** and **goal programming models** are very useful for managerial decisions. These are widely used OR techniques. In fact, OR is an **inter-disciplinary solution finding technique**. It combines economics, mathematics and statistics to build models for solving specific problems and to find a quantitative solution there by.

Accountancy – It provides **business data support** for decision-making. The data on costs, revenues, inventories, receivables and profits is provided by the accountancy. Cost accounting, ratio analysis, break-even analysis are the subject matters of accountancy and they are of great help to managers in decision-making.

Psychology and Organisation Behaviour (OB)–In fact, managerial economics analyses the individual behaviour of a buyer and seller [microeconomic units]. Psychology is helpful in understanding the behavioural aspects like attitude and motivation of individual decision making unit. **Psychological Economics**-a new discipline of recent origin analyses the buyer's behaviour useful for marketing management. **Behavioural models** of firms have also been developed based on organization psychology and micro economics to explain the economic behaviour of a firm.

Management Theory – Management theories bring out the behaviour of the firm in its efforts to achieve some predetermined objectives. With change in environment and circumstances, both the objectives of firm and managerial behaviour change. Therefore sufficient knowledge of management theory is essential to the decision-makers. The basic knowledge of the **principles of personnel, marketing, financial** and **production management** is required for accomplishing the task.

Summary

It is now universally accepted that the Managerial Economics has emerged as a separate branch of knowledge in management studies. Managerial Economics is the study of economic theory, logic and tools of economic analysis that are used in the process of business decision making. Economic theories and techniques of economic analysis are applied to analyze business problems, evaluate business options and opportunities with a view to arriving at an appropriate business decision. Infact, it is an applied economics. The important features of Managerial Economics are: Micro economic nature, economics of the firm, use of macro economic variables, normative nature, focus on case study method, applied use of economics and more refined and developing discipline.

The scope of managerial economics spreads both to micro and macro economics. The theory of demand, theory of production, analysis of market structure and pricing theory, profit analysis and management, theory of capital and investment decisions are the subject matter of micro economics.

Macro economic issues pertain to macro economic variables, foreign trade and various policies of the government. Operational issues are internal and they are part of micro economics, while environmental issues are exogeneous and they are part of macro economics. Both these together constitute the subject matter and scope of managerial economics.

Managerial economics is a science as well an art. It is basically a normative science involving value judgment. It is a tool making as well as tool using discipline. The most important disciplines on which managerial economics draws heavily are Economics and Econometrics, Mathematics and Statistics, Operational Research, Accountancy, Psychology & Organizational Behaviour and Management.

Key Words

- **Managerial Economics :** is an applied Economics in the field of business management. It is an application of economic theory and methodology in the business decision-making process. It is an integration of economic theory with business practices.
- **Micro Economics:** It is that branch of Economics in which the study of an individual economic unit is done. For instance, the study of a firm is a subject matter of micro economics. It is also known as the method of slicing.
- **Macro Economic:** It is that branch of Economics in which the economy as a whole is studied. It is also known as the economics of lumping / aggregation.
- **Macro Economic Variables :** These are the variables which relate to the entire economy of a nation / globe such as National Income, Inflation, Recession and they constitute the part of overall economic environment.
- **Positive Science:** It pertains to the cause and effect relationship of an event. It is a factual analysis, therefore, it studies _What is‖.
- **Normative Science:** A science which studies ‒What ought to be‖. In other words, it involves value judgement, hence it is perspective in nature.

Self Assessment Test

1. What does economic theory contribute to Managerial Economics?
2. What is the contribution of psychology and organization behavior to Managerial Economics?
3. How is mathematics & statistics and operational research useful to Managerial Economics?
4. List the important characteristics of Managerial Economics.
5. Summarize the scope of Managerial Economics as a learner.
6. Why should you study the Managerial Economics?

Suggested Books / References

1. Mithani D.M. : Managerial Economics, Himalaya Publishing House, Mumbai
2. Dwivedi, D.N. : Managerial Economics, Vikas Publishing House Pvt. Ltd, New Delhi
3. Misra & Puri : Economics for Managers, Himalaya Publishing House, Mumbai
4. Adhikary M. : Managerial Economics, Khosla Educational Publishers, Delhi
5. Mathur N.D., : Managerial Economics, Shivam Book House Private Limited, Jaipur

Unit - 2 Theory of Demand

Introduction

Without understanding the concept of demand and supply, economic analysis is incomplete and meaningless. Demand is one of the most important economic decision variables. The analysis of demand for a firm's product plays a crucial role in business decision-making. Demand determines the size and pattern of market. All business activities are mostly demand driven. For instance, the inducement to investment and production is limited by the size of the market of products. The profit of a firm is influenced and determined by the demand and supply conditions of its output and inputs. Even if a firm pursues other objectives than the profit maximization, demand concepts are still relevant. For instance, the objective of firm is _customer service' or discharging _social responsibility'. Without analyzing the needs of customers and evaluating social preferences, these objectives cannot be achieved. All these variables are an integral part of the concept of demand. Thus, the **demand is the mother of all economic activities**. The firm's production planning, sales and profit targeting, revenue maximization, pricing policies, inventory management, advertisement and marketing strategy all are dependent on the demand of its product. Not only this, the survival and growth of a firm also depends on the demand for its product. In this unit, we shall be examining various concepts of demand and the law of demand.

Concepts of Demand

Demand is a technical economic concept. It is a different and broader concept than the _desire' and ‒want‖. The following **five elements are inclusive** in it:

1. Desire to acquire a product-willingness to have it,
2. Ability to pay for it-purchasing power to buy it,
3. Willingness to spend on it,
4. Given/particular price, and
5. Given/particular time period.

The presence of **first three elements constitute the „want"**. Thus, it is evident that **without reference to specific price and time period, demand has no meaning**. For instance, Ram is desirous of buying a car, but he does not have sufficient money to buy it, it can't be termed demand as he does not have sufficient purchasing power to buy a car. Suppose, Ram is has sufficient money to buy a car, but he does not want to spend on it-even in such a situation, the desire of Ram for a car will remain a desire. What is required for being a demand is sufficient purchasing power and willingness to spend on that product for which he has desire to acquire. Not only this, the demand for a product must be expressed in reference to certain given price and time period, otherwise it won't be a demand. Thus, the **concept of demand has following characteristics**:

1. It is effective desire / want,
2. It is related with certain price, and
3. It is related with specific time period.

According to **Benham**, ‒The demand for any thing at a given price is that amount of it, which will be bought at a time at that price.‖ The complete definition of demand has been given by **Prof. Meyers** According to him, ‒The demand for a good is a schedule of the amount that buyers would be willing to purchase at all possible prices at any one instant of time.‖

Distinct concepts of demand

1. **Direct and derived demand:** Direct demand refers to the **demand for goods meant for final consumption**. It is the **demand for consumer goods** such as sugar, milk, tea, food items etc. On the contrary to it, derived demand refers to the **demand for those goods which are needed for further production** of a particular good. For instance, the demand for cotton for producing cotton textiles is a case of derived demand. Indeed, **derived demand is the demand for producer"s goods;** i.e., the demand for raw materials, intermediate goods and machine tools and equipment. The another example of derived demand is the **demand for factors of production**. The derived demand for inputs also depends upon the degree of substitutability/complementarities between inputs used in production process. For example, the degree of substitutability between gas and coal for fertilizer production.

2. **Domestic and industrial demand:** The distinction between domestic and industrial demand is very important from the pricing and distribution point of view of a product. For instance, the price of water, electricity, coal etc. is deliberately kept low for domestic use as compared to their price for industrial use.

3. **Perishable and durable goods demand:** Perishable goods are also known as **non-durable / single use goods**, while durable goods are also known as **non- perishable/ repeated use goods**. Bread, butter, ice-cream etc are the fine example of perishable goods, while mobiles and bikes are the good examples of durable goods. **Both „consumers" and „producers" goods may be of perishable and non-perishable nature**. Perishable goods are used for meeting immediate demand, while durable goods are meant for current as well as future demand. Durable goods demand is

influenced by the replacement of old products and expansion of stock. Such demand fluctuates with business conditions, speculation and price expectations. **Real wealth effect** has strong influence on demand for consumers durables.

4. **New and replacement demand:** New demand is meant for **an addition to stock**, while replacement demand is meant for **maintaining the old stock of capital**/asset intact. The demand for spare parts of a machine is a good example of replacement demand, but the demand for new models of a particular item [say computer or machine] is a fine example of new demand. Generally, **new demand is of an autonomous type**, while the **replacement demand is induced** one-induced by the quantity and quality of existing stock. However, such distinction is more of a degree than of kind.

5. **Final and intermediate demand:** The demand for semi-finished goods and raw materials is derived and induced demand as it is dependent on the demand for final goods. The demand for final goods is a direct demand. This type of distinction is based on types of goods- final or intermediate and is often employed in the context of **input-output models**.

6. **Short run and long run demand:** The distinction between these two types of demand is made with specific reference to time element. Short- run demand **is immediate demand** based on available taste and technology, products improvement and promotional measures and such other factors. **Price-income fluctuations** are more relevant in case of short- run demand, while changes in **consumption pattern**, **urbanization and work culture** etc. do have significant influence on long –run demand. Generally, long-run demand is for future consumption.

7. **Autonomous and induced demand:** The **demand for complementary goods** such as bread and butter, pen and ink, tea, sugar milk illustrate the case of induced demand. In case of induced demand, the demand for a product is dependent on the demand/purchase of some main product. For instance, the demand for sugar is induced by the demand for tea. Autonomous demand for a product is **totally independent of the use of other product**, which is rarely found in the present world of dependence. These days we all consume bundles of commodities. Even then, all direct demands may be loosely called autonomous. The following equation illustrates the determinants of demand.

$$D_X = á + â P_X$$

Here á is a symbol of autonomous part - which captures the influence of all non-price factors on demand, whereas $âP_X$ symbolizes the induced part-D_X is induced by P_X, given the size of β .

8. **Individual and Market Demand:** The demand of an individual for a product over a period of time is called as an individual demand, whereas the sum total of demand for a product by all individuals in a market is known as market/collective demand. This can be illustrated with the help of the following table:

Individual and Market Demand Schedule

Price of Commodity (Rs.)	Units of X Commodity Purchased by			Market (Total)
	A	B	C	
6	5	10	12	27
7	4	8	9	21
8	3	5	7	15

The distinction between individual and market demand is very useful for personalized service/target group planning as a part of sales strategy formulation.

9. **Total market and segmented market demand:** A market for a product may have **different segments based on location, age, sex, income, nationality etc**. The demand for a product in a **particular market segment** is called as segmented market demand. Total market demand is a **sum total of demand in all segments of a market** of that particular product. Segmented market demand takes care of different patterns of buying behaviour and consumer preferences in different segments of the market. Each market segment may differ with respect to delivery prices, net profit margins, element of competition, seasonal pattern and cyclical sensitivity. When these differences are glaring, demand analysis is done segment-wise, and accordingly, different marketing strategies are followed for different segments. For instance, airlines charge different fares from different passengers based on their class-economy class and executive/business class.

10. **Company and industry demand:** A company is a **single firm** engaged in the production of a particular product, while an industry is the **aggregate / group of firms** engaged in the production of the same product. Thus, the company's demand is similar to an individual demand, whereas the industry's demand is similar to the total demand. For instance, the demand for iron and steel produced by Bokaro plant is an example of company's demand, but the demand for iron and steel produced by all iron and steel companies including the Bokaro plant is the example of industry demand. **The determinants of a company's demand may be different from industry's demand**. There may be the inter-company differences with regard to technology, product quality, financial position, market share & leadership and competitiveness. The understanding and knowledge of the relation between company and industry demand is of great significance in understanding the different market

structures/forms based on nature and degree of competition. For example, under perfect competition, a firm's demand curve is parallel to ox-axis, while under monopoly and monopolistic competition, it is downward sloping to the right.

The Law of Demand

The law of demand states **an inverse relationship between the price of a commodity and its quantity demanded**, if other things remaining constant (Ceteris Paribus), i.e., at higher price, less quantity is demanded and at lower price, larger quantity is demanded.

Prof. Paul Samuelson has lucidly defined the law of demand. According to him, –if a greater quantity of a good is thrown on the market then - other things being equal- it can be sold only at a lower price.‖

Assumptions of the law of demand: The law of demand is based on the following important ceteris paribus assumptions:

- The money income of consumer should remain the same.
- There should be no change in the scale of preference (taste, habit & fashion) of the consumer.
- There should be no change in the price of substitute goods.
- There should be no expectation of price changes of the commodity in near future.
- The commodity under question should not be prestigious or of snob appeal.

Reasons behind downward sloping demand curves

As we know that most of the demand curves slope downward to the right because of an inverse relationship between the price of a commodity and its quantity demanded. But the question is why inverse relationship exists between the price and quantity demanded. Economists have mentioned the following reasons of this relationship:

1. **Application of the law of diminishing marginal utility:** The marginal utility curve slopes downward, hence the demand curve also slopes downward to the right.
2. **Substitution effect:** The commodity under question becomes cheaper with fall in its price in comparison to its substitutes, therefore demand increases.
3. **Income effect:** With fall in price of the commodity, demand increases due to increase in **real income** as a result of **positive income effect**.
4. **Falling prices attract new consumers** as the commodity now becomes affordable to them.
5. With fall in price of the commodity consumers start using it in less important uses, therefore demand increases. Generally, commodities have different / varied uses.

Exception to the law of demand or upward sloping Demand curve

Sometimes, the law of demand may not hold true, although rarely. In such a situation, a consumer may purchase **more at higher price and less at lower price**. In this unusual condition, demand curve will be upward sloping from left to the right as shown below:

Positive relationship between Px and Dx, hence demand curve is positively sloped.
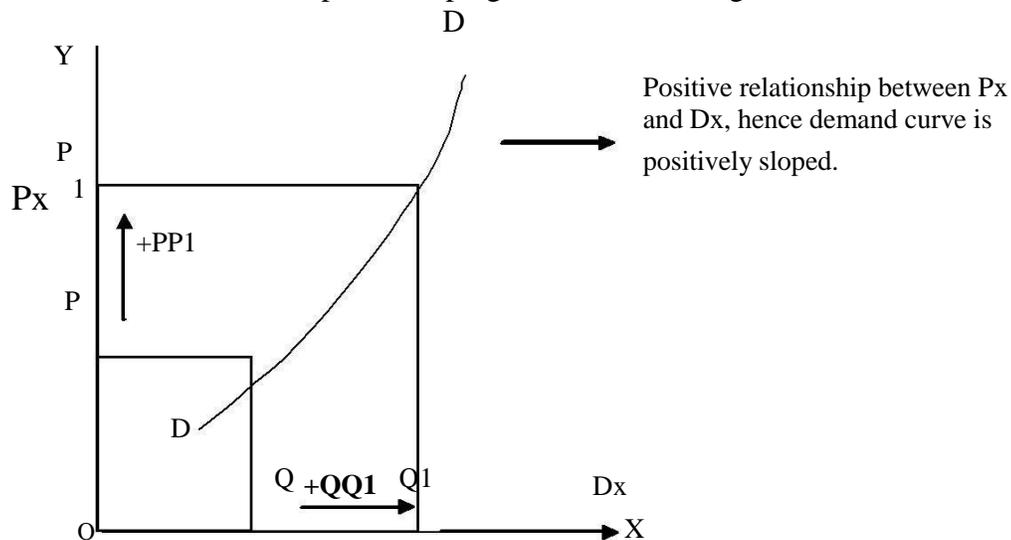
few real exceptions to the law of Demand

1. **Giffen goods:** In case of such goods, the income effect is negative and it is stronger than positive substitution effect. Examples of such goods are coarse grain like jowar, bajra and coarse cloth.
2. **Articles of Distinction/Snob appeal:** They satisfy aristocratic desire to preserve exclusiveness for unique goods- such goods are purchased only by few highly rich people for snob appeal. For instance, very costly diamonds, rare paintings, Rolls-Royce- cars and antique items. These goods are called –**veblen goods**‖ after the name of an American economist.
3. **Consumers psychological bias or illusion** about the quality of commodity with price change. They feel that high priced goods are better quality goods and low price goods are inferior goods.

Prof. Benham has given an example of a **book of photographs** during the first world war. The sale of second edition of the book increased tremendously inspite of rise in its price, though the book contained the same photographs without any change.

4. The law of demand does not apply in case of **life saving essential goods** and also **in times of extraordinary circumstances** like inflation, deflation, war and other natural calamities. The law also does not hold true in case of **speculative demand**. Stock markets are the fine examples of speculative demand

Demand Schedule and Demand Curve

Demand schedule is a **statistical/tabular statement** showing the different quantities of a commodity which will be bought at its different prices during a specified time period. It is a table which represents functional relationship between price of a commodity and its quantity demanded. Demand schedule can be **for an individual** –known as **Individual Demand Schedule (IDS)** and it can be for the **whole market**-known **as Market Demand Schedule(MDS)**.MDS can be obtained by aggregating the IDS as illustrated earlier in this unit under the heading of individual and market demand.

Demand Curve: By plotting the demand schedule on graph, we can obtain the demand curve. According to **Prof. Samuelson**, ‒Picturization of demand schedule is called the demand curve‖. Accordingly, there can be two types of demand curve- **Individual Demand Curve based on IDS** and **Market Demand Curve based on MDS**.

Demand curve may be linear as well as non-linear depending upon the nature of demand function.
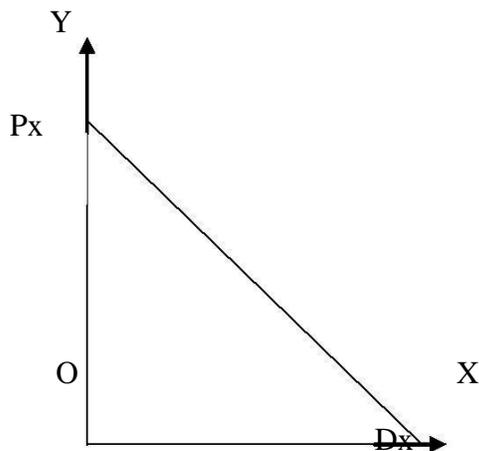
Linear Demand curve   **Non-Linear Demand Curve**
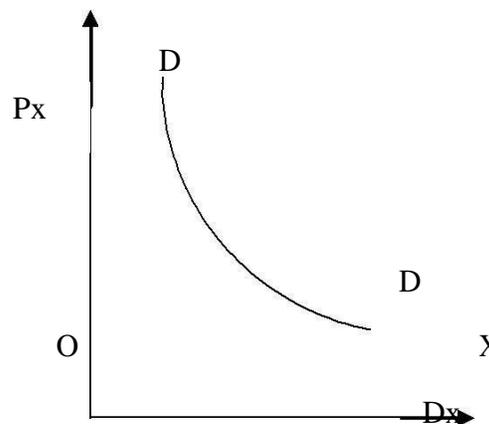
Determinants of Demand / Demand Function

The demand for a particular commodity is influenced by so many factors- they together are known as determinants of demand in technical jargon, it is stated as demand function. A demand function in mathematical terms expresses the **functional relationship between the demand for a product and its various determining factors.** For instance,

$$D_X = f (P_x, P_s, P_c, Y_d, T, A, W, C, E, P, G, U)$$

Here:

D_x =   Demand for x commodity (say, tea)

Px	=	Price of x commodity (of tea)
Ps	=	Price of substitute of x commodity (coffee)
Pc	=	Price of complementary goods of x commodity (sugar, milk)
Yd	=	Disposable income of the consumer
T	=	Taste and Preference of the consumer
A	=	Advertisement of x commodity
W	=	Wealth of purchaser
C	=	Climate
E	=	Price expectation of the consumer
P	=	Population
G	=	Govt. policies pertaining to taxes and subsidies
U	=	Other factors (unspecified/unidentified)

Under normal circumstances, the **impact of these determinants** can be explained as under:

1. Demand for x is inversely related to its own price. As price increases, the demand tends to fall and vice-versa

$$\frac{\delta Dx}{\delta Px} < 0$$

This is price- demand relation, depicting the **price- effect** on demand

2. Disposable income (budget) of the consumer is one of the important variables to influence the demand. With increase in income, people buy more of superior/normal goods and less of inferior / Giffen goods. The **income effect** on demand may be **positive as well as negative**.

$$\frac{\delta Dx}{\delta Yd} \genfrac{}{}{0pt}{}{> 0}{<}$$

This is an income – demand relation, depicting **income effect.**

The **Bandwagon** effect or **Demonstration effect** may influence the demand and it is a result of **relative income.**

3. The demand for x is also influenced by the prices of its related goods (substitutes or complements as the case may be). **Substitution effect is always positive** and **complementarity effect is negative** as stated earlier

$$\frac{\delta Dx}{\delta Ps} > 0, \qquad \frac{\delta Dx}{\delta Pc} < 0$$

This is cross-demand relation showing the **substitution and complementary effect**

4. The demand for x may be sensitive to price expectation of the consumer (depends on psychology of the consumer)

$$\frac{\delta Dx}{\delta E} \genfrac{}{}{0pt}{}{> 0}{<}$$

Price expectation effect on demand is not certain. For instance, **Speculative demand.**

5. Accumulated savings and expected future income, its discounted value along with present income – permanent and transitory - all together constitute the nominal wealth of a person. We may also

add to his current assets and other forms of physical capital adjusted to price level – This is **real wealth** and it has influence on the demand. For example, a person has a two wheeler, now may demand a four wheeler and it can be stated as

$$\frac{Dx}{\delta w} > 0$$

6. Taste, preference and habits of consumers may also have decisive influence an the pattern of demand. Social customs, traditions and conventions are **Socio – psychological** determinants of demand – these are **non-economic and non-market factors**.
7. Advertisement has great influence on demand. It is in observed fact that sales turnover of firms increases up to a point due to advertisement – this is **promotional effect** on demand and can be stated as

$$\frac{\delta Dx}{\delta A} \; {> 0 \atop <}$$

8. Climate also influences the demand for different goods. For instance, the demand for coolers and A.C. increases in summers, while their demand declines in winters.
9. The number and composition (age, sex etc.) of population also influence the demand for goods.
10. Government policy on taxes and subsidies also influences the demand of different goods differently. For instance, increase in tax rates / imposition of new taxes reduce the demand, while increase in subsidies increase the demand.

Types of Demand

Prof. Baber has mentioned the following three types of demand based on three important factors [price of commodity, income of the consumer and prices of related goods] influencing the demand:

1. **Price demand:** This type of demand indicates the _price effect', which explains the impact of changes in price of a particular product on its quantity demanded, if other factors influencing the demand remaining constant. The functional relationship between price of a product and its quantity demanded can be put in the following equation form and be illustrated with price demand schedule:

$$D_X = f[P_X]$$

Here: D_X = Demand for x commodity, f = functional relation, and Px = Price of x commodity

Price Demand Schedule

Price of X Commodity (Px) (Rs.)	Demand for X Commodity (Dx) (units)	Particulars
2	100	Inverse relationship between
3	80	Px and Dx showing negative
4	40	price effect.

Negatively sloped demand curve/
Sloping downward to the right
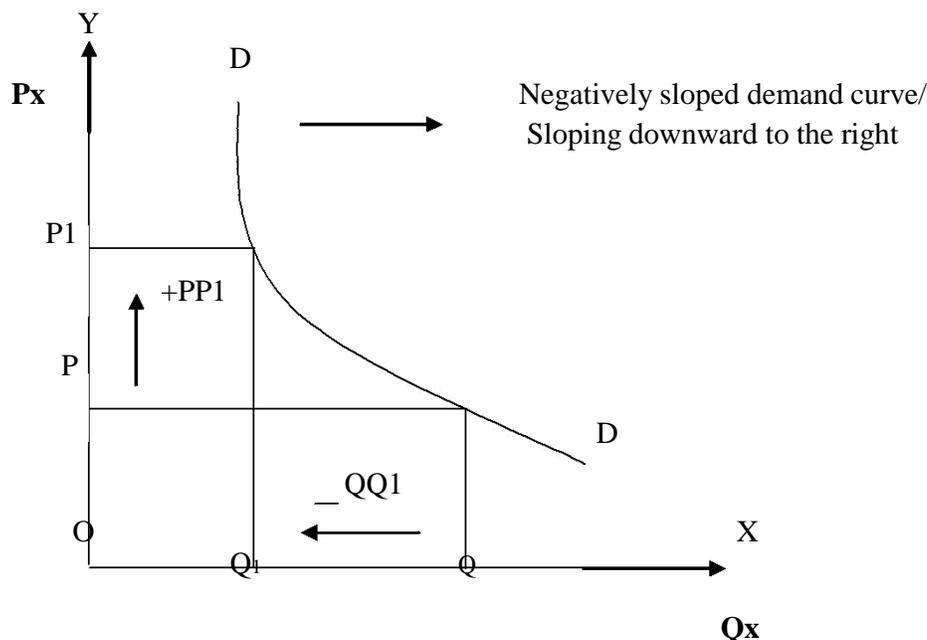
2. **Income demand:** This type of demand shows the _income effect", which explains the impact of changes in the income of the consumer on the demand for a particular product, other things remaining constant. The functional relationship between the income of the consumer and the demand for a product can be put as under:

$$D_X = f[y]$$

Here: Dx = Demand for x commodity,

f = Functional relation, and

Y = Income of the consumer.

From income demand point of view, goods can be **classified into two categories** as explained under:
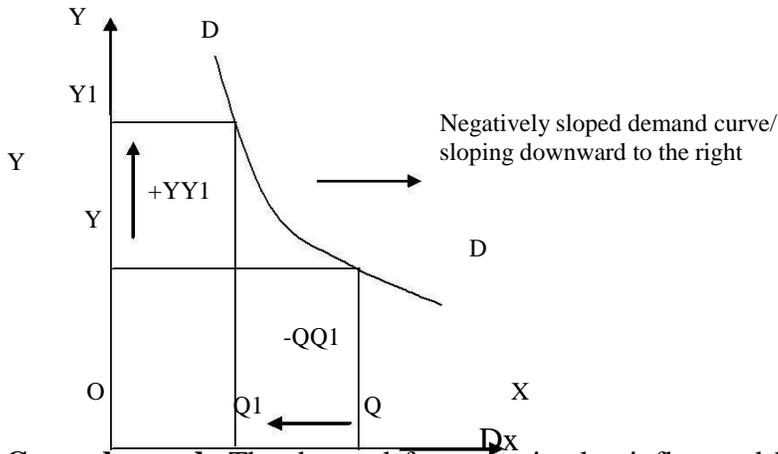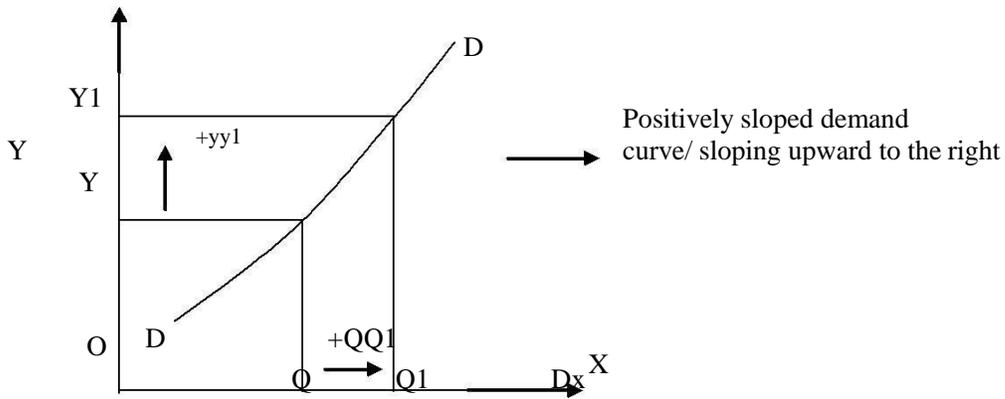
a) **Superior goods:** In case of such goods **income effect is positive** as demand for them increases with increase in income of the consumer and vice-versa. This is illustrated in the following table:

Income of the consumer(Y) (Rs.)	Demand for x commodity (Dx) (units)	Particulars
1000	10	Positive relationship between Y & Dx showing positive income effect
2000	20	
3000	30	

b) **Inferior goods:** The demand for such goods declines with increase in the income of the consumer and vice-versa. The **income effect is negative** in case of such goods. Since this was observed, for the first time, by **Robert Giffen**, hence to give him honour, inferior goods are termed as **Giffen goods**. But there is difference between inferior goods and Giffen goods. Only those inferior goods are termed as Giffen goods, on which a consumer spends comparatively a large part of his income. Thus, all **Giffen goods are inferior goods, but all inferior goods are not Giffen goods**. The example of Giffen goods is coarse grain and coarse cloth and this is illustrated in the following table:

Income of the consumer(Y) (Rs.)	Demand for x Commodity (Dx) (units)	Particulars
1000	10	Inverse relationship between Y & Dx depicting negative income effect
2000	05	
3000	02	

Demand curve for superior goods

Positively sloped demand curve/ sloping upward to the right

Negatively sloped demand curve/ sloping downward to the right

3. Cross demand: The demand for a is also influenced by the changes in price of its related goods (substitutes or complementary goods as the case may be). This is technically termed as ‗**cross effect**' and can be put in the following equation:

$$D_X = f(pr) \quad \text{or} \quad D_X = f(py)$$

Here: D_X = Demand for x commodity, f = function, and Pr = Price of related goods,
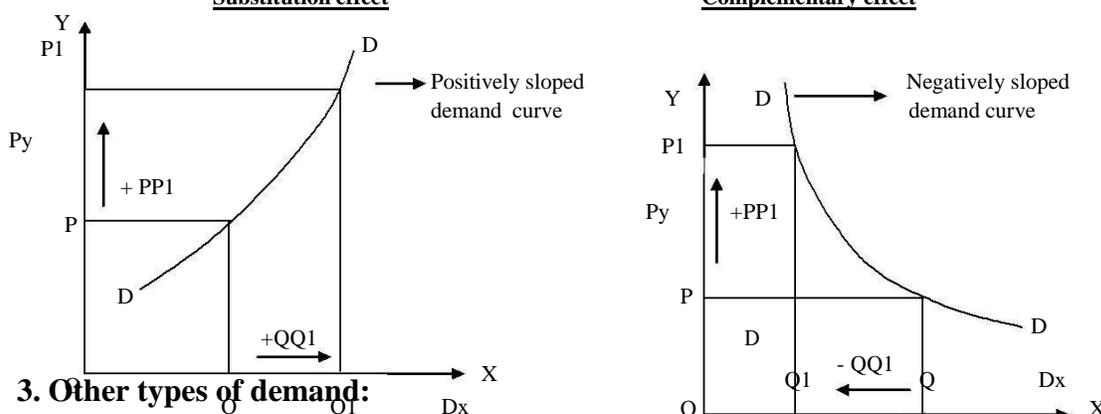Py = Price of Y commodity- related to x either as substitute or complementary good.

The cross demand of a commodity **depends on the nature of its related goods** –from this point of view, it can be of the following **two types**:

(a) Cross demand for substitutes: Substitute goods / competing goods can easily be used in place of each other for satisfying a particular want. For example, tea and coffee or pepsi and coca-cola or wheat and rice etc. The impact of changes in price of Y commodity (Py) on the demand for X commodity (D_X) is called ‗**Substitution effect**',which is **always positive** as illustrated in the following table:

Price of coffee (Py) (Rs.)	Demand for tea (Dx) (cups)	Particulars
8	1000	Direct relationship between
9	1200	Py & Dx showing positive
10	1800	Substitution effect

(b) **Cross demand for complementary goods:** Those goods which are used together for satisfying a particular want are known as complementary goods. For instance, tea, sugar and milk or pen and ink etc. The **complementary effect is negative** as the price of one good increases, the demand for other good decreases and vice-versa. This is illustrated in the table given below:

Price of car (py) (Lakh Rs.)	Demand for petrol (Dx) (Litres)	Particulars
2	10,000	Inverse relationship
3	8,000	between Py & Dx indicating
4	4,000	negative complementary effect

3. Other types of demand:

(i) Derived demand: As stated earlier, when a commodity is demanded for the production of some other commodity instead of its own direct use, its demand is said to be an indirect demand. For instance, the demand for producer's goods and inputs is a derived demand.

(ii) Joint demand: Many times, we use two or more goods together for satisfying a particular want, the demand for such goods is called as joint demand. The demand for complementary goods is a fine example.

(iii) Collective/Composite demand: When a commodity is put to several uses, its total demand in all uses is termed as composite demand. Electricity and water bills are good examples of such a demand.

Changes in Quantity Demanded Versus Changes in Demand

In economic analysis, _changes in quantity demanded' and _changes in demand' **altogether have different meanings**. The changes in quantity demanded relates to the **law of demand** and it has reference to _extension „ or „contraction" of demand, but the changes in demand is related to _increase" or „decrease" in demand.

Changes in quantity demanded take place only in response to **the own price** of the commodity, while changes in demand take place due to **changes in non-price factors** such as income, taste & preference, price of related goods etc. „**price demand" is an example of changes in quantity demanded and income demand and cross demand represent the case of changes in demand**. **Price is the driving force** in bringing changes in amount demanded, while **non-price factors** are responsible for the changes in demand.

In graphical depiction, changes in quantity demanded are **shown by the movement along the same demand curve**. A downward movement from one point to another on the same demand curve implies extension of demand, i.e., more quantity is demanded at lower price. Contrary to it, upward movement from one point to another on the same demand curve implies contraction of demand, i.e., less quantity is demanded at higher price.

Changes in demand (increase or decrease), is graphically **depicted by shifting of the demand curve**. In case of an increase in demand, the **demand curve is shifted to the right** and in case of decrease in demand, **the demand curve is shifted to the left**.
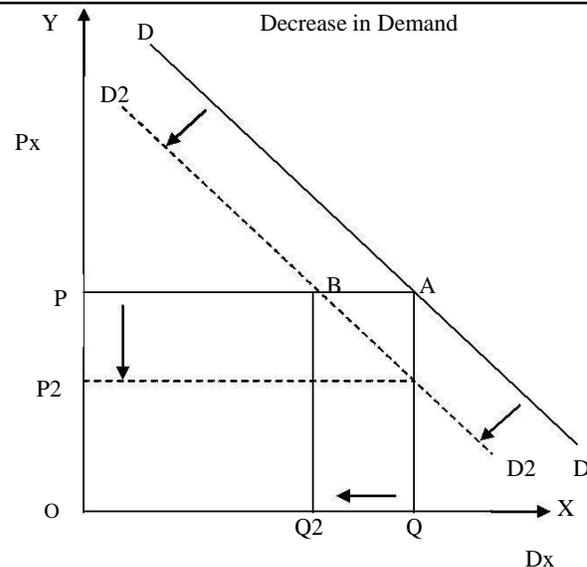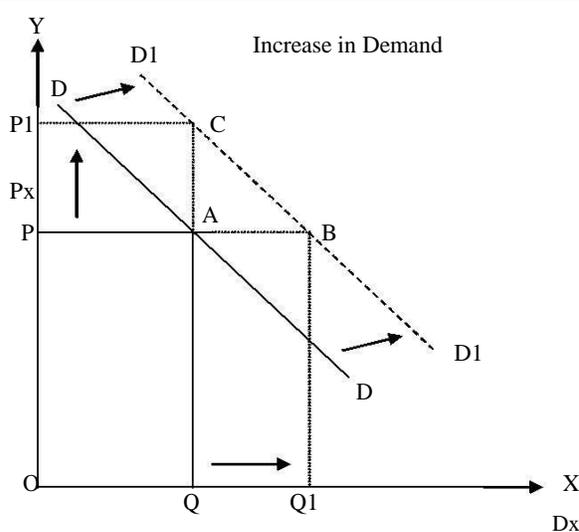
Increase in demand: Technically, it may be in the following two forms:

- Higher quantity at the same price,
- Same quantity at higher price
- Lesser quantity at the same price.
- Same quantity at lower price.

Changes in quantity demanded (extension and contraction of demand)
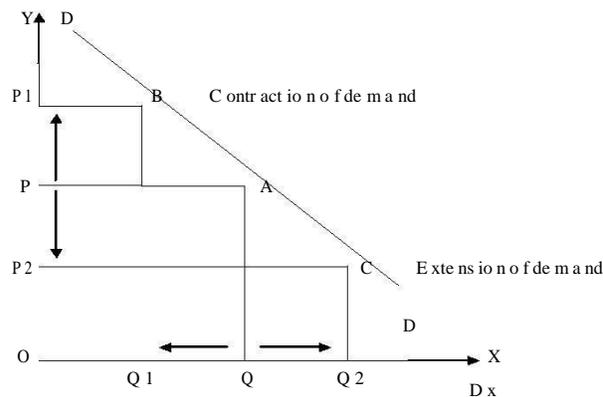
Changes in Demand

2.8 Summary

Demand is one of the most important economic decision variables. Demand analysis is very crucial for managerial decisions related to market strategy, pricing, advertising, production planning, inventory management, financial evaluation and investment decisions. Demand is effective want related to given price and given time period. The determinants of the demand include both price and non-price

they are responsible for bringing changes in quantity demanded and changes in demand. Changes in demand take place only in response to the price of the commodity under consideration in the form of contraction and extension of demand, but the changes in demand is a result of changes in non-price factors which influence the demand for a product. These changes are either as increase in demand or decrease in demand. Price demand, income demand, cross demand, derived demand are some of the important types of demand which are crucial for understanding the law of demand and elasticity of demand. The law of demand states, if other things are equal, there is an inverse relationship between the price of a commodity and its quantity demanded, i.e., higher the price, lower the demand and vice versa. There are only few real exceptiona to the law of demand such as Giffen goods, Veblen goods and articles of bare necessity. In this unit, we are also exposed to various distinct concepts of demand such as new and replacement demand, short-run and long-run demand, perishable and durable goods demand, individual and market demand, domestic and industrial demand etc..

Key Words

- **Demand:** It is that quantity of a commodity which will be purchased at a given price and at a given time.

- **Price demand:** It expresses those quantities of a commodity, if other things remaining the same, which will be bought by a consumer at its different prices during a specified period of time.
- **Income demand:** It denotes those quantities of a commodity, if other things remaining the same, which will be purchased by a consumer at different levels of his income during a period of time.
- **Cross demand:** It signifies those quantities of a commodity(X), if other things are equal, which will be bought by a consumer at different prices of its related goods(Y).
- **Derived demand:** It is an indirect demand of a commodity which is demanded for producing some other commodity.
- **Joint demand:** It is the demand of those goods which are needed together for satisfying a particular want. For instance, demand for complementary goods.
- **Composite demand:** The total demand of a commodity in its several uses is known as mixed demand. For instance the total demand of electricity for a household.
- **Demand schedule:** It is a statistical/functional relationship of the price of a commodity and its quantity demanded, if other things are equal.
- **Demand function:** It expresses functional relationship between the demand for a commodity and factors influencing the demand. They are also known as demand determinants.
- **Law of demand:** It states an inverse relationship between the price of a commodity and its quantity demanded, if other things are equal, i.e., higher the price, lower the demand and vice-versa.
- **Changes in quantity demanded:** When the quantity purchased of a commodity changes only due to change in its own price, known as changes in quantity demanded. It is either in the form of extension or contraction of demand. Price demand is a good example.

- **Changes in demand:** When quantity bought changes due to changes in other determinants of demand except the price of the commodity under consideration, it is termed as changes in demand. It can be either increase or decrease in demand. Income demand and cross demand are good examples.
- **Price effect:** It is the influence of changes in price of a commodity on its quantity demanded. It is generally negative.
- **Income effect:** It signifies the impact of changes in income of the consumer on the demand for a commodity. It can be positive or negative.
- **Cross effect:** It expresses the impact of changes in price of related goods (Py) on the demand of the parent product.(Dx) It can also be positive or negative.
- **Substitute goods:** Those goods which can easily be used in place of each other for satisfying a particular want. For instance, tea and coffee.
- **Complementary goods:** Those goods which are required together for satisfying a particular want. For instance, tea, sugar& milk or cricket bat and ball.
- **Superior/normal goods:** These are the goods the demand for which increases with increase in income of the consumer and vice-versa.
- **Giffen/inferior goods:** Those goods whose demand declines with increase in income of the consumers. For instance, Coarse grain and clothes.
- **Veblen Effect :** It refers to the desire of a person (usually very rich) to own exclusive or unique product – called veblen good / snob good. It serves as prestige symbol.
- **Bandwagon Effect :** It is also known as demonstration effect : The demand for a product seems to be determined basically not by the utility of it, but mostly on account of consumption of trend setters such as cricket /film stars, models, neighbours etc.
- **Ceteris Paribus** : It means other things being equal. It is a French word
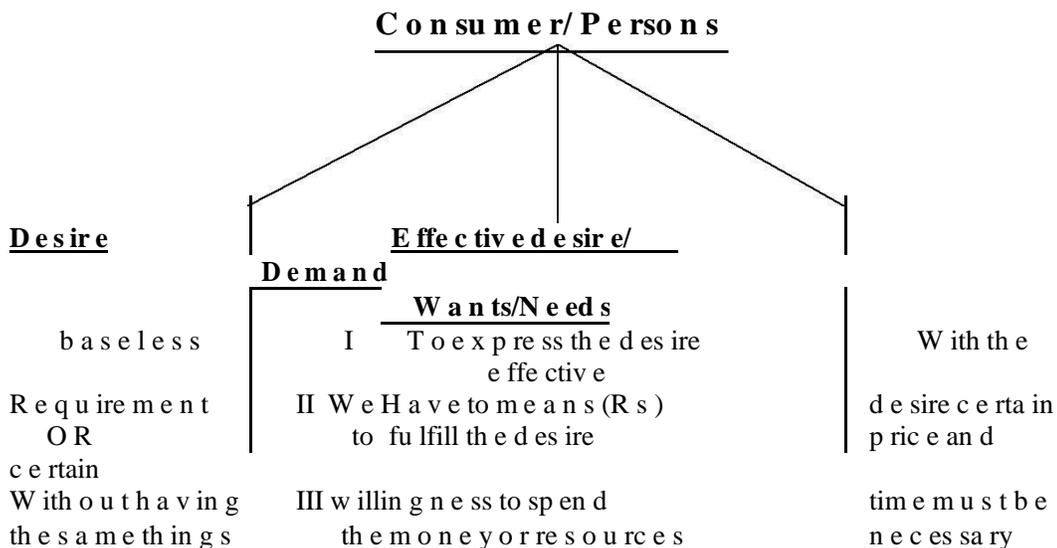
Elasticity of Demand and Demand Estimates

Introduction

Demand and supply play an important role in economics as well as in an economy. Therefore this one is a famous saying that if a parrot is taught demand & supply, demand & supply in the answers of the questions it may prove to be a good economist. This proves that demand & supply play a prominent role in the entire economics. With this background, before we discuss the elasticity of demand, it is better that we should know a brief concept of demand. Law of demand only describes direction of change in demand but elasticity of demand describes degree of change in demand.
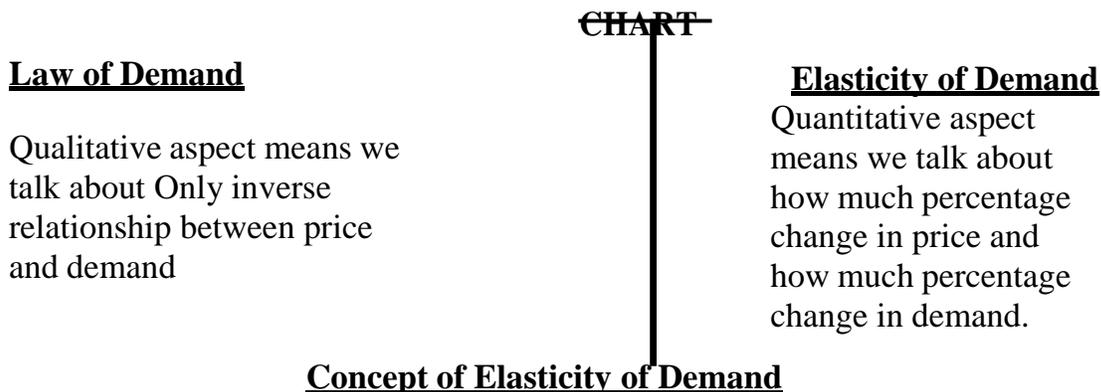
Concept of Demand

Generally demand is that commodity which is demanded by the consumer at a certain price and at a time. In a practical life a person uses so many words instead of demand for example- desire, effective desire, wants, needs etc. but in a practical market, the concept is different. We can explain with the help of following chart-

C o n su m e r/ P e rso n s

```
                              Desire          Effective desire/        
                                              Demand                    
                                              Wants/Needs               
        baseless            I   To express the desire        With the
                                     effective
        Requirement        II  We Have to means (Rs)        desire certain
           OR                   to fulfill the desire        price and
         certain
        Without having     III willingness to spend          time must be
        the same things        the money or resources        necessary
```

It is clear from the above discussion that demand is an effective desire at a certain price and at a certain time by consumers in a market.

Concept of Elasticity of Demand

Background- Law of demand describes the qualitative aspect regarding the inverse relationship between price and demand and elasticity of demand describes the quantitative aspects regarding the inverse relationship between price & demand. We can explain qualitative and quantitative aspects of price & demand with the help of the following chart

CHART

Law of Demand

Qualitative aspect means we talk about Only inverse relationship between price and demand

Elasticity of Demand
Quantitative aspect means we talk about how much percentage change in price and how much percentage change in demand.

Concept of Elasticity of Demand

Other things remaining the same, due to certain percentage change in a price of the commodity if certain percentage changes in demand of that commodity it is known as elasticity of demand. The concept of elasticity of demand is generally associated with the name of Alfred Marshal Though this idea was evolved much earlier by economists like Courrat and Duel different economists have defined the elasticity of demand. Some of the definitions are given below:-

Prof. Alfred Marshal, ‒The elasticity (or Responsiveness) of demand in a market is large or small according to the amount demanded increases much or little for a given rise in price.‖

Prof. K.E. Boulding, ‒The elasticity of demand may be defined as the percentage change in the quantity demand which would result in one percent change in price.‖ Boulding gives the following formula to calculate the elasticity of demand-

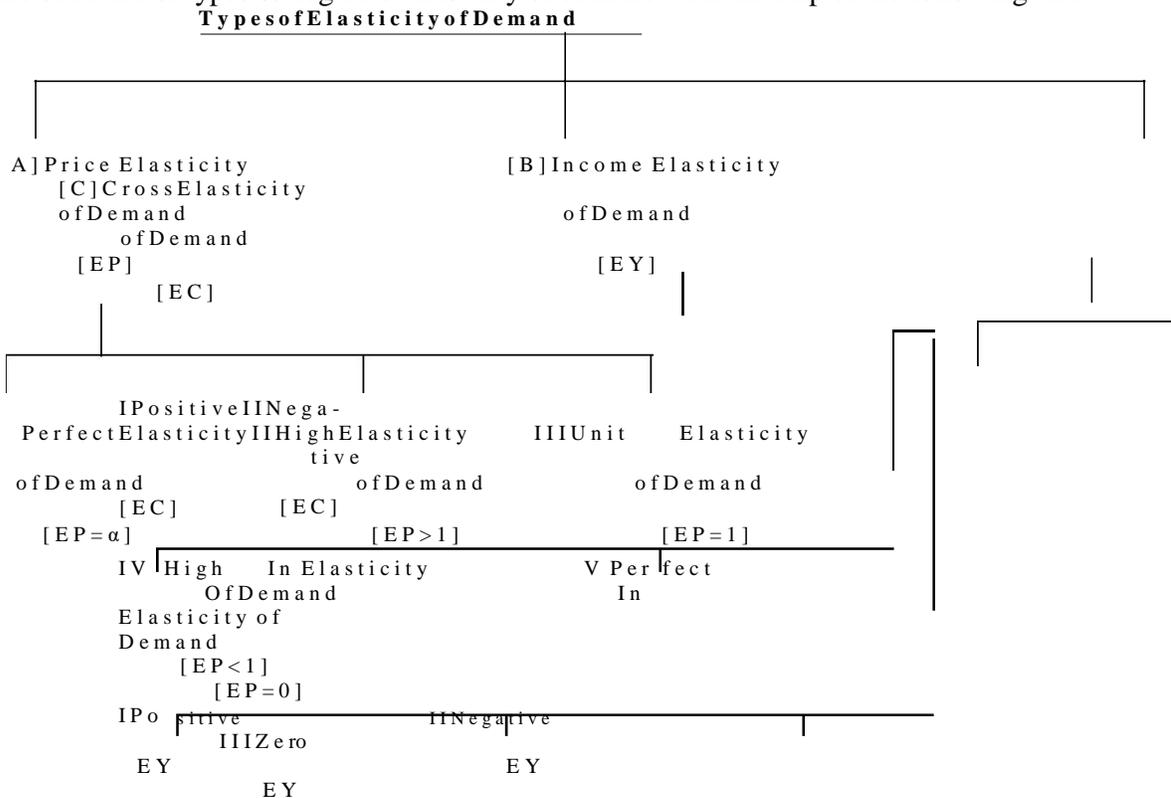| Elasticity of Demand	=	Percentage change in demand
		Percentage change in a price of the commodity

Mrs. John Robinson, –The elasticity of demand at any price or at any output is equal to the proportional change of amount demanded in response to a small change in price divided by the proportional change in price.‖

Robinson also gives the following formula for calculation of the elasticity of demand.

Elasticity of Demand	=	Percentage change in demand
		Percentage change in a price of the commodity

Types of Elasticity of Demand

Before we discuss the types and degree of elasticity of demand it is better if we can express entire structure of types & degree of elasticity of demand with the help of the following chart-

Types of Elasticity of Demand

A] Price Elasticity
[C] Cross Elasticity
of Demand
of Demand
[EP]
[EC]

[B] Income Elasticity
of Demand
[EY]

I Positive II Nega-
Perfect Elasticity II High Elasticity
tive
of Demand
of Demand
[EC]
[EC]
[EP = α]
[EP > 1]

III Unit   Elasticity
of Demand
[EP = 1]

IV High   In Elasticity
Of Demand
Elasticity of
Demand
[EP < 1]
[EP = 0]

V Per fect
In

I Po sitive   II Negative
III Zero
E Y   E Y
E Y

Price Elasticity of Demand (EP)- Other things remaining the same due to certain percentage change in price if certain percentage change in demand of commodity is there, it is known as price elasticity of demand. It is measured as percentage change in quantity demanded divided by the percentage change in price.

$$ED = \frac{\text{Percentage change in Quantity demanded}}{\text{Percentage change in price}}$$

or

Or

$$\frac{\%}{\%} \quad \frac{\%}{\%} \quad \frac{Q}{\triangle P}$$

Where Ep = Price Elasticity
  P   = Price
  Q = Quantity
  Δ   = Change

Degree of Price Elasticity of Demand

I Perfectly Elastic Demand (Ep=á):

When minor, nothing or as good as zero percentage change in price results in tremendous percentage change in demand, it is known as perfectly elastic demand. We can say in other words that it is a situation in which demand of a commodity continuously changes without any change in price. It can be explained with the help of following example and diagram.
Example:-

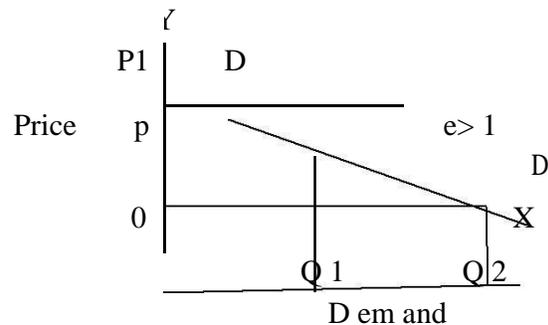0.25 or 0.10 % Change

In price
10 % or 15 % Change in demand
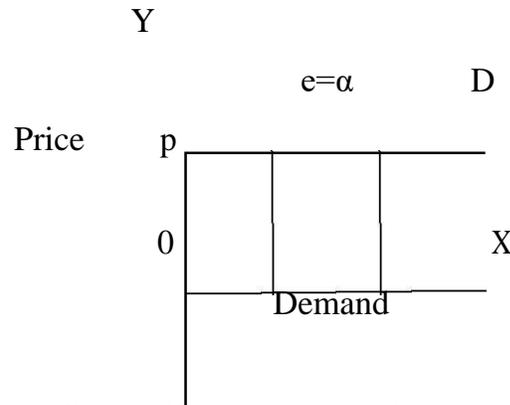
II Highly Elastic Demand (e>1):

When less percentage change in price of commodity and if as compared to that more percentage change in demand is there, it is known as highly elastic demand. We can say in other words that it refers to a situation in which percentage change in demand of commodity is higher than percentage change in price of that commodity. We can explain this with the help of the following example and diagram-

Example:-
5% Change In price

20% Change in demand


III Unitary Elastic Demand (e=1)

When equal percentage or a proportionate change in price of commodity and demand of commodity is there, it is known as unitary elastic demand . It means that percentage change in demand of a commodity is equal to percentage change in price. We can explain this with the help of following example and diagram-
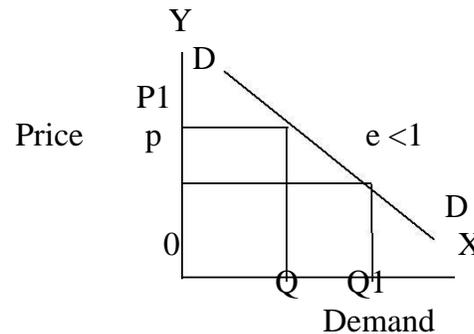
Example:-

10 % Change In price

10 % Change in demand
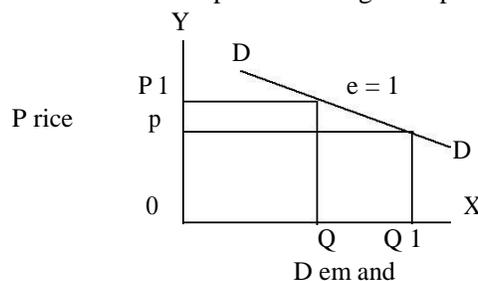
IV Highly Inelastic Demand (e<1)

When as compared to price less percentage change in demand of that particular commodity is there it is known as highly inelastic demand. It means when percentage change in demand of a commodity is less than percentage change in demand in price. We can explain with the help of following example and diagram-

Example:-

20 % Change In price
5 % Change in demand

Y

D

P1

Price   p   e <1

                                        D

0   X

        Q   Q1

                Demand

V Perfectly Inelastic Demand (e=0)

When extreme percentage change in price of the commodity and if minor, nothing or as good on zero percentage in demand is known as perfectly inelastic demand. We can explain with the help of the following example and diagram-

Example:-

10% OR 15 %Change In price

P1   D

Price   p   e =0

0.25 % OR 0.10 % Change in demand
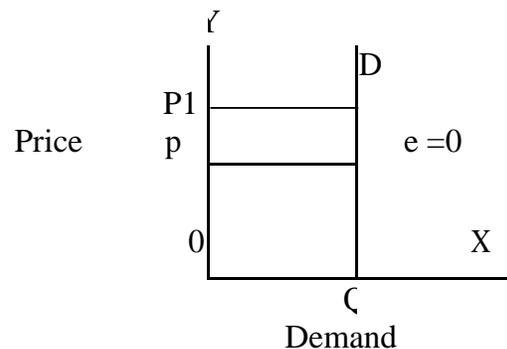
0   X

        Q

                Demand

Income Elasticity of Demand

Other things remaining the same due to certain percentage change in consumer's income if there is certain percentage change in demand it is known as income elasticity of demand. It means the ratio of percentage change in quantity demanded due to percentage change in income of consumers.

$$EY = \frac{Percentage\ change\ in Quantity\ demanded}{Percentage\ change in\ income}$$

$$EY = \frac{\%\Delta Q}{\%\Delta Y} = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$$

Types/ Degree of Income Elasticity
I Positive Income Elasticity –

Increase in normal/ luxury goods, there will be positive relation between income and demand because as income increases demand increase and vice versa. Positive income elasticity may be of three types-EY=1, Ey>1, Ey<1

II Negative Income Elasticity (EY<0)-

Incase of inferior goods, the income elasticity of demand is negative because there will be an inverse relation between income and demand for inferior goods. As income increases demand for inferior goods decreases and vice versa.

III Zero Income Elasticity (EY=0)

In case of necessary goods wehther income increases or decreases the quantity demanded remains the same. So Zero income is found here.

Cross Elasticity of Demand

Other things remaining the same due to certain percentage change in price of one commodity certain percentage change in demand of another commodity is known as cross elasticity of demand.

$$EC = \frac{Percentage \ change \ in \ Quantity \ demanded \ x \ com \ mod \ ity}{Percentage \ change \ in \ price \ x \ com \ mod \ ity}$$

OR

$$\frac{\% \ QX}{\% \ PY}$$

$$EC = \frac{QX \quad PY}{\overline{PY} \times QX}$$

Types/ Degree of Cross Elasticity

I Positive Cross Elasticity- In case of substitute goods for example – tea and coffee, there is positive relation so Positive Lie between to ―

II Negative Cross Elasticity - Incase of complementary goods like car and petrol, there is inverse relation. So negative cross elasticity is found here Negative lie between -0 to - ―

Measuring the Price Elasticity of Demand

[A] Flux‟s Percentage Method:- Prof. Flux tries to measure the price elasticity of demand with the help of percentage. According to him e=∥ and e=0 does not exist in practical life and says that e>1, e=1 & e<1 have a practical approach.

According to Prof. Flux ―due to certain percentage change in price of commodity if certain percentage change in demand of that particular commodity is there, it is known as price elasticity of demand.∥ Prof. Flux gives the following formula for the calculation of the price elasticity of demand:-

$$EP = \frac{\text{\% change in Quantity demanded}}{\text{\% change in price}}$$

Example

I if $\dfrac{20 \text{ \% change in Quantity demand}}{10 \text{ \% change in price}}$

$$= \frac{20}{10} = \frac{2}{1}$$

$= e > 1$ elasticity of demand

II if $\dfrac{10 \text{ \% change in Quantity demand}}{10 \text{ \% change in price}}$

$$= \frac{10}{10} = \frac{1}{1}$$

$= e = 1$ elasticity of demand

III if $\dfrac{10 \text{ \% change in Quantity demand}}{20 \text{ \% change in price}}$

$$= \frac{10}{20} = \frac{1}{1}$$

$= e < 1$ elasticity of demand

[B] Total Outlay/Total Expenditure Method

Prof. Alfred Marshal tries to measure the price elasticity of demand with the help of total expenditure method and he also says that e= and e=0 does not exist in practical life and e>1,e=1 & e<1 have practical approach. Under this method elasticity will be of three types:-

I E> 1 elasticity of demand:- When there is inverse relation between price and total expenditure it means that when price increases total expenditure increases and vice versa , it is known as e>1 elasticity of demand.

II E=1 elasticity of demand:- Even if price increases or decreases but total expenditure is constant, then it is known as e=1 or a unit elasticity of demand.
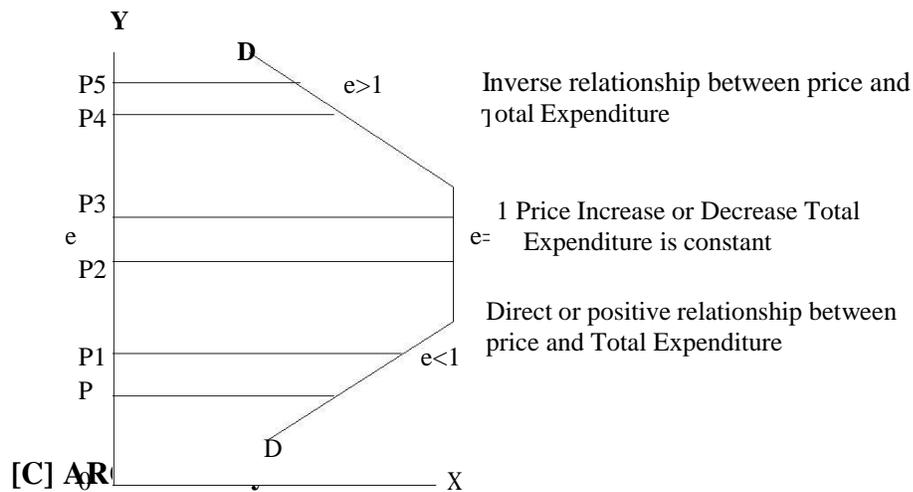
III E<1 elasticity of demand:- When there is positive or direct relationship between price total expenditure it means as the price increase total expenditure increase & vice versa is known as E<1 elasticity of demand.

We can explain total expenditure method with the help of the following chart and diagram.

CHART

Price change and its effect on Total expenditure

Types	Price Change (p)	Total Expenditure (TE)	Relation
(a) E = 1	↑ OR ↓	No Change	No Relation
(b) E < 1 Inelastic Demand	↑ ↓	↑ ↓	Positive Relation Between P and TE
(c) E > 1 Elastic Demand	↑ ↓	↑ ↓	Negative Relation Between P and TE

Y

D

P5 ———————— e>1   Inverse relationship between price and
P4 ————————   Total Expenditure

P3 ————————   1 Price Increase or Decrease Total
e   e=   Expenditure is constant
P2 ————————

                          Direct or positive relationship between
P1 ———————— e<1   price and Total Expenditure
P ————————

        D
[C] ARC ——————————— X
0

When we measure any two particular points of the demand curve, it is known as ARC elasticity of demand. When there is a major percentage change in price or in a demand then ARC elasticity of demand method is appropriate for the economist.

In reality we may come across demand schedules which have gaps in prices as well as in quantities. ARC signifies a segment or portion of a curve between two points. The formula for measuring the ARC elasticity is :-

$$Ec = \dfrac{\dfrac{\text{Original quantity- New quantity}}{\text{Original quantity+New quantity}}}{\dfrac{\text{Original price – New Price}}{\text{Original Price+ New Price}}}$$

$$= \dfrac{Q\ Q_1}{Q+Q_1} \div \dfrac{P\ P_1}{P+P_1}$$

$$= \dfrac{Q\ Q_1}{Q+Q_1} \times \dfrac{P+P_1}{P\ P_1}$$

$$= \dfrac{Q\ Q_1}{P+P_1} \div \dfrac{P+P_1}{Q\ Q_1}$$

In Which – Q = Original quantity demanded

Q_1 = New quantity demanded

P = Original Price

P_1 = New Price

Let us take a concrete example to explain the arc method. The demand when the price was 3000 units per week and the price was Rs. 2/- per unit. The demand contracted to 2700 units when price was raised to Rs. 2.10 per unit. Calculate elasticity of demand by ARC method. The formula is:-
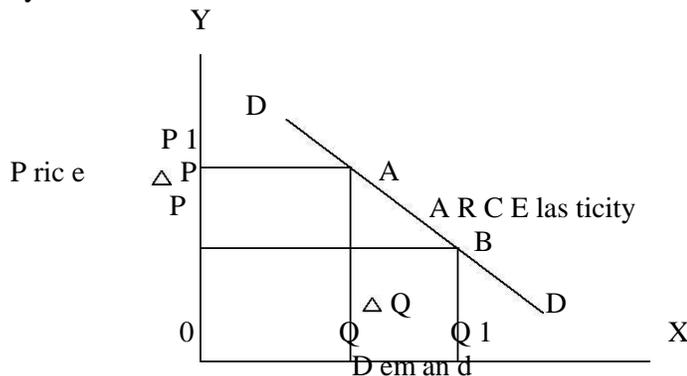
$$Ec = \dfrac{Q\ Q_1}{Q+Q_1} \div \dfrac{P\ P_1}{P+P_1}$$

$$= \dfrac{Q\ Q_1}{Q+Q_1} \times \dfrac{P+P_1}{P\ P_1}$$

Now substituting with the figures given in the question we have

$$Ec = \frac{3000 \; 2700}{3000 + 2700} \times \frac{200 + 210}{200 \; 210}$$

$$= \frac{300}{5700} \times \frac{410}{10}$$

$$= \frac{41}{19} = 2.16 \text{ (MinusS ymbol May be Omitted)}$$

Elasticity of demand is 2.16

Demand

[D] Point Elasticity of Demand:-
    When there is minor percentage change in price & demand then point elasticity of demand method is useful for the economist. Price elasticity of demand can also be measured with the help of what is known as the –Point Method.‖ According to this method , elasticity of demand on each point of a demand curve shall be different, and can be measured with the help of the following formula:-

Point elasticity of demand $= \dfrac{\text{Lower Sagment of the demand curve}}{\text{Upper segment of demand curve}}$

    Elasticity at different point of a straight line demand curve by different points use the above formula. We can calculate the elasticity of demand and at any point on a straight line demand curve—
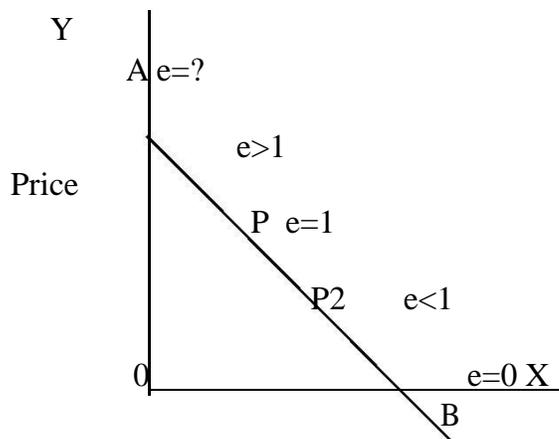
It shall be Zero at the point where the demand curve Touches horizontal axis; and it shall be infinity where it Touched vertical axis. It shall be equal to unity at the central Point of the demand curve.

It shall be less than unity in the lower segment and more than unity in the upper segment of the curve. It is equal to unity at the middle point of the curve AB less than unity in the lower segment and more than unity in the upper segment.

It is clear from the above diagram that AB is the straight line demand curve. Let us take price P as the middle point of the demand curve AB.

Now, E at point

$$P = \frac{\overline{PB}}{\overline{PA}} = 1 \quad \text{To illustrate the same point}$$

(For PB= PA)

Let us assume AB to represent 6 cm. then the middle point of AB, PB will be equal to 3cm and PA will be equal to 3 cm.

$$\text{E at point } P = \frac{PB}{PA} = \frac{3cm}{3cm} = 1$$

Let us take a price p1 at the point higher than the middle point of the demand curve AB.

$$\text{E at point } _1 \quad P = \frac{P_1B}{P_1A} = \text{ More than 1 (P1B>P1A)}$$

Using the numerical example of AB being equal to 6cm; then

$$\text{E at point } _1 \quad \frac{P_1B}{P A_1} = \frac{4 \text{ cm}}{2 \text{ cm}} = 2 \text{ more than 1}$$

At a price lower than the middle point of the demand curve (P2) elasticity will be less unity as far instance.

$$\text{E at point } _2 \quad P = \frac{P_2B}{P_1B} = \text{Less than 1 (P2B<P2A)}$$

If P2 B is 2 c, and P2A is 4cm ; than

$$\text{E at point } _2 \quad P = \frac{P_2B}{P A_2} = \frac{2cm}{4cm} \qquad \text{Less than 1.}$$

Factors Influencing Elasticity of Demand

Demand is a function of price, income, taste, hobby, nature of consumer population, govt. policy etc. Elasticity of demand tends to be different for different types of goods it will differ from market to market with this background we can explain the factors influencing elasticity of demand.

1. **Nature of commodity -** These who have no substitute goods will have an inelasticity of demand. The consumers will buy almost a fixed demand whether the price is higher or lower. Demand for luxuries, on the other hand, is elastic in nature.

2. **Different uses of the commodity-** A commodity that has several kinds of uses is apt to be elastic in demand. For each single use demand may be inelastic so that when price of the commodity goes down only a little more is purchased for every use.
3. **Availability of substitute goods-** When there exists a class substitute in the relevant price range, its demand will tend to be elastic. But in respect of commodities having no substitutes, their demand will be the same inelastic.
4. **Consumer"s income -** Generally larger the income, the overall demand for commodities tends to be relatively inelastic. The redistribution of income in favour of low income people may tend to make demand for some goods relatively inelastic.
5. **Proportion of expenditure-** Items that constitute a smaller amount of expenditure in a consumer's family budget tend to have a relatively inelastic demand, e.g., a cinegoer who sees a film every fort night is not likely to give it up when the ticket rates are raised. But one who sees a film every alternate day perhaps may cut down his number of films. So is the case with matches, sugar etc.
6. **Durability of the commodity-** In the case of durable goods, the demand generally tends to be inelastic in the short run, e.g., furniture. bicycle radio, etc. In the perishable commodities, on the other hand, demand is relatively elastic, e.g., milk , vegetables, etc.
7. **Influence of habit and customs-** There are certain articles which have a demand on account of conventions, customs or habit and in these cases, elasticity is less, e.g., Mangal Sutra to a Hindu bride or cigarettes to a smoker have inelasticity of demand.
8. **Complementary goods-** Goods which are jointly demanded have less elasticity, e.g., ink, petrol have inelastic demand for this reason.
9. **Recurrence of demand-** If the demand for a commodity is of a recurring nature, its price elasticity is higher than that of a commodity which is purchased only once. For instance, bicycle, tape recorders, radios, etc. are purchased only once, hence their price elasticity will be less. But the demand for cassettes or tape spools would be more price elastic.
10. **Possibility of postponement-** When the demand for a product is postponable, it will tend to be price elastic. In the case of consumption goods which are urgently and immediately required, their demand will be inelastic.

Importance of Elasticity of Demand

The concept of elasticity of demand is of considerable significance in various situations, which we shall briefly summaries below:
1. **Helpful to a monopolist in fixing price-** The individual producer under imperfect competition has to consider the demand for his product when he fixes its price. He has to take into account the response of his customers in formulating his price policy. Like wise the monopolist has to study the elasticity of demand of his product before he fixes its price.
2. **Helpful to the Government in formulating Taxation Policies-** The concept of elasticity of demand also proves helpful to the Government in the formulation of its economic and taxation policies, The finance minister has to consider the nature of the elasticity of demand for a commodity before levying an excise tax on it.
3. **Helpful in Determination of rewards for factors of Production-** The concept of elasticity of demand also influences the determination of the rewards for factors of production in a private enterprise economy. If the demand for labour on a particular industry is relatively inelastic, it will be easier for the trade union to get their wages raised. The same remarks apply to other factors of production whose demands are relatively inelastic.

4. **Helpful in determination of terms of trade-** It is possible to calculate the terms of trade between two countries only by taking into account the mutual elasticities of demand for each others products. The term –Terms of Trade‖ implies the rate at which one unit of a domestic commodity will exchange for units of commodity of a foreign country.

5. **Helpful in determining the Rate of Exchange-** The concept of elasticity of demand also helps the government in fixing an appropriate foreign rate of exchange for its domestic currency in relation to the currencies of other countries. Before deciding to devalue or revalue domestic currency in relation to foreign currencies the government has to study carefully the elasticites of demand for its imports and exports.

6. **Helpful in declaring certain industries as „Public Utilities‟-** The concept of elasticity of demand also enables the government to decide as to what particular industries should be declared as public utilities and being consequently owned and operated by state.

Summary

Demand & law of demand is related with the Qualitative aspect regarding the inverse relationship between price & demand and elasticity of demand is related with the Quantitative aspect regarding the inverse relationship between price and demand. Elasticity of demand means due to certain percentage change in price if certain percentages change in Quantity demand by consumers.

Price elasticity of demand is a measure of the extent to which quantity demanded of a good responds to a change in its price. When the numerical measure is less then one, we say that the demand is inelastic. When it is e>1, we say demand is elastic and when it is e=1 we say demand is unitary Two special cases are when elasticity equals zero (e=0) or infinity (e=‖). When elasticity is (e=0), the quantity demanded does not change at all as price changes, and when elasticity e=‖, a very small reduction in price increases the quantity demanded from zero to an infinity large number.

Price elasticity can be measured at a point or between two points Here we use the concepts of point elasticity and ARC elasticity respectively. The main determinants of elasticity are the availability of substitutes for the commodity, numbers of uses of the commodity, nature of commodity etc.

Demand Forecasting

Introduction

Generally, there is uncertainity in over every decision-making process. The producer of some goods or any other decision-making authority or the government must keep in view the existing level of demand for the product in question and estimate the prevalent gap between demand and supply. The decision maker, whether a firm or a state planning agency, must not only estimate the present level of demand but also forecast the demand for a future date.

Degree of risk depends upon the nature of business. All the risks can not be completely eradicated but by proper planning these risks can be minimized. Demand forecasting is also one of the techniques to minimize the risk and uncertainity.

Concept of Demand Forecasting

Forecasting of demand is the art of predicting demand for a product or a service at some future date on the basis of certain present and past behaviour patterns of some related events. Please remember that forecasting is no simple guessing but it refers to estimating scientifically and objectively on the basis of certain facts and events relevant to the art of forecasting.

Cundif and Still:- ― According to Cundif and Still sales forecasting is an estimate of sales during a specified future period on which estimates is tied to a proposed marketing plan which assumes a particular set of uncontrollable and competitive forces.‖

According to Philip Kotler:- ― The Company sales forecast is the expected level of company sales based on a chosen marketing plan and assumed marketing environment.‖

Features of Demand Forecasting

From the above discussions the following features of demand forecasting emerge:
1. Demand forecasting is based on past data and present positions.
2. Demand forecasting may be monetary or physical.
3. Demand forecasting gives basis to future planning.
4. Demand forecasting is made for a certain period.
5. Future sales and profit estimate can be made by demand forecasting.

Importance of Demand Forecasting

Demand forecasting is important for every producer. He has to know the present level of demand as also the increase that is expected to take place in the demand for his product over time. Demand forecasts are generally useful for the following categories of decision makers:-
1. Importance for the producers.
2. Importance for policy makers and planners.
3. Importance for estimating financial requirements.
4. Utility for determination of sales target & incentive.
5. Importance for regular supply of labour and raw material is made possible by demand forecasting.
6. Production planning is possible with the help of demand forecasting.
7. Use for other groups of the society researchers, social workers and other who have a futuristic approach.
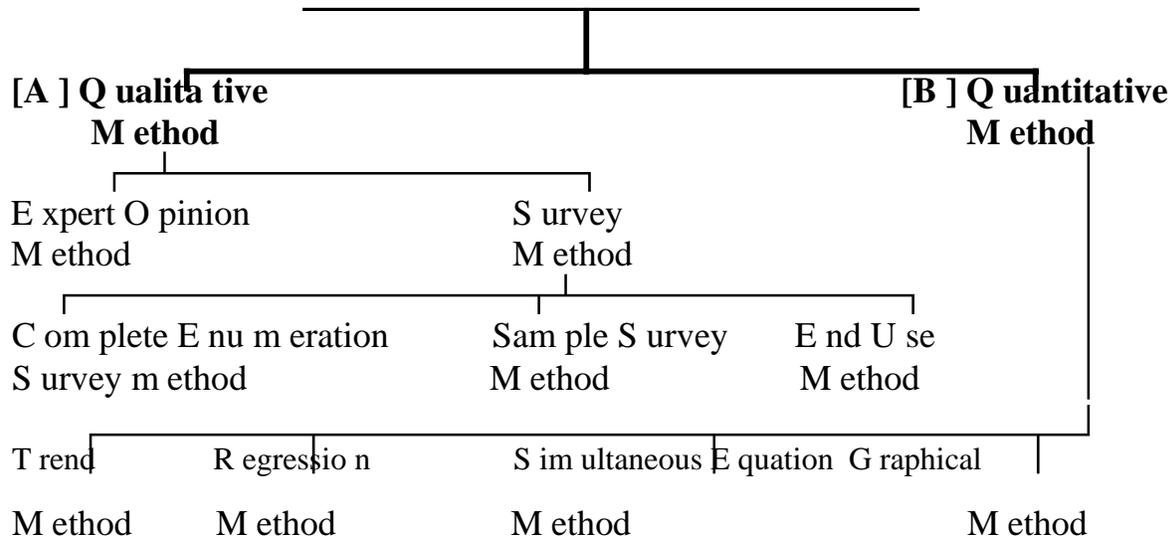
Scope of Demand Forecasting

Demand forecasting can be at the international level depending upon the area of operation of given economic institution. It can also be confined to a given product or service supplied by a small firm in local area. The scope of work will depend upon the area of operation in the present and proposed in future much would depend upon the cost and time involved in relation to the benefit of the information acquired through the study of demand. The factors determining the scope of demand forecasting are as follows:-
1. Period conversed under demand forecasting.
2. Levels of demand forecasting.
3. Purpose of demand forecasting.
4. Nature of product.
5. Miscellaneous factors- socio-psychological factors, degree of competition impact of risk and uncertainity.

Methods of Demand Forecasting

Demand forecasting is a very absorbing and difficult exercise. Consumer's behaviour is the most unpredictable thing in the world because it is motivated and influenced by multiplicity. Moreover; economist and statisticians over the years have developed several methods of demand forecasting. Each of these methods has its relative merits and demerits. Selection of the right method is essential to make demand forecasting accurate and credible. The methods of demand forecasting can be summarized in the form of a chart as follows:-

C H A R T
Methods of Demand Forecasting

```
                    C H A R T
              Methods of Demand Forecasting
                          |
        ┌─────────────────┴─────────────────┐
  [A] Qualitative                      [B] Quantitative
      Method                               Method
        |                                     |
  ┌─────┴─────┐                               |
Expert Opinion    Survey                      |
   Method         Method                      |
                    |                         |
        ┌───────────┼───────────┐             |
Complete Enumeration  Sample Survey  End Use   |
  Survey method        Method        Method    |
                                              |
Trend      Regression    Simultaneous Equation  Graphical
Method      Method          Method               Method
```

[A] **Qualitative Method**:-

Expert Opinion Method:- Under this method the researcher identifies the experts on the commodity whose demand forecast is being attempted and probes with them on the likely demand for the product in the forecast period. The word ‗Expert' is a high powered term but it should be taken to stand for those who possess the requisite expertise on the subject.

A specialised form of panel opinion is the Delphi method, Instead of going in for direct identification. This method seeks the opinion of a group of experts through mail about the expected level of demand. The responses so received are analysed by an independent body. The method thus takes care of the disadvantage of panel consensus where some powerful individual could have influenced the consensus.

Survey Method:- According to this method a few consumers are selected and their views on the probable demand are collected. The sample is considered to be a true representation of the entire population. The demand of the sample so ascertained is then magnified to generate the total demand of all the consumers for that commodity in the forecast period. The selection of an opinion sample size is crucial to this method, while a small sample would be easily managed and less costly.

Enumeration Survy Method:- Under this technique either consumers are divided in several groups on the basis of income, caste, sex, education or any other variable or they may be divided according to geographical regions. Through appropriately selected sample design, sample units are selected and data are collected either through direct interview or by mailing questionnaires or filling up schedules. The results of sample survey may be reliable provided the sample is representative of the population.

Sample Survey Method:- Under this method only a few consumers are selected and their views on the probable demand are collected. The sample is considered to by a true representation of the entire population. The demand of the sample so ascertained is then magnified to generate the total demand of all consumers for that commodity in the forecast period.

End Use Survey Method:- Under this method commodity that is used for the production of some other finally consumable goods is also known as an intermediary good. While the demand for goods used for final consumption can be forecasted using any other method the end use method focuses on forecasting the demand for intermediary goods. Such goods can also be exported or imported besides being used for domestic production of other goods. For example milk is a commodity which can be used as an intermediary good for the production of ICE Cream, paneer and other dairy products. We can analyze end use method with the help of following formula:-

$$Dm = Dmc + Dme - Im + X1 .OI + XP. OP + - - - + XN + ON$$

where -

Dme= Export Demand for Milk

Im = Import of Milk

XI = Per Unit Milk Requirement- of the ICE- Cream

Industry OI = Output of ICE Cream Industry

Xp and Op Notations are similar to XI and OI for paneer

The equation above can be generalized to calculate the projected demand for any

commodity. D= Dc+De-I+X1.O1+X2—XN+ON

[B]   **Quantitative Methods**:-

These method is based on historical Quantitative data. A statistical concept is applied to this existing data about the demand for a commodity over the past year in order to generate the predicted demand in the forecast period. Due to this reason these Quantitative methods are also known as statistical methods. Following are the Quantitative methods:-

Trend Projection Method: A firm which has been in existence for some time will have accumulated considerable data on sales pertaining to different time periods. Such data when arranged chronologically yield time series. Time series relating to sales represent the past pattern of effective demand for a particular product.

Such data can be used to project the trend of the time series. This can be done either through graph or through least square method. Following equation is used under Trend Projection Method:-

II $Y = Na + B -X$

III– $XY = a\| X + b -X2$

Years	Sales (In Rs. Lacs)
2004	120
2005	140
2006	150
2007	140
2008	170

Q. Findout the estimated sales for neat five year i.e. 2009 to 2013.

<u>Solution</u>

Years (N)	Sales (Y)	Deviation (X)	x 2	XY
2004	120	-2	4	-240
2005	140	-1	1	-140
2006	150	0	0	0
2007	140	+1	1	140
2008	170	+2	4	340
N=5	? Y =720	?X=0	? x 2= 10	? XY =100

Calculation of a ,we have equation (II)

$Y = NA + b\| X$

720= 5a+0

.. $a = 720/5 = 144$

For finding b, we use equation =(III)

$-XY = a\|X + b\|X2$

100= 0+ B10

100/0=b

.

.. b=10

By keeping the value of a & b in equation (I)

$Y = a+bx$ (a=144, b=10)

Y= 144+10X (IV)

On the basis of this equation (IV) we can find trend for next five years as follows:-

Years	Deviation (X)	Sales (In Rs. Lacs)	Y=144+10X
2004	-2	-	
2005	-1	-	
2006	0	-	
2007	+1	-	
2008	+2	-(Already Given)	
2009	+3	Y(144+10(3)=174	
2010	+4	184	
2011	+5	194	
2012	+6	204	
2013	+7	214	

Regression Method:- Under this method relationship is established between Quantity demanded and one or more independent variables such as income, price of the related goods, price of the commodity under consideration, advertisement cost etc. In regression a Quantitative relationship is established between demand which is a dependent variable and the independent variable i.e., determinants of demand.

Let us suppose that we have two variables Y and X where Y is dependent on X. it can be expressed in the form of an equation as follows:-

Y=a+bx

We can explain the regression method with the help of following example-

Year	2005	2006	2007	2008	2009
I Income Index	100	110	140	150	200
II Sales of TV (000)	110	130	150	160	180

We are required to estimate sales of T.V. if the Index of income rises to 240. The regression equations will be calculated as follows:

Year	Income Index (X)	Sales of TV (Y)	X_1	Y_1	X_1^2	$X_1 Y_1$
2005	100	110	10	11	100	110
2006	110	130	11	13	121	143
2007	140	150	14	15	196	210
2008	150	160	15	16	225	240
2009	200	180	20	18	400	360
			$\Sigma X_1 = 70$	$\Sigma Y_1 = 73$	$\Sigma X_1^2 = 1042$	$\Sigma X_1 Y_1 = 1063$

In order to estimate the regression line we should first find the values of the constants a and b

$$b = \frac{n\Sigma X_1 Y_1 \quad (\Sigma X_1 \Sigma Y_1)}{n\Sigma X_1^2 \quad (\Sigma X_1)2}$$

$$= \frac{5 \times 1063 \quad (70 \times 73)}{5 \times 1042 \quad (70)^2} = 0.66$$

$$a = \frac{\Sigma Y_1 \quad b \quad \Sigma X_1}{n}$$

$$\frac{73 \quad 70(.66)}{5} = 5.36$$

Hence the regression equation is

Y= a+bx

Or

Y = 5.36+0.66 x

If the Index of Income rises to 240 sales of TV will be estimated as follows:-

Y= 53.6+0.66x240

= 53.6+158.4

= 212 Thousand.

Simultaneous Equations Method- This method, also called the complete system approach to forecasting, is the most sophisticated econometric method of forecasting. Since it involves complicated mathematical and statistical tools, its detail discussion is beyond the scope of this text. Thus the simultaneous equations method overcomes the major problem of the regression method, viz., forecasts for the independent variable.

Graphical Method- Under this method trend is estimated with the help of a graph. Time & Quantity demanded are taken on both the axis and demand forecasting is made for future. This method is completely subjective, as in this method graph is drawn and on the basis of this graph demand forecasting is made Expansion of this graph is completely imaginary & subjective so it can be different for different persons.

According to graphical method, the past data will be plotted on a graph and the indentified trend/ behaviour will be extended further in the same pattern to ascertain the demand in the forecast period. The following diagram shows the past data in bold lines and the forecasted data in dotted lines.
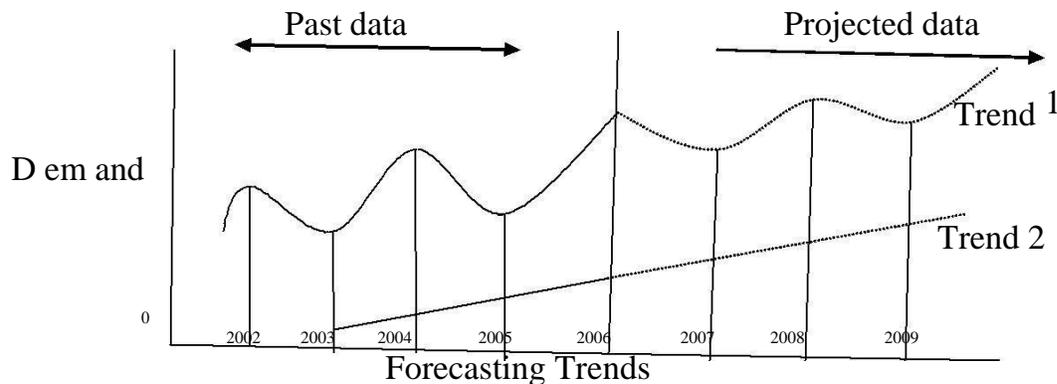
Demand Forecasting Process

Process for demand forecasting depends on the scope of demand forecasting. We may follow the following sequence in projecting the demand for a product:

1. **Specifying the objectives**- The person or agency assigned the task of forecasting the demand must specifiy the purpose for which demand forecasts are being made.
2. **Selection of Appropriate Method**-Once the purpose of demand forecasting has been specified, we must select the methods which will be used for the purpose.
3. **Collection of Appropriate Data**-The quality and adequacy of data will determine the quality of our results and their reliability. As far as possible, data must be collected by experienced persons.
4. **Estimation and Interpretation of results**- Having collected the relevant data we have to compile them and obtain results manually or with the help of computers. These results must be interpreted and their correspondence with the objective examined.
5. **Evaluation of the Forecasts**- If the method or model used in demand forecasting has objectivity; we may expect to receive good results. Yet the result so obtained must be verified by persons having professional acumen and expertise.

Production Function

Introduction

Production in economic terms is generally understood as the transformation of inputs into outputs. The inputs are what the firm buys, namely productive resources, and outputs are what it sells. Production is not the creation of matter but it is the creation of value. Production is also defined as producing goods which satisfy some human want. Production is a sequence of technical processes requiring either directly or indirectly the mental and physical skill of craftsman and consists of changing requiring either directly or indirectly the mental and physical skill of craftsman and consists of changing the shape, size and properties of materials and ultimately converting them into more useful articles. Means of production refer to the concept which combines the means of labor and the subject of labor. Means of labor simply means all the things which require labor to transform it. Subject of labor means the material to work on. Production, therefore, is the combined resources and equipment needed to come up with goods or services.

Fixed and variable input: An input is the production of goods and services that does not change in the short run. A fixed input should be compared with a variable input, an input that changes in the short run. Fixed and variable inputs are most important for the analysis of short-run production by a firm. The best example of a fixed input is the factory, building, equipment, or other capital used in production. The comparable example of a variable input would then be the labor or workers who work in the factory or

operate the equipment. In the short run (such as a day or so) a firm can vary the quantity of labor, but the quantity of capital is fixed.

Short run: A production period of time in which at all inputs in the production process are fixed, meaning the quantity of output itself is fixed. Also termed market period, the short run exists if the period is so short that no additional production is possible. In other words, the good have been produced all that remains is to sell them.

Long run: A production time period in which all inputs are variable, including those under control of the firm and those beyond the control of the firm. During the very long run, not only are the labor, capital, land, and entrepreneurship inputs variable, but so too are key production inputs such as government rules, technology, and social customs.

In other words we can say that production in economics is all those activities that have to do with the creation of commodities, by imparting to raw materials utility, added value, or the ability to satisfy human wants.

Objective of Production Function

The objective of production function is as under:-

- The primary purpose of the production function is to address allocative efficiency in the use of factor inputs in production and the resulting distribution of income to those factors.
- Production function is a function that specifies the output of a firm for all combinations of inputs.
- The relationship of output to inputs is non-monetary; that is, a production function relates physical inputs to physical outputs, and prices and costs are reflected in the function.
- Influences economic decision-making.

The Production Function

The production function expresses a functional relationship between quantities of inputs and out-puts. It shows how and to what extent output changes with variations in inputs during a specified period of time. In the words of Stigler, "The production function is the name given to the relationship between rates of input of productive services and the rate of output of product. It is the economist's summary of technical knowledge." Basically, the production function is a technological or engineering concept which can be expressed in the form of a table, graph and equation showing the amount of output obtained from various combinations of inputs used in production, given the state of technology. Algebraically, it may be ex-pressed in the form of an equation as

$$Q = f (L,M,N,K,T)$$

Where Q stands for the output of a good per unit of time, L for labour, M for management (or organization), N for land (or natural resources), K for capital and T for given technology, and f refers to the functional relationship.

The production function with many inputs cannot be depicted on a diagram. Moreover, given the specific values of the various inputs, it becomes difficult to solve such a production function mathematically. Economists, therefore, use a two input production function. If we take two inputs, labour and capital, the production function assumes the form

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

The production function as determined by technical conditions of production is of two types: it may be rigid or flexible. The former relates to the short run and the latter to the long run.

The Nature of Production Function

The production function depends upon the following factors:

a) The quantities of inputs to be used.
b) The state of technical knowledge.
c) The possible processes of production.
d) The size of the firm.
e) The prices of inputs.

Now if these factors change the production function automatically changes.

Attributes of Production Function

The following are the important attributes of production function:

i. The production function is a flow concept.
ii. A production function is a technical relationship between inputs and outputs expressed in physical terms.
iii. The production function of a firm depends on the state of technology and inputs.
iv. From the economic point of view, a rational firm is interested not in all the numerous possible levels of output but only in that combination which yields maximum outputs.
v. The short run production function pertains to the given scale of production. The long run production function pertains to the changing scale of production.

Production Function as Graph

Any of these equations can be plotted on a graph. A typical (quadratic) production function is shown in the following diagram under the assumption of a single variable input (or fixed ratios of inputs so the can be treated as a single variable). All points above the production function are unobtainable with current technology, all points below are technically feasible, and all points on the function show the maximum quantity of output obtainable at the specified level of usage of the input. From the origin, through points A, B, and C, the production function is rising, indicating that as additional units of inputs are used, the quantity of outputs also increases. Beyond point C, the employment of additional units of inputs produces no additional outputs (in fact, total output starts to decline); the variable input is being used too intensively. With too much variable input use relative to the available fixed inputs, the company is experiencing negative returns to variable inputs, and diminishing total returns. In the diagram this is illustrated by the negative marginal physical product curve (MPP) beyond point Z, and the declining production function beyond point C.
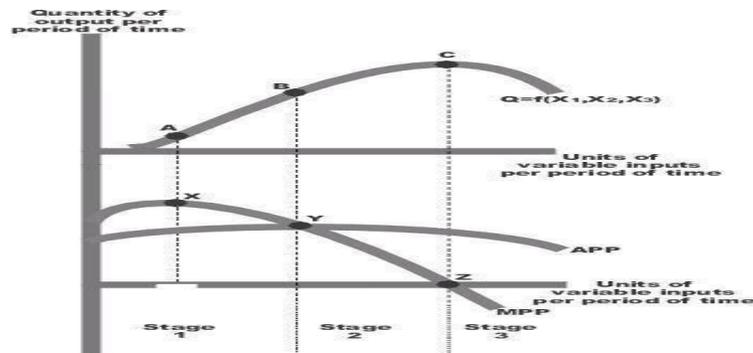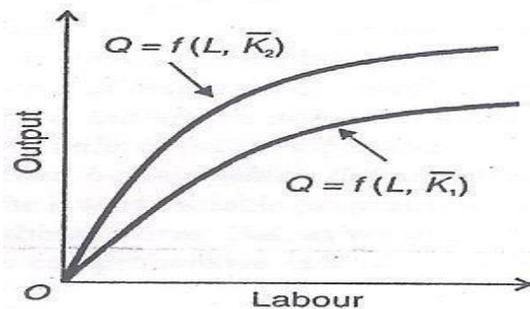

Quadratic Production Function

From the origin to point A, the firm is experiencing increasing returns to variable inputs. As additional inputs are employed, output increases at an increasing rate. Both marginal physical product (MPP, the derivative of the production function) and average physical product (APP, the ratio of output to the variable input) are rising. The inflection point A defines the point beyond which there are diminishing marginal returns, as can be seen from the declining MPP curve beyond point X. From point A to point C, the firm is experiencing positive but decreasing marginal returns to the variable input. As additional units of the input are employed, output increases but at a decreasing rate. Point B is the point beyond which there are diminishing average returns, as shown by the declining slope of the average physical product curve (APP) beyond point Y. Point B is just tangent to the steepest ray from the origin hence the average physical product is at a maximum. Beyond point B, mathematical necessity requires that the marginal curve must be below the average curve

Short Run Production Function

In the short run, the technical conditions of production are rigid so that the various inputs used to produce a given outputs are in fixed proportions. However, in the short run, it is possible to increase the quantities of one input while keeping the quantities of other inputs constant in order to have more output. This aspect of the production function is known as the Law of Variable Proportions. The short run production function in the case of two inputs, labour and capital with capital as fixed and labour as the variable input can be expressed as

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

Where K refers to the fixed input.

This production function is depicted in Figure 1 where the slope of the curve shows the marginal production of labor. A movements along the production function shows the increase in outputs as labour increases, given the amount of capital employed $..._{K_1}$, If the amount of capital increases to $..._{K_2}$, at a point of time, the production function $Q=f(L,K_1)$ is taken as a fixed upwards to $Q=f(L,K_2)$, as shown in the figure. of time, On the other hand, if labour is taken as a fixed input and capital as the variable input, the production function takes the form

$$Q= f(KL)$$

This production function is depicted in Figure 2 where the slope of the curve represents the marginal product of capital.
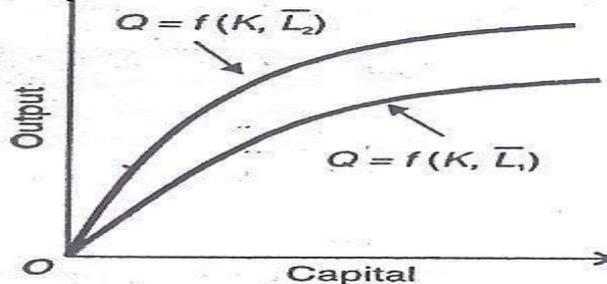
A movement along the production function shows the increase in output as capital increases, given the quantity of labour employed, L_1 . If the quantity of labour increases to L_2 , at a point of time, the production function $Q = f (K, L)_1$ shifts upwards to $Q = f (K, \overset{...}{L})_2$

5.6 Long Run Production Function

In the long run all inputs are variable. Production can be increased by changing one or more of the inputs. The firm can changes its plants or scale of production. Equations (1) and (2) represent the long-run production function. Given the level of technology, a combination of the quantities of labour and capital produces a specified level of output. The long run production function is depicted in Figure 3 where the combination of OK of capital and OL of labour produced 100Q. With the increase in inputs of capital and labour to and , the output increases to 200Q. The long run production function is shown in terms of an isoquant such as 100 Q.
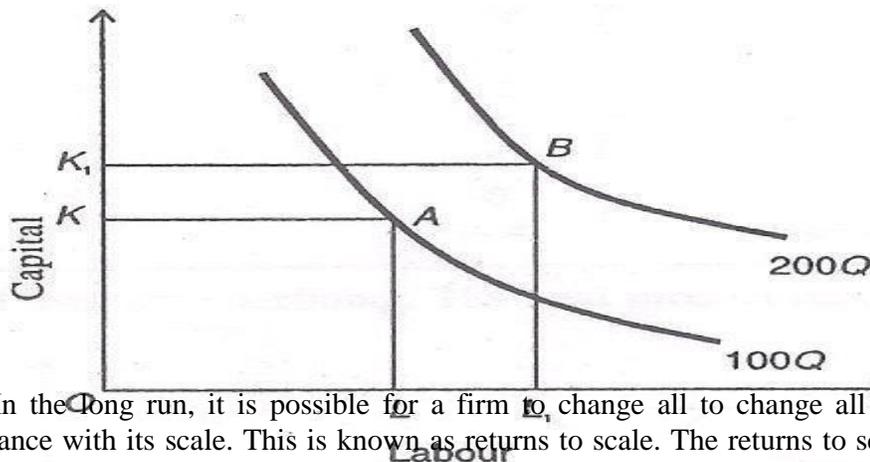
In the long run, it is possible for a firm to change all to change all inputs up or down in accordance with its scale. This is known as returns to scale. The returns to scale are constant when output increases in the same proportion as the increase in the quantities of inputs. The returns to scale are increasing when the increased in output is more than proportional to the increase in inputs. They are decreasing if the increase in output is less than proportional to the increase in inputs.

Let us illustrate the case of constant returns to scale with the help of our production function.

$$Q = (L, M, N, K\ T_2)$$

Given , if the quantities of all inputs L,M,N,K are increased n-fold the output Q also increases n-fold. Then the production function becomes

$$nQ = f(nL,\ nM,\ nN,\ nK)$$

This is known as linear an homogeneous production function, or a homogeneous function of the first degree. If the homogeneous function is of the kth degree, the production function is

$$n^k\ Q = f(nL,\ nM,\ nN,\ nK)$$

If k is equal to 1, it is a case of constant returns to scale; if it is greater than 1, it is a case of increasing returns of scale; and if it is less than 1, it is a case of decreasing returns to scale.

Thus a production function is of two types: (i) Liear homogeneous of the first degree in which the output would change in exactly the same proportion as the change in inputs. Doubling the inputs would exactly double the output, and vice versa. Such a production function expresses constant returns to scale. (ii)Non homogeneous production functions of a degree greater or less than one. The former relates to increasing returns to scale and the latter to decreasing returns to scale.

UNIT-3

The Cobb-Douglas Production Function:

The Cobb-Douglas production function is based on the empirical study of the American manufacturing industry made by Paul H. Douglas and C.W. Cobb. It is a linear homogeneous production function of degree one which takes into account two inputs, labour and capital, for the entire output of the .manufacturing industry.

In economics and econometrics, the Cobb–Douglas production function is a particular functional form of the production function, widely used to represent the technological relationship between the amounts of two or more inputs (particularly physical capital and labor) and the amount of output that can be produced by those inputs. The Cobb–Douglas form was developed and tested against statistical evidence by Charles Cobb and Paul Douglas between 1927 and 1947.

The production function is a way of calculating the output of production compared to its input. Learn more about the Cobb Douglas production function, examine its definition and formula, and look at some examples.

Factors of Production

You can't make something from nothing. You need supplies, equipment, resources, and some know-how, too. How much you have of these things can affect your production. In economics, a production function is a way of calculating what comes out of production to what has gone into it. The formula attempts to calculate the maximum amount of output you can get from a certain number of inputs.

In macroeconomics, the factors of production are:

Physical capital (K), or tangible assets that are created for use in the production process. This includes such things as buildings, machines, computers, and other equipment.

Labor (L), or input of skilled and unskilled activities of human workers.

Land (P), which includes natural resources, raw materials, and energy sources, such as oil, gas, and coal.

Entrepreneurship (H), which is the quality of the business intelligence that is applied to the production function.

The production function is expressed in the formula: $Q = f(K, L, P, H)$, where the quantity produced is a function of the combined input amounts of each factor. Of course, not all businesses require the same factors of production or number of inputs. Another form of the production function reduces the inputs to just labor and physical capital. The formula for this

form is: Q = f(L, K), in which labor and capital are the two factors of production with the greatest impact on the quantity of output.

Cobb-Douglas Production Function

In 1928, Charles Cobb and Paul Douglas presented the view that production output is the result of the amount of labor and physical capital invested. This analysis produced a calculation that is still in use today, largely because of its accuracy.

The Cobb-Douglas production function reflects the relationships between its inputs - namely physical capital and labor - and the amount of output produced. It's a means for calculating the impact of changes in the inputs, the relevant efficiencies, and the yields of a production activity. Here's the basic form of the Cobb-Douglas production function:

$$Q(L, K) = A * L^{\beta} * K^{\alpha}$$

The Cobb-Douglas production function:

In this formula, Q is the quantity produced from the inputs L and K. L is the amount of labor expended, which is typically expressed in hours. K represents the amount of physical capital input, such as the number of hours for a particular machine, operation, or perhaps factory. A, which appears as a lower case b in some versions of this formula, represents the total factor productivity (TFP) that measures the change in output that isn't the result of the inputs. Typically, this change in TFP is the result of an improvement in efficiency or technology. The Greek characters alpha and beta reflect the output elasticity of the inputs. Output elasticity is the change in the output that results from a change in either labor or physical capital.

For example, if the output elasticity for physical capital (K) is 0.60 and K is increased by 20 percent, then output increases by 3 percent (0.6/0.2). The same is true for the output elasticity of labor: an increase of 10 percent in L with an output elasticity of 0.40 increases the output by 4 percent (0.4/0.1).

Marginal Product

Another concept associated with the Cobb-Douglas production function is marginal product, which is the change in the output that results from one additional unit of a single production factor with all other factors held constant. Or, as the economists say, ceteris parabis, which means 'all other things equal.' Marginal product is measured in physical units, which is why it is also called marginal physical product.

For example, consider a company called WeeBee Toys. When there are no workers in the factory, there is no output even though physical capital is present. When a single worker shows up, three units are produced per labor hour. When two workers come in, output increases to five units per hour.

The addition of the labor of the second worker results in two more units per hour, or a marginal product of two. Because the marginal product is directly related to the increase in labor, this is also called the marginal product of labor. Had the increase in output been a result of new technology or physical capital, the change would be marginal product of capital.

Returns to Scale and Returns to Factor (With Diagram)

In this article we will discuss about the relationship between Returns to Scale and Returns to Factor.

Returns to a factor and returns to scale are two important laws of production. Both laws explain the relation between inputs and output. Both laws have three stages of increasing, decreasing and constant returns. Even then, there are fundamental differences between the two laws.

Returns to a factor relate to the short period production function when one factor is varied keeping the other factor fixed in order to have more output, the marginal returns of the Variable factor diminish. On the other hand, returns to scale relate to the long period production function when a firm changes its scale of production by changing one or more of its factors.

Assumptions:

We discuss the relation between the returns to a factor (law of diminishing returns) and returns to scale (law of returns to scale) on the assumptions that:

(1) There are only two factors of production, labour and capital.

(2) Labour is the variable factor and capital is the fixed factor.

(3) Both factors are variable in returns to scale.

(4) The production function is homogeneous.

Explanation:

Given these assumptions, we first explain the relation between constant return to scale and returns to a variable factor in terms of Figure 14 where OS is the expansion path which

shows constant returns to scale because the difference between the two isoquants 100 and 200 on the expansion path is equal i.e.,

Fig. 14
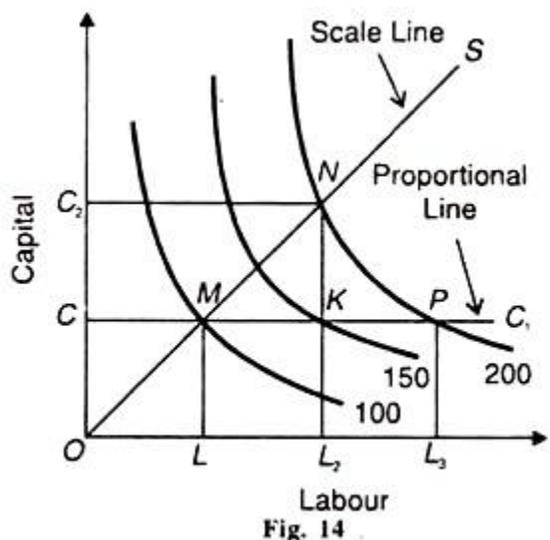
OM = MN. To produce 100 units, the firm uses OC + OL quantities of capital and labour and to double the output to 200 units, double the quantities of labour and capital are required so that OC_2 + OL_2 lead to this output level at point N. Thus there are constant returns to scale because OM = MN.

To prove that there are decreasing returns to the variable factor, labour, we take OC of capital as the fixed factor, represented by the CC line which is parallel to the X-axis relating to labour.

This is called the proportional line. Keeping C as constant, if the amount of labour is doubled by LL_2 we reach point Y which lies on a lower isoquant 150 than the isoquant 200. By keeping C constant, if the output is to be doubled from 100 to 200 units, then OL_3 units of labour will be required. But $OL_3 > OL_2$. Thus by doubling the units of labour from OL to OL_2 with constant C the output less than doubles.

It is 150 units at point K instead of 200 units at point P. This shows that the marginal returns of the variable factor, labour, have diminished when there are constant returns to scale.

The relation between diminishing returns to scale and returns to a variable factor is explained with the help of Figure 15 where OS is the expansion path which depicts diminishing returns to scale because the segment MN > OM. It means that in order to double the output from 100 to 200, more than double the amounts of both factors are required.
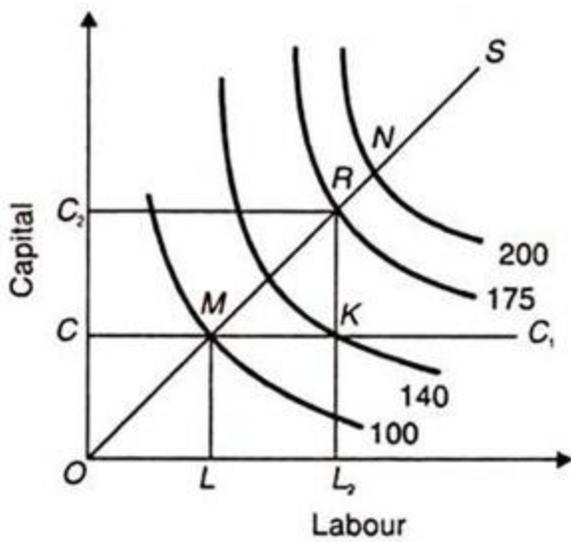
Fig. 15

Alternatively, if both factors are doubled to $OC_2 + OL_2$, they lead to the lower output level isoquant 175 at point R than the isoquant 200 which shows diminishing returns to scale. If C is kept constant and the amount of variable factor, labour, is doubled by LL_2, we reach point K which lies on a still lower level of output represented by the isoquant 140. This proves that the marginal returns of the variable factor, labour, and have diminished when there are diminishing returns to scale.

Now we take the relation between increasing returns to scale and returns to a variable factor. This is explained in terms of figure 16 (A) and (B) In Panel (A), the expansion path OS depicts increasing returns to scale because the Segment OM > MN. It means that in older to double the output from 100 to 200 less than double the amounts of both factors will be required.

If C is kept constant and the amount of variable factor labour is doubled by LL_2 the level of output is reached at point K which shows diminishing marginal return as represented by the lower isoquant 160 than the isoquant 200 when returns to scale are increasing.
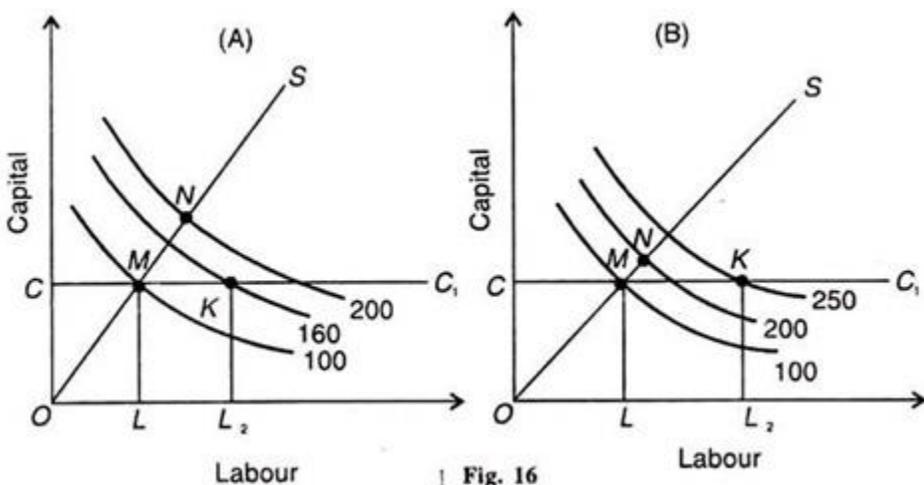

| Fig. 16

In case the returns to scale are increasing strongly, that is, they are highly positive; they will offset the diminishing marginal returns of the variable factor, labour. Such a situation leads to increasing marginal returns. This is explained in Panel (B) of Figure 16 where on the expansion path OS the segment OM > MN, thereby showing increasing returns to scale.

When the amount of the variable factor, labour, is doubled by LL while keeping C as constant, we reach the output level K represented by the isoquant 250 which is at a higher level than the isoquant 200. This shows that the marginal returns of the variable factor, labour, have increased even when there are increasing returns to scale.

Conclusion:

It can be concluded from the above analysis that under a homogeneous production function when a fixed factor is combined with a variable factor, the marginal returns of the variable factor diminish when there are constant, diminishing and increasing returns to scale. However, if there are strong increasing returns to scale, the marginal returns of the variable factor increase instead of diminishing.

Distinguish between returns to a factor and returns to scale. Use isoquants to explain constant returns to scale and diminishing returns to a factor can they exist together?

Kane Dane

Returns to a factor studies the behavior of output when more and more units of the variable factor is combined with the fixed factor. Here, scale of production remains constant but factor ratio changes. Whereas the returns to scale studies the behavior of output when the scale of output changes. Here scale changes but the factor ratio remains constant.

**Returns to a factor is a short -run concept. It has three situations namely;**
1.   **Increasing Returns to a factor :** Total output tends to increase at a increasing rate when more of the variable factor is combined with the fixed factors of production.
2.   **Constant Returns to a factor :** It's a situation when increasing application of the variable factor no more results in increasing marginal product of the factor, rather marginal product of the factors tends to stabilize.
3.   **Diminishing Returns to a factor :** Total output tends to increase at the diminishing rate when more of the variable factor is combined with the fixed factors of production. Marginal product of the variable factor must be

Returns to scale is a long run concept as in the long run all factors of production are variable. The response of output to changes in the scale or size of all factors in the same proportion is termed as returns to scale. It has three situations i.e.,

1. **Increasing Returns to scale:** It occurs when a given percentage increases in all factor inputs causes proportionately greater increase in output.
2. **Constant Returns to Scale :** It occurs when a gives percentage increase in all factor inputs causes equal percentage increase in output.
3. **Diminishing Returns to Scale :** It occurs when a given percentage increase in all factor inputs (in some constant ratio) cause proportionately lesser increase in output.

The main cause of the application of Returns to a factor is the variation or the change in the proportion of different factors. Whereas, Returns to scale are caused by change in the scale of production.

Constant Returns to Scale : It refers to a situation in which expansion in output happens to be just proportionate to the expansion in factor inputs. Constant returns to scale means that the size of inputs and the size of the output increases in the same proportion. Doubling the input, doubles the output.
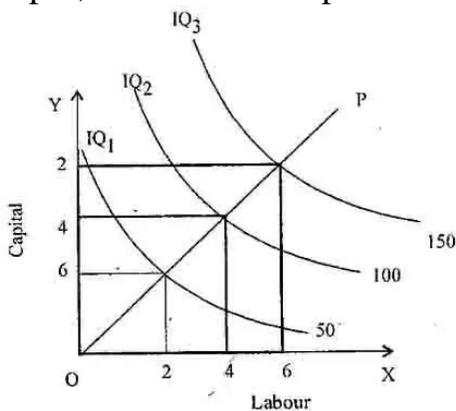
Diminishing Returns to a factor : It is a situation when increasing application of the variable factor increases total output only at the diminishing rate. When capital is held constant at OR and production is expanded by adding more labour, the distance between successive isoquants become increasingly greater, that is, more and more labour is required for every 100 additional units of output. This means a diminishing Marginal product of labour. The distance EF is less than FG and FG is less than GH.
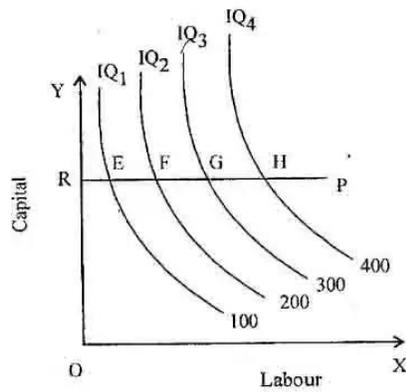
It means that 100 units increase in output can be obtained by using successively greater increments of labor. Between E & F additional 10 units of labor. Between F to G additional 100 units of output is obtained by applying 20 units of additional labor. Thus, the marginal product of labor diminishes when output is expanded along the output path RP.

Economies of scale:

Economies of scale, in microeconomics, refer to the cost advantages that a business obtains due to expansion. There are factors that cause a producer's average cost per unit to fall as the scale of output is increased. "Economies of scale" is a long run concept and refers to reductions in unit cost as the size of a facility and the usage levels of other inputs increase. Diseconomies of scale are the opposite. The com-mon sources of economies of scale are purchasing (bulk buying of materials through long-term contracts), managerial (increasing the specialization of managers), financial (obtaining lower-interest charges when borrowing from banks and having access to a greater range of financial instruments), marketing (spreading the cost of advertising over a greater range of output in media markets), and technological (taking advantage of returns to scale in the production function).

An economy of scale exists when larger output is associated with lower per unit cost. Economies of scale have been classified by Marshall into Internal Economies and External Economies.

Internal Economies are internal to firm when it expands its size or increases

its output. They "are open to single factory or a single firm independently of the action of other firms. They result from an increase in the scale of output of the firm, and cannot be achieved unless output increases. They are not the result of invention of any kind, but are due to the use of known methods of production which a small firm does not find worthwhile." (A.K. Cairn cross)

External Economies are external to a firm which is available to it when the output of the whole industry expands. They are "shared by a number of firms or industries when the scale of production in any industry or group of industries increases. They are not monopolized by a single firm when it grows in size, but are conferred on it when some other firms grow large". (A.K. Cairncross).

Modern economists distinguish economies of scale in terms of real and pecuniary internal and external economies.

Real Internal economies are "associated with a reduction in the physical quantity of inputs, raw materials, various types of labour and various types of capital (fixed or circulating) used by a large firm."2 Real internal economies which arise from the expansion of a firm are the following:

1. **Labour Economies.** As the firm expands, it achieves labour economies with increased division of labour and specialization. When a firm expands in size, this necessitates division of labour whereby each worker is assigned one particular job, and the splitting of processes into sub- processes for greater efficiency and productivity. This, in turn, leads to the increase in the dexterity (skill) of every worker, the saving time to produce goods, and to the invention of large number of labour saving machines, according to Adam Smith. Thus division of labour and specialization lead to grather productive efficiency and reduction in per unit cost in a large firm.

2. **Technical Economies.** Technical economies are associated with all types of machines and equipments used by a large firm. They arise from the use of better machines and techniques of production which increase output and reduce per unit cost of production. Technical economies are classified as follows:

(i) **Economies of Indivisibility.** Mrs. Joan Robinson refers to economies of factor indivisibility. Fixed capital is one such factor. It is indivisible in the sense that a machine, an equipment or a plant mush be used in a fixed minimum size or capacity to justify its use. Such machines can be most efficiently used at fairly large output than at small outputs because they

cannot be divided into smaller units. For example, an automated car assembly plant is not a viable proposition, if the number of cars to be assembled is small because much of the plant would remain idle. But a large firm assembling a large number of cars may be able to utilise the plant to its full capacity and achieve lower per unit cost.

(ii) Economies of Superior Technique. It is only a large firm which can afford to pay for costly machines and install them. Such machines are more productive than small machines. The high cost of such machines can be spread over a larger output which they help to produce. Thus ther per unit cost of production falls in a large firm which employs costly and superior plant and equipment and thereby enjoys a technical superiority over a small firm.

(iii) Economies of Increased Dimensions. The installation of large machines itself brings may advantages to a firm. The cost of operating large machines is less than that ofoperating small machines. Even the cost of construction is relatively lower for large machines than for small ones. The cos of manufacture of a double-decker bus is lower as compared to the manufacture of two single-decker buses. Moreover, a double-decker carries more passengers than a single-decker and at the same time requires only a driver and a conductor like the latter. Thus its operating costs are relatively lower.

(iv) Economies of Linked Processes. A large firm is able to reduce itsper unit cost of production by linking the various processes of production. For instance, a large sugar manufacturing firm may own its sugarcane farms, manufacture sugar, pack it in bags, transport and distribute sugar through its own transport and distribution departments. Thus by linking the various processes of production and sale, a large firm saves the expenses incurred on intermediaries there by reducing unit cost of production.

(v) Economies of the Use of By-products. A large firm possesses greater rosources than a small firm and is able to utilise its waste material as a by product. For example, the molasses left over after manufacturing sugar from the surgarcane can be used for producing spirit by installing a plant for the purpose.

(vi) Economies in Power Consumption. A large firm which operates large machines and runs them continuously, economies in power consumption as compared to small machines.

3. Marketing Economies. A large firm also reaps the economies of buying and selling. It buys its requirements of various inputs in bulk and is, therefore, able to secure them at favorable terms in the form of better quality inputs, prompt delivery, transport concessions, etc. Because of its larger organization, it produces quality products which are offered for sale in attractive packing by its packing department. It may also have a scale

department manned by experts who carry on salesmanship, propaganda and advertisement through the various media efficiently. Thus a large firm is able to reap the economies of marketing through its superior bargaining power and efficient packing and sales organization.

Managerial Economies. A large firm can afford to put specialists to supervise and manage the various departments. There may be a separate head for manufacturing, assembling, packing, marketing, general administration, etc. This decentralization leads to functional specialization which increases the productive efficiency of the firm. "Large firms apply techniques of management involving a high degree of mechanization, such as telephones, telex machines, television screens and computers. These techniques save time in decision making process and speed up to processing of information, as well as increasing its amount and its accuracy." These managerial economies also reduce per unit cost of management because with expansion of the firm, the various departmental managers will manage large output as efficiently as they were managing small output at the same salary.

Cost Function

Cost function is derived from the production function. Time factor is very important in cost theory. The short-run costs are the costs over a period during which some factors of production are fixed. The long-run costs are the costs over a period long enough to permit changes in all factors of production. Both in the short-run and in the long-run, cost is a multivariate function, i.e., it is determined by many factors simultaneously, symbolically, the long run cost function is given as

$$C = f(X,T,Pf)$$

And the shot-run-run cost function is:

$$C = f(X, T, Pf, K)$$

Where C = Total Cost

X = Output

T = Technology

Pf = prices of factors

K = Fixed factor (s)

Graphically, the cost function is generally shown on a two-dimensional

diagram by taking C= f(x), ceteris paribus, If other factors (i.e.T,Pf) to change, then the cost curve will shift.

Factors determining the cost are

(a) **Size of plant:** There is an inverse relationship between size of plant and cost. As size of plant increases, cost falls and vice versa.

(b) **Level of Output**: There is a direct relationship between output level and cost. More the level of output, more is the cost (i. e., total cost) and vice Versa.

(c) **Price of Inputs:** There is a direct relationship between price of inputs and cost. As the price of inputs rises, cost ruses and vice versa.

(d) **State of technology:** More modern and upgraded the technology implies lesser cost and vice versa.

(e) **Management and administrative efficiency:** Efficiency and cost are inversely related. More the efficiency in management and administration

better will be the product and less will be the cost. Cost will case of inefficiencies in management and administration.

Cost Concepts:

According to Marshall, the real cost of production includes the ‒real cost of efforts of various Qualities‖ and ‒real cost of waiting‖

It is also known as ‒alternative sacrificed cost, or ‒transfer cost‖. Opportunity cost of a commodity is the alternative sacrificed in order of order to order to obtain it.

Cost concepts differ because of differences in view point. Different combinations of cost ingredients are important for various kinds of management problems. Disparities occur form deletions, from additions from recombination which do not appear anywhere in the accounting records. Different cost concepts explained in our study are

(a) Actual cost and opportunity costs
(b) Past and future costs
(c) Short run and long run costs
(d) Variable or Prime cost and fixed costs or supplementary costs
(e)   Incremental costs and sunk costs
(f)   Traceable and Non-Traceable costs
(g)   Explicit and Implicit costs

(h)   Controllable and Non-Controllable Costs

(i)   Private, External and social costs

(j)   Total. Average and Marginal Costs

(a) Actual Cost and Opportunity Cost

Actual costs are those that involve financial expenditure incurred for acquiring inputs for producing a commodity. These expenditures are recorded in the books of accounts of the firm. The expenditures are wages, payment made for the purchase made for the purchase of raw materials machinery etc. These costs are called actual costs or outlay costs or real costs. The real cost of production has been interpreted in different forms. According to Adam Smith, —Pains and sacrifices of labour are real cost of production‖ Opportunity cost is not the actual expenditure but it is the revenue earned by employing that good or service in some other alternative uses. Opportunity cost is the cost of producing any commodity in the next best alternative cost. For example the inputs which are used to manufacture a car may also be used in the productions of military equipment. A farmer who is producing paddy can also produce sugar cane with the same factors. Therefore, the opportunity cost of one quintal of paddy is the amount of sugarcane given up. Main points of opportunity cost are:

1.   The opportunity cost of any commodity is only the next best alternative forgone.
2.   The next best alternative commodity that could be produced with the same value of the factors, which are more or less the same.
3.   It helps in determining relative prices of factor inputs at different places.
4.   It helps in determining the remuneration to services.
5.   It helps the manager to decide what he should produce in the factory.

(b) Past and Future Costs

Past costs are actual costs incurred in the past. These costs are mentioned in the financial accounts. Future costs are those costs which are to be incurred in the near future. This is only a forecast. Future costs matter for managerial decisions because, the management can evaluate the desirability of that expenditure, since the past costs are costs that have already been incurred, and there is no scope for managerial decision. If the management finds out that the past costs are excessive, it cannot do anything to rectify it now. In the case of future costs, if the management considers them very high , it can either reduce them or postpone the use of them.

(c) sort Run and Long Run Costs

Shorts run costs are those associated with variation in the utilization of fixed plan or other facilities, whereas long run costs encompass changes in the size and kind of plant. Short run cost is relevant when a firm has to decide whether or not to produce more or less with the given plant and equipments. If the firm dicides to expand the capacity of the plant, it must examine the long run cost. Long run cost is useful in making investment decisions.

(**d**) Prime or Variable Costs and Supplementary or Fixed Costs

Prime costs are variable or direct costs. Normally, they include the money cost of the raw material used in making a commodity, the wages of the labour directly spent on it and the extra wear and tear of the

machine that makes it. Suppose a carpenter has been asked to charge for a chair, he would first think of the wood and cane that he used and the number of days he spent in making it. This is the prime cost.

It is clear that prime cost of a commodity differs with the quantity produced. When more chairs are made, more money will have to be spent on carpenter's wages as well as on wood. When production is stopped, the prime costs disappear. Prime costs therefore are also called the Variable Costs.

Supplementary or Fixed Costs

The carpenter will not only charge for the chair but also for the wood and his wage. In addition to the above he will think of including a portion of rent in the cost that he is paying and also interest on the capital invested, the municipal taxes, etc. A big company will further have to include a portion of the salaries of the manager, the peons, the cost of advertisement and salesmanship, etc. These costs must also be covered. They are called supplementary costs on costs or over head charges or fixed costs.

The fixed costs do not change with the volume of production. Irrespective of quantity of goods produced, big or small, the charges on account of rent, taxes, interest salaries, etc will be included. Even if the orders cease to flow in and the factory is closed, these costs will continue. They are fixed costs.

Generally, the distinction between the variable and fixed costs applies only to the short period, because nothing can really remain fixed in the long run. In the long the strength and the salary bill of the staff may change, the amount of capital invested may be different, hence the amount of interest would vary. Thus, all costs, which ware regarded as fixed in the short run, may vary in the long run. Thus in the long run, all costs are variable.

(e) Incremental Costs and Sunk Costs

Incremental costs are the added costs of a change in the level of production or the nature of activity. It may be adding a new product or changing distribution channel, or adding new machinery, etc. It appears to be similar to marginal cost, but it is not managerial cost. Marginal cost refers to the cost on added unit of

output.

Sunk costs are costs which cannot be altered in any way. Sunk costs are costs which have already been uncured. For example, cost incurred in constructing a factory. When the factory building is constructed costs have already been incurred. The building has to be used for which originally envisaged. It cannot be altered when operations are increased or decreased. Investment on machinery is an example of sunk cost.

The distinction between the sunk cost and the incremental cost is important in evaluating the alterative. Incremental cost will be different in the case of different alternative. Hence incremental cost is relevant for the management in decision making. Sunk cost will remain the same irrespective or the alternative in decision making. Sunk cost will remain the same irrespective of the alternative selected. Marketing programme has its own set of incremental costs for equipment, delivery men and executive time and so on.

(f) Traceable Costs and Non-traceable Costs

Traceable costs are those which can easily be identified by a producing unit. These are directly related to a unit of operation like a product, a process or department of firm. These are also know as direct costs or assignable costs.

Non-traceable costs or indirect costs are not traceable to plant, department or unit or operation or individual final product. Fox example, for operating air-services, the cost of runway, airport equipment, staff, etc. cannot be assigned to one passenger. These are common costs to distinguish between traceable and non-traceable costs. Change in the total output and product-mix affect the total costs in complex ways. Even a traceable cost gets lost in the process and has to be indentified as overhead cost only.

(g) Explicit Cost and Implicit Costs

The total cost of production of a particular commodity can be said to include ‗Expenditure' or

‗explicit' cost, ‗non-expenditure' or ‗implicit' cost. Explicit costs are paid by the employer to owners of the factor units, which do not belong to the employer himself. These costs include payments for raw materials interest on borrowed funds, rent on hired land and taxes paid to the government.

Non-expenditure or implicit costs arise when factor units are owned by the employer himself, The two non expenditure costs are supplied by the shareholders; in the case of small business units the depreciation and an average or normal return on the money capital wages of the entrepreneur or organizer himself will have to be included in this category.

Expenditure costs are explicit since they are paid to factors outside the firm while non- expenditure costs are implicit and hence they are imputed costs.

(h) Controllable Costs and Non-Controllable costs

Controllable costs are those that cannot be controlled by some executive action on the part of the management These can improve the efficiency of the factor inputs.

Non-controllable costs are those that cannot be controlled through any administrative or supervisory action. These tend to wastage of resources and encourage inefficiency.

(i) Private, External and Social Costs

Some times, there is a discrepancy between the cost incurred by a firm and the cost that must be incurred by the society as a whole. For example, a factory may dispose of its untreated waste into a river or a lake. Such a method of waste disposal may minimize the private cost but it does impose a cost to the society in the form of polluted waterways. A cost that is not borne by the firm, but is incurred by others in society is called an external cost. The true cost to the society must include all costs regardless of who bears them. Thus, the social cost is the sum of private and external cost. This is

$$\text{Social cost} = \text{Private Cost} + \text{External Cost}$$

Or

$$\text{External Cost} = \text{Social Cost} - \text{Private Cost}$$

(j) Total, Average and Marginal Costs

Total cost is made up of both the fixed cost and the variable cost. They are represented in the following diagram. OX and OY are the two axes, along OX is represented the quantity produced and along OY the cost. FC, a straight horizontal line represents the fixed cost and the area above is the variable cost so that the TC is total cost curve.

$$\text{Average cost at any output} = \frac{\text{TotalCost}}{\text{Units of output}}$$

Average Cost: Average cost is the sum of average variable cost and average fixed cost; it is also called average total cost. If the totalcost of producing 60 units of good is 2400 rupees, then average cost.will be

$$\frac{2400}{120} = 20$$

Marginal Cost : Marginal cost is the cost of producing an additional unit of output. In other words, marginal cost is the addition made to the total cost by producing one more unit of output. for example, if the total cost of producing 120 units is 2400 rupees and the total cost of producing 121 units is 2436 rupees, the marginal costing in this case will be equal to 36 rupees.The concepts of total cost, average cost and marginal cost can be understood easily form the following table

Total, Average and Marginal Costs

Output	Total Cost Rs.	Average Cost Rs.	Marginal cost Rs.
1.	60	60	60
2.	80	40	20
3.	90	30	10
4.	96	24	6
5.	100	20	4
6.	144	24	44
7.	210	30	66
8.	320	40	110
9.	540	60	220
10.	900	90	360

It is evident from the above table that marginal cost of the second unit has been derived from subtracting Rs60 from Rs80 (80-60) =20. Marginal costs of subsequent units are obtained in the same manner. Hence Marginal cost is the addition made to the total cost at each step.

Marginal Cost and Average Cost

Generally, the average and marginal costs are related together. It is evident from the above table that when the average cost is falling, the marginal cost is less than the average cost and when average cost is rising, the marginal cost is higher than the average cost. When the marginal cost neither goes up nor comes down, the average and marginal cost are equal. In the table, up to 5th unit average cost is falling. It will be seen from the fourth column that from 6th to 10th unit average cost is rising. It will be seen from the table that marginal cost is higher than average cost in this range.

For instance, let us assume that a cricket player's batting average is 50. suppose, in the next match, he scor less than 50, say 45, his batting average will decrease, because his additional (i.e. marginal) scores

(45)is less than his average score (50). Suppose, on the other hand in the next match, he scores more than the average (50), say 60, his average will go up for the obvious reason that this new or additional (i.e., marginal score 60) is higher than his average score (50) thus, when the marginal is rising, the average goes up, and if the marginal is falling, the average goes down. When, however, the marginal remains unchanged, the average and marginal are equal.

Short Run Cost Function:

The short-run refers to that period of time within which a firm can vary its output by varying only the amount of variable factors, factors such as labour and raw material. In the short run period the firm cannot alter the fixed factors such capital equipment management personal, the factory buildings etc. Suppose a firm wants to increase production in the short run it can do so only by hiring more worker or buying and using more raw materials. In the short run a firm cannot enlarge the size of the existing plant or build a new plant of a bigger capacity. Thus in the

short run only variable factors can be varied while the fixed factors remain the same.

Short-run Fixed and Variable Costs

In the period, the prime costs relating to lobour and raw material can be varied whereas the fixed costs remain the same. On the other hand, in the long period, even the fixed costs relating to plant and machinery, staff salaries, etc, can be varied. That is, in the long run all costs are variable and no costs are fixed.

Short-run Cost Curve

Generally, in the short-run a firm will adjust output to demand by varying the variable factors. When the factors of production can be used in varying proportions, it means that the scale of operations of the firm can be changed. Each time the scale of operations is changed, a new short-run curve will have to be drawn for the firm such as SAC' SAC‖ and SAC‖ in the next.
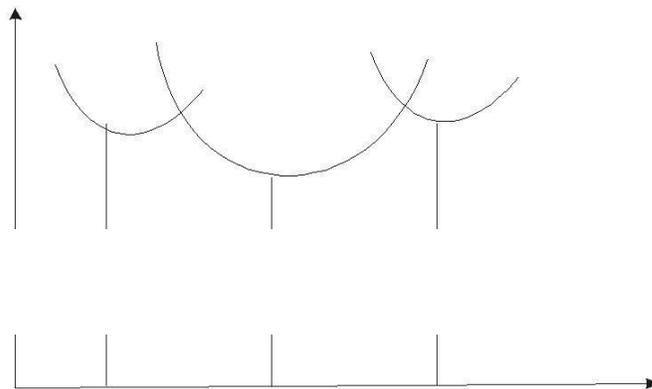
Suppose, a firm has the short-run cost curve SAV‖. In this case, the optimum will be OM'. When it wants to increase the output to OM‖ in the short-run it can be obtained at the average cost M‖L‖ along the short-run cost curve Sac:, because in the short-run the scale of operation is fixed.

On the other hand, during the long run, a new and bigger plant can be built on which OM‖ is the optimum output. That is, the firm has now a short run average cost curve SAC‖, and by increasing the scale of its operations, the firm can produce the OM‖ output at a cost of M‖L‖ instead of M‖L‖.

It is evident form the above figure that at any scale of operations in the short-run, a firm will have regions of rising and falling costs. On the other hand, in the long-run the firm can produce on a completely short-

run cost curve, and there will be an output where the average cost is minimum. This is the optimum output.

Long-Run Average Cost Curve:

In the following diagram SAC', SAC‖ and SAC‖' refer to the short run cost curve corresponding to the different scales of operations. In the following situations the firm will be producing the desired output at the lowest cost. For example. OM output is produced at PM in the scale of operations represented by the curve SAC. OM will be produced on SAC, and so on.
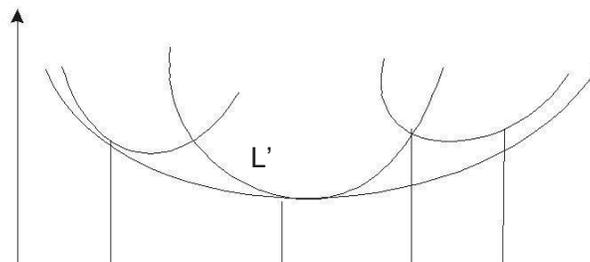
However, it is imperative that only in the long-run the scale of operations can be altered; in the short-run, in it will be fixed and the average cost of output above of below the optimum level will

necessarily rise along the short-run cost curve in question whether it will be SAC1, SAC2 and SAC3. A long run average cost will show what is the long-run cost of producing each output.

The short-run average cost curve SAC2 has a lower minimum point that either the curves SAC1, SAC2 and SAC3. The maximum output of the firm is obtained at OM. The long-run average cost curve LAC is a tangent to all the short run cost curve. SAC1, SAC2 and SAC3. The LAC curve will therefore, be U-shaped like the short-run cost curve. It will be flatter. That is why the long-run cost curve is called an _Envelope' , because it envelops all the short-run cost curves.

According to Dewett and Varma, the cost curve, whether short-run or long-run are U-shaped because the cost of production first starts falling as output is increased owing to the various economies of scale. But after touching the lowest point at the optimum output level, it starts rising, and goes on rising if production is continued beyond the optimum level. This obviously makes a U-shape.

The U-shape of the long-run cost curves is less pronounced. In other words, the long run average costs are than the short-run curves. The longer the period to which the curve relates the less pronounced

will be the U-shape of the curve. By the long period the size and organization of the firm can be altered to meet the changed conditions.

Break Even Analysis:

A break-even analysis is an economic tool that is used to determine the cost structure of a company or the number of units that need to be sold to cover the cost. Break-even is a circumstance where a company neither makes a profit nor loss but recovers all the money spent.

The break-even analysis is used to examine the relation between the fixed cost, variable cost, and revenue. Usually, an organisation with a low fixed cost will have a low break-even point of sale.

Importance of Break-Even Analysis

- **Manages the size of units to be sold:** With the help of break-even analysis, the company or the owner comes to know how many units need to be sold to cover the cost. The variable cost and the selling price of an individual product and the total cost are required to evaluate the break-even analysis.
- **Budgeting and setting targets:** Since the company or the owner knows at which point a company can break-even, it is easy for them to fix a goal and set a budget for the firm accordingly. This analysis can also be practised in establishing a realistic target for a company.
- **Manage the margin of safety:** In a financial breakdown, the sales of a company tend to decrease. The break-even analysis helps the company to decide the least number of sales required to make profits. With the margin of safety reports, the management can execute a high business decision.
- **Monitors and controls cost:** Companies' profit margin can be affected by the fixed and variable cost. Therefore, with break-even analysis, the management can detect if any effects are changing the cost.
- **Helps to design pricing strategy: The** break-even point can be affected if there is any change in the pricing of a product. For example, if the selling price is raised, then the quantity of the product to be sold to break-even will be reduced. Similarly, if the selling price is reduced, then a company needs to sell extra to break-even.

Components of Break-Even Analysis

- Fixed costs: These costs are also known as overhead costs. These costs materialise once the financial activity of a business starts. The fixed prices include taxes, salaries, rents, depreciation cost, labour cost, interests, energy cost, etc.
- Variable costs: These costs fluctuate and will decrease or increase according to the volume of the production. These costs include packaging cost, cost of raw material, fuel, and other materials related to production.

Graphically Representing the Break Even Point

The graphical representation of unit sales and dollar sales needed to break even is referred to as the break even chart or Cost Volume Profit (CVP) graph. Below is the CVP graph of the example above:
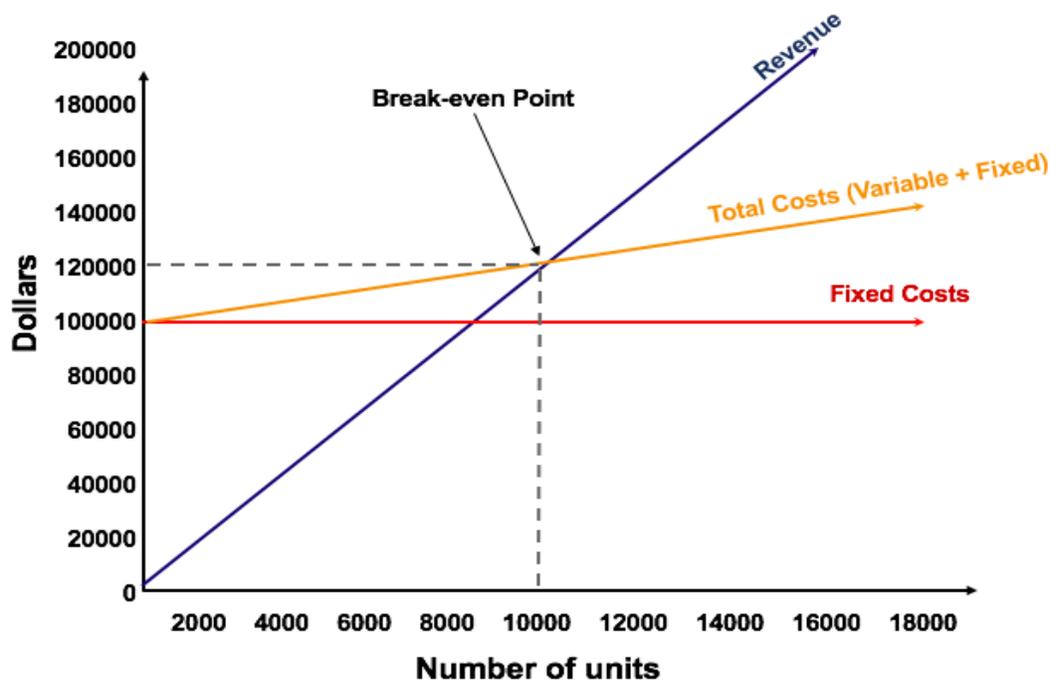
Break Even Analysis
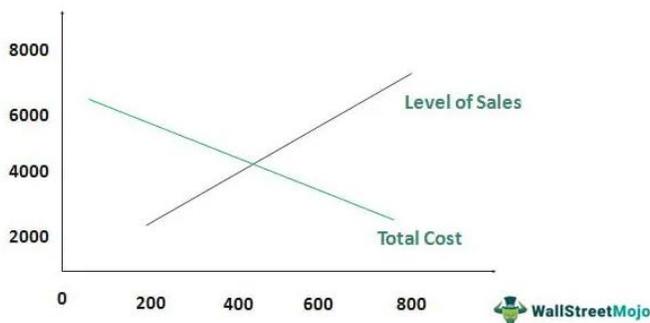
Explanation:

- The number of units is on the X-axis (horizontal) and the dollar amount is on the Y-axis (vertical).
- The red line represents the total fixed costs of $100,000.
- The blue line represents revenue per unit sold. For example, selling 10,000 units would generate 10,000 x $12 = $120,000 in revenue.
- The yellow line represents total costs (fixed and variable costs). For example, if the company sells 0 units, then the company would incur $0 in variable costs but $100,000 in fixed costs for total costs of $100,000. If the company sells 10,000 units, the company would incur 10,000 x $2 = $20,000 in variable costs and $100,000 in fixed costs for total costs of $120,000.
- The break even point is at 10,000 units. At this point, revenue would be 10,000 x $12 = $120,000 and costs would be 10,000 x 2 = $20,000 in variable costs and $100,000 in fixed costs.
- When the number of units exceeds 10,000, the company would be making a profit on the units sold. Note that the blue revenue line is greater than the yellow total costs line after 10,000 units are produced. Likewise, if the number of units is below 10,000, the company would be incurring a loss. From 0-9,999 units, the total costs line is above the revenue line.

Break-Even Analysis Formula

Break-even point = Fixed cost/-Price per cost – Variable cost

Example of break-even analysis

Company X sells a pen. The company first determined the fixed costs, which include a lease, property tax, and salaries. They sum up to ₹1,00,000. The variable cost linked with manufacturing one pen is ₹2 per unit. So, the pen is sold at a premium price of ₹10.

Therefore, to determine the break-even point of Company X, the premium pen will be:

Break-even point = Fixed cost/Price per cost – Variable cost

= ₹1,00,000/(₹12 – ₹2)

= 1,oo,000/10

= 10,000

Therefore, given the variable costs, fixed costs, and selling price of the pen, company X would need to sell 10,000 units of pens to break-even.

The above-mentioned is the concept of 'Break-Even Analysis'. To know more, stay tuned to our website.
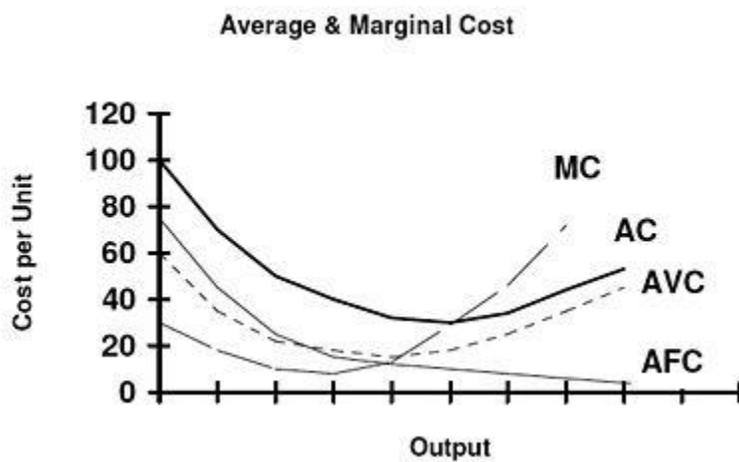
Average cost

In economics, average cost or unit cost is equal to total cost (TC) divided by the number of units of a good produced (the output Q):

$Ac=TC/Q$

Average cost has strong implication to how firms will choose to price their commodities. Firms' sale of commodities of certain kind is strictly related to the size of the certain market and how the rivals would choose to act.

Short-run average cost

A U-shaped short-run Average Cost (AC) curve. AVC is the Average Variable Cost, AFC the Average Fixed Cost, and MC the marginal cost curve crossing the minimum points of both the Average Variable Cost and Average Cost curves.

Short-run costs are those that vary with almost no time lagging. Labor cost and the cost of raw materials are short-run costs, but physical capital is not.

An average cost curve can be plotted with cost on the vertical axis and quantity on the horizontal axis. Marginal costs are often also shown on these graphs, with marginal cost representing the cost of the last unit produced at each point; marginal costs in the short run are the slope of the variable cost curve (and hence the first derivative of variable cost).

A typical average cost curve has a U-shape, because fixed costs are all incurred before any production takes place and marginal costs are typically increasing, because of diminishing marginal productivity. In this "typical" case, for low levels of production marginal costs are below average costs, so average costs are decreasing as quantity increases. An increasing marginal cost curve intersects a U-shaped average cost curve at the latter's minimum, after which the average cost curve begins to slope upward. For further increases in production beyond this minimum, marginal cost is above average costs, so average costs are increasing as quantity increases. For example: for a factory designed to produce a specific quantity of widgets per period—below a certain production level, average cost is higher due to under-used equipment, and above that level, production bottlenecks increase average cost.

Long-run average cost

Long-run average cost is the unit cost of producing a certain output when all inputs, even physical capital, are variable. The behavioral assumption is that the firm will choose that combination of inputs that produce the desired quantity at the lowest possible cost.

A long-run average cost curve is typically downward sloping at relatively low levels of output, and upward or downward sloping at relatively high levels of output. Most commonly, the long-run average cost curve is U-shaped, by definition reflecting economies of scale where negatively sloped and diseconomies of scale where positively sloped.

If the firm is a perfect competitor in all input markets, and thus the per-unit prices of all its inputs are unaffected by how much of the inputs the firm purchases, then it can be shown[1][2][3] that at a particular level of output, the firm has economies of scale (i.e., is operating in a downward sloping region of the long-run average cost curve) if and only if it has increasing returns to scale, the latter being exclusively a feature of the production function. Likewise, it has diseconomies of scale (is operating in an upward sloping region of the long-run average cost curve) if and only if it has decreasing returns to scale, and has neither economies nor diseconomies of scale if it has constant returns to scale. With perfect competition in the output market the long-run market equilibrium will involve all firms operating at the minimum point of their long-run average cost curves (i.e., at the borderline between economies and diseconomies of scale).

If, however, the firm is not a perfect competitor in the input markets, then the above conclusions are modified. For example, if there are increasing returns to scale in some range of output levels, but the firm is so big in one or more input markets that increasing its purchases of an input drives up the input's per-unit cost, then the firm could have diseconomies of scale in that range of output levels. Conversely, if the firm is able to get bulk discounts of an input, then it could have economies of scale in some range of output levels even if it has decreasing returns in production in that output range.

In some industries, long-run average cost is always declining (economies of scale exist indefinitely). This means that the largest firm tends to have a cost advantage, and the industry tends naturally to become a monopoly, and hence is called a natural monopoly. Natural monopolies tend to exist in industries with high capital costs in relation to variable costs, such as water supply and electricity supply.

Relationship to marginal cost

When average cost is declining as output increases, marginal cost is less than average cost. When average cost is rising, marginal cost is greater than average cost. When average cost is neither rising nor falling (at a minimum or maximum), marginal cost equals average cost.

Other special cases for average cost and marginal cost appear frequently:

- Constant marginal cost/high fixed costs: each additional unit of production is produced at constant additional expense per unit. The average cost curve slopes down continuously, approaching marginal cost. An example is hydroelectric generation, which has no fuel expense, limited maintenance expenses and a high up-front fixed cost (ignoring irregular maintenance costs or useful lifespan). Industries with fixed marginal costs, such as electrical transmission networks, may meet the conditions for a natural monopoly, because once capacity is built, the marginal cost to the incumbent of serving an additional customer is always lower than the average cost for a potential competitor. The high fixed capital costs are a barrier to entry.
- Two popular pricing mechanisms are average cost pricing (or rate of return regulation) and marginal cost pricing. A monopoly produces where its average cost curve meets the market demand curve under average cost pricing, referred to as the average cost pricing equilibrium.

- Minimum efficient scale: Marginal or average costs may be nonlinear, or have discontinuities. Average cost curves may therefore only be shown over a limited scale of production for a given technology. For example, a nuclear plant would be extremely inefficient (high average cost) for production in small quantities. Similarly, its maximum output for any given time period may essentially be fixed, and production above that level may be technically impossible, dangerous or extremely costly. The long run elasticity of supply are higher, as new plants could be built and brought on-line.
- Zero fixed costs (long-run analysis) and constant marginal cost: since there are no economies of scale, average cost is equal to the constant marginal cost.

Relationship between AC, AFC, AVC and MC

1. The Average Fixed Cost curve (AFC) starts from a height and goes on declining continuously as production increases.

2. The Average Variable Cost curve, Average Cost curve and the Marginal Cost curve start from a height, reach the minimum points, then rise sharply and continuously.

3. The Average Fixed Cost curve approaches zero asymptotically. The Average Variable Cost curve is never parallel to or as high as the Average Cost curve due to the existence of positive Average Fixed Costs at all levels of production; but the Average Variable Cost curve asymptotically approaches the Average Cost curve from below.

4. The Marginal Cost curve always passes through the minimum points of the Average Variable Cost and Average Cost curves, though the Average Variable Cost curve attains the minimum point prior to that of the Average Cost curve.

Introduction:

In general, market means a place where there are many buyers and sellers of different products who are actively engaged in buying and selling acts. The firm's demand curve is expected to depend on such things as the numbers of sellers in the market and the similarity of their products. These are the aspects of market structure which may be termed as the characteristics of market of generalisation that are likely to influence a firm's behaviour and performance. In broader sense face to face contact between buyers and sellers is not necessary. They can establish contact through different means of communication like letters, agents, telegraphs, telephone etc. or newspapers. Thus, the terms market does not mean and particular place but the entire area where buyers and sellers of a commodity are in such close contact with each other that the price of the same commodity tends to be one throughout that area.

According to Cournot, "Economists understand by the term market not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in such free intercourse with each other that the price of the same goods tends to uniformity, easily and quickly."

According to J.C. Edwards, "A market is that mechanism by which buyers and sellers are brought together. It is not necessarily a fixed place."

Chapman defines as "The term market refers not necessarily to place but always to a commodity and the buyers and sellers who are in direct competition with one another."

Objective of Market Structure:

Market Structure influences how a firm behaves in pricing, supply, barrier of entry, efficiency, com-petition.

- It enables an organisation to control its market plan.

- Market Structure helps in strategic decision making.

- Market Structure aligns the organisation to the changed environment.

- Market Structure is important and it affects market outcomes through its impact on motivation, opportunities & decision of economic factors.

Area: Market does not mean any particular place where buyers and sellers meet, rather, it means the entire area within which buyers and sellers are spread and have close contacts with each other. For example Bata Shoes has market all over India., because its buyers and sellers are found in every city and state.

Buyers & Sellers: For exchange at least one buyer and one seller are needed. Thus, the existence of buyers and sellers is a must. If one of the two does not exist in a region, it does not satisfy the function of market. It is not necessary that buyers and sellers should be physically present to ex-change or transact the things. They can come in contact through correspondence.

One Commodity: For the existence of the market there must be one commodity like wheat, sugar, ghee, vegetables and utensils. Thus they can be termed as wheat market, sugar market, ghee mar-ket,

vegetables market, utensils market respectively.

Free Competition: There must be healthy and free competition among the buyers and sellers. Thus in practice, there should not be any restrictions on them. There must be free competition.

One Price: Generally it is remarked that in a market one price prevails which is the main feature and testimony of a market.

Classification of Market

    (1)   On the basis of area or region:

        The economists have classified the market on the basis of area or region which further can be summarised as under.

        (i) Local Market
        (ii) Regional or Provincial Market
        (iii) National Market
        (iv) International Market

        (i) Local Market: If the buyers and sellers of a certain commodity are limited to certain area or region, then it is called local market. The perishable goods and low price goods have their local market like milk, ghee, hand-made fans, basket, cots etc.

        (ii) Regional or Provincial Market: If the buyers and sellers of a commodity are confined to certain region, say a province like Rajasthan or Haryana, then it is known as regional or provincial market. The area of regional market is greater than that of local market e.g. the demand for Red Bangles in Rajasthan or the demand for Laharia in Rajasthan.

        (iii) National Market: When the buyers and sellers are not confined to state boundary, but are spread throughout the country e.g., the market of sarees and dhotis or of Gandhian cap or of Nehru cut jacket etc. have national market. These are demanded throughout the nation. Hence they come under the purview of national market.

        (iv) International Market: When the buyers and sellers are spread across the geographical bound-ary of a nation and the demand for such product is worldwide or universal demand then its market is known as international market e.g. market for gold and silver.

(2) On the basis of time:

On the basis of time the economist have classified the market as under:

(i) Very short period Market.
(ii) Short period Market.
(iii) Long period Market.
(iv) Very long period Market.

(i) Very short period Market: This market can further be classified into Daily Market or Weekly market. Very short period market is that market which takes part in transaction for a very short period of time say a few hours a day or so. In very short period the supply of the product cannot be increased e.g. of milk. Here the demand determines the price. In very short period market generally perishable commodities are exchanged.

Daily Market- The market for perishable commodities come under daily market e.g. milk and vegetables.

Weekly Market- Sometimes a market operates on any specific day of week. It is generally found in those areas in which main market has its closed day for the week, say Sunday market, or Tuesday market or whatever the case may be according to the closing day of the main market.

(ii) Short period Market: Its time period is greater than that of the previous one in which the supply of the product can be increased but we cannot make any change in production plant according to the changed demand. In short period also the demand side plays a major role in determining the price as change in the plant and machinery is not possible from the point of view of production.

(iii) Long Period Market: It is such a market in which we can make necessary changes in the plant and machinery as well to increase the supply of the product according to its demand. The supply of the product plays a vital role in price determination resulting in normal price for the product in such market.

(iv) Very long period Market: There can be an enormous change in the supply of the product in very long period market. New techniques of production, innovations and the new models of prod-ucts can be produced because of a very long period. And in very long periods the demand also increases because of change in population, habits, customs, fashions etc.

(3) On the basis of Functions:

On the basis of functions the markets can be classified as under:

(i) Mixed or general Market.
(ii) Specialised Market
(iii) Marketing by
samples. (iv) Marketing
by grading.

Mixed or general Market: When different types of commodities are transacted simultaneously in a market then it is known as mixed or general market e.g. Chandni Chowk market in Delhi.

(i) Specialised Market: When only one product or any of the special product is transacted in a market then it is known as specialised market. In such market, a particular thing is traded with its different brand names of possibly different kinds, e.g. bathing soap is bought and sold in soap market could be Lux, Liril, Hamam, Rexona, Lifebuoy, etc.

(ii) Marketing by Samples: In such market the firms need not show whole of their product. They only send samples through their agents or they may themselves show the samples of their product, e.g. in case of wool, cloth, paints etc.

(iii) Marketing by Grading: The product is first graded according to its quality and then put forth for selling is known as marketing by grading e.g. in an Agricultural product market the product is graded accordingly and then sold. It is known as Marketing by grading.

(4) On the basis of nature of commodity:

The market can also be classified on the basis of nature of commodity.

(i) Product Market.
(ii) Stock Market.
(iii) Bullion Market.

(i) Product Market: The production goods are exchanged in these market e.g. Agriculture product is bought and sold in Agriculture produce market.

(ii) Stock Market: Stock market is a market where stock and shares, bonds, securities, debentures etc. are bought and sold. Bulls and Bears do transactions in the stock market as per their market reading.

(iii) Bullion Market: This is such a market in which Metallic trading exists e.g. the goods like silver and gold better known as Bullion are traded and transacted.

(5) On the basis of Legality:

On the basis the market can be sub-divided as under:

(i) Legal or fair Market. (ii) Illegal Market.

(i) Legal and Fair Market: When the goods are transacted in a market under certain norms and rules, the market is known as legal market which also has a legal sanctity behind it issued by the legal authorities in a country. Here every consumer gets commodities at fair prices. These markets are also known as Fair Market.

(ii) Illegal Market: When the transaction of certain commodities is taking place in more than or less than quantity prescribed by the legal authorities in operation say a government

and then it is termed

as illegal trade. The Hong Kong Market is an illegal market at International level. Generally it is also termed as Chor Market.

S.No.	On the basis of Area or Region	On the basis of Time	On the basis of Functions	On the basis of nature of commodity	On the basis of legality
1-	Local Market	Very short period market	Mixed market or general market	Product market	Legal market
2-	Regional Market or Provincial market	Short period market	Specialised market	Stock market	Illegal market
3-	National market	Long period market	Marketing by sample	Bullion market	--
4-	International market	Very long period market	Marking by grades	Bullion market	--

The price and level of production of a commodity depends upon the market structure of its condi-tions. Market demand depends on the following factors :

(i) Nature of the commodity : It is to be taken into account whether the goods arehomogeneous or heterogeneous.

(ii) Number of buyers and sellers of the product in the market. (iii) Mutual inter-dependence of buyers and sellers.

In brief the market structure depends on the level or forms of competition which are as under:

(1) Perfect Competition
(2) Monopoly
(3) Imperfect Competition

PERFECT COMPETITION:

It is such a market structure where there are large number of buyers and sellers of a homogeneous product and the price of the product is determined by the industry. There is one price that prevails in the market. All firms sell the product at the prevailing price.

According to Leftwitch, "Perfect competition is a market in which there are many firms selling identical product with no firm being large enough relative to the entire market so as to be able to influence market price."

In other words a perfectly competitive firm is too small and insignificant to affect the market price like a wheat farmer. He is a price taker who can sell all he wishes to sell at the ruling market price. In terms of elasticity of demand a perfect competitor faces a horizontal demand curve (parallel to the X-axis) for his product, coefficient of elasticity being infinite.

The main characteristics of perfect competition are as follows:

(1) Large number of buyers and sellers: There is a large number of buyers and sellers of a commodity under perfect competition but each buyer and each seller is so small in comparison with entire market of product that he cannot influence the market price by changing the quantity of the product sold by him. If a seller supplies the entire stock of the product produced by him the total supply will not increase to such as extent as to lower the price and on the other hand if he withdraws from the market the total supply will not fall to such an extent as to raise the price. Thus, every seller has to accept the prevailing price. Hence a uniformity of price is there under perfect competition and as a consequence of uniform price prevailing in the market average revenue (AR) or the price of the product is equal to the marginal revenue (MR) as shown in diagram .7. Average revenue is total sales proceeds of the product divided by the total production.
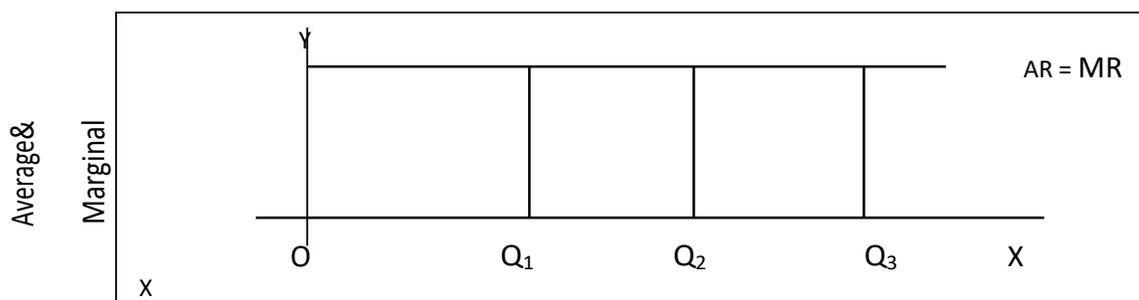
(2) Homogeneous Product: The second important charactristic of the perfectly competitive market is that the product sold by the various firms are homogeneous. The products are homogenous in the sense that they are perfect substitutes from the buyer's point of view. The sellers do not spend on advertisement and publicity etc. because all the firms sell homogeneous product.

(3) Absence of artificial Restrictions: The third major characteristic of the perfect competition is the non-existence of any artificial restrictions on the demands, supplies, prices of goods and factors of productions in the market. There must not be any external intervention in

price fixation and any controls on the product.

(4) Free entry and exit: The fourth characteristic of perfect competition is free entry and free exit for the firms under perfectly competitive market. The firms are free to enter or to exit from the industry whenever they want to do so. Any firm can enter or leave the industry at any time as there are no legal restrictions.

(5) Perfect knowledge about the market: There is perfect knowledge on the part of buyers and sellers about market conditions. The buyers and sellers are fully aware of the price prevailing in the market. Due to this awareness all the firms charge on price from the buyers.

(6) Perfect mobility of the factors of production: The existence of perfect mobility of the factors of production is another important characteristic of the perfect competition for its smooth functioning. It means all the factors of production are perfectly mobile under perfectly competitive market. Factors will move to the industry which pays the higher remuneration.

(7) Non-Existence of transportation cost: A perfectly competitive market also assumes the character-istic of non-existence of transport costs as uniform price prevails throughout the market. It is essen-tial that there is no transportation cost across different areas of the market. Thus, the existence of a single uniform price is an essential feature of a perfectly competitive market and a single uniform price for the same product cannot exist in the market if transportation costs are taken into accounts.

MONOPOLY:

It is a market structure in which there is only a single seller of the product. Here one firm is selling the product and has full control over the supply of the product e.g. the supply of electricity by the Rajasthan State Electricity Board or postage stamps, post cards, envelopes Indian Postal Orders etc. are supplied by the Postal Dept. This is such a situation of market where, there is only one producer of a commodity with no close substitutes. Hence, monopoly is a market structure in which there is only one producer of a commodity with no close substitute. Thus, the analysis of monopoly begins with two simple assumptions:

(i) First, that an entire industry in supplied by a single seller who is called a monopolist;

(ii) Second by the monopolist sets a single price and supplies all buyers who wish to buy at that price.

According to Ferguson, "A pure monopoly exists when there is only one producer in a market. There are no direct competitors."

According to A. Koutsoyiannis, "Monopoly is a market situation in which there is a single seller, there are no close substitutes for commodity it produces, there are barriers to entry."

For the smooth functioning of a monopoly market situation it is necessary to have the following characteristics or features.

1. Sole supplier of the product and large number of buyers: The monopoly is characterised by the sole seller of product in an industry. Firm represents the industry as a whole which has complete control over the supply of product. Thus, there is only one firm under monopoly but the buyers of the product are in large number, consequently, no buyer can influence the price of the product.

2. No close substitutes: Under Monopoly there are no close substitutes of the product. Monopoly cannot continue if there is availability of substitute goods.

3. One firm industry: There being only one firm, the distinction between the firm and the industry is no longer in existence.

4. Monopoly may vary from industry to industry: The form and structure of a monopoly may also vary from industry to industry.

5. Absence of Entry: Under monopoly market structure no other firm can enter the market. It implies the absence of actual entry. The barriers to the entry may be artificial, legal, natural, economic and institutional etc.

6. **Monopolist is a Price maker:** Under Monopoly, market structure is a price maker not the price taker because of the fact that a monopolist has full control over the supply of the commodity. The fortunate monopolist can fix whatever price he chooses. But if his sale is not enough, then he may lose instead of gaining.

After discussing monopoly we may note certain other forms which are offshoot of monopoly. They are

(i) MONOPSONY, (2) BILATERAL MONOPOLY. In monopsony there is only one buyer but there are large number of sellers. Price is determined by negotiation and output is determined on the basis of orders placed by the buyer. In bilateral monopoly there is one buyer and only one seller of the commodity.

IMPERFECT COMPETITION:

The market structure may be imperfect because of the number of firms in the industry may be relatively small, and the commodity or service may not be homogeneous. A small number of firms may compete vigorously with one another. Thus, in real life, it is imperfect by competitive market that exists. The concept of imperfect competition was developed in 1933 by Mrs. Joan Robinson and Prof. Chamberlin. It is such a market structure where there are many sellers of the products, but the product of each seller is different from the product of other sellers. This product differentiation manifests itself in trade mark, name of the brand, patent, rights, colour composition of goods, chemical composition, packaging, advertising, incentive schemes, or different facilities and services offered to the consumers. Thus, imperfect competi-tion can be of various types as follows:

(1) Monopolistic Competition
(2) Oligopoly
(3) Duopoly

(1) MONOPOLISTIC COMPETITION:

As a matter of fact, monopolistic competition is a mid-way between perfect competition and mo-nopoly. Under perfect competition the number of sellers is very large and unlimited and under mo-nopoly there is only single seller of the product, while under monopolistic competition the number of sellers is relatively limited.

Some main definitions of monopolistic competition are as follows:

According to J.S. Bain, "Monopolistic competition is a market structure found in the industry where there are large number of small sellers, selling differentiated but close substitute products."

According to Lim Chungyoh, "Monopolistic competition is a market situation where there are many producers but each offers a slightly differentiated product."

(1) Large number of firms: There is a large number of firms or sellers operating under monopolistic competition but a relatively small fraction of the total market is shared by each firm or seller.

(2) Product differentiation: The second distinct feature of monopolistic competitive market structure is product differentiation. The number of firms is large but their products differ from one another in colours, shape and size, brand, chemical composition, quality, trade mark, packaging, durability

brands. 79

etc. For example, firms produce different kinds of bathing soap e.g. Hamam, Lux, Lifebuoy, Rexona, Liril, Dove, Ganga, Pears, Le Sancy etc. but these products are close substitutes.

(3) Freedom of entry and exit: Under monopolistic competition the firms are relatively free to enter theindustry and to exit from the industry, but they have no absolute freedom of entry the industry. New firms are free to enter into the market with new brands as close substitute of the existing

(4) Non-price competition: Under monopolistic competition firms compete with one another without changing the price of their products. The firms attract the potential buyers by offering them gifts, incentives, credit schemes, selling schemes and other services. Thus, the firms compete at other than price front.

(5) Price policy: Every firm has its own price policy. As under monopoly and monopolistic competition the average revenue curve and marginal revenue curve are sloping downward means that the firm will have to fix low price for fulfilling sales maximisation as shown in diagram 7.2 and high price for less sales.
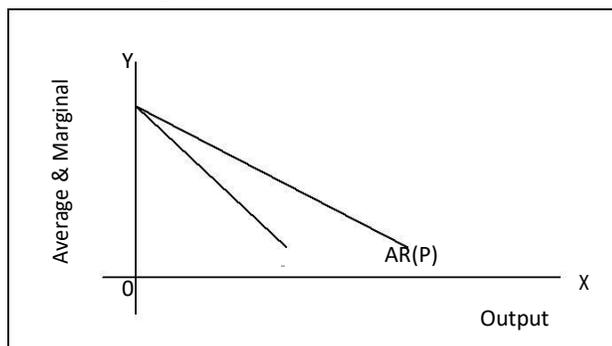
(6) Less Mobility: There is no perfect mobility of factors of production and of goods and services in practical life. The factors are less mobile because of psychological reasons and disparity among the regions.

(7) No perfect knowledge: Under monopolistic competition the buyers and sellers do not have perfect knowledge about the market conditions. The buyers and sellers of the products and owners of the factors of production are ignorant about the prices of the products and factor services.

(8) Selling Costs: Under monopolistic competition each firm wants to promote the sales of its products by incurring selling costs. The expenditure incurred on advertisement and publicity to increase sales is called selling costs. The selling costs shift the demand for a firm's product and the rival firms also retaliate by incurring more and more selling costs.

(9) Close Substitutes: Under monopolistic competitions the product are not homogeneous products but they are close substitutes to each other which tends to create competition among the firms regarding their products.

(10) Group Equilibrium: Under monopolistic competition the industry is not said to be in equilibrium but there is a position of group equilibrium for the group as whole e.g. soap manufacturing group combine a group of soap manufacturers and that group itself needs to be in equilibrium position. Group denotes the collection of firms producing unidentical but close substitutes.

(2) OLIGOPOLY:

An oligopoly is a market structure in which there are a few sellers of a product selling identical or differentiated products. If they are selling identical products, it is a case of pure oligopoly and if they are selling differentiated products, it is a case of differentiated oligopoly. In this case each firm has to take into

account the price being charged by the others. One studies the reaction curves of the other firms and in this way the firms are interdependent. They may even charge high price if they enter into agreement and there is no pricing policy under oligopoly because of the kinky shape of demand curve which is a broken one. Thus, price rigidity and price war are the common features of oligopoly.

The various features of oligopoly are discussed as follows:

(1) Relatively small number of sellers: There are relatively small number of sellers under oligopoly market structure selling identical or differentiated products. Each seller controls a large part of the demand and the policies of every seller influence the price and output of the industry as a whole.

(2) Interdependence of the firms: Under the oligopoly market structure all the firms are sailing in the same boat and every tilting position influences each of the firm as well with equal proportion. No firm can be neutral. They depend on each other while determining the price and output of the firm.

(3) Price rigidity and price war: Price rigidity and price was are the common features of an oligopoly market structure. Each firm retaliates and acts according to the actions of the other firms and a tug of war starts between them which is better known as 'Price War' which further paves way to price rigidity.

(4) Difficulty in entry and exit: Under oligopoly the entry and exit of the firms is banned. The new firms cannot enter the market as the old firms have complete hold over the market conditions and the firms are also reluctant to leave because of the huge investment made by them.

(5) Selling costs: Under oligopoly market structure, each firm pursues an aggressive and defensive marketing strategy to control the market. Advertisement is an important method used by the oligopolists to control the bigger part of the market.

(6) Indeterminateness of the demand curve: Under oligopoly market structure the shape of the de-mand curve is broken and is indeterminate because the firms cannot assume that the rival firms will not make a change in their price policy in response to change in price affected by it. Thus, the fact that the reaction pattern of the rival firms are indeterminate leaves the demand curve in a indetermi-nate position.

(7) Complex Market Structure: The market structure of oligopoly is quite complex. As there isa pos-sibility of rival firms to end rivalry by working out some policy of collusion and the collusive oli-gopoly manifests itself in the form of combination of rival firms to fix the same price and also share in output as in case of cartels. Besides it, non-collusive oligopoly is also found in practice which presents a complex market structure.

(3) DUOPOLY:

When there are only two firms in a market having complete hold over the supply of the product it is termed as a case of duopoly. It is such a market structure when two firms produce a standardised product or

produce two products which are very much similar to each other and price of both the products is also uniform. Under such market, each firm has to think over the possible impact on the rival firm of its price policy, discount policy and production techniques. Both the firms try to maximize the profits of each other andby pacts and collusion they try to come in monopoly power situation and exploit the consumers.

DIFFERENT MARKET STRUCTURES AT A GLANCE:

Points of Difference	Perfect Competition	Monopoly	Imperfect Competition		
			Monopolistic competition	Oligopoly	Duopoly
No. of sellers	Very large	One	Large	A few	Two
Product	Homogeneous	One Product	Product differentiation	Product differentiation	Similar of product differentiation
Price	Uniform	Single Price and Price discrimination	Different	Different	Similar or Different
Entry	Free entry	Restricted	Not absolute freedom	Not absolute freedom	Not restricted and absolute freedom
Mobility	Perfect	Partial	Partial	Partial	Partial
Price elasticity of demand	Perfectly elastic	Highly Inelastic	Less elastic	Less elastic	Less elastic or inelastic
Knowledge of the market	Perfect knowledge	Partial Knowledge	Partial knowledge	Partial knowledge	Partial knowledge
Selling cost	NIL	NIL	Exist	Exist	May or may not exist
AR & MR	Horizontal and AR = MR	Both are different AR > MR	Both are different AR > MR	AR is indeterminate	Downward sloping AR>MR
Transportation cost	NIL	Exist	Exist	Exist	Exist
Price determination	By industry equilibrium	By firm but firm and industry is Same	Firms them-selves	Counter pricing	Uniformity

Price and Output Determination under Perfect Competition

Perfect competition refers to a market situation where there are a large number of buyers and sellers dealing in homogenous products.

Moreover, under perfect competition, there are no legal, social, or technological barriers on the entry or exit of organizations.

In perfect competition, sellers and buyers are fully aware about the current market price of a product. Therefore, none of them sell or buy at a higher rate. As a result, the same price prevails in the market under perfect competition.

Under perfect competition, the buyers and sellers cannot influence the market price by increasing or decreasing their purchases or output, respectively. The market price of products in perfect competition is determined by the industry. This implies that in perfect competition, the market price of products is determined by taking into account two market forces, namely market demand and market supply.

In the words of Marshall, "Both the elements of demand and supply are required for the determination of price of a commodity in the same manner as both the blades of scissors are required to cut a cloth." As discussed in the previous chapters, market demand is defined as a sum of the quantity demanded by each individual organizations in the industry.

On the other hand, market supply refers to the sum of the quantity supplied by individual organizations in the industry. In perfect competition, the price of a product is determined at a point at which the demand and supply curve intersect each other. This point is known as equilibrium point as well as the price is known as equilibrium price. In addition, at this point, the quantity demanded and supplied is called equilibrium quantity. Let us discuss price determination under perfect competition in the next sections.

Demand under Perfect Competition:

Demand refers to the quantity of a product that consumers are willing to purchase at a particular price, while other factors remain constant. A consumer demands more quantity at lower price and less quantity at higher price. Therefore, the demand varies at different prices.

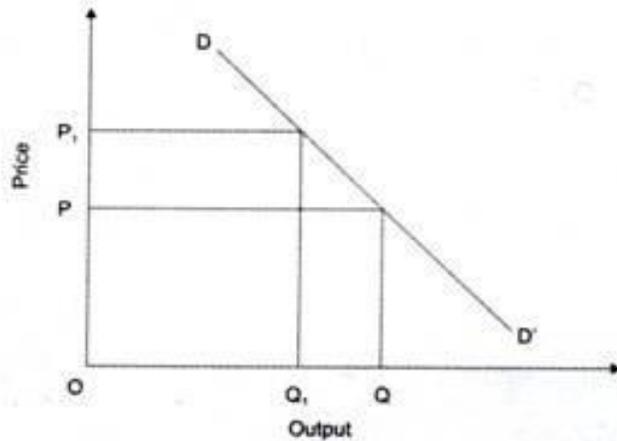**Figure-1 represents the demand curve under perfect competition:**

Figure-1: Demand Curve under Perfect Competition

As shown in Figure-1, when price is OP, the quantity demanded is OQ. On the other hand, when price increases to OP1, the quantity demanded reduces to OQ1. Therefore, under perfect competition, the demand curve (DD') slopes downward.

Equilibrium under Perfect Competition:

As discussed earlier, in perfect competition, the price of a product is determined at a point at which the demand and supply curve intersect each other. This point is known as equilibrium point. At this point, the quantity demanded and supplied is called equilibrium quantity.

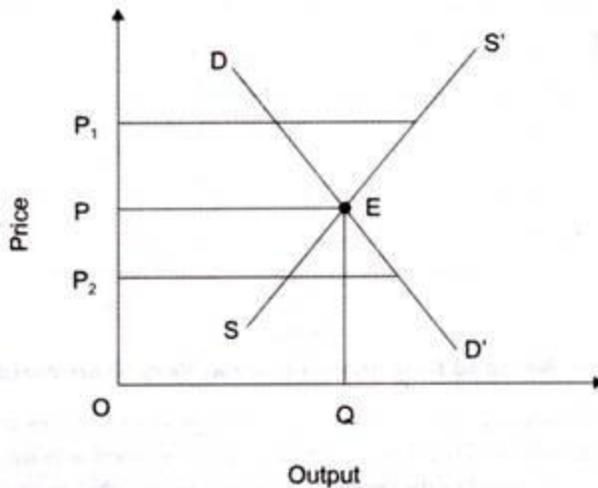**Figure-3 shows the equilibrium under perfect competition:**

Figure-3: Price and Output Determination under Perfect Competition

In Figure-3, it can be seen that at price OP1, supply is more than the demand. Therefore, prices will fall down to OP. Similarly, at price OP2, demand is more than the supply. Similarly, in such

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a case, the prices will rise to OP. Thus, E is the equilibrium at which equilibrium price is OP and equilibrium quantity is OQ.

Price and Output Determination under Monopoly

Monopoly refers to a market structure in which there is a single producer or seller that has a control on the entire market.

This single seller deals in the products that have no close substitutes and has a direct demand, supply, and prices of a product.

Therefore, in monopoly, there is no distinction between an one organization constitutes the whole industry.

Demand and Revenue under Monopoly:

In monopoly, there is only one producer of a product, who influences the price of the product by making Change m supply. The producer under monopoly is called monopolist. If the monopolist wants to sell more, he/she can reduce the price of a product. On the other hand, if he/she is willing to sell less, he/she can increase the price.

As we know, there is no difference between organization and industry under monopoly. Accordingly, the demand curve of the organization constitutes the demand curve of the entire industry. The demand curve of the monopolist is Average Revenue (AR), which slopes downward.
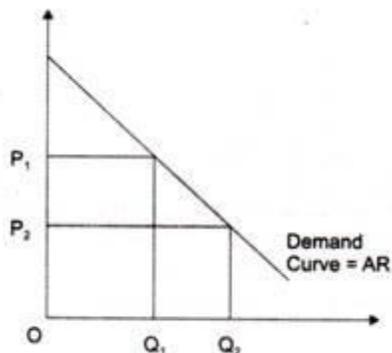
Figure-9 shows the AR curve of the monopolist:

Figure-9: AR Curve under Monopoly

In Figure-9, it can be seen that more quantity (OQ_2) can only be sold at lower price (OP_2). Under monopoly, the slope of AR curve is downward, which implies that if the high prices are set by the monopolist, the demand will fall. In addition, in monopoly, AR curve and Marginal Revenue (MR) curve are different from each other. However, both of them slope downward.

The negative AR and MR curve depicts the following facts:

i. When MR is greater than AR, the AR rises

ii. When MR is equal to AR, then AR remains constant

iii. When MR is lesser than AR, then AR falls

Here, AR is the price of a product, As we know, AR falls under monopoly; thus, MR is less than AR.
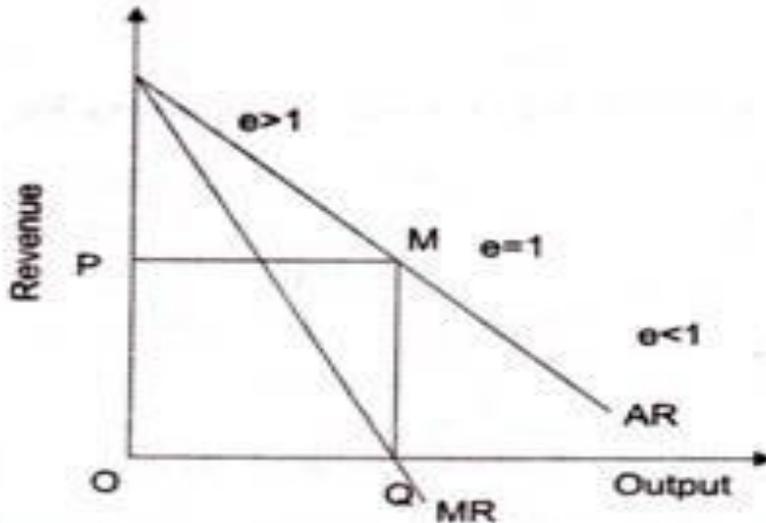
Figure-10 shows AR and MR curves under monopoly:

Figure-10: MR and AR Curves under Monopoly

In figure-10, MR curve is shown below the AR curve because AR falls.

Table-1 shows the numerical calculation of AR and MR under monopoly:

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Table-1: AR and MR under Monopoly

No. of Units Sold (Q)	Price	TR =P *Q	MR	AR = TR /Q
1	10	10	10	10
2	9	18	8	9
3	8	24	6	8
4	7	28	4	7
5	6	30	2	6
6	5	30	0	5
7	4	28	-2	4

As shown in Table-1, AR is equal to price. MR is less than AR and falls twice the rate than AR. For instance, when two units of Output are sold, MR falls by Rs. 2, whereas AR falls by Re. 1.

Monopoly Equilibrium:

Single organization constitutes the whole industry in monopoly. Thus, there is no need for separate analysis of equilibrium of organization and industry in case of monopoly. The main aim of monopolist is to earn maximum profit as of a producer in perfect competition.

Unlike perfect competition, the equilibrium, under monopoly, is attained at the point where profit is maximum that is where MR=MC. Therefore, the monopolist will go on producing additional units of output as long as MR is greater than MC, to earn maximum profit.

Let us learn monopoly equilibrium through Figure-11:
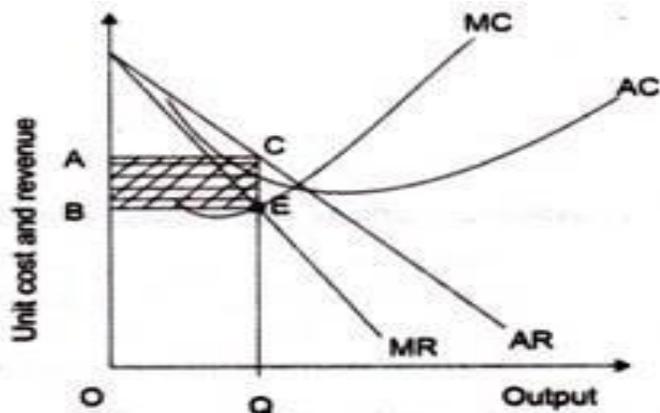
Figure-11: Monopoly Equilibrium

In Figure-11, if output is increased beyond OQ, MR will be less than MC. Thus, if additional units are produced, the organization will incur loss. At equilibrium point, total profits earned are equal to shaded area ABEC. E is the equilibrium point at which MR=MC with quantity as OQ.

It should be noted that under monopoly, price forms the following relation with the MC:
Price = AR

MR= AR [(e-1)/e]

e = Price elasticity of demand

As in equilibrium MR=MC

MC = AR [(e-1)/e]

Exhibit-2:
Determining Price and Output under Monopoly:
Suppose demand function for monopoly is Q = 200-0.4Q

Price function is P= 1000-10Q

Cost function is TC= $100 + 40Q + Q^2$
Maximum profit is achieved where MR=MC

To find MR, TR is derived.

TR= (1000-10Q) Q = $1000Q-10Q^2$
MR = $\Delta TR/\Delta Q$= 1000 – 20Q

$MC = \Delta TC/\Delta Q = 40 + 2Q$

$MR = MC$

$1000 - 20Q = 40 + 2Q$

$Q = 43.63$ (44 approx.) = Profit Maximizing Output

Profit maximizing price $= 1000 - 20*44 = 120$

Total maximum profit= TR-TC= $(1000Q - 10Q^2) - (100 + 40Q + Q^2)$
At $Q = 44$

Total maximum profit = Rs. 20844

Monopoly Equilibrium in Case of Zero Marginal Cost:
In certain situations, it may happen that MC is zero, which implies that the cost of production is zero. For example, cost of production of spring water is zero. However, the monopolist will set its price to earn profit.

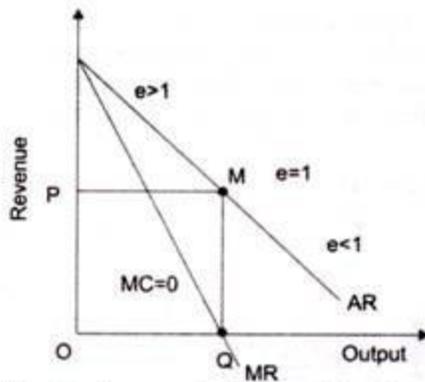**Figure-12 shows the monopoly equilibrium when MC is zero:**

Figure-12: Equilibrium under Monopoly when MC is Zero

In Figure-12, AR is the average revenue curve and MR is the marginal revenue curve. In such a case, the total cost is zero; therefore, AR and MR are also zero. As shown in Figure-12, equilibrium position is achieved at the point where MR equals zero that is at output OQ and price P.We can see that point M is the mid-point of AR curve, where elasticity of demand is unity. Therefore, when MC = 0, the equilibrium of the monopolist is established at the output (OQ) where elasticity of demand is unity.

Short-Run and Long-Run View under Monopoly:

Till now, we have discussed monopoly equilibrium without taking into consideration the short-run and long- run period. This is because there is not so much difference under short run and long run analysis in monopoly.

In the short run, the monopolist should make sure that the price should not go below Average Variable Cost (AVC). The equilibrium under monopoly in long-run is same as in short-run. However, in long-run, the monopolist can expand the size of its plants according to demand. The adjustment is done to make MR equal to the long run MC.

In the long-run, under perfect competition, the equilibrium position is attained by entry or exit of the organizations. In monopoly, the entry of new organizations is restricted.

The monopolist may hold some patents or copyright that limits the entry of other players in the market. When a monopolist incurs losses, he/she may exit the business. On the other hand, if profits are earned, then he/she may increase the plant size to gain more profit.

Monopolistic Competition

In order to understand monopolistic competition, let's look at the market for soaps and detergents in India. There are many well-known brands like Lux, Rexona, Dettol, Dove, Pears, etc. in this segment.

Since all manufacturers produce soaps, it appears to be an example of perfect competition. However, on close scrutiny, we find that each seller varies the product slightly to make it different from its competitors.

Hence, Lux focuses on making beauty soaps, Liril on freshness, Dettol on antiseptic properties, Dove on smooth skin, etc. This allows each seller to attract buyers to itself based on some factor other than price.

Price-output determination under Monopolistic Competition: Equilibrium of a firm

In monopolistic competition, since the product is differentiated between firms, each firm does not have a perfectly elastic demand for its products. In such a market, all firms determine the

price of their own products. Therefore, it faces a downward sloping demand curve. Overall, we can say that the elasticity of demand increases as the differentiation between products decreases.
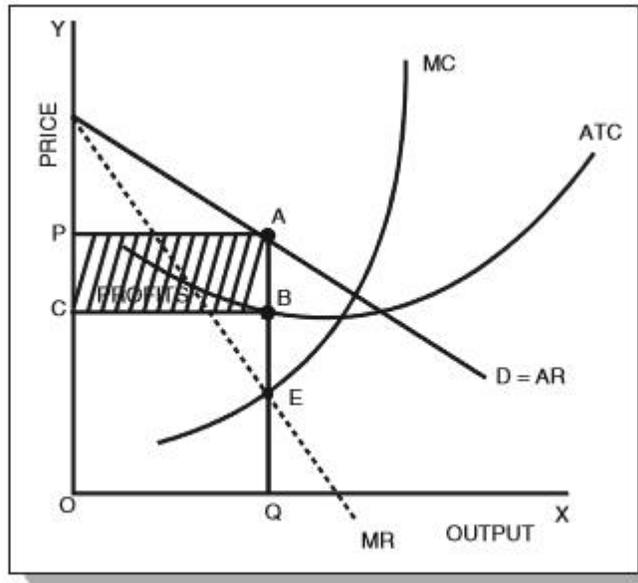

Fig. 1 : Short run equilibrium of a firm in monopolistic competition : Super-normal profits

Fig. 1 above depicts a firm facing a downward sloping, but flat demand curve. It also has a U-shaped short-run cost curve.

Conditions for the Equilibrium of an individual firm

The conditions for price-output determination and equilibrium of an individual firm are as follows:

1.   MC = MR

2.   The MC curve cuts the MR curve from below.

In Fig. 1, we can see that the MC curve cuts the MR curve at point E. At this point,

•   Equilibrium price = OP and

•   Equilibrium output = OQ

Now, since the per unit cost is BQ, we have

•   Per unit super-normal profit (price-cost) = AB or PC.

- Total super-normal profit = APCB

The following figure depicts a firm earning losses in the short-run.
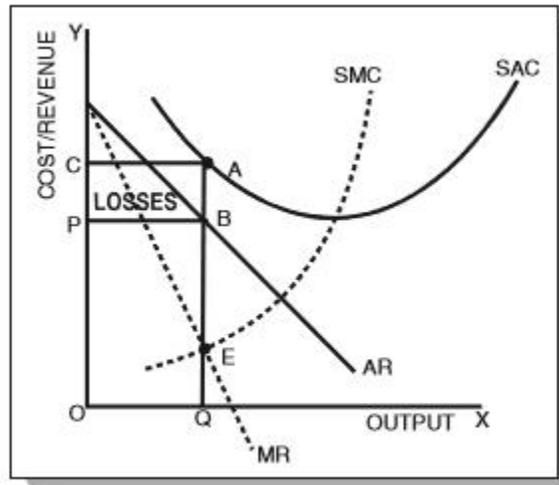

Fig. 2 : Short run equilibrium of a firm in Monopolistic Competition – With losses

-

From Fig. 2, we can see that the per unit cost is higher than the price of the firm. Therefore,

- AQ > OP (or BQ)

- Loss per unit = AQ – BQ = AB

- Total losses = ACPB

Long-run equilibrium

If firms in a monopolistic competition earn super-normal profits in the short-run, then new firms will have an incentive to enter the industry. As these firms enter, the profits per firm decrease as the total demand gets shared between a larger number of firms. This continues until all firms earn only normal profits. Therefore, in the long-run, firms, in such a market, earn only normal profits.
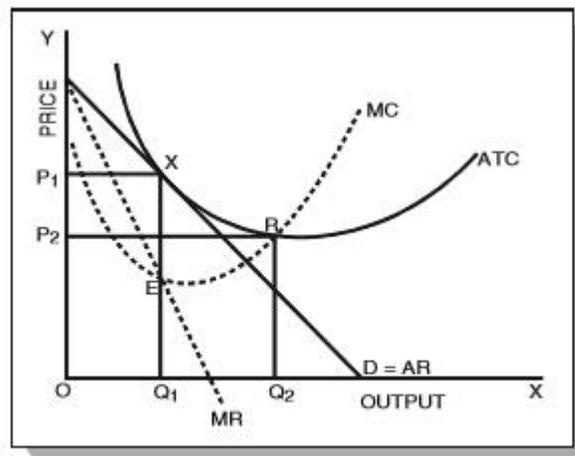
Fig. 3 : The long-term equilibrium of a firm in monopolistic competition

As we can see in Fig. 3 above, the average revenue (AR) curve touches the average cost (ATC) curve at point X. This corresponds to quantity Q_1 and price P_1. Now, at equilibrium (MC = MR), all super-normal profits are zero since the average revenue = average costs. Therefore, all firms earn zero super-normal profits or earn only normal profits.

It is important to note that in the long-run, a firm is in an equilibrium position having excess capacity. In simple words, it produces a lower quantity than its full capacity. From Fig. 3 above, we can see that the firm can increase its output from Q_1 to Q_2 and reduce average costs. However, it does not do so because it reduces the average revenue more than the average costs. Hence, we can conclude that in monopolistic competition, firms do not operate optimally. There always exists an excess capacity of production with each firm.

In case of losses in the short-run, the firms making a loss will exit from the market. This continues until the remaining firms make normal profits only.

Price Determination Under Oligopoly

An Oligopoly market condition exists between two of the most extreme market conditions; i.e. perfect competition Market and Monopoly Market. An Oligopoly market is a type of market condition where there are two-three firms that dominate the market for a certain type of good or service. In this type of market condition, there are few companies, and the marketing decisions of each company affect the other. Hence, it can be said that in an oligopoly market, the marketing decisions of the competing firms are interdependent. Here, interdependence can be seen in any kind of decision, say pricing. When one company changes the price of its product or service, the effect of the change can be seen in the pricing of products and services of other companies.

Price and Output Determination Under Oligopoly

Price and Output

A determination under the Oligopoly market can be studied under two heads; One when there is a duopoly and one when there are a few firms. Here, we will discuss the price determination under Oligopoly in both the conditions:

When There is Duopoly

If in a sector there are only two companies that dominate the market, then such a condition is called duopoly. In such a market condition if, both the firms have identical products, they are likely to form a collaboration and make a joint profit. If in case the products of both the firms are a perfect substitute, then the firm with a lower cost, better goodwill and better client interaction will attract more customers. This will force the other company to lose business.

A firm with better quality products and the lesser price will earn abnormal profits.

When There is Oligopoly

In case there are more than two firms in a sector, and each one is considered a key player in that sector, then such a market is called oligopoly market. If all the firms produce the same products, then they will always promote collusion. This collaboration will help them earn profit jointly and would cause no harm to the other. On the other hand, if the products of all the firms are different, then they can lower or increase the price without any fear of losing a share in the market.

Theories on Price and Output Determination

No single theory can explain how the price is determined under Oligopoly. Several theories suggest various ways on how the price determination under oligopoly is done. Here we will discuss the important theories of price and output determination.

Cournot's Model

According to Cournot, Each firm in a duopolist market thinks that instead of its action and effect on the market, The other firm will keep on producing the products. The Cournot model suggests that the most profitable pricing is when a firm's output is two-third of its competitor's output, and the price is also two-third.

Stackelberg Model

Under Stackelberg's model, a leader and follower relationship is formed. The firm with good brand equity is called the leader, and the one with lower brand equity is called the follower. The leader decides the price and quality of the commodity, and then the follower observes the leader and decides the price, to maintain its market share.

Bertrand Model

Bertrand model can be explained when there exists a symmetry in the industry, i.e. there are firms which are equal in size and operations. The Bertrand model suggests that the firms set a low price until the price matches the cost of production. This is done to dominate the market.

Edgeworth Model

The Edgeworth Model suggests that each firm in a duopoly market thinks that his competitor will charge the same price, so it changes its price to make a greater profit. This thinking of the firm keeps the price war continued.

Explanation of Price and Output Determination Under Oligopoly

- Under the oligopoly market, the number of firms varies.
- Sometimes there are 2-3 firms, and sometimes there are 7-10 firms.
- The commodities produced under the oligopoly market may or may not be homogenous.
- Sometimes it so happens that firms consult each other before fixing the price of the commodities, to save each other from losses.
- A firm can never be sure of its rivals' reaction to its decisions.

Determination of Price and Output In Oligopoly

There are various types of markets that exist and oligopoly is one of them. Oligopoly markets are mostly dominated by suppliers on a small scale. These are oligopoly markets that are found across the world in many sectors. Some of the oligopoly markets are competitive whereas some are not that significant. The authorities for the competition are called upon to supervise the coordinated actions as well as if there is low competition. Oligopoly markets can exist between the extreme conditions of a market which is either a perfect competition market or a monopoly market. It is the market where three are two or three firms that dominate the market for a good or service. Marketing decisions of each company and other companies affect one another thus; the oligopoly marketing decisions are interdependent in an oligopoly market. Interdependence can be any decision e.g. pricing of a particular product or service. This, in turn, will affect all the pricing of products and services of the other companies associated with a company.

Price and Output Determination in Oligopoly

There are two conditions under which the price and output determination in an oligopoly can be done. They are:

1. In the case of duopoly

2. In the case of fewer firms

In the case of duopoly, which means two companies that dominate the market in a sector and the firms have similar products. In such cases, the two firms or companies will form a collaboration with each other and have a joint profit. The firm which provides products with lower prices will attract more people and have better client associations. This can cause losses to the other company. On the other hand, if the companies have slightly different products, the firm which provides products of better quality with a low price will gain large profits.

In the case of fewer firms, each company is an essential player in that sector. Here, the collaboration will help both the companies and there won't be a loss for either of them. When the products of the companies are different then they may increase or decrease the pricing without having the fear of losing shares in the market. On the other hand, when the offerings of both the companies are differentiated, then each one has to keep a close watch on the other. In this kind of situation.

Pricing:

Meaning of Pricing:

Pricing is a process of fixing the value that a manufacturer will receive in the exchange of services and goods. Pricing method is exercised to adjust the cost of the producer's offerings suitable to both the manufacturer and the customer. The pricing depends on the company's average prices, and the buyer's perceived value of an item, as compared to the perceived value of competitors product.

Every businessperson starts a business with a motive and intention of earning profits. This ambition can be acquired by the pricing method of a firm. While fixing the cost of a product and services the following point should be considered:

- The identity of the goods and services
- The cost of similar goods and services in the market
- The target audience for whom the goods and services are produces
- The total cost of production (raw material, labour cost, machinery cost, transit, inventory cost etc).
- External elements like government rules and regulations, policies, economy, etc.,

Objectives of Pricing:

- **Survival-** The objective of pricing for any company is to fix a price that is reasonable for the consumers and also for the producer to survive in the market. Every company is in danger of getting ruled out from the market because of rigorous competition, change in customer's preferences and taste. Therefore, while determining the cost of a product all the variables and fixed cost should be taken into consideration. Once the survival phase is over the company can strive for extra profits.

- **Expansion of current profits-**Most of the company tries to enlarge their profit margin by evaluating the demand and supply of services and goods in the market. So the pricing is fixed according to the product's demand and the substitute for that product. If the demand is high, the price will also be high.

- **Ruling the market-** Firm's impose low figure for the goods and services to get hold of large market size. The technique helps to increase the sale by increasing the demand and leading to low production cost.

- **A market for an innovative idea-** Here, the company charge a high price for their product and services that are highly innovative and use cutting-edge technology. The price is high because of high production cost. Mobile phone, electronic gadgets are a few examples.

What is Pricing Method?

Pricing method is a technique that a company apply to evaluate the cost of their products. This process is the most challenging challenge encountered by a company, as the price should match the current market structure and also compliment the expenses of a company and gain profits. Also, it has to take the competitor's product pricing into consideration so, choosing the correct pricing method is essential.

Types of Pricing Method:

The pricing method is divided into two parts:

- **Cost Oriented Pricing Method**– It is the base for evaluating the price of the finished goods, and most of the company apply this method to calculate the cost of the product. This method is divided further into the following ways.
    - **Cost-Plus Pricing-** In this pricing, the manufacturer calculates the cost of production sustained and includes a fixed percentage (also known as mark up) to obtain the selling price. The mark up of profit is evaluated on the total cost (fixed and variable cost).
    - **Markup Pricing-** Here, the fixed number or a percentage of the total cost of a product is added to the product's end price to get the selling price of a product.
    - **Target-Returning Pricing-** The company or a firm fix the cost of the product to achieve the Rate of Return on Investment.

    Market-Oriented Pricing Method- Under this category, the is determined on the base of market research

- **Perceived-Value Pricing-** In this method, the producer establish the cost taking into consideration the customer's approach towards the goods and services, including other elements such as product quality, advertisement, promotion, distribution, etc. that impacts the customer's point of view.
- **Value pricing-** Here, the company produces a product that is high in quality but low in price.
- **Going-Rate Pricing-** In this method, the company reviews the competitor's rate as a foundation in deciding the rate of their product. Usually, the cost of the product will be more or less the same as the competitors.
- **Auction Type Pricing-** With more usage of internet, this contemporary pricing method is blooming day by day. Many online platforms like OLX, Quickr, eBay, etc. use online sites to buy and sell the product to the customer.
- **Differential Pricing-** This method is applied when the pricing has to be different for different groups or customers. Here, the pricing might differ according to the region, area, product, time etc.

Pricing Strategy:

Pricing strategies are the methods and procedures companies employ to determine the rates they charge for their goods and services. Pricing is the amount you charge for your items; pricing strategy is how you calculate that number.

Pricing strategy can encompass anything from:

- The state of the market
- Competitors actions
- Account segments
- Profit margins
- Input costs
- The financial capability of the average consumer
- Amounts spent on manufacturing and distributing products
- Variable costs

What Is The Importance Of Pricing?

A successful pricing strategy helps you strengthen your position in the market by earning your clients' confidence and bringing your company closer to achieving its objectives.

Pricing strategies can be important for various reasons, but those reasons might differ from company to company.

Pricing strategies aren't necessarily about profit margins, despite common opinion. For example, you can want to keep the price of an item or service low to keep your share of the market and keep competitors out.

1. Cost-Plus Pricing Strategy

One way to price a product is to add a fixed percentage to the manufacturing costs for each unit. This pricing technique is known as "cost plus" or "markup pricing."

As a seller, you would calculate the fixed and variable expenses incurred in making your goods and then apply the markup percentage to that cost. This approach is popular since it's simple to defend and almost always results in a level playing field for all participants.

Cost-Plus Pricing Strategy Example

In "cost-plus pricing," businesses can charge a higher price for their goods or services than they pay to create or deliver them. Profit margins can vary from company to company based on production cost.

For example, a company that sells sunglasses and wants to use the cost-plus approach to price their product may come up with the following:

Expenses incurred in the manufacture of goods: To get to a total production cost of $357.00,

the corporation adds its $220.10 in material expenses, $56.15 in labor costs, and $80.75 in allocated overhead.

The price per unit: The next step is to divide the total cost of manufacturing by the amount of product produced. They made 20 pairs of sunglasses in this case. $357.00 divided by 20 equals $17.85.

The expense of selling: Using a 30% markup, the sunglasses company may multiply the unit price by 1 x.30 to come up with $23.21. Based on this figure, a pair of sunglasses will set you back $23.50.

Thus, $23.50 is the amount of a pair of sunglasses after implementing the cost-plus pricing strategy.

2. Competitor-Based Pricing Strategy

Competitive pricing is the practice of setting your product or service prices based on the pricing of your competitors in your market or niche rather than on your company's costs or desired profit margins. Sometimes this means just raising your prices, but you also can offer better terms of payment as an alternative.

Competitor-Based Pricing Strategy Example

In competitive pricing, a product's price is established by its competitors' prices. [Amazon's](#) price of popular items serves as a real-world illustration. The retail behemoth gathers competitive pricing knowledge and uses it to provide the lowest price on the market at any given moment.

Before making a purchase, most people use the internet to compare prices. As a result, internet retailers keep tabs on each other's prices to stay on top of the market.

However, not everyone wants to be known as the most affordable.

EX Fitbit, being a well-known brand, can demand a higher price in this instance. Consumers are ready to spend far more for a famous brand than they would for a lesser-known one

3. Value-Based Pricing Strategy

The method of determining your rates, known as value pricing, considers how much your customers value what you provide and adjusts your prices accordingly. You must employ a marketing mix to retain sales and deliver more value to your clients in the face of increased competition or a recession.

Due to the perceived worth of the product or service, buyers flock to this price strategy over the competition. Customers don't care how much it costs a corporation to manufacture a product; what matters is that the client believes they are getting a good deal when they buy it.

Value-Based Pricing Strategy Example

Value-based pricing is a pricing strategy based on how valuable a consumer believes the product or service is.

When it comes to pricing, [Apple's](#) strategy revolves around the customer. In this case, the brand name is more important than the product itself

Initially, their pricing mirrored the simplicity of their products and the ease with which customers could use them. Over the years, this was an exercise in gaining market share and establishing a devoted consumer base.

To do this, they created an operating system that was easy to use, putting it ahead of the competition. Apple goods now account for most personal computers, cellphones, smartwatches, MP3 players, and other electronic devices in the United States.

Essentially, Apple has given up market research to build and retain brand loyalty, and its revenues have reflected this shift in strategy.

4. Loss Leader Pricing Strategy

Loss leader pricing is a marketing strategy where one or more retail goods are chosen and sold below cost – at a loss to the retailer – to entice customers. Loss leads are items offered at deeply discounted rates to draw customers into the business.

Loss Leader Pricing Strategy Example

Using a pricing strategy known as "loss leader pricing," a company tries to entice new consumers by offering items at a discount below what it costs to make them.

Microsoft released their Xbox gaming console with a relatively low-profit margin to compete with Sony Playstation's established players. This strategy compelled customers to buy the console since it was so inexpensively accessible. However, this was not the end of the story, as the console was pointless without any games to play.

Microsoft used its pricing strategy to compensate for the losses it incurred when selling consoles by raising the prices of its games.

5. Penetration Pricing Strategy

The penetration pricing strategy aims to draw customers by providing products and services at lower costs than rivals. This tactic can take attention away from competing firms and lead to long-term contracts by promoting brand recognition and loyalty. However, in the long run, brand recognition may lead to higher earnings and help small businesses stand out from the crowd.

Penetration Pricing Strategy Example

Businesses use penetration pricing to lure customers into trying out a new product or service by first providing it at a cheaper cost.

Regarding penetration price, Netflix is a textbook case in point. Many customers have expressed dissatisfaction with Netflix due to rising membership costs or the expiration of their free trial period.

Nevertheless, despite the occasional complaints, people are satisfied with paying the increased membership fees in exchange for the never-ending supply of high-quality media content.

The first quarter of 2022 saw Netflix reach a global audience of around 221.64 million paying customers. Other OTT platforms are using penetration pricing to recruit new consumers, like Netflix

6. Everyday Low Pricing Strategy

Retailers use "everyday low pricing" to maintain perpetually low prices for their items rather than special promotions or sales.

As a result, the daily low pricing strategy aims to optimize sales by always giving the lowest prices on the market and anticipating huge sales volumes.

Everyday Low Pricing Strategy Example

Everyday low pricing strategy allows firms, brands, and retailers to provide continuously low-priced items.

As a result of its everyday low-price approach, Walmart Inc. has become a significant player in the retail industry. Instead of giving low prices only during sales, the giant store gives inexpensive pricing to customers all year round.

Following its inception, the company pursued this strategy and established itself as the retailer that consistently provides customers with the lowest costs. Despite the low-profit margins, the shop will profit because of the large amount of merchandise it sells.

This pricing approach helped Walmart establish itself as a well-known, low-priced corporation. Walmart has over 10,500 stores and clubs in 24 countries under 46 banners.

7. Economy Pricing Strategy

Economy pricing aims to get the most price-conscious customers to purchase the product. Because they don't have to pay for additional promotion or marketing expenditures, businesses may price their products according to their manufacturing value.

Economy Pricing Strategy Example

An "economy pricing" approach relies on reduced item prices due to decreased production costs.

Source

The Up & Up diapers represent Target's economy pricing. Target doesn't need to account for this production expense because it doesn't market its diapers. Up and Up is less expensive than Pampers, which might influence customers' purchase decisions when they visit the store.

8. Premium Pricing Strategy

Businesses that charge premium prices do so because they have a specific product or brand that no one else can match. Suppose you have a significant competitive edge and know you can charge a higher price without being undercut by a product of comparable quality. In that case, you should consider using this technique.

 Premium Pricing Strategy Example

Premium pricing is a technique that involves pricing your goods more than your direct competitors. The marketing strategy of the 7 Ps develops a successful marketing strategy that appeals to your target audience.
Salesforce has a great heritage with premium pricing because it is one of the few SaaS companies that has effectively implemented price skimming into its overall strategy. Here is a peek at the price information.
Source

There is little denying that Salesforce's "Unlimited" subscription is a premium choice. Prospects can tell the difference between this more expensive choice and the "Essentials" plan, which has a similar name but a far lower price tag.

It's a smart move by Salesforce to provide a free trial for all plans, even the premium ones. In addition to free trials, premium pricing also benefits from creating brand equity through free trials.

9. Skimming Pricing Strategy

Price skimming is a dynamic pricing strategy businesses use to increase sales of new goods and services.

Price skimming is a strategy usually employed at a new product's debut. This strategy aims to maximize income to the greatest extent possible when customer interest in the product is strong, and your company faces low competition.

Skimming Pricing Strategy Example

Price skimming is a pricing strategy in which businesses initially charge a high price for their product or service while gradually lowering the price to attract a more price-sensitive market segment.

Price skimming can apply to a wide range of well-known items. Many electronic goods employ a price-skimming technique during the early stages of a product's lifecycle. The device's price then reduces once competitors develop rival goods, such as the [Samsung Galaxy](#), to maintain their competitive edge.

[Source](#)

Regarding mobile phones, Samsung employs a pricing approach known as price skimming. The pricing is chosen to maximize revenue when significant demand for a new product release exists. After the initial frenzy and excitement dies down, Samsung lowers the price to make the product more accessible to a broader range of customers.

In the beginning, Samsung used price skimming to steal market share and attention from their key competitors. For example, Samsung's Galaxy phones were priced to grab market share away from Apple's popular iPhone.

10. High-Low Pricing Strategy

High-low pricing is a strategy where a business focuses on marketing campaigns to entice customers to make purchases. For example, a company charges a high price for a product and then lowers the cost through promotions, markdowns, or clearance sales. A product's pricing fluctuates between "high" and "low" in a certain amount of time with this method.

 High-Low Pricing Strategy Example

When a new product enters the market, it's common to see high-low pricing applied.

Smartphones are almost always launched at a high price point, then gradually drop as the anticipation subsides. This is true for both flagship and mid-range phones.

Although Apple was the first company to adopt this method of pricing smartphones, it is now used by many manufacturers, including Samsung, Google, Huawei, and others.

When you don't have any previous sales data on which to base price decisions, using high-low pricing is an effective pricing and marketing strategy. The objective of most retailers is to maximize profits. Therefore, it's logical to begin your pricing plan with increasing gross profit.

11. Dynamic Pricing Strategy

Dynamic pricing involves charging variable costs depending on who or when you purchase your goods or service. Flexibility in pricing is one of this technique's essential features, which considers supply and demand.

While dynamic pricing is widespread in e-commerce and transportation, it isn't appropriate for all businesses. The greatest dangers lay in implementing variable prices with price-sensitive products and services.

Dynamic Pricing Strategy Example

Uber is a significant player in the on-demand transportation industry. Your route's traffic, peak hours, and current rider-to-driver demand are all factors in Uber's dynamic pricing algorithm.

Source

Despite the complaints about unfair pricing hikes, Uber stands by its algorithm and maintains that it helps the system manage supply and demand difficulties and provides drivers with incentives to work in challenging situations

UNIT -5

Definition and Meaning of Inflation

Everyone is familiar with the term ***Inflation*** as rising prices. This means the same thing as fall in the value of money. Inflation is a monetary ailment in an economy and it is defined by economists in so many ways.

Crowther defines inflation as

a state in which the value of money is falling, i.e., prices are rising.

Pigou defines inflation as a condition

when money income is expanding relatively to the output of work done by the productive agents for which it is the payment.

If an economy is working at a low level with a number of unemployed people and resources, an expansion of money or other factors will not only increase the prices due to increase in demand, but also increase the volume of goods and services produced in the system. This is the case of rise in prices accompanied by increased production and employment. This condition will continue till all the unemployed factors are fully utilized, i,e., a stage of full-employment is reached. Beyond this stage, however, any expansion in the volume of money will only lead to rise in prices and not rise in production or employment.

Keynes opines that the stage of increasing prices with increasing output and employment is desirable. Such a type of increasing prices is called ***Reflation*** or ***partial inflation*** which helps the economy to move towards full employment condition. But increasing prices after full employment is bad, as there will not be any increase in the production of goods or increase in employment. Hence in the Keynesian sense, inflation refers to a rise in the price level after full employment is reached.

Characteristics of Inflation

1. Persistent rise in prices

The first characteristic feature of inflation is the persistent rise in prices. This conclusion is based on observation of facts and it is by an large correct. Though there may be recovery of prices here and there due to monetary and fiscal measures undertaken by the government, it is an agreed fact that excessive rise in prices is the hallmark of inflation.

2. Excessive supply of money in economy

The second feature of inflation is an excessive supply of money in the economy. In times of war or sudden preparations for war, the resources at the disposal of the government may not be sufficient and the government may adopt war time measures to augment the resources to meed the emergent situation. The government may resort to banks which make advances on the basis of government bonds and securities. This result in an expansion in the paper currency as well as bank credit in the economy.

3. Vicious circle of inflationary spiral

Another important characteristic feature of inflation is the vicious circle of inflationary spiral created by the velocity of circulation of money. Inflation will feed on itself to grow into an inflationary spiral.

Since the prices are rising and also expected to rise, the community will have the least inclination to save money or hold cash assets as the value of money is decreasing.

There will be strong tendencies to spend more in commodities and services, not only for the current period, but also for future. The tendency will be strong and persistent in hoarding stock of goods, the prices of which are increasing. People will try to invest on real-estate and other tangible assets whose prices will increase with inflation. The people will try to capitalize on the increasing prices and decreasing value of money.

On the other hand, businesses anticipating increased demand for goods will be expanding their investment programmes. Thus spending on both accounts will be speeded up. The velocity of money will be at a very-high level.

Increased prices and supply of money may not result in increased goods either because the economy in production. These bottlenecks cause a further hike in price due to high demand.

Rising prices will lead to increased wages and costs which will lead to further increase in prices. More of bank money will lead to more of spending. Thus the vicious circle once started will continue to feed itself.

What Are the Three Main Types of Inflation?

There are three primary types of inflation:

- Demand-pull inflation
- Cost-push inflation
- Built-in inflation

Right now, the country is dealing with all three major types of inflation, which is rare, according to Christopher Blake, assistant professor of economics at Oxford College of Emory University. "The story is complicated in a way that it hasn't been in 40-plus years, given that we usually only see one form of inflation or the other," he says.

Demand-Pull Inflation

Demand-pull inflation describes how demand for goods and services can drive up their prices. If something is in short supply, you can generally get people to pay more for it.

Are you still paying for plane tickets for a vacation despite prices being considerably higher than normal? That's a good example of demand-pull inflation.

The U.S. is experiencing demand-pull inflation due to wages rising and Americans having a decent amount of money in their savings accounts, Blake explains, although some consumers are starting to empty those accounts.
"Consumer spending has remained high, despite the rising prices we currently see," Blake says. "This is commonly referred to as demand-pull inflation, as consumer demand pulls prices higher because firms cannot keep up."

Cost-Push Inflation

Cost-push inflation often kicks in when demand-pull inflation is going strong. When raw materials costs increase for businesses, the businesses in turn must raise their prices, regardless of demand.

"Increases to the prices that producers face put businesses in a tough spot," Blake says. "They can either accept higher costs and keep their prices the same, or they can respond by trying to keep their profit margins the same."

When the price of chicken keeps going up, for example, eventually your favorite restaurant will need to charge more for a chicken sandwich.

Built-in Inflation

As demand-pull inflation and cost-push inflation occur, employees may start asking employers for a raise. If employers don't keep their wages competitive, they could end up with a labor shortage.

If a business raises workers' wages or salaries and tries to maintain profit margins by raising prices, that's built-in inflation.

Now, if you learn about your favorite coffeehouse raising prices due to the climbing cost of coffee beans, you're a victim of cost-push inflation.

And if you're going to buy that coffee even though the price is uncomfortably high, you're engaging in demand-pull inflation.

What is India's inflation in 2023?

India's Inflation rate in 2023 is around 6.77%. The inflation rate of an economy is determined by the increase in the price of the product basket. The product basket consists of the services and goods on which an average consumer spends through the year. For example, rent, power, clothing, groceries, telecommunication, domestic needs (oil, gas), recreational activities, and taxes, etc. In 2020, India's inflation was around 3.34%.

Effects of Inflation

Inflation is not a new phenomenon. It has been well studied throughout the years, with its effects widely researched. Which is why the Central Banks try to aim and keep its rate at around 2 percent. This is because too much inflation can lead to hyperinflation as seen in the Weimar Republic, or Venezuela of today. While inflation can help stimulate economic activity, too much can destroy it.

We will look at the main effects of inflation below, but it is important to note that these effects will depend on the rate of inflation. For instance, a rate of 2 percent will not have the same effect as a rate of 100 percent a year. Therefore, we will look at the effects that primarily occur from prolonged and sustained levels of inflation that occur above 2 percent

- Those who have savings tend to lose to inflation, whilst those with debts generally benefit.
- Whilst the effects of inflation are seen as largely negative, there are some positives. For instance, it can help reduce the debt burden for private households and governments.

Negative Effects of Inflation

1. Money Loses its Value

As the prices of products go up, money loses value. For instance, if you keep $1 under your pillow for ten years, you will not be able to buy as much as you could today due to inflation.

If we look at the value of the US dollar between 1980 and 2019, we can see that the dollar has lost over half its value. In other words, you can buy half as many goods and services with one dollar as you could 30 years ago. So if you stored $1,000 under your bed in 1980, it would be worth less than $500 today.

As a result of the loss of purchasing power, inflation causes consumers to try and find a return on their capital. Rather than leaving money under the mattress, or in low-interest bank accounts, it incentivizes consumers to find better returns. This is because consumers fear that the money they have saved over the years will gradually become worthless.

At the same time, inflation creates a greater pressure on businesses to invest any excess capital. So any money that is not being used is losing its value if it's not employed in some fashion. Whether this is in the stock market, or another form of investment.

2. Inequality

Inflation can predominantly hurt low-income households. They spend by far the largest percentage of their income, so price increases usually take up more of their incomes. For instance, when the price of necessities such as food and housing goes up, the poor have no choice but to pay. An increase of $10 a week in the price of food has a more profound impact on someone earning $12,000 a year than someone on $50,000.

One of the effects of inflation is that asset prices tend to rise. Assets such as housing, the stock market, and commodities such as gold tend to outstrip inflation.

This increases inequality as richer households have more assets. They own more property, shares, and other assets. What this means is that when inflation occurs, these assets increase in price ahead of ordinary goods such as bread, milk, eggs, etc. As a consequence, they end up with wealth that can buy them more goods and services than previously. At the same time, low-income households are having to spend more just to get by.

Those on lower incomes tend to spend a higher proportion of their incomes, hence they have less to save and invest in stocks, bonds, and other assets. Furthermore, they are equally unlikely to be able to afford to invest in high capital expenditures such as a house. What results is that those who are able to invest some of their incomes into 'inflation protected' assets such as stocks are left better off in comparison.

3. Exchange Rate Fluctuations

Increase in Money Supply

When the money supply and prices increase, a countries currency can decline in value. For example, if $1 million is in circulation in the US and YEN30 million in China, this may suggest an exchange rate of 1:30. However, if the Federal Reserve creates a further $1 million, taking the total to $2 million, then the ratio will decline to 1:15. This is just suggestive, as the exchange

markets fluctuate daily. However, the premise remains the same. When prices inflate and the money supply expands, its value against other currencies decreases.

Let us take another example. A Chinese vase is worth YEN 100. This is traded with the US for a barrel of American oil worth $25. Based on this exchange, there would be an exchange rate of 1:4. However, the Chinese print more money and inflation increases the price of the vase to YEN 200.

The value of the vase to the US has not gone up. So they would not be willing to suddenly exchange two barrels of oil for the same vase. What happens as a result is the exchange rate adapts to the new reality. With the American oil worth $25, and the Chinese vase now worth YEN 200, this would take the exchange rate up to 1:8. there is a relative correlation between inflation and the exchange rate. However, that does not necessarily mean that inflation causes the exchange rate to fluctuate. Often, inflation can result from other factors that contribute to exchange rate fluctuations. In other words, a fall in the exchange rate causes inflation rather than the other way around.

Although an increase in the money supply can create inflation and cause the exchange rate to fall, a decline in the exchange rate can create cost-push inflation. Simply, this is where the price of imported goods increases as the domestic currency can buy fewer goods. This may be a result of having a trade deficit, poor economic performance, or high-interest rates.

4. Impact on the Cost of Borrowing

If you take out a mortgage for $200,000, you have to pay that much back, plus interest. That loan may be over 25 years, with an interest rate of 5 percent. The total cost of over 25 years will be over $345,000. That's over $145,000 in interest costs alone. However, when we consider inflation from the past 25 years (1995-2020), the real cost is $205,000. In other words, in 2020 prices, the total cost of $345,000 is equal to $205,000 in 1995 prices. So although we are looking at an extortionate amount of money to repay, inflation is able to reduce the cost.

If we put it another way, the initial money that is borrowed is worth less year on year. So the debtor needs to provide fewer resources in order to pay their debt. For instance, a debtor may

earn $20,000 per year after tax. They also take out a loan for $40,000, which is the equivalent of 2 years of wages. However, after 5 years, inflation has taken their wages to $40,000, which is now equivalent to 1 years wage.

With that said, consistent and high levels of inflation may prompt financial institutions to increase their rates in order to protect themselves from inflationary pressures. In turn, debtors may actually find it harder to obtain credit.

5. Increased Cost of Living

As prices of goods increase, it goes without saying that consumers will have to pay more in order to buy basic necessities and luxuries alike. This may not necessarily be a problem if incomes rise in line with inflation, but those who don't will face higher real prices. In other words, they will have to spend a higher percentage of their income on the same number of goods.

What inflation also does is push tax-payers up into higher tax brackets, meaning higher taxes for some. If the brackets aren't adequately adjusted to the new reality, they end up worse off as a result.

Low skilled workers are also particularly affected as their wages are particularly sticky due to the high level of competition in the market. There are many low skilled workers vying for employment, meaning the employers have great power. In turn, wages can lag behind the rest of the economy, making them even worse off. On top of that, minimum wage rises do not always follow inflation, which also puts further downwards pressure on wages.

Positive Effects of Inflation

1. Increased Spending and Investment

As inflation increases, consumers are incentivized to move purchasing decisions forward. Rather than wait until next year when the product will be more expensive, consumers rationally elect to buy now than pay more next year.

For the average consumer, this means buying new cars, fridges, phones, and other consumer goods. Yet this extends beyond consumer goods. Consumers are also incentivized to find the best

return on investment. As money starts losing its value under inflation, it is necessary to 'beat' it just in order to maintain the same purchasing power.

For instance, a consumer may have $1,000 in the bank, but is only earning interest of 1 percent. However, if inflation is consistently at 3 percent, they are losing money year on year. In turn, they can then react in two ways.

First of all, let inflation take hold and see the value of their money decline. Or, second of all, try and find higher-yielding investments. This can be positive for the economy as savers are looking to move their money to areas of the economy which will be most productive.

However, this presents a risk as the average consumer may not have the requisite knowledge or skill to make a good investment. In turn, there is a greater risk of economic loss due to poor money management.

2. Higher Asset Prices

Historically, asset prices increase more rapidly than inflation. For example, long-term house prices have historically out-stripped inflation. An average house sold in the US was $74,500 in 1980, which, adjusted for inflation is worth $231,000 in 2019 prices. By comparison, the average house sells for $375,000 in 2019; a massive $144,000 in real gains over 39 years.

The stock market is also a prime example. Since the inception of the S&P 500 in 1926, it has returned an average return of 10 percent per year. Once we account for inflation, it returns a rate of over 7 percent above inflation.

What happens during consistent inflationary periods is that consumers and businesses move purchasing decisions forward and spend more rapidly. Or, they move their capital into illiquid assets such as stocks, bonds, and real estate. What happens, in reality, is a mixture of both.

So a consistent inflationary environment is caused by higher levels of spending as consumers moving purchasing decisions forward. At the same time, we also see increasing asset prices as a result of individuals moving investments to illiquid assets which can better protect against the eroding effects of inflation.

3. Reduces Effective Level of Debt

Whether it's a business, the government, or the consumer, those who have high levels of debt may in fact benefit from having higher levels of inflation. For example, the borrower may have an interest rate of 2 percent on their debt. If inflation is at 10 percent, and their income increases at a similar rate, it means the effective rate by which they are repaying declines.

Although this can be a positive effect of inflation for those in debt, but for individuals such as savers and institutions such as banks, it can actually be a huge disadvantage. Banks lose out because they are receiving lower levels of interest than the rate of inflation. And for savers, they are likely to be earning interest below the rate of inflation.

4. It's better than Deflation

Many economists argue over what is the most optimal rate of inflation – 1 percent, 2 percent, or 4 percent? However, there is a general consensus that whatever it is, it's generally better than deflation.

Deflation is perhaps more harmful to an economy than inflation. It has the potential to increase the debt burden to both governments and private businesses/individuals. This can effectively paralyse public services and create a huge number of bankruptcies as firms are unable to meet repayments which are effectively becoming more expensive.

Anti-Inflationary Measures:

Inflation should be controlled in the beginning stage, otherwise it will take the shape of hyper-inflation which will completely run the country. The different methods used to control inflation are known as **anti-inflationary measures**. These measures attempt mainly at reducing aggregate demand for goods and services on the basic assumption that inflationary rise in prices is due to an excess of demand over a given supply of goods and services.

1. Monetary policy

2. Fiscal policy

3. Price control and rationing

4. Other methods

1. Monetary Policy

It is the policy of the central bank of the country, which is the supreme monetary and banking authority in a country. The central bank may use such methods as the <u>bank rate</u>, <u>open market operations,</u> the <u>reserve ratio</u> and <u>selective controls</u> in order to control the <u>credit creation operation of commercial banks</u> and thus restrict the amounts of bank deposits in the country. This is known as tight money policy. <u>Monetary policy</u> to control inflation is based on the assumption that a rise in prices is due to a larger demand for goods and services, which is the direct result of expansion of bank credit. To the extent this is true, the central bank's policy will be successful.

2. Fiscal Policy

It is the policy

of a government with regard to taxation, expenditure and public borrowing. It has a very important influence on business and economic activity. Taxes determine the size or the volume of disposable income in the hands of the public. The proper tax policy to control inflation will avoid tax cuts, introduce new taxes and raise the rates of existing taxes. The purpose being to reduce the volume of purchasing power in the hands of the public and thus reduces their demand. A precisely similar effect will be achieved if voluntary or compulsory savings are increased. Savings will reduce current demand for goods and thus reduce the inflationary rise in prices.

As an **anti-inflationary measure**, government expenditure should be reduced. This indicates that demand for goods and services will be further reduced. This policy of increasing public revenue through taxation and decreasing public expenditure is known as surplus budgeting. However, there is one important difficulty is this policy. It may be easy to increase revenue in times of inflation when people have more money income, but difficult to reduce public expenditure. During war times as well as during a period of development, it is absolutely impossible to reduce the planned expenditure. If the government has already taken up a scheme or a group of schemes, it is ruinous to give them up in the middle. Therefore, public expenditure cannot be used as an **anti-inflationary measure**. Lastly, public debt, i.e., the debt of the

government may be managed in such a way that the supply of money in the country may be controlled. The government should avoid paying back any of its previous loans during inflation so as to prevent an increase in the circulation of money. Moreover, if the government manages to get a surplus budget, it should be used to cancel public debt held by the central bank. The result will be anti-inflationary since money taken from the public and commercial banks is being cancelled out and is removed from circulation. But the problem is how to get a budget surplus, which is extremely difficult.

3. Price Control and Rationing

This is the most important and effective method available during war and other critical times particularly because both monetary and fiscal policies are more or less useless during this period. Price control implies the establishment to legal upper limits beyond which prices of particular goods should not rise. The purpose of rationing, on the other hand, is to distribute the goods in short supply in an equitable manner among all people, irrespective of their wealth and social status. Price control and rationing generally go together. The chief objection behind use of this method to fight inflation is that they restrict the freedom of the consumers and thus limit their welfare. Besides, its success depends on administrative efficiency, which in many underdeveloped countries is very low.

4. Other Methods

1. Another important anti-inflationary device is to increase the supply of goods through either increased production or imports. Production may be increased by shifting factors of production from the production of less inflation sensitive goods, which are in comparative abundance to the production of those goods which are in short supply and which are inflation-sensitive. Moreover, shortage of goods internally may be relieved through imports of inflation sensitive goods, either on credit or in exchange for export of luxury goods and other non-essentials.

2. A word may be added about the measures to control cost-push inflation. It is suggested that wages, salaries and profit margins should be controlled and fixed through a system of income freeze. Business units may particularly welcome wage freeze. However, wage freeze is not so easy or just, unless trade unions agree to the proposal and there is also

freezing of prices. At the same time, the Government should not raise the rates of commodity taxes. Thus, it is difficult to control cost push inflation through controlling wages and other incomes. The best method is to bring a rapid increase in production, which will automatically check prices and wages also.

What is a Business Cycle?

A business cycle is a cycle of fluctuations in the Gross Domestic Product (GDP) around its long-term natural growth rate. It explains the expansion and contraction in economic activity that an economy experiences over time.

Phases or stages of business cycle:
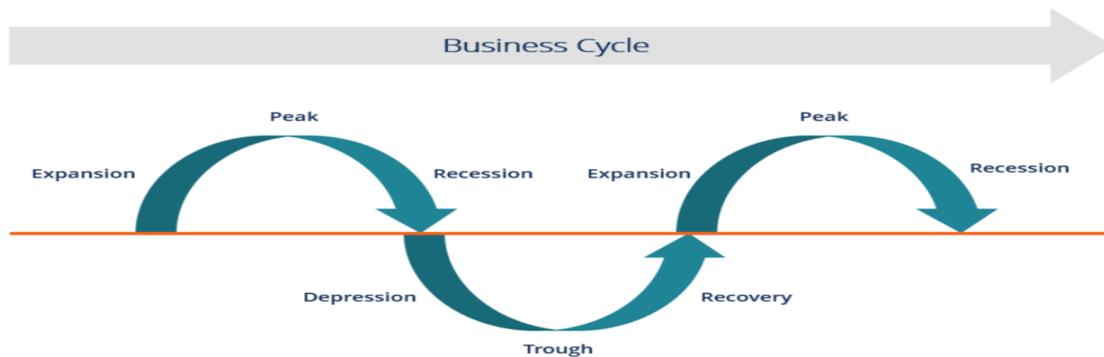
A business cycle is completed when it goes through a single boom and a single contraction in sequence. The time period to complete this sequence is called the length of the business cycle. A boom is characterized by a period of rapid economic growth whereas a period of relatively stagnated economic growth is a recession. These are measured in terms of the growth of the real GDP, which is inflation-adjusted.

Stages of the Business Cycle

In the diagram above, the straight line in the middle is the steady growth line. The business cycle moves about the line. Below is a more detailed description of each stage in the business cycle:

1. Expansion

The first stage in the business cycle is expansion. In this stage, there is an increase in positive economic indicators such as employment, income, output, wages, profits, demand, and supply of goods and services. Debtors are generally paying their debts on time, the velocity of the money supply is high, and investment is high. This process continues as long as economic conditions are favorable for expansion.

2. Peak

The economy then reaches a saturation point, or peak, which is the second stage of the business cycle. The maximum limit of growth is attained. The economic indicators do not grow further and are at their highest. Prices are at their peak. This stage marks the reversal point in the trend of economic growth. Consumers tend to restructure their budgets at this point.

3. Recession

The recession is the stage that follows the peak phase. The demand for goods and services starts declining rapidly and steadily in this phase. Producers do not notice the decrease in demand instantly and go on producing, which creates a situation of excess supply in the market. Prices tend to fall. All positive economic indicators such as income, output, wages, etc., consequently start to fall.

4. Depression

There is a commensurate rise in unemployment. The growth in the economy continues to decline, and as this falls below the steady growth line, the stage is called a depression.

5. Trough

In the depression stage, the economy's growth rate becomes negative. There is further decline until the prices of factors, as well as the demand and supply of goods and services, contract to reach their lowest point. The economy eventually reaches the trough. It is the negative

saturation point for an economy. There is extensive depletion of national income and expenditure.

6. Recovery

After the trough, the economy moves to the stage of recovery. In this phase, there is a turnaround in the economy, and it begins to recover from the negative growth rate. Demand starts to pick up due to low prices and, consequently, supply begins to increase. The population develops a positive attitude towards investment and employment and production starts increasing.

Employment begins to rise and, due to accumulated cash balances with the bankers, lending also shows positive signals. In this phase, depreciated capital is replaced, leading to new investments in the production process. Recovery continues until the economy returns to steady growth levels.

This completes one full business cycle of boom and contraction. The extreme points are the peak and the trough.

{How long do business cycles last?
A typical business cycle persists for 5.5 years on average; however, it may be shorter or longer than this. While the economy self-corrects over time, various monetary and fiscal policy measures are implemented to create economic balance.}

Characteristics of Business Cycles:

The business cycle occurs periodically in a wave-like fashion with varying magnitude affecting not only the entire economy of the country but also making its impact on economies of other countries.

1. Business cycle occurs Periodically

The Business cycles occur periodically in a regular fashion. This means the prosperity and depression will be occurring alternatively. But there need not be uniformity in the extent and magnitude. Though the general structure of different cycles may be the same, it may not be perfectly rhythmical in character.

2. It is all embracing.

The business cycle implies that the prosperity or depressionary effect of the phase will be affecting all industries in the entire economy and also affect the economies of other countries. It is international in character. The Great Depression of 1929 is an example of this.

3. Business Cycle is wave-like

The business cycle will have set pattern of movements which is analogous to waves. Rising prices, production, employment, and prosperity will become the features of upward movement. Falling prices, unemployment will become the features of the downward movement.

4. Process of Business Cycle is cumulative and self-reinforcing

The upward movement and downward movement are cumulative in their process. When once the upward movement starts, it creates further movement in the same direction by feeding on itself. This movement will persist till the forces accumulate to alter the direction and create the downward movement. When a downward movement starts, it persists in the same direction leading to the worst depression and stagnation till it is retrieved to gain an upward movement.

5. The cycles will be similar but not identical

Different cycles and waves in the business cycles will be similar in general features, but they are not identical in all respects.

Besides these features, the American Economic Association stressed the following important characteristics of the business cycle.

1. Generally, prices and production fall or rise together. The exception is agriculture in which, during the downward phase of the cycle, prices will be falling but production will be increasing. The reason is, with falling prices of agricultural commodities, the farmers would try to produce more to offset the loss of falling prices of their produce and maintain the same level of income.

2. Fluctuations in output and employment will be greater in capital goods industries than in consumption goods Industries.

3. Phenomenal changes in employment, output and price level will be normally accompanied by changes in currency, credit and velocity of circulation of money in the same direction.

4. Prices of <u>agricultural goods</u> will be flexible while the prices of <u>manufactured goods</u> will be comparatively rigid as they will be kept stable by the manufacturers.

5. Profits fluctuate by a larger percentage than the other types of income.

6. Fluctuations will spread throughout, as industries are interconnected and the cyclical fluctuations tend to be international in the sense that the prosperity or adversity will affect the foreign countries, through international trade.

Measures To Control Business Cycles

The following are some of the measures to control business cycles.

1. **Monetary policy:** Some economists advocated the monetary measure's to control business cycles. The central bank can practice the monetary measures to control trade cycles. The Central. Bank uses both quantitative and qualitative measures to control credit. During the terms of inflation it can increase the bank rate and it leads to higher interest rates in the money market. Thus, expansion is checked. It can also sell its securities for public. As a result the excessive purchasing power of people decreases. It can also increase cash reserve ratios CRR to reduce the credit creation of commercial banks.

In the same way, during the period of depression the Central Bank can reduce the Bank rate to stimulate investment. It can purchase securities from bank and public to increase the credit creation of banks and the purchasing power of the people. Cash reserve ratio to be kept by the commercial banks is lowered enabling them to give more credit. As a result, money and credit are increased. Due to these measures the economy can take an upward movement.

2. **Fiscal measures:** Keynes advocates <u>fiscal measures</u> to control trade cycles. Budgetary measures, taxation, public expenditure and public debt should be used to control trade cycles. During the period Of depression the government should increase its expenditure and increase aggregate demand. The government should increase its expenditure by deficit budgeting. The government spends large sums of money on public works like roads, projects etc. and consequently employment will be increased.

This will arrest the fall of prices of goods and unemployment in those industries. This can mitigate suffering and revival will start. During the period of prosperity or inflation, public expenditure should be reduced. Taxation and public borrowing should be increased. The government adopt surplus budgets. All these measures can reduce the incomes of the people, leading to a fall in the aggregate demand. This can arrest the expansion of business.

3. Price control : To control inflation or rising prices, price control measures should be introduced. That means prices must he kept under check.

4. Price support : During the period of depression prices begin to fall. This has cumulative effect. So it is harmful. To avoid this, price support policy should be adopted. Minimum prices should be provided. If prices fall below a minimum level, government purchases all the goods at support prices in the market.

5. Socialistic measures: Socialists recommended replacement or capitalist economy by a socialistic system of production and distribution. When this is done, there would be a completely planned economy and all fears of over-investment and over production would be brought to an end.

6. Reduction of economic inequalities : Inequalities of income should be reduced. This can be done by raising the wage levels and ensuring more equitable distribution of national income by increased taxation. This will reduce inequalities in the distribution of income and wealth and thereby will remove the "under consumption tendency.

7. State control over investment : The government should control private investment in order to prevent over improvement and thereby the boom. Though the government has taken a number of steps, business cycles could not be controlled. The business cycle seems to have become an almost natural feature of the present economic order so that none of these remedies can be expected to root it out. However, to get desirable results both monetary and fiscal policies should be combined and implemented effectively.