

GURUNANAK INSTITUTE OF TECHNOLOGY

157/F, Nilgunj Road, Panihati

Kolkata -700114

Website: www.gnit.ac.in

Email: info.gnit@jisgroup.org

Approved by A.I.C.T.E., New Delhi

Affiliated to MAKAUT, West Bengal



ON-LINE COURSE WARE

SUB: Economics for Engineers

SUB CODE: HU 502

STREAM: FOOD TECHNOLOGY

MODULE-I

TOPIC:INTRODUCTION OF ECONOMICS

Economics meaning, definitions, nature, scope and subject matter of Economics.

Man being born in this world is influenced by biological, physical and social needs, which keep him always busy in searching out the means to keep him satisfied. To fulfill his requirements arising out of various needs, he involves in an activity called economic activity. Because of the scarcity of resources imposed by the nature, humans always deeply engage in arriving at an equation, which balances their unlimited wants and limited means. By engaging themselves in the economic activity people aim at maximizing their satisfaction from their scarce resources. Thus scarcity is the pivot for the economic activity of the people representing consuming and producing segments leading to the origination of a field of study called economics.

Economics tells us how a person tries to satisfy his unlimited wants with his limited means; in other words how to use scarce goods that he has to his best advantage or how to economize.

Economics teaches us to make the best use of our limited resources. It tells us how the scarce means at our disposal can be put to several alternative uses so as to derive the maximum benefit out of them.

Economics is a very wide subject. It concerns itself not only with the behavior of individual consumers and individual producers of firms, but also with industries, national income and economic growth.

DEFINITIONS OF ECONOMICS

The word economics has been derived from the Greek word “OIKONOMICAS” with “OIKOS” meaning a household and “NOMOS” meaning management. It is understood that the beginning was made

by the Greek Philosopher, Aristotle who in his book “Economica” focused that the field of economics deals with household management.

The concepts on which various definitions of economics given are : 1)wealth 2) Welfare 3) Scarcity and 4) Growth.

Adam Smith (1776) who is regarded as “Father of Economics” in his book entitled “Wealth of Nations” defined economics as “An enquiry into the nature and causes of the wealth of nations”. J.S. Mill, another classical economist defined economics as “The practical science of production and distribution of wealth”.

Here, the term, economics is defined as the field of science concerned with wealth. Wealth in this context refers to abundant supply of money or affluence. These definitions invited the criticism of Carlyl as he called economics as a ‘dismal science’.

Alfred Marshall defined economics as “A study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the material requisites of wellbeing”.

This definition of economics has received the acceptance of a number of economists, as it considered that wealth was not the end itself but a means of achieving welfare, i.e., it is a source of attaining human welfare. However, the idea of Marshall was condemned by Lionel Robbins on the points that economics was treated as a social science rather than a human science; and the term “human science” is more apt on the ground that any individual either as a member of a society or in isolation does have economic problems. Secondly, emphasis on material requisites of wellbeing was objected, as demarcation was created between material requisites and non-material activities, when both are equally important. Thirdly, his approach of economics is limited to the study of mankind in the ordinary business of life, leaving the human life in the extra-ordinary business of life such as famines, wars, etc., is another point of criticism.

‘Scarcity’ Definition of Economics:

Lionel Robbins opposing the Marshall’s definition put forth the following definition based on the scarcity concept. “Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses” according to Robbins. In this definition ‘ends’ indicate human wants. ‘Means’ are the sources with which wants are fulfilled. Though the resources are scarce, they have numerous alternative uses. This definition examines as to how an individual either as a consumer or a producer or a businessman, etc., shortlists the unlimited wants in the light of limited available resources. Indeed, this is an important aspect of human behaviour.

Robbins’s definition is superior to ‘wealth’ and ‘welfare’ definitions because ‘welfare’ aspect is embodied in the definition and ‘wealth’ is represented as means which is always scarce. However, some limitations were pointed out with Robbin’s definition. ‘Scarcity’ is not the problem always and ‘abundance’ also gives rise to problems, which was not recognized by Robbins. His definition treats economics as a positive science only without touching normative aspects of economics.

It has not taken into account the growth aspect of the economy, the dynamic nature of adjustment, etc.

‘Growth’ Definition of Economics:

Keynes defined economics as “The study of the administration of scarce resources and of the determinants of employment and income. Thus besides studying the theory of value or of resource allocation, economics studies how the levels of income and employment in an economy are determined. In other words, it also studies the cause of economic fluctuations to see how economic stability could be promoted.

NATURE AND SCOPE OF ECONOMICS

Scope means the sphere of study. We have to consider what Economics studies and what lies beyond it. The scope of Economics will be brought out by discussing the following:

1. The subject matter of Economics
2. Economics is a Social Science

3. Whether Economics is a Science or an Art

4. If Economics is a Science, Whether it is a Positive or a Normative science.

Subject matter of economics: A man wants food, cloths and shelter. To get these things he must have money. For getting money, he must work or make an effort. Effort leads to satisfaction. Thus, Wants-Efforts-Satisfaction sums up the subject – matter of Economics.

Economics - a Social Science

Economics studies human beings as members of the society participating in the economic activities. It does not study humans as isolated individuals. He is interdependent. Thus economics is a social science.

Is Economics a Science or an Art?

By definition, science is a systematized body of knowledge having an empirical correspondence. Analogous to science, an art is also systematized body of knowledge. It directs through a system of procedures to attain a given objective or goal it tells us how to do a thing.

Treating economics as a science, a given theory is formed through conduct of experiments, recording observations, analysis of data recorded, drawing the conclusions and finally testing them. In economics also the same procedure is followed to present any principle or theory. Hence economics is as good as any science. Only the question is regarding precision. The scientific experiments are conducted under laboratory conditions, while economic theories are subjected to several causal factors that influence human behaviour.

The situation of controlled experiments in economics is not a possibility, since it deals with human behaviour, which is unpredictable.

This indicates the fact that the degree of precision of economics as a science is less, when compared with the pure sciences, but nonetheless economics is a science. As an art, economics shows solutions to the problems. It helps us how to do a thing. The role of economics as an art can be found in any sphere of economic activity. For example, it advocates how to maximize the profits of a firm given the resource constraints. Given a problem, the field of economics guides us to solve the same. Thus, the field of economics has the attributes of science and art. Economics therefore is a science as well as an art.

Economics –Positive Science or Normative-Science.

In economic theory, we make an effort to explain the nature of economic activity and predict the events in the economy as facts change. Such an effort helps us to know the environment in which we live and what part is related to others and what causes what. Economists differentiate between positive economics and normative economics. Positive economics is completely objective and is limited to the cause and effect relationship of economic activity. It is simply concerned with the way the economic relationships are present in different economic activities (what they are).

Normative economics studies the way that economic relations ought to be. Normative economics evaluates. Policy making, a conscious intervention in the economy for the welfare of the people is essentially a normative in character.

Methods of Economic investigation.

Every field of science follows certain methods to formulate the laws of principles. There are two methods followed in the scientific study of economics. They are: 1) Deductive method and 2) Inductive method.

Deductive Method

Economists belonging to classical school viz., J.S. Mill and Bacon advocated this method. This method is called analytical or abstract or apriori method. Here the economists proceed from general to particular. It proceeds from certain fundamental assumptions or truths. Through this method theoretical abstractions are derived from the real world. We further analyse these abstractions and hypotheses with the data and finally make logical conclusions about the objectives of the research studies.

Inductive Method

This method is known as historical or empirical or posterior method. The economists belonging to historical school like Roscher, Frederick, etc., advocated this method. In this method facts are generated through surveys. Here the investigator moves up from particular to general. It is a realistic method because, it is based on facts. We collect data from sample units and analyse the data and infer or draw conclusions relevant to the study. Here we give importance to the predictive power of models.

Though distinction does exist between deduction and induction methods both are needed for scientific investigation, as neither deduction nor induction alone is suffice to formulate and test theories, hypotheses and economic laws.

Relation of Economics with other Sciences:

Economics has relation with almost all other sciences. All sciences have been developed by man for the benefit of mankind. As a science, which is primarily concerned with mans welfare; Economics freely makes use

of the other sciences in its study. It uses its own reasoning, the conclusions at which the other sciences may have reached. But its relation with social sciences like Politics, history and Ethics is the closest.

Economics and Politics:

Economics and politics are very closely mixed up these days. All political events have their roots in economic causes. All political problems are economics in nature. If you follow discussions in the legislature, you will find that most of the time of the legislature is taken up by economic matters. Political institutions also affect economic conditions, and *viceversa*. Dictatorship moulds economic

conditions in a different manner from a democracy. Foreign rule in India was largely responsible for Indian poverty. Thus, there is a very close connection between Economics and Politics.

Economics and History:

Economics makes use of History in understanding the background of the present – day economic problems. History is also useful in establishing or verifying economic theories and laws. But History is incomplete unless it discusses the economic condition of man. History must devote its attention to the discussion of the economic condition of the people. Thus Economics with out History has no root; History with out Economics has no fruit.

Economics and Ethics:

Ethics is a science of what ought to be. It tells us whether a thing is right or wrong. Now ethical or moral considerations govern all economic activity. The economist cannot justify immoral activities. Economics cannot be dissociated from Ethics. Ethics is indeed a handmaid of Economics. The economists are being called upon more and more to give their advice in economic affairs, and they should not shirk this task.

That is why it is said that Economics is both a positive science and a normative science.

Economic Laws:

Economic laws are the principles that govern the actions of the individuals in their economic activities. Just like any law of science, economic laws too are conditional i.e., applicable when certain conditions are fulfilled. What economists do is that they consider the basic factors into account while developing a theory, keeping other factors influencing the theory as constant. This implies that for developing a theory in economics some kind of abstraction is necessary. There is an important role for assumptions.

“Economic laws are statements of uniformities, which govern human behaviour concerning the utilization of limited resources for the achievement of unlimited ends (Robbins)”.

Characteristics of Economic Laws

1. Economic Laws are not the Governmental Laws: The laws of Government are very stringent and any violation of these laws amounts to punishment. Economic laws, on the other hand, are applicable, only if certain conditions are satisfied.
2. Economic Laws are Merely the Statements of Tendencies: These are based on the tendencies of humans who behave in a particular way to a given phenomenon. This is the expected behaviour. This expected behaviour, however may not be found, for certain reasons. This leads to unpredictable character of economic laws. Certainty is one thing, which is not guaranteed with regard to economic laws.
3. Economic Laws are Hypothetical: These hold good under the assumption of a number of things. Economic laws are characterized by the phrase *ceteris paribus* (other factors are held constant).

4. Economic Laws are Positive but not Normative: They only describe the economic phenomenon but do not prescribe how it should be.

5. Some Economic Laws are Axiomatic in Character: It means that they are self-evident as that of law of diminishing marginal utility and generalizations drawn are universally valid.

6. Economic Laws Lack Exactness of the Laws of Science: This prompted Marshall to compare the economic laws to the laws to the laws of tides rather than the simple laws of gravitation.

Traditional and modern approaches of economics

Traditional Approach

Traditionally, the subject matter of economics can be studied under four divisions. These are consumption, production, exchange and distribution.

Consumption

It means the use of wealth to satisfy innumerable wants. It also means the destruction of utility. All the goods that are produced are consumed immediately or some time in future. Through the consumption activity, we use utilities hence consumption represents using up of utilities.

Production

It is an activity that helps to create utility. It simply means the addition of utilities. Hence production is defined as the creation of utility. Through the process of production one set of goods is transformed into the other. In the economic sense mere creation of utilities is not treated as production, and in fact the goods that are produced should have value too. In the production process, inputs or resources are transformed into products.

Exchange

The word exchange of goods implies transfer of goods from one person to the other. Exchange of goods takes place among groups of individuals, countries, markets, regions and so on. The exchange of goods leads to an increase in the welfare of the individuals through creation of higher utilities for goods and services.

Distribution

It refers to the sharing of wealth produced by the community among the agents of production. Proper distribution of wealth and resources leads to growth and economic welfare of the people in the nation.

Modern Approach:

Microeconomics and Macroeconomics

As has been mentioned earlier, it is only an old approach to divide Economics in to these four divisions. The modern approach is different.

The study of Economics is now usually divided in to two parts:

a) income theory or Macro-Economics; and b) price theory or Micro-Economics.

Nature of Micro and Macro- Economics

The term “microeconomics” has been derived from the Greek word “MICROS” meaning small. In other words micro means a millionth part.

It is otherwise known as price theory. It focuses on price determination.

Microeconomics fundamentally deals with economic behaviour of individual economic units such as consumer, resource owners and business firms. It is concerned with the flow of goods and services from business firms to consumers and also the flow of resources or their services from resource owners to business firms. Microeconomics covers theory of consumer behaviour, theory of value (product pricing and factor pricing) and theory of economic welfare.

The term macroeconomics has been derived from the Greek word “MACROS” meaning large. Macroeconomics otherwise is called income theory. It treats the economic system as a whole, rather than treating the individual economic units of which it is composed.

Macroeconomics is concerned with the value of the overall flow of goods and the value of the overall flow of resources. Thus, it covers theory of income and employment, theory of money and prices, banking, theory of economic growth macro theory of distribution, general equilibrium analysis, policy formulation and analysis, etc. Thus, it is concerned with the study of aggregates.

Though distinction exists between microeconomics and macroeconomics, both are essential for a thorough understanding of the economy.

Basic Concepts in Economics

Basic concepts in the field of economics are discussed below:

GOOD

Anything that satisfies a human want is called good. Goods are tangible and material outcome of production. Examples: Food grains, pulses, oilseeds, machinery, implements, seeds, fertilizers, cloth, book, pen, etc.

SERVICE

A service is any act or performance that one party can offer to another i.e., essentially intangible and does not result in the ownership of any thing. Services are intangible, non-material, inseparable, variable

and perishable. The services rendered by doctors, teachers, lawyers, engineers, labourers, etc., are the examples.

CLASSIFICATION OF GOODS

Goods are categorized based on four criteria viz., supply, transferability, consumption, and durability as given below:

Based on Supply

Based on supply, goods are classified into economic goods and free goods. Economic goods are those goods, which are produced through human efforts and are to be purchased at a given price. Supply is less than demand. They have value in use and value in exchange. Buildings, machinery, furniture and a host of other goods of our daily use are the economic goods. Free goods are the free gifts of nature. Their supply is more than demand and one can get to the extent they need. No efforts are needed to be put forth by humans to secure free goods.

Since these are freely available in nature, no price needs to be paid. They have value in use but no value in exchange. Examples are, air, sunshine, rainfall, etc.

Though a clear distinction is made between free goods and economic goods based on their distinct characteristic features, the distinction between the two is lost under certain situations. Water, which is a free good near the canals and rivers for the consumers, becomes an economic good in the water scarcity places. Similarly, sand which is a free good in riverbeds becomes an economic good in the places of house construction activities.

Based on Transferability: As given by Marshall Goods are classified as follows:

Based on Consumption

Based on consumption, goods are classified into consumer goods and producer goods. Consumer goods are those from which consumers directly derive the satisfaction using the goods. These are otherwise known as goods of first order in view of their ability to give direct satisfaction. Food, cosmetics, clothes, books, pens, etc., are the examples of consumer goods.

GOODS

External Internal

Material Personal

Transferable

(Land, buildings, furniture etc.)

Non-transferable

(Degree, certificate, driving license, etc.)

Transferable

(Goodwill of a business)

Non-transferable

(Personal qualities like ability, intelligence, etc.)

Non-transferable

(Friendship, courage, etc.)

Producer goods are those that help to produce other goods. They can be used by consumers or producers or both, because it depends upon how the good is used. From the consumers' point of view they give satisfaction indirectly. The examples are machines, factory buildings, raw material, etc. The chance of a producer good to become a consumer good is possible based on its usage. For instance, electricity when used at home, it becomes a consumer good and the same becomes a producer good when used in industry.

Based on Durability

Based on durability goods are classified into mono period goods and poly period goods. Those goods which are used only once to satisfy a need are called mono period goods. They cease to exist once their use was over. Examples: All food items and productive resources like seeds, fertilizers, etc.

Durable goods are those goods, which are used time and again. They can be made use of several times. Here the relevant examples are machinery, implements, buildings, etc.

Utility and characteristics of utility

UTILITY

In the process of economic activity, consumers exhibit, their desire to possess a good and /or service. Desire for a good arises in view of the utility the consumers derive from the purchase of that particular good.

If the consumers feel that they can not derive utility from the possession of a good, they pay least attention for the same. Utility therefore is the capacity of a good that satisfies a human want. In other words, utility is the want satisfying power of a good. Also it means the power of a commodity to satisfy a human want.

Kinds or Types of Utility

Utilities are classified into different kinds. A particular kind or type of utility for a commodity is found in a particular situation. The kinds of utilities are 1) Form utility 2) Place utility 3) Time utility and 4) Possession utility.

1. Form Utility

By changing the form of a good, greater utility is created. It does not mean that before change of form of good, there was no utility. It means that change in the form offers greater utility to the good.

Examples: the transformation of a log of wood in to a piece of furniture, Processing of paddy into rice, wheat into flour, coffee seeds into coffee powder, butter into ghee, cotton into cloth, etc.

2. Place Utility

Utility can also be increased by transporting a good from one place to another. Such utility is called place utility. Spatial movement of the goods i.e., moving a good from one place or market to another place or market increases its utility. Mostly the goods are transported from the places of production down to the places of consumption and also

from the places of surplus production to the places of scarcity. For example, cement is transported from the places of production to the areas of consumption; Apples from Himachal Pradesh, the area of abundant production are transported to Southern and Western parts of the country (non producing areas), thereby increasing the utility of

apples.

3. Time Utility

Any time lag between production and consumption of commodities creates time utility. Through storage over time, greater utility is created for the products. Storage helps to create time utility.

Agricultural production being season bound with consumption spreading throughout the year, the commodities need to be made available to the consumers as and when required. The storage helps us to perform this function. Agricultural commodities like paddy, wheat, oilseeds, pulses, etc., are stored to make them available for

the regular use of consumers throughout the year.

4 Possession Utility

Commodities in the transaction process change the hands from one person to another person.

Commodities in the hands of producers have some utility and by the time they reach consumers through the traders their utility is increased. Such utility due to possession or transfer of ownership of the commodity is called, possession utility.

For example, paddy in the hands of producers, i.e., farmers are having less utility compared to that of consumer in the form of rice. Similarly any other commodities like fruits, vegetables, livestock products, etc., would have higher utility when these goods change hands from farmers.

Characteristics of Utility

1. Utility is Subjective: Utility is not satisfaction by itself; it is subjective to the interest of an individual. It depends on the individual's frame of mind. Hence a given commodity need not bring the same utility to all the consumers. Utility varies from person to person. For example, a blind man cannot see a picture and it has no utility for him. A non-vegetarian food to a vegetarian, alcohol to a teetotaler, motorcycle to a child, etc., give zero utility.

Utility varies with a regular smoker when compared with an occasional smoker and similarly for a regular non-vegetarian to an occasional non-vegetarian. Utilities derived by the occasional users of a good are greater than those of regular users.

2. Utility Varies with Purpose: Depending upon the purpose for which a commodity is used, utility of the same varies. For example, utility derived from water varies from its use as drinking water against its use as irrigation or for power generation or for industrial use, etc.

3. Utility Varies with Time: A particular commodity gives different utilities for the same person in different time periods. Cool drinks and ice-creams provide greater utility to the same individual in summer than in winter. The wine stored over time in scientific warehouses would have higher utilities and fetch higher price.

4. Utility Varies with Ownership: Ownership of a good creates far greater utility from a good than that when it is hired. For a farmer, land ownership brings higher utility over leasing in the land.

Similarly, owning farm machinery offers greater utility than hiring in, for a farmer.

5. Utility Need not be Synonymous with Pleasure: Utility derived from a commodity need not be associated always with pleasure for the consumer, Consuming items of our taste brings in the utility one expects. Similarly, buying an asset also gives the desired utility. These are all the pleasures enjoyed by the consumer from the goods. As against this, consumption of a good is a painful feeling for an individual though it possesses utility. For example,

for a sick man, bitter medicines are difficult to swallow.

6. Utility does not Mean Satisfaction: Utility is not satisfaction by itself. Utility is the quality of a good by virtue of which it gives satisfaction to an individual. The question of obtaining satisfaction from a good depends on the consumer's choice for the same.

Value, Price, Wealth , types of wealth and distinction between wealth and welfare.

VALUE

It is the capacity of a good to command other things in exchange. It is the rate of exchangeability. In reality, value can be used as value-in-use as well as value-in-exchange. Free goods have value-in-use and not value-in-exchange. Economic goods possess both value-in-use and value-in-exchange. But in economics always the term, value means

value in exchange.

The value of a commodity, thus, means the commodities or services that we can get in return for it; it is, in short, its purchasing power in terms of other commodities and services; it is its power of commanding other things in exchange for itself .

Attributes of Value: Following are the attributes, which make the goods possess value.

1. Goods must possess utility
2. Goods must be scarce; and
3. Goods must be transferable or marketable

PRICE

When the value of good is expressed in terms of money, it is called price. Price expresses value in terms of money.

WEALTH

In ordinary language wealth is synonymously used to mean riches. Wealthy man is the one who is blessed with riches. But in economics, the term, wealth conveys a different meaning. Anything, which has value is wealth. When one says value, only economic goods possess value. Consequently economic goods represent wealth.

Wealthy consists of all potentially exchangeable means of satisfying human wants (J.M. Keynes).

Characteristics of Wealth

1. Wealth should Possess Utility: Wealth must be capable of satisfying human wants.
2. Wealth must be Scarce: Scarcity is the binding factor for exchange. Economic goods are exchangeable. Since wealth represents economic goods, it must be scarce.
3. Wealth Must Transferable: Transferability implies changing the ownership of a good from one to another. It is nothing but exchangeability.
4. Wealth Must be External to Person: This quality of wealth enables for exchange.

Types of Wealth: These are:

1. Individual Wealth: Individual wealth consists of all tangible and intangible possessions of the individuals, besides loans due to them. Land, buildings, vehicles, shares, bonds, deposits, commodities for sale, cash, etc., are the tangible possessions.

Goodwill of a business, copyrights, patents (non-material external goods), etc., are intangible possessions. From the total value of all these possessions, loans owed to others are to be deducted to arrive at the individual wealth.

2. Social wealth: It is wealth, which is collectively used by all the people in a nation. Hence it is also termed as collective wealth or communal wealth. Common properties of the community like roads, railways, public parks, libraries, Government hospitals, Government colleges. Etc., represent the social wealth.

3. National Wealth: National wealth is an aggregate of all individuals' wealth and collective wealth of the country. To this amount the loans due to people and loans due to the Government from foreign countries should be added. From this amount so arrived at the debts that the people and the Government owed to foreign countries should be deducted. Economists like Marshall feel the inclusion of free gift of nature like mountains, rivers, etc., in national wealth.

4. Cosmopolitan Wealth: Here the wealth belongs to the world but not to one country. Rivers, oceans, forests, etc., extending over the nations are the examples of cosmopolitan wealth. It is the sum total of wealth of all nations.

5. Negative Wealth: Negative wealth is the exclusive debts owed by the individuals and the nation.

Wealth and Welfare: A Comparison

Wealth and welfare apparently appear to carry the same meaning, but they are two different aspects having relationship. Wealth as defined earlier, is used in the sense of economic goods. Free goods have no place while representing wealth. Once we say economic goods the question of good and bad from social point of view is

ignored. As long as they are economic goods, it hardly matters whether they are harmless or harmful. Therefore, economic goods represent both harmless and harmful goods. Wealth is a path for welfare, as all our desires are satisfied by means of wealth.

Welfare is the well being of individual or community. It refers to the condition of mind. Here, any good whether it is free of economic, is counted as long as it causes well being of an individual or community. Both economic and free goods lead to welfare.

wants meaning and characteristics of human wants and classification of human wants.

HUMAN WANTS

"Man is a bundle of desires". His wants are infinite in variety and number. Some of his wants are organic and natural. He must have some food to live, some clothing to cover his body and some sort of shelter

to protect himself against the inclement of weather, and also against his enemies. Without these things man's life would be impossible. But a civilized man is not satisfied with bare necessities of life. Even when the problem of bare existence has been solved, the struggle of life remains as keen as ever. The struggle now is for the comforts

and joys of life. As man becomes more civilized, his wants multiply. He wants better food, fashionable clothing, comfortable lodging and so on.

All people do not have the same wants. Wants vary from individual to individual. They are relative to one's social and economic position. They are also the outcome of one's education, temperament and tastes. The modern man is the product of a long process of evolution which is reflected in his endless and ever-growing wants.

Characteristics of Human Wants

1. **Wants are Unlimited:** Wants are continuously cropping up in the minds of the humans. If one want is satisfied, immediately another want emerges. They go on multiplying. There is no end to human desires, hence unlimited.
2. **Wants Recur:** If one want is satisfied at a point of time, the same want again repeats in the future. It can be satisfied for that moment only and it is again ready to be fulfilled. Wants like hunger, recreation, etc., need to be satisfied time and again because of their recurrence.
3. **A given Want is Satisfiable:** Though human wants are unlimited, a given want at particular point of time is completely satisfied. For example, for a man who is thirsty, adequate potable water completely satisfies his thirst.
4. **Wants are Complimentary:** Goods are required in pairs or groups to satisfy human wants. For example, bread and butter, tractor and driver, fertilizer and irrigation water, pen and paper, etc., can serve as complimentary goods to satisfy human wants.
5. **Wants are Competitive:** Wants are unlimited but means to satisfy them are limited. Wants compete among themselves and hence given preference. This compels the consumer to choose the most urgent wants keeping in view of the limited income.
6. **Wants have Alternative means:** There is more than one way of satisfying a certain want. A given want can be satisfied with alternative goods. If a man is thirsty, he can be satisfied with water or cool drink or coconut water or cool drink or coconut water, etc.

Origin of Wants

The basic need of humans i.e., food is the most obvious reason for the origination of wants. Two other desires which also arise from necessity are shelter and clothing. Both are essential for the humans to protect themselves from the vagaries of weather.

Individual's habits and tastes give rise to demand for wide variety of goods. The customs of the society, in which we live in, influence the origination of wants. Differences in age of the individuals, climate, education, social position, etc., will give rise to a variety of wants. Finally the satisfaction of existing wants results in the generation of new wants. Thus as the economy develops, new wants may crop up adding to the existing wants.

Classifications of Wants

Wants are broadly divided into three categories:

1. Necessaries

Necessaries are those wants which must be satisfied. The goods which are used to satisfy basic needs of humans are called necessities. They are further classified into necessities of existence, necessities of efficiency and conventional necessities.

a) Necessaries of Existence: These are the necessities which are essential for living. Human existence is not possible without fulfilling the necessities of existence. Examples: Food, water, clothes, shelter; etc.

b) Necessaries of Efficiency: These are not as essential as those of necessities of existence, but at the same time essential in improving the efficiency of an individual.

Examples: Nutritious diet, table and chair to a student, class rooms with good ventilation, etc.

c) Conventional Necessaries: These are the necessities, which arise out of customs or habits. The customs prevailing in a society influence the individuals to follow them. Examples: Customs like celebration of functions and habits like smoking, drinking, gambling, etc.

2. Comforts

Comforts are those which fall between necessities and luxuries. Man is not satisfied with fulfilling necessities only. The comforts also increase the efficiency. Examples: Cushion chairs in a classroom, revolving chair in the saloons, fans in house/office, etc.

3. Luxuries

Luxuries are those which satisfy superfluous wants of individuals. These are neither essential for life nor increase the efficiency. Luxuries represent wasteful expenditure of the individuals. Luxuries are further classified into harmless luxuries, harmful luxuries and defense luxuries. Harmless luxuries are those, the expenditure on

which will not cause any harm to the individuals. For example, well furnished bungalow, expensive food habits, etc., fall under harmless luxuries. Harmful luxuries on the other hand are injurious to the health of the users. Examples: Alcohol, smoking, etc.

Defense luxuries are those which protect the users during the period of crisis. Expenditure on gold ornaments, jewellery, etc. though appears to be luxurious, at the same time it would help the individuals during the periods of crisis.

Though demarcation is made among necessities, comforts and luxuries, in reality these are interchangeable. What is necessary for an individual may turn out to be a comfort for another person and luxury for someone else. Air travel is a luxury for a common man but an absolutely necessary for a busy business executive. Due to development of the economy the wants and desires may change over time. For example TV and telephone were once considered as

luxuries, now because of their abundance and less price, we are using them as necessary goods. Changing consumerism is going to give a new dimension to the human wants.

MODULE-2

TOPIC: DEMAND AND SUPPLY ANALYSIS

Law of demand states that People will Buy more at Lower Prices and Buy less at Higher Prices, Ceteris paribus, or other things Remaining the Same. By : Samuelson

The Law of Demand states that Quantity Demanded Increases with a Fall in Price and Diminishes when Price Increases, other things being equal. By : Marshall

Law of demand

There is an inverse relationship between quantity demanded and its price. The people know that when price of a commodity goes up its demand comes down. When there is decrease in price the demand for a commodity goes up. There is inverse relation between price and demand. The law refers to the direction in which quantity demanded changes due to change in price.

A consumer may demand one dozen oranges at \$5 per dozen. He may demand two dozens when the price is \$4 per dozen. A person generally buys more at a lower price. He buys less at higher price. It is not the case with one person but all people like to buy more due to fall in price and vice versa. This is true for all commodities and under all conditions. The economists call it as law of demand. In simple words the law of demand states that other things being equal more will be demanded at lower price and lower will be demanded at higher price.

Definition

Alfred Marshall says that the amount demanded increases with a fall in price, diminishes with a rise in price.

C.E. Ferguson says that according to law of demand, the quantity demanded varies inversely with price.

Paul A. Samuelson says that law of demand states that people will buy more at a lower price and buy less at higher prices, other things remaining the same.

Assumptions of the law

There is no change in income of consumers.

There is no change in the price of product.

There is no change in quality of product.

There is no substitute of the commodity.

The prices of related commodities remain the same.

There is no change in customs.

There is no change in taste and preference of consumers.

The size of population remains the same.

The climate and weather conditions are same.

The tax rates and other fiscal measures remain the same.

Explanation of the law

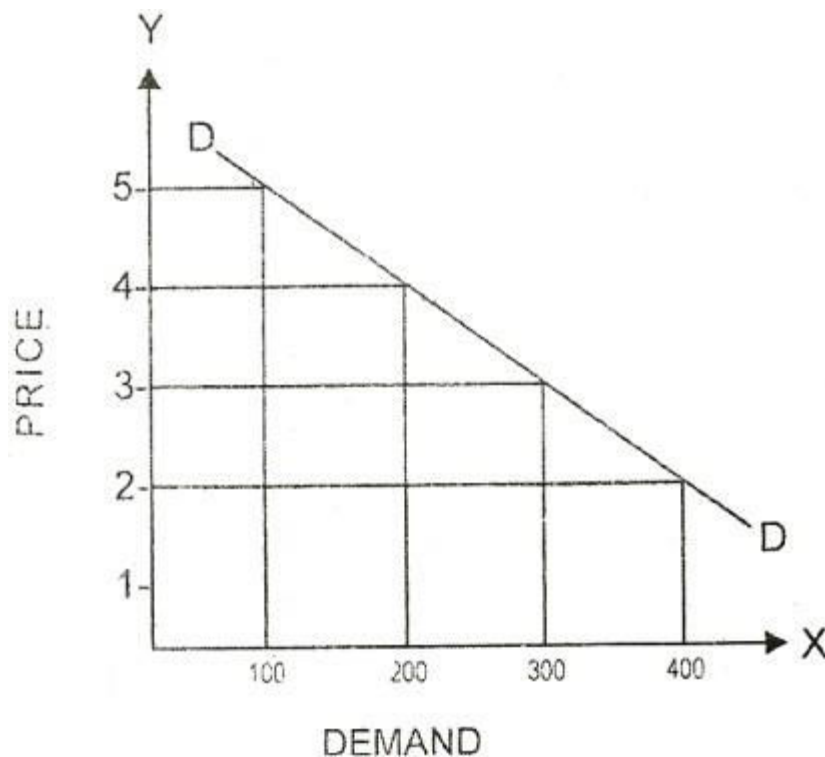
The relationship between price of a commodity and its demand depends upon many factors. The most important factor is nature of commodity. The demand schedule shows response of quantity demanded to change in price of that commodity. This is the table that shows prices per unit of commodity and amount demanded per period of time. The demand of one person is called individual demand. The demand of many persons is known as market demand. The experts are concerned with market demand schedule. The market demand schedule means 'quantities of given commodity which all consumers want to buy at all possible prices at a given moment of time'. The demand schedules of all individuals can be added up to find out market demand schedule.

Demand schedule

Price in dollars.	Demand in Kg.
5	100
4	200
3	300
2	400

The table shows the demand of all the consumers in a market. When the price decreases there is increase in demand for goods and vice versa. When price is \$5 demand is 100 kilograms. When the price is \$4 demand is 200 kilograms. Thus the table shows the total amount demanded by all consumers various price levels.

Diagram



There is same price in the market. All consumers purchase commodity according to their needs. The market demand curve is the total amount demanded by all consumers at different prices. The market demand curve slopes from left down to the right.

Why demand curve falls

Marginal utility decreases:

When a consumer buys more units of a commodity, the marginal utility of such commodity continue to decline. The consumer can buy more units of commodity when its price falls and vice versa. The demand curve falls because demand is more at lower price.

Price effect:

When there is increase in price of commodity, the consumers reduce the consumption of such commodity. The result is that there is decrease in demand for that commodity. The consumers consume more or less of a commodity due to price effect. The demand curve slopes downward.

Income effect

Real income of consumer rises due to fall in prices. The consumer can buy more quantity of same commodity. When there is increase in price, real income of consumer falls. This is income effect that the consumer can spend increased income on other commodities. The demand curve slopes downward due to positive income effect.

Same price of substitutes

When the price of a commodity falls, the prices of substitutes remaining the same, consumer can buy more of the commodity and vice versa. The demand curve slopes downward due to substitution effect.

Demand of poor people

The income of people is not the same, The rich people have money to buy same commodity at high prices. Large majority of people are poor, They buy more when price fall and vice versa. The demand curve slopes due to poor people.

Different uses of goods

There are different uses of many goods. When prices of such goods increase these goods are put into uses that are more important and their demand falls. The demand curve slopes downward due to such goods.

Exceptions to the law

Inferior goods

The law of demand does not apply in case of inferior goods. When price of inferior commodity decreases and its demand also decrease and amount so saved is spent on superior commodity. The wheat and rice are superior food grains while maize is inferior food grain.

Demonstration effect

The law of demand does not apply in case of diamond and jewelry. There is more demand when prices are high. There is less demand due to low prices. The rich people like to demonstrate such items that only they have such commodities.

Ignorance of consumers

The consumer usually judge the quality of a commodity from its price. A low priced commodity is considered as inferior and less quantity is purchased. A high priced commodity is treated as superior and more quantity is purchased. The law of demand does not apply in this case.

Less supply

The law of demand does not work when there is less supply of commodity. The people buy more for stock purpose even at high price. They think that commodity will become short.

Depression

The law of demand does not work during period of depression. The prices of commodities are low but there is increase in demand. it is due to low purchasing power of people.

Speculation

The law does not apply in case of speculation. The speculators start buying share just to raise the price. Then they start selling large quantity of shares to avoid losses.

Out of fashion

The law of demand is not applicable in case of goods out of fashion. The decrease in prices cannot raise the demand of such goods. The quantity purchased is less even though there is falls in prices.

Importance of the law

Price determination

A monopolist can determine price of a commodity on the basis of such law. He can know the effect on demand due to increase or decrease in price. The demand schedule can help him to determine the most suitable price level.

Tax on commodities

The law of demand is important for tax authorities. The effect of tax on different commodities is checked. The commodity must be taxed if its demand is relatively inelastic. A commodity cannot be taxed if its sales fall to great extent.

Agricultural prices

The law of demand is useful to determine agricultural prices. When there are good crops, the prices come down due to change in demand. In case of bad crops, the prices go up if demand remains the same. The poverty of farmers can be determined.

Planning

Individual demand schedule is used in planning for individual goods and industries. There is need to know the effect of change in price on the demand of commodity at national and world level. The nature of demand schedule helps to know such effect.

Elasticity of Demand is defined as the Responsiveness of the Quantity Demanded of a Good to Change on one of the Variables on which Demand Depends.

Elasticity of Demand is defined as the Responsiveness of the Quantity Demanded of a Good to Change on one of the Variables on which Demand Depends.

$$ed = \frac{\% \text{ change in Quantity Demanded}}{\% \text{ change in one of the variable on which demand depends}}$$

Types of Elasticity of Demand

PriceElasticity, IncomeElasticity , CrossElasticity

Price elasticity of demand indicates a measure of the extent to which the quantity demanded of a good changes when the price of the good changes. To determine the price elasticity of demand, we compare the percentage change in the quantity demanded with the percentage change in price.

$$ed = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}}$$
$$ed = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}$$

Where, ED= Price Elasticity

ΔQ =Very Small Change in quantity demanded

ΔP = Very small change in price change

P=Price

Q=Quantity Demanded

Note:Ep is (-)ve due to Inverse Relationship Between Price & Quantity Demanded.

Degrees of Price Elasticity of Demand

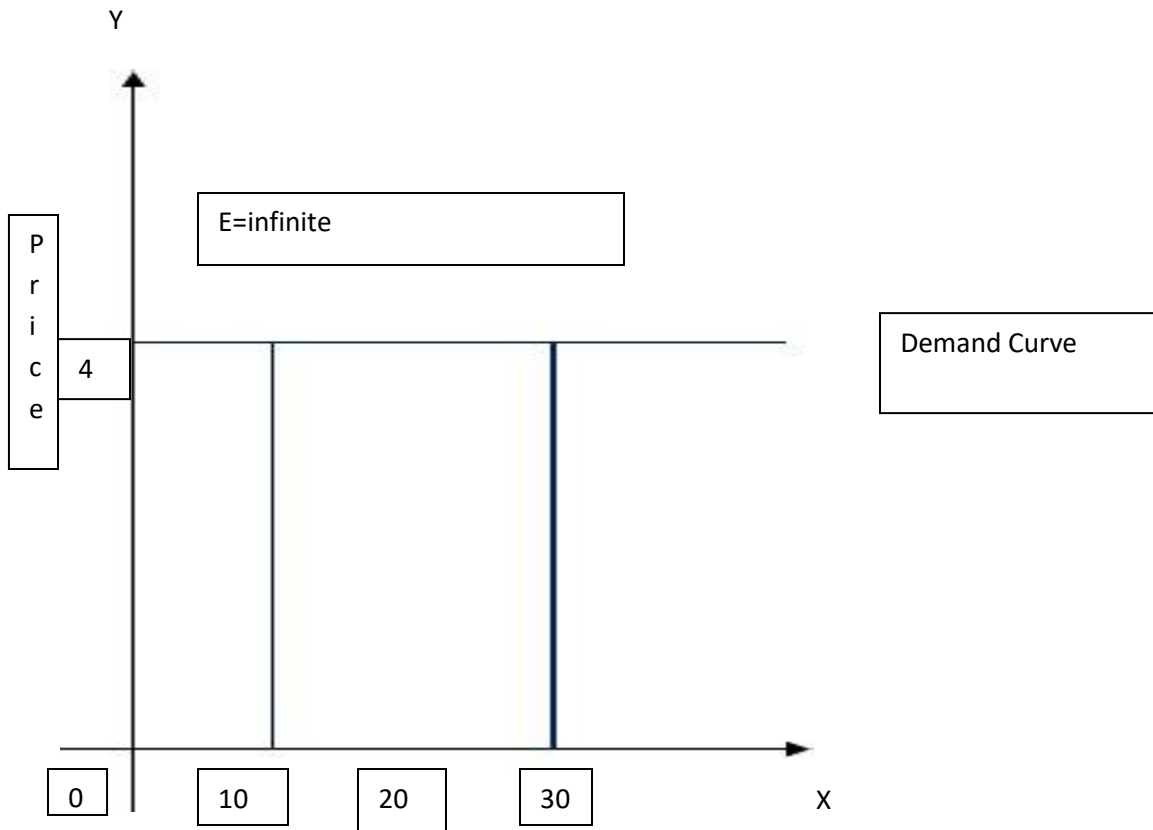
- 1.Perfectly Elastic Demand : $ep=\infty$
- 2.Perfectly In Elastic Demand: $ep=0$
- 3.Unit Elastic Demand: $ep=1$
- 4.More than Unit Elastic: $ep>1$
- 5.Less than Unit Elastic: $ep<1$

Perfectly Elastic Demand

i) A Perfectly Elastic Demand is one in which a Little Change in Price will Cause an Infinite Change in Demand.

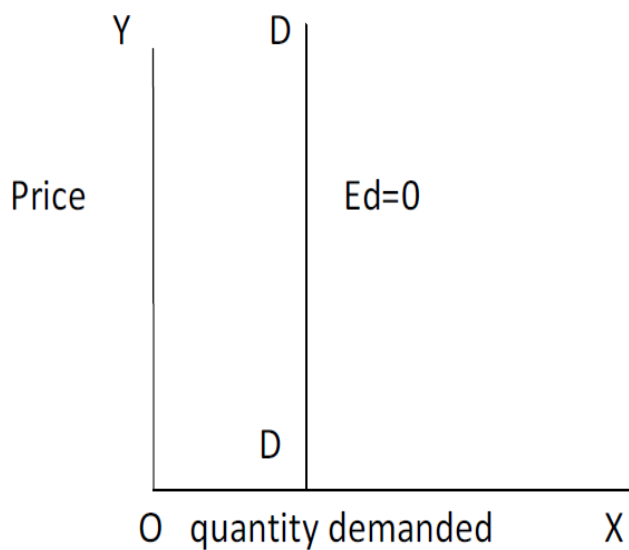
ii) A very little Rise in Price causes the Demand to Fall to Zero and a very little Fall in Price causes Demand to extend to infinity.

iii) Under Perfect Competition, Demand Curve of a Firm is Perfectly Elastic.



Perfectly in elastic demand

It is the situation in which change in price of a commodity leaves the demand unaffected. The price of the commodity may increase or decrease, but the quantity demanded remains the same. The demand here is insensitive. Elasticity of demand is zero. The demand curve is vertical to X axis. The case of perfectly inelastic demand is also a theoretical concept.



Unitary Elastic Demand

When a given proportionate change in price results in the same proportionate change in the quantity demanded of commodity, the demand is said to be unitary elastic. A given proportionate fall in price is followed by the same proportionate increase in demand and vice versa. Elasticity of demand is one.

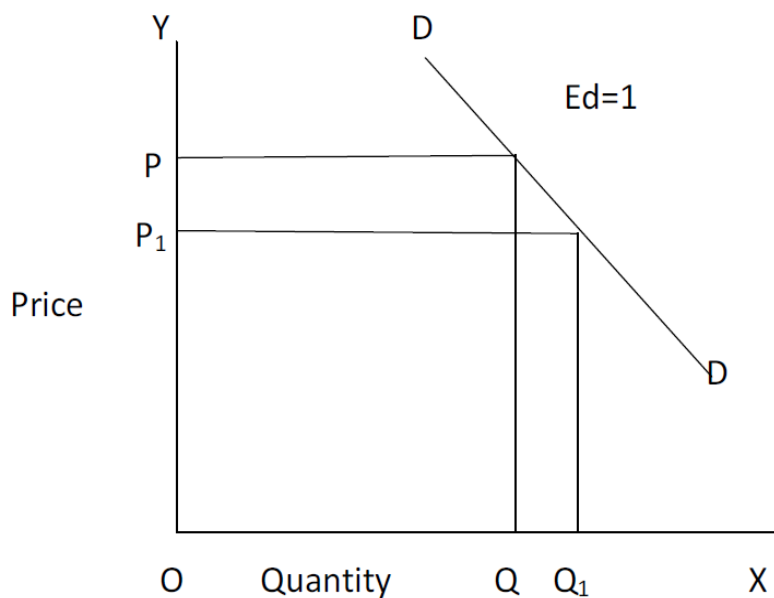


Fig. Unitary elastic demand

Relatively Elastic Demand

It means that lesser proportionate change in the price of a commodity is followed by a larger proportionate change in the quantity demanded. A small proportionate fall in the price is accompanied by a larger proportionate increase in demand and Vice versa. Elasticity of demand is greater than unity.

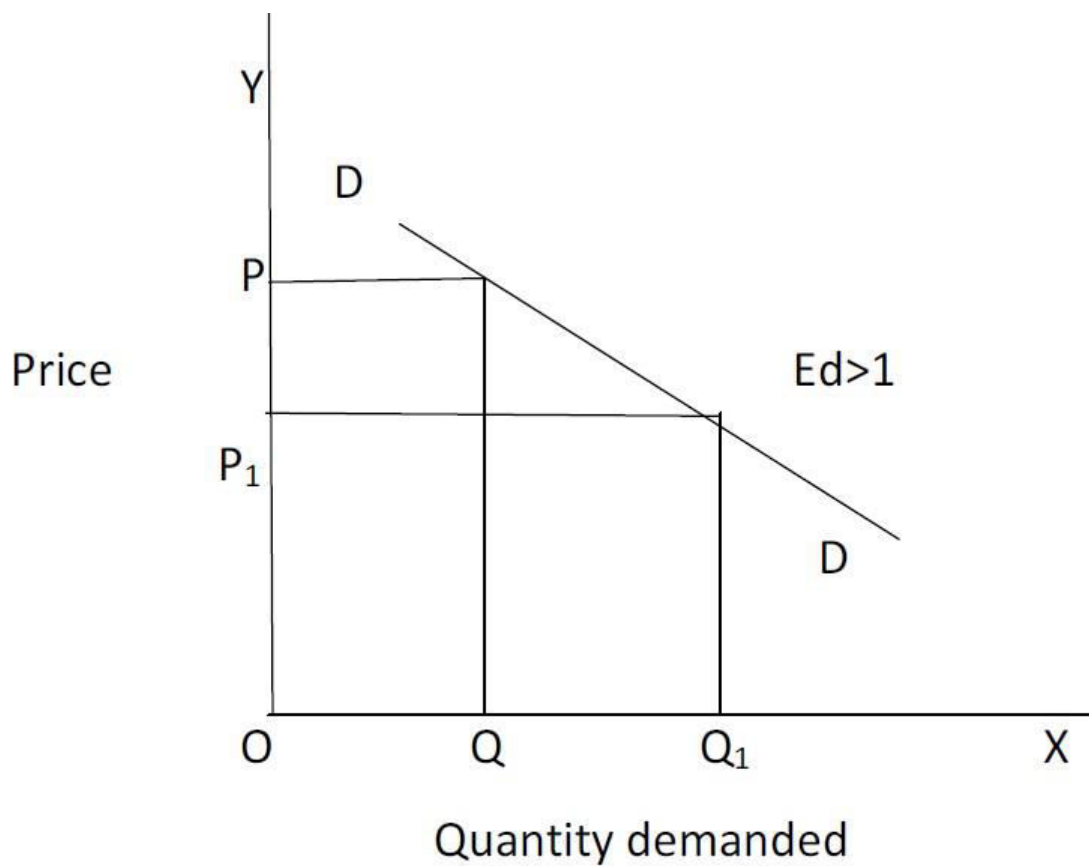


Fig. Relatively elastic demand.

Relatively Inelastic Demand

It means that large proportionate change in the price of a commodity is followed by a smaller proportionate change in the quantity demanded. This is to say that a large proportionate fall in the price is followed by a smaller proportionate increase in the quantity demanded and vice versa. Elasticity of demand is less than unity.

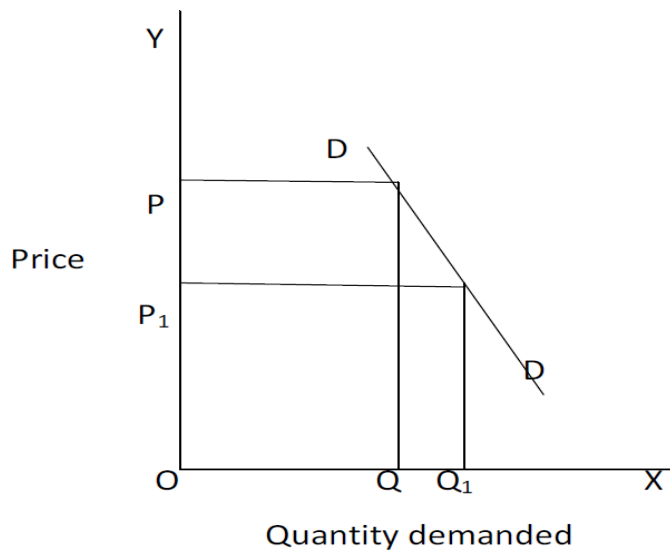


Fig. Relatively inelastic

Practical Importance of Elasticity of Demand

The importance of the elasticity of demand can be visualized from the points as given below:

1. **Determination of Wages:** The elasticity of demand for labour plays an important role in the determination of wages. If the demand for labour is elastic, and pressure put up by labour in the form of strikes to get higher wages would be unsuccessful. On the other hand, if the demand for labour happens to be inelastic, even a threat of strike would help the workers to get the approval of their employers in raising their wages.
2. **The Elasticity of Promotional Activity:** The producers are well convinced that the advertisement makes the demand for a product less elastic. Hence, they would not mind spending substantial amount of money on advertising. The price increase therefore will not reduce the sales.
3. **Determination of Monopoly Price:** The monopolist considers the nature of demand for his product before fixing the prices. If the demand is elastic, a lower price would help him to realize more profits. On the other hand, if the demand is inelastic, he is in a position to fix a higher price. The monopolist while

practicing price discrimination also takes into account the elasticity of demand. He fixes a lower price for the product in the market in which the demand for the product is elastic and he charges a higher price for the same product in the market in which the

demand is less elastic or inelastic.

4. Undertaking the Public Utilities: The Government itself runs some enterprises or industries in the interest of people, otherwise they are subjected to exploitation by the private people. In the case of electricity, the demand is inelastic and it is very essential item in the lives of humans. In the interest of the public, electricity boards are run by the Government to supply power at reasonable rates.

5. Taxation: The nature of demand for a good helps the Government, looking into the possibilities of raising the revenue.

If the demand is less elastic for a good, by levying more indirect taxes on that good, the Government would get larger revenue.

6. International Trade: The country gains in the international trade by exporting those goods, for which the demand in the export market is less elastic and by importing those goods for which the demand is elastic. The less elastic nature of demand in the export market helps the nation to charge a higher price and pay less price for those goods which are imported.

7. Paradox of Poverty in Plenty: A bumper crop instead of bringing prosperity to the farmers, ruin their economic position. The inelastic demand for the products in the years of bumper harvest brings down the prices, consequent to which the farmers fail to realize prices of normal years.

Factors Determining Elasticity of Demand

1. Type of Goods: The demand is inelastic or less elastic for necessities. It is obvious because the price changes do not influence the consumption of these goods. On the other hand, in respect of comforts and luxuries, the demand is elastic or relatively elastic.

2. Goods Having several Uses: The demand for those goods which can be put to several uses is elastic. For example, electricity when it is cheap, it can be put to uses like cooking, apart from its regular use in production of industrial goods, transport, lighting, etc. In case it is dearer, its use is limited and demand automatically declines.

3. Existence of Substitutes: The demand for those commodities which have good substitutes is elastic. The price variations of such goods would have a bearing on the quantities demanded. If the price of groundnut oil increases, with the prices of other edible oils, say sunflower remaining constant, the consumers tend to shift to sunflower oil. Conversely a decrease in price of groundnut oil makes consumers to switch over back to groundnut oil.

4. Possibilities of Postponement: For such goods the purchase of which can be postponed by the consumers, the demand is elastic. The consumers prefer to buy the same when their prices are cheap. Televisions, cars, ornaments, etc., are the relevant examples here.

5. Range of Prices: When the price range of goods is very high or very low the demand is inelastic. The demand for goods like salt, matches, etc., with low price range, the demand is inelastic.

Analogously for goods like diamonds, luxurious cars, etc., the demand is inelastic as consumers cannot afford to the changes in the price of such a high range.

Stock and supply

Supply means the quantities that a seller is willing and able to sell at different prices. It is obvious that if the price goes up, he will offer more for sale. But if the price goes down, he will be reluctant to sell and will offer to sell less. Supply thus varies with price. Just as we cannot speak of demand without reference to price and time, similarly we cannot speak of supply without reference to price and time. Supply is always at a price. The supply of any good may then be defined “as a schedule of respective quantities of the good which people are ready to offer for sale at all possible prices”.

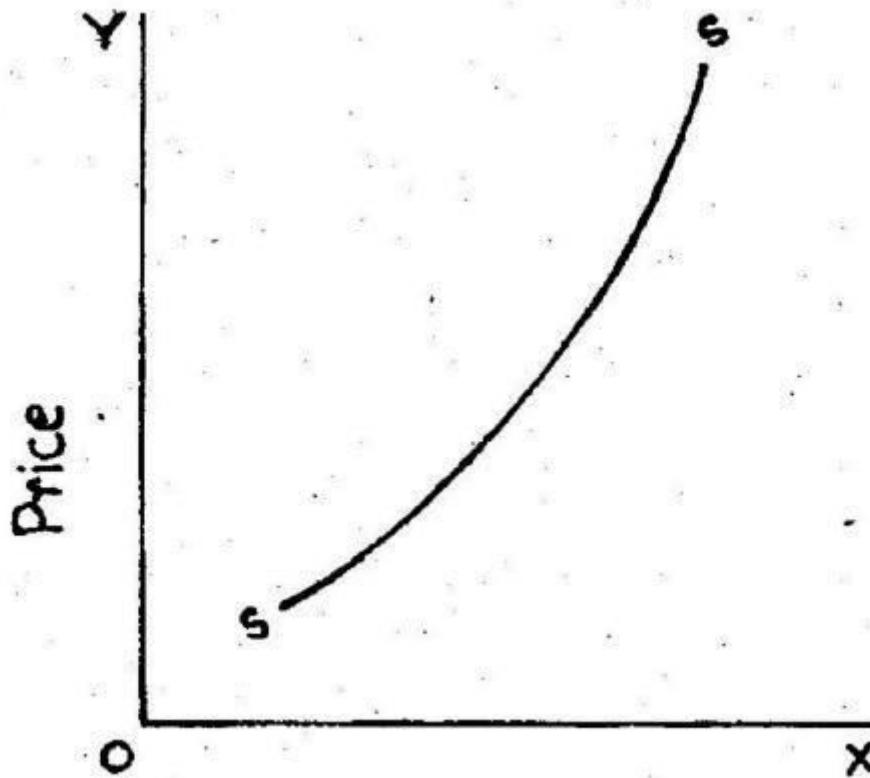
The term supply and stock are often confused. A clear understanding of the difference between the two is essential. Stock is at the back of supply. It constitutes potential supply. Supply means the quantity actually offered for sale at a certain price, but stock means the total quantity which can be offered for sale if the conditions are favourable. At any time the godowns in the mandi may be full of wheat. This is the stock. If the price is low, very little wheat will come out of the godowns. The quantity that actually comes out is the supply. The stock will change into supply and vice versa according as the market price rises or falls. In case of perishable articles like fresh milk and vegetables, there is no difference between stock and supply. The entire stock is supply and has to be sold off, for unless it is disposed of quickly, it will perish.

Supply schedule: Individual Supply Schedule

Supply schedule depicts the list of quantities—price relationships of a commodity in a market at a specific point of time by an individual seller. In other words, it reveals the mind of sellers in offering various quantities of a given commodity against corresponding prices. An example of supply schedule is presented in the following Table .

Price (Rs./Q)	Quantity supplied (Q)
300	30
325	40
350	50
375	60
400	70
425	80

It reveals that at price of Rs.300 the quantity supplied by a seller is 30 Q at Rs.325, 40 Q and son on. As the price per unit of the commodity rises, the quantity supplied is also increasing. As price increases, sellers are committed to increase their sales. When a supply schedule is plotted on a graph it becomes a supply curve. The supply curve will have a positive slope i.e., it slopes upwards from left to right.



Market supply

It is the sum of the quantity of commodity that is brought into a market for sale by the sellers in a given market at a specific point of time. Assume that there are three sellers in a market viz., A, B and C with individual supply schedules as shown in below.

TABLE 5.2 Market Supply Schedule.

Price (in Rs./Q)	Individual seller's supply/week (Q)			Market supply (Q) = (A + B + C)
	A	B	C	
300	30	35	0	65
325	40	50	0	90
350	50	65	50	165
375	60	80	70	210
400	70	95	90	255
425	80	110	110	300

The price quantity relationship of the three sellers reveals that at Rs.300 per quintal, seller 'A' is prepared to sell 30 Q, while seller 'B' 35 Q and seller 'C' is not prepared to sell at all at this particular price. The seller 'C' is not prepared to sell the commodity at any price less than Rs.350/Q. Market supply is the sum total of output that is sold by the three sellers as presented in the last column of the table. Thus the market supply is 65, 90, 165 Q and so on. It is the lateral or horizontal summation of the supply of individual sellers at each unit price. The market supply curve is drawn based on the first and last columns of the table. The graphical presentation of market supply is found in Fig. below.

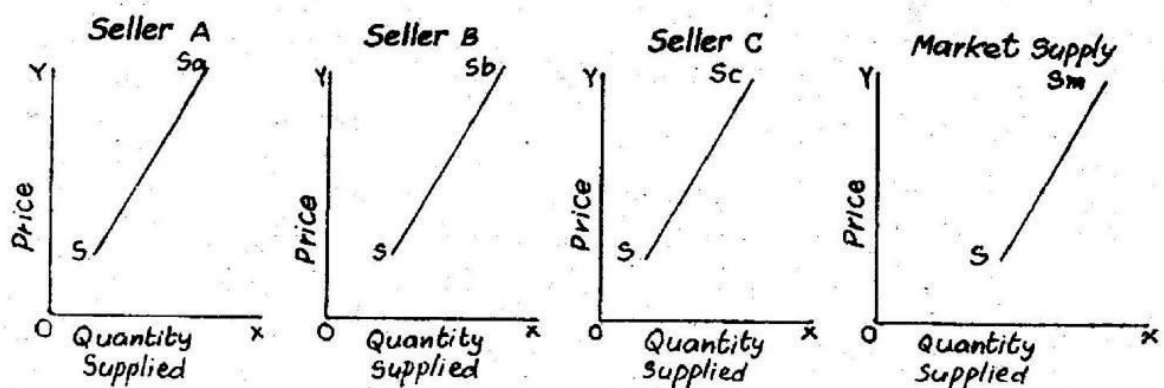


Fig. 5.2 Market supply curve.

LAW OF SUPPLY

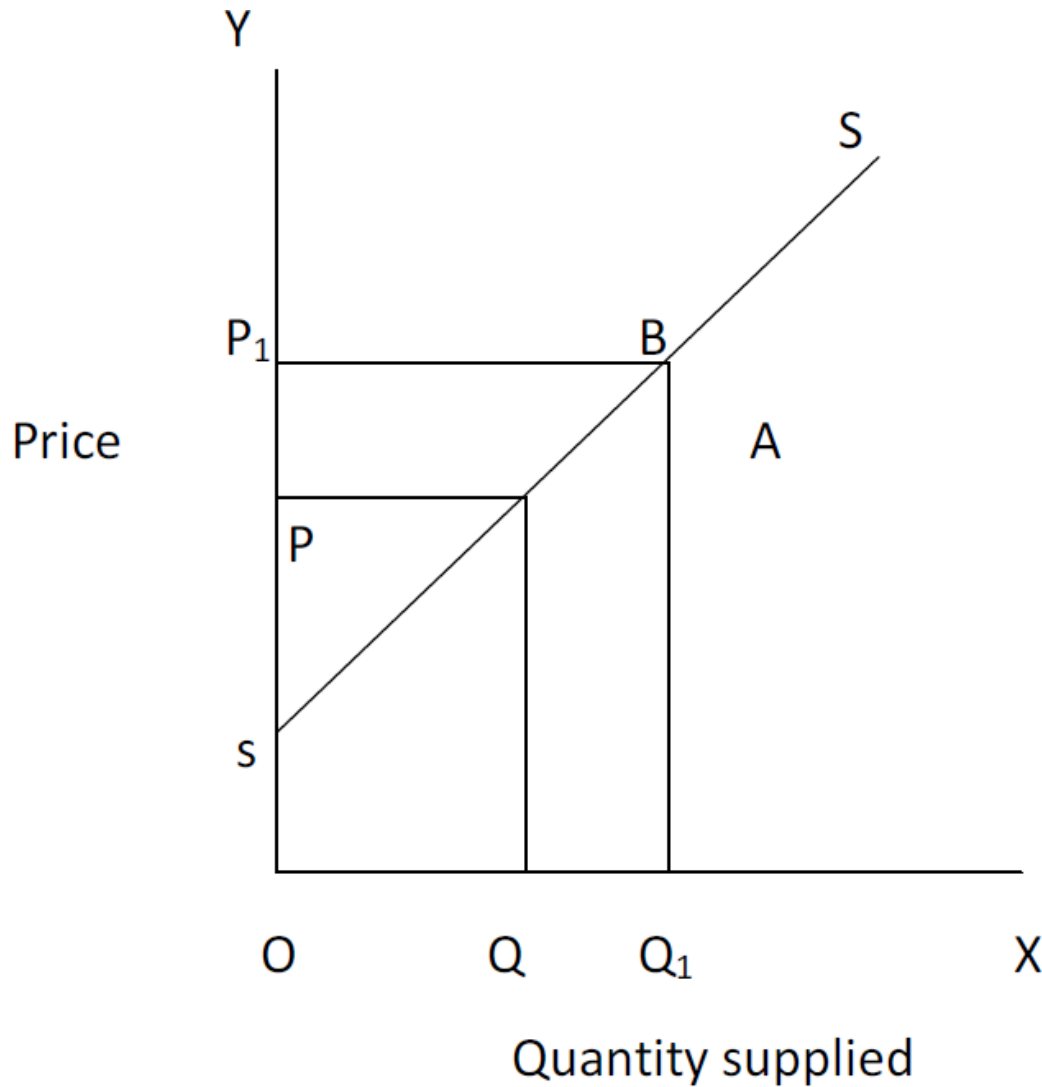
The law of supply indicates the functional relationship between the quantity supplied of a commodity and its unit price. The law signifies the positive relationship i.e., as the price of a commodity raises its supply extends and as the price fall its supply contracts, with other things remaining the same. Producers normally tend to increase the supplies in the wake of rising prices and reduce the same when the prices are on the lower side. Supply varies directly with the price, *ceteris paribus*.

Extension and Contraction of Supply (Change in Quantity Supplied)

Extension and contraction of supply refer to the movement of product supply on the same supply curve. Extension of supply means offering more quantity for sale at a higher price, while contraction means offering less quantity at a lower price. As is seen from table that the quantity of commodity supplied by 'A' at Rs. 300 is 30 Q and it is 40 Q, when the price rose to Rs. 325. Here the quantity supplied has

increased from 30 to 40 Q. It is the case of extension of supply, conversely if the price falls from Rs. 325 to Rs. 300, the quantity supplied too falls from 40 to 30 Q. It is the contraction of supply.

When it is depicted graphically, it shows that the upward movement from A to B is extension of supply and movement from B to A is downward.



Increase and Decrease in Supply (Shift in Supply)

Increase in supply implies more supply at the same price and decrease in supply means less supply at the same price. The change in supply (increase and decrease in supply) results in a shift of the supply curve. An increase in supply results in the shift of the supply curve towards right side of the initial supply, curve SS as shown in Fig. The new supply curve is S₁S₁. On the other hand, a decrease in supply

causes a shift of the supply curve towards the left side of the initial supply curve. The new supply curve thus formed is S_2S_2 . Originally OQ quantity is supplied at OP price. But due to changes in supply conditions at the same price OP , OQ_2 quantity of commodity is supplied indicating increase in supply. On the other hand, again influenced by changing supply conditions at the same price, OQ_1 is supplied. This is decrease in supply.

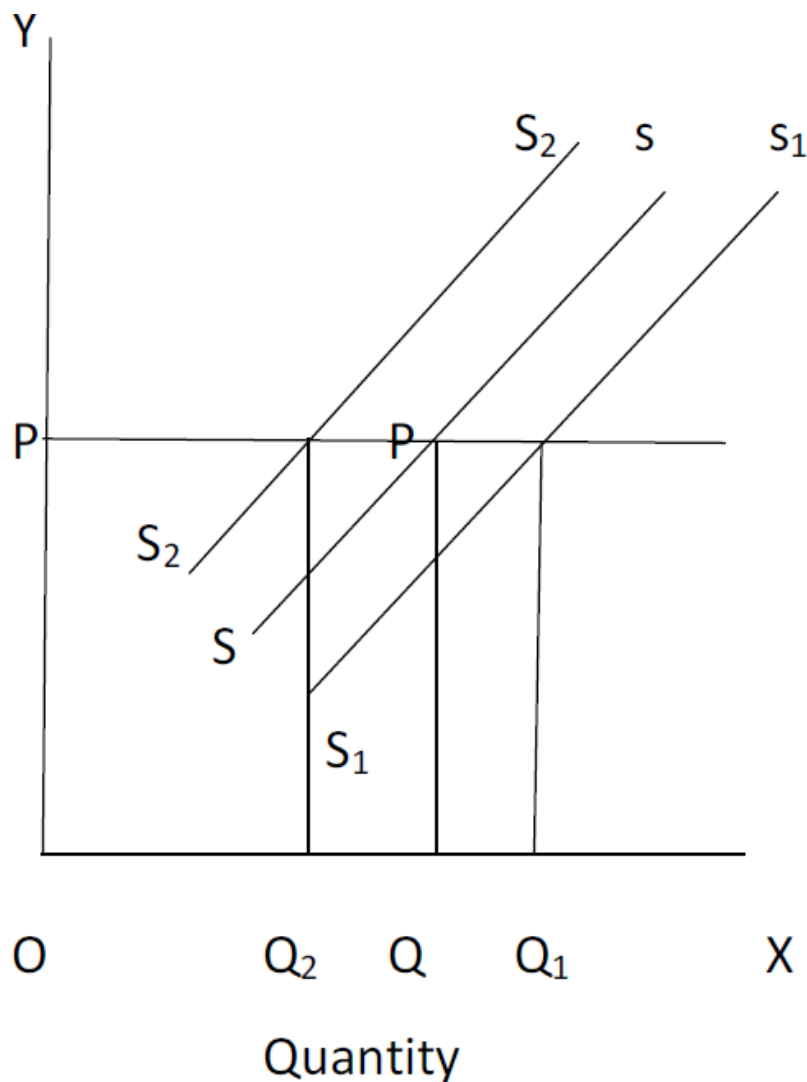


Fig. Increase and decrease in supply.

Factors Causing Changes in Supply (Shift Factors)

The factors that are responsible for changes in supply are discussed below:

1. **Changes in Technology:** Technological innovations viz., new varieties of crops and their consequent increased yields per unit area, help to increase the supply of the commodity.
2. **Reduction in Resource Prices:** When the prices of input factors become cheaper than before, it encourages producers to use more of them in producing more output. Supply curve shifts towards the right side.
3. **Reduction in the Relative Prices of Other Products:** A reduction in relative prices of other related products come the producers to increase the production of that particular commodity whose prices are relatively higher.
4. **Market Infrastructure:** When good communication and transport network increase, the supply of the commodity also increases.
5. **Number of Producers:** Changes that are found regarding number of producers producing a given commodity influence the supplies. More the number of producers, greater the supply and vice versa.
6. **Producers, Expectations about Future Prices:** Price expectations influence the sales strategies of the producers positively.

ELASTICITY OF SUPPLY

Elasticity of supply of a commodity is the responsiveness, or sensitiveness of supply to the changes in price. Supply is said to be elastic, if a small change in price causes considerable change in the quantity supplied. The supply is inelastic when a given change in price leads to little or less change or no change in the quantity supplied. In short, elasticity measures the adjustability of supply of a commodity to price. Elasticity of supply (Price elasticity of supply) is expressed as the ratio of percentage change in the quantity of good supplied and percentage change in price of the good *ceteris paribus*.

$$\text{Elasticity of supply (Es)} = \frac{\text{Percentage change in quantity of good supplied}}{\text{Percentage change in price of good supplied}}$$

Algebraically elasticity of supply is expressed as

$$\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100} = \frac{\Delta Q}{Q} \cdot \frac{P}{\Delta P} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

Degrees of Elasticity of Supply

There are five degrees of elasticity of supply. They are as follows:

Perfectly Elastic Supply

When the supply of commodity increases to infinite quantity or unlimited quantity, even though there is invisible rise or minute rise in the price, the elasticity of supply is said to be infinity ($E_s = \alpha$).

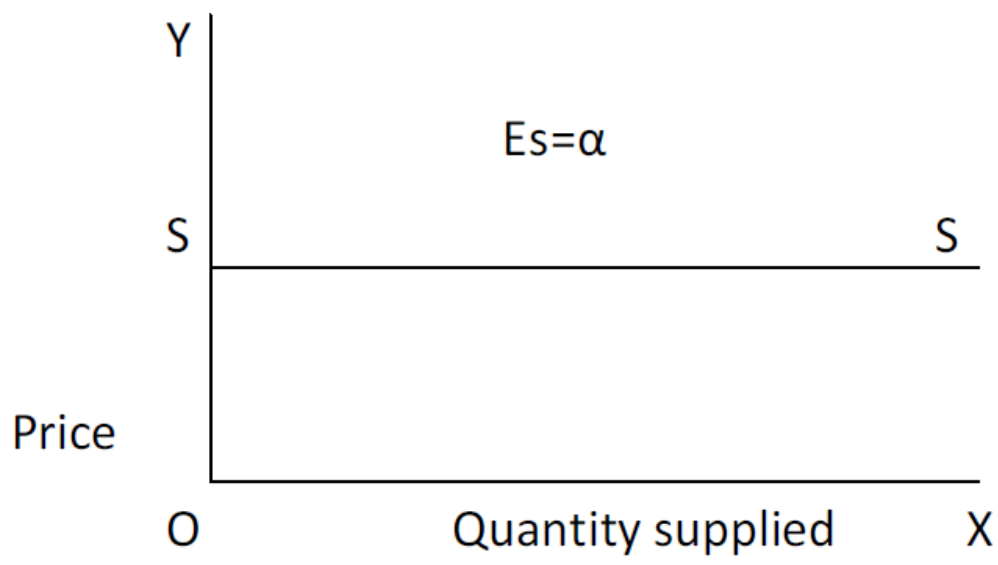


Fig. Perfectly elastic supply

Perfectly Inelastic Supply

It means that the quantity supplied is not responsive to change in prices. Elasticity of supply in this case is zero ($E_s = 0$).

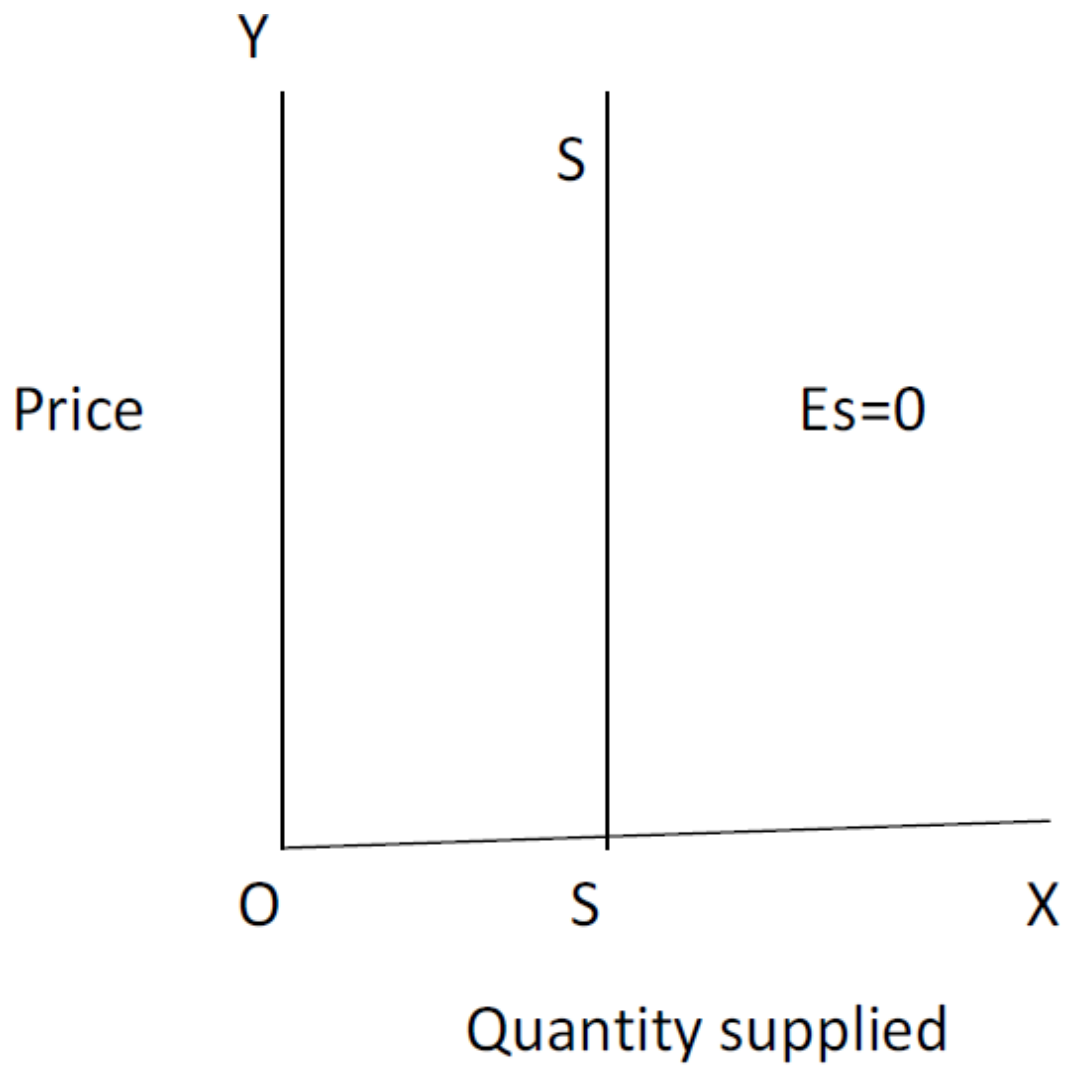


Fig. **Perfectly inelastic**

Relatively Elastic Supply

Supply is referred as relatively elastic, when the percentage change in quantity supplied is more than the corresponding percentage change in price. It is also called elastic supply. Elasticity of supply is more than one ($E_s > 1$).

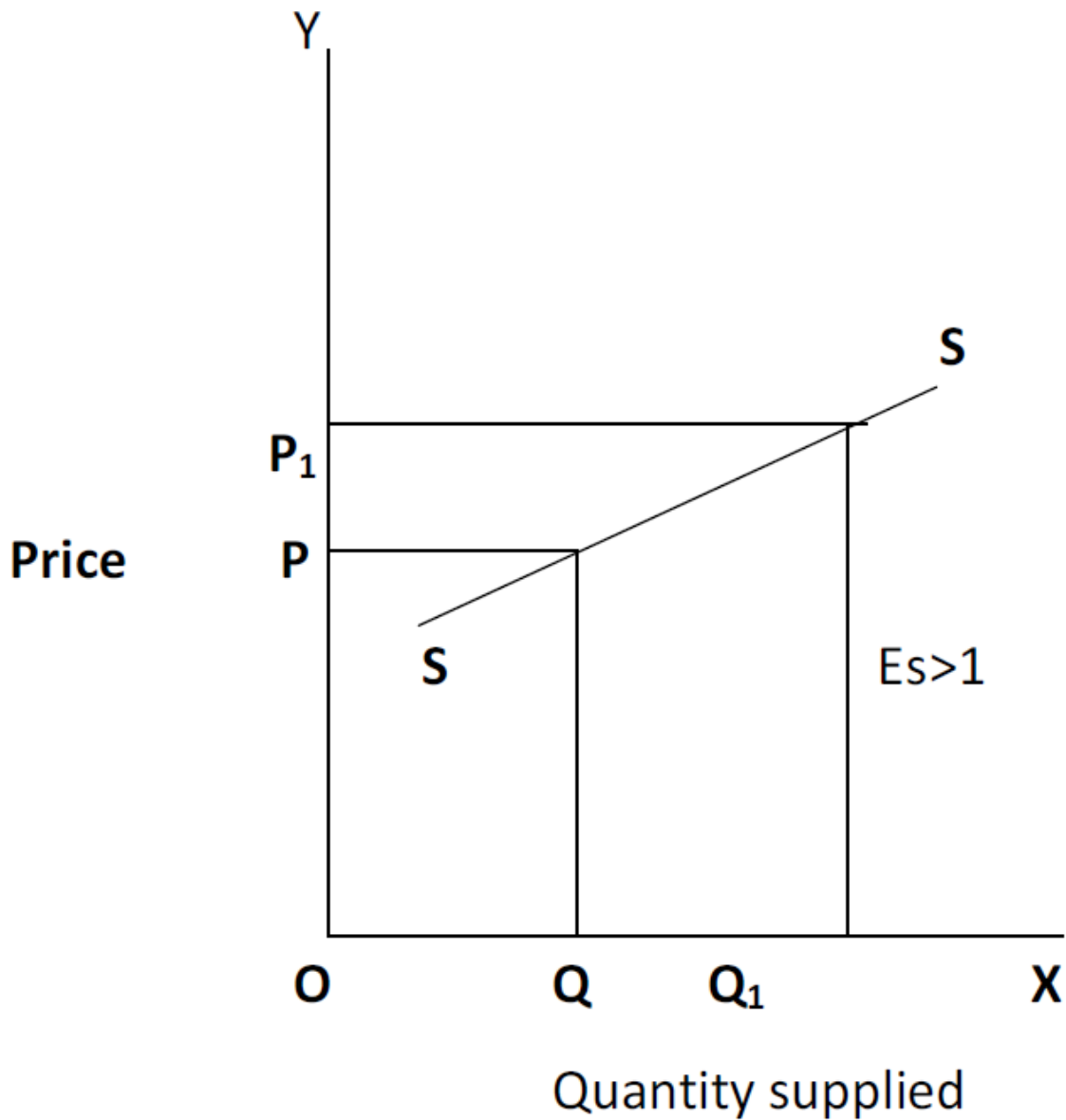


Fig. Relatively elastic supply.

Relatively Inelastic Supply

Supply is said to be relatively inelastic, when the percentage change in quantity supplied is less than the corresponding percentage change in price. In this case the elasticity of supply is less than one ($E_s < 1$).

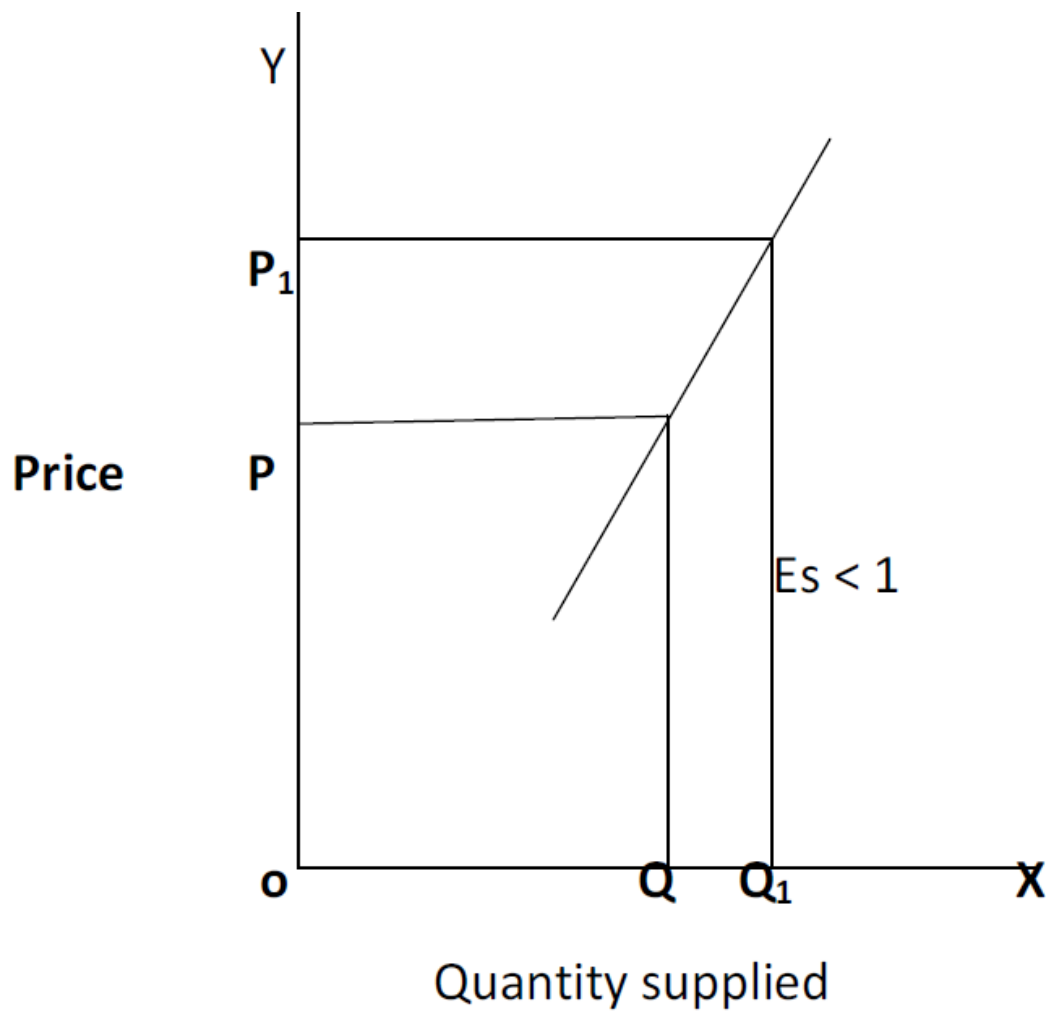


Fig. **Relatively inelastic.**

Unitary Elastic Supply

When percentage change in quantity supplied equals the percentage change in price, it is called unitary elastic supply. Here the elasticity of supply is equal to one ($E_s = 1$).

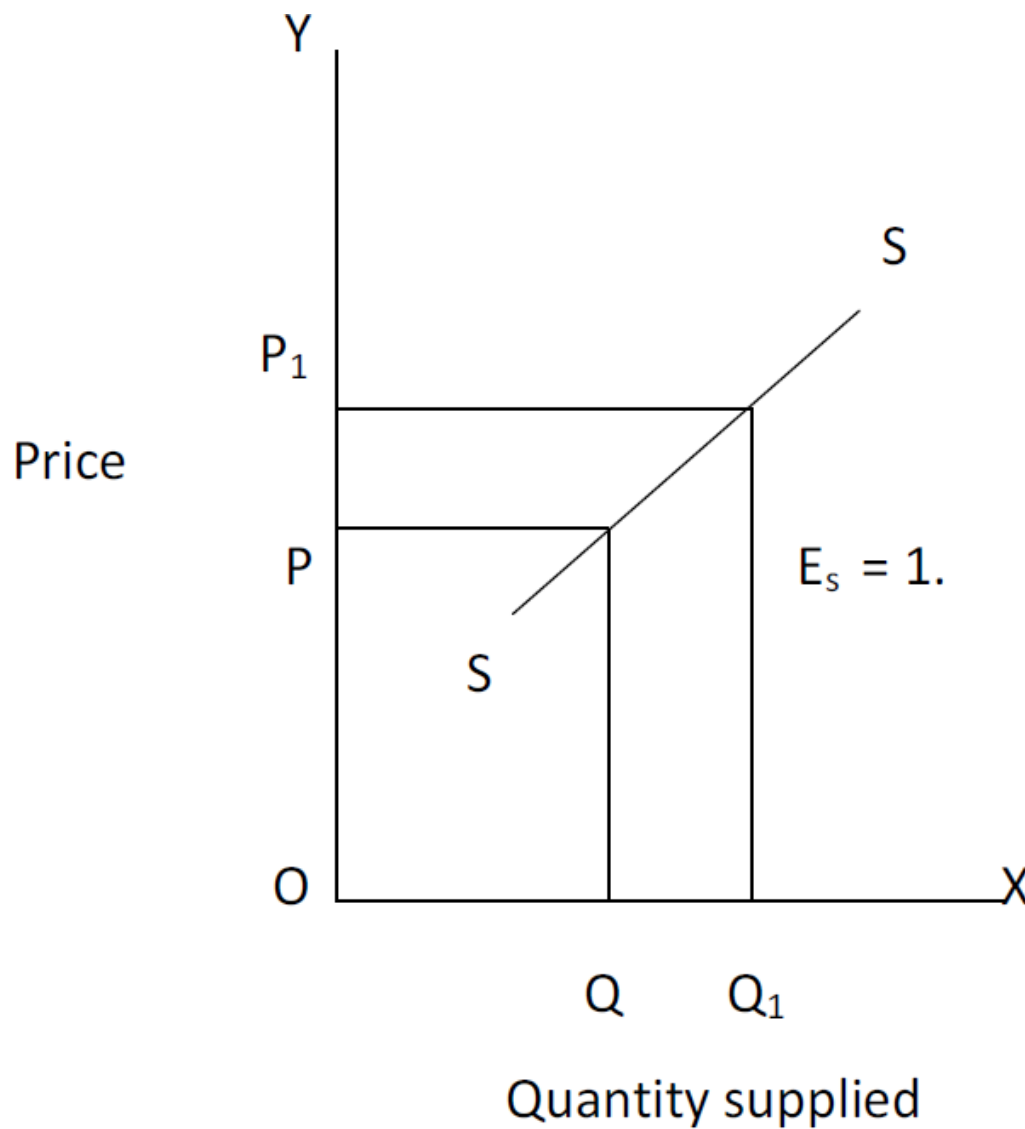


Fig. **Unitary elastic.**

Factors Influencing Elasticity of Supply

1. Availability of Inputs of Production: If the needed inputs are available as per the requirement, the supply is elastic. If any one of the factors is not available which is absolutely necessary, supply would be inelastic.
2. Length of Time Period: It is the period of time required to adjust the supplies to the changes in prices. The biological characteristics of the product dictate the changes of responsiveness.
3. Diversification of Production Activity: When the producer is engaged in production of a number of products and facilities exist for shifting of production from one product to the other, in such a case for each product the supply is elastic.
4. Availability of Alternative Markets: Suppose there exists several markets for the producer to sell the goods, a fall in price in one market would prompt him to shift his goods to other markets and a rise in price in one market induces him to shift his goods to that market. In such a case the supply is elastic.

MODULE-3

TOPIC: COST ANALYSIS

COST : MEANING AND ITS ELEMENTS

The term 'cost' means the amount of expenses *actual or notional+ incurred on or attributable to specified thing or activity. As per Institute of cost and work accounts (ICWA) India, Cost is 'measurement in monetary terms of the amount of resources used for the purpose of production of goods or rendering services.

The elements that constitute the cost of manufacture are known as the elements of cost. Such element of cost is divided into three categories. In a manufacturing concern, raw materials are converted into a finished product with the help of labour and other service units. They are Material, Labour and Expenses.

Again, these elements of cost are divided into two categories such as direct material and Indirect Material, Direct Labour and Indirect Labour, Direct Expenses and Indirect Expenses. All direct material, direct labour and direct expenses are added to get prime cost. Likewise all indirect material, indirect labour and indirect expenses are added to get overhead. Again, overheads divided into four categories. They are factory overhead, administration overhead, selling overhead and distribution overhead.

1. **Direct Material**: It refers to material out of which a product is to be produced or manufactured. The cost of direct material is varying according to the level of output. For example: Milk is the direct material of butter.
2. **Indirect Material**: It refers to material required to produce a product but not directly and does not form a part of a finished product. For example: Nails are used in furniture. The cost of indirect material is not varying in direct proportion of product.
3. **Direct Labour**: It refers to the amount paid to the workers who are directly engaged in the production of goods. It varies directly with the output.
4. **Indirect Labour**: It refers to the amount paid to the workers who are indirectly engaged in the production of goods. It does not vary directly with the output.
5. **Direct Expenses**: It refers to the expenses that are specifically incurred by the company to produce a product. A product cannot be produced without incurring such expenses. It varies directly with the level of output.
6. **Indirect Expenses**: It refers to the expenses that are incurred by the organization to produce a product. But, these expenses cannot be easily found out accurately. For example: Power used for production.
7. **Overhead**: It is the combination of all indirect materials, indirect labour and indirect expenses.
8. **Factory Overhead**: It is otherwise called Production Overhead or Works Overhead. It refers to the expenses that are incurred in the production place or within factory premises. For example: Indirect material, rent, rates and taxes of factory, canteen expenses etc.

9. **Administration Overhead:** It is otherwise called Office Overhead. It refers to the expenses that are incurred in connection with the general administration of the company. For example: Salary of administrative staff, postage, telegram and telephone, stationery etc.

10. **Selling Overhead:** It refers to all expenses incurred in connection with sales. For example: Salary of sales department staff, travelers' commission, advertisement etc.

11. **Distribution Overhead:** It refers to all expenses incurred in connection with the delivery or distribution of goods and services from the producer to the consumer. For example: Delivery van expenses. loading and unloading, customs duty, salary of deliverymen etc.

ABSORPTION COSTING

Absorption Costing technique is also termed as Traditional or Full Cost Method. According to this method, the cost of a product is determined after considering both Fixed and Variable Costs. The Variable Costs, such as those of direct materials, direct labour, etc., are directly charged to the products while the fixed costs are apportioned on a suitable basis over different products manufactured during a period. Thus, in case of Absorption Costing all costs are identified with the manufactured products. This will be clear with the help of the following illustration.

Illustration 8.1. A company is manufacturing three products A, B and C. The costs of their manufacture are as follows:

	A	B	C
Direct Material per unit	Rs 3	Rs 4	Rs 5
Direct Labour	2	3	4
Selling Price	10	15	20
Output	1,000 units	1,000 units	1,000 units

The total overheads are Rs 6,000 out of which Rs. 3,000 are fixed and rest are variable. It is decided to apportion these costs over different products in the ratio of output. You are required to prepare a statement showing cost of each product and profit according to Absorption Costing.

The cost of each product would be ascertained according to Absorption Costing as follows:

STATEMENT SHOWING COST AND PROFIT
(According to Absorption Costing Technique)

	<i>A</i>		<i>B</i>		<i>C</i>	
	<i>Per Unit</i> Rs	<i>Total</i> Rs	<i>Per Unit</i> Rs	<i>Total</i> Rs	<i>Per Unit</i> Rs	<i>Total</i> Rs
Direct Materials	3	3,000	4	4,000	5	5,000
Direct Labour	2	2,000	3	3,000	4	4,000
Overheads:						
Fixed	1	1,000	1	1,000	1	1,000
Variable	1	1,000	1	1,000	1	1,000
Total Cost	7	7,000	9	9,000	11	11,000
Profit	3	3,000	6	6,000	9	9,000
Selling Price	10	10,000	15	15,000	20	20,000
Total Profit	Rs 3,000 + Rs 6,000 + Rs 9,000 = Rs 18,000					

Under Absorption Costing each unit of product has to bear its total share of cost. It may be true that some products may not be able to bear their full share of cost but may be able to contribute to the overall profitability of the firm. For example, a product can be sold at a price which is sufficient to recover more than its Variable Cost required to produce it, but may not be sufficient to recover its full share of Fixed Cost. On the other hand, there may be products which contribute much more than their share of variable and fixed costs. Under absorption costing, the management is interested in knowing whether or not a product can produce an adequate return on investment after absorbing its share of the overall cost whether fixed or variable or direct or indirect. This is because in the long run, all costs must be more than recovered to assure a satisfactory return to the investors on their investment.

However, charging of fixed costs creates problems.

Marginal Costing

Marginal costing is a technique where only the variable costs are considered while computing the cost of a product. The fixed costs are met against the total fund arising out of the excess of selling price over total variable cost. This fund is known as 'contribution' in marginal costing. According to the Chartered Institute of Management Accountants, London, marginal costing is a technique where 'only the variable costs are charged to cost units, the fixed costs attributable being written off in full against the contribution for that period'.

Marginal Cost

The technique of Marginal Costing is concerned with 'Marginal Cost'. It is, therefore, very necessary that the term 'Marginal Cost' is correctly understood. According to the Chartered Institute of Management Accountants, London, the term 'Marginal Cost' means 'the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit'. On analysing this definition we can conclude that the term 'Marginal Cost' refers to increase or decrease in

the amount of cost on account of increase or decrease of production by a single unit. The unit may be a single article or a batch of similar articles.

Marginal Revenue

Marginal revenue is the increase in revenue that results from the sale of one additional unit of output. While marginal revenue can remain constant over a certain level of output, it follows the law of diminishing returns and will eventually slow down, as the output level increases. Perfectly competitive firms continue producing output until marginal revenue equals marginal cost.

Sunk Cost:

A sunk cost is a cost that an entity has incurred, and which it can no longer recover by any means. Sunk costs should not be considered when making the decision to continue investing in an ongoing project, since these costs cannot be recovered.

COST VOLUME PROFIT ANALYSIS

Cost Volume Profit (CVP) analysis is an important tool of profit planning. It provides information about the following matters:

1. The behaviour of cost in relation to volume
2. Volume of production or sales, where the business will break-even
3. Sensitivity of profits due to variation in output
4. Amount of profit for a projected sales volume
5. Quantity of production and sales for a target profit level

Cost-volume-profit analysis may therefore be defined as a managerial tool showing the relationship between various ingredients of profit planning, viz., cost (both fixed and variable), selling price and volume of activity, etc.

Such an analysis is useful to the Finance Manager in the following respects:

- (i) It helps him in forecasting the profit fairly accurately.
- (ii) It is helpful in setting up flexible budgets, since on the basis of this relationship, it can ascertain the cost, sales and profits at different levels of activity.
- (iii) It also assists him in performance evaluation for purposes of management control.
- (iv) It helps in formulating price policy by projecting the effect which different price structures will have on cost and profits.

(v) It helps in determining the amount of overhead cost to be charged at various levels of operations, since overhead rates are generally predetermined on the basis of a selected volume of production.

Thus, cost-volume-profit analysis is an important media through which the management can have an insight into effects on profit on account of variations in costs (both fixed and variable) and sales (both volume and value) and take appropriate decisions.

BREAK-EVEN ANALYSIS

Break-even analysis is a widely used technique to study cost-volume-profit relationship. The narrower interpretation of the term break-even analysis refers to a system of determination of that level of activity where total cost equals total selling price. The broader interpretation refers to that system of analysis which determines probable profit at any level of activity. It portrays the relationship between cost of production, volume of production and the sales value.

It may be added here that CVP analysis is also popularly, although not very correctly, designated as 'Break-even Analysis'. The difference between the two terms is very narrow.

CVP analysis includes the entire gamut of profit planning, while break-even analysis is one of the techniques used in this process. However, as stated above, the technique of break-even analysis is so popular for studying CVP Analysis that the two terms are used as synonymous terms. For the purposes of this study, we have also not made any distinction between these two terms.

In order to understand the concept of break-even analysis, it will be useful to know about certain basic terms as given below:

1. Contribution

This refers to the excess of selling price over the variable cost. It is also known as, 'gross margin'. The amount of profit (loss) can be ascertained by deducting the fixed cost from contribution. In other words, fixed cost plus profit is equivalent to contribution. It can be expressed by the following formula:—

Contribution = Selling Price (–) Variable Cost

or

Fixed Cost (+) Profit

Profit = Contribution – Fixed Cost :

Example 2

Variable Cost = Rs 50,000

Fixed Cost = Rs 20,000

Selling Price = Rs 80,000

Contribution = Selling Price – Variable Cost

= Rs 80,000 – Rs 50,000

= Rs 30,000

Profit = Contribution – Fixed Cost

= Rs 30,000 – Rs 20,000

= Rs 10,000

Hence, contribution exceeds fixed cost and, therefore, the profit is of the magnitude of Rs 10,000.

Suppose the fixed cost is Rs. 40,000 then the position shall be

Contribution – Fixed cost = Profit

= Rs 30,000 – Rs 40,000 = (–) Rs 10,000

The amount of Rs 10,000 represents the extent of loss since the fixed costs are more than the contribution. At the level of fixed cost of Rs 30,000, there shall be no profit and no loss. The concept of the break-even analysis emerges out of this theory.

2. Profit/Volume Ratio (P/V Ratio)

This term is important for studying the profitability of operations of a business, Profit volume ratio establishes a relationship between the contribution and the sale value. The ratio can be shown in the form of a percentage also. The formula can be expressed thus:

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}}$$

This ratio can also be called 'Contribution/Sales' ratio. This ratio can also be known by comparing the change in contribution to change in sales or change in profit due to change in sales. Any increase in contribution would mean increase in profit only because fixed costs are assumed to be constant at all levels of production. Thus,

P/V Ratio can be expressed as:

$$\text{Contribution} = \frac{\text{Change in Profit}}{\text{Change in Sales}}$$

This ratio would remain constant at different levels of production since variable costs as a proportion to sales remain constant at various levels.

The following are the special features of P/V Ratio:

- (i) It helps the management in ascertaining the total amount of contribution for a given volume of sales.

(ii) It remains constant so long the selling price and the variable cost per unit remain constant or so long they fluctuate in the same proportion.

(iii) It remains unaffected by any change in the level of activity. In other words, PV ratio for a product will remain the same whether the volume of activity is 1,000 units or 10,000 units.

(iv) The ratio also remains unaffected by any variation in the fixed cost since the latter are not at all considered while calculating the PV ratio.

In case of a multi-product organisation, PV ratio is of vital importance for the management to find out which product is more profitable. Management tries to increase the value of this ratio by reducing the variable costs or by increasing the selling price.

3. Break-even Point

The point which breaks the total cost and the selling price evenly to show the level of output or sales at which there shall be neither profit nor loss, is regarded as break-even point.

At this point, the income of the business exactly equals its expenditure. If production is enhanced beyond this level, profit shall accrue to the business, and if it is decreased from this level, loss shall be suffered by the business.

It will be proper here to understand different concepts regarding marginal cost and break-even point before proceeding further. Break-Even point can be expressed as:

$$\text{i) Break-Even point(in units)} = \frac{\text{Fixed Cost}}{\text{Contribution /Unit}}$$

$$\text{ii) Break-Even point(in amount)} = \frac{\text{Fixed Cost}}{P/v}$$

4. Margin of Safety

Total sales minus the sales at break-even point is known as the 'margin of safety'. Thus,

the formula is:

$$\text{M.S.} = \text{T.S.} - \text{B.E.S.}$$

$$\text{Margin of Safety} = \text{Total Sales} - \text{Break-even Sales.}$$

Margin of safety can also be computed according to the following formula:

$$\text{MOS} = \text{Sales} - \text{Break-Even Point Sales}$$

$$= \text{Sales} - \frac{\text{Fixed Cost}}{P/v}$$

$$\begin{aligned}
&= \text{Sales} \times \frac{p}{v} - \frac{\text{Fixed Cost}}{p/v} \\
&= \frac{\text{Contribution} - \text{Fixed Cost}}{p/v} \\
&= \frac{\text{Fixed Cost} + \text{Profit} - \text{fixed Cost}}{p/v} \\
&= \frac{\text{Profit}}{p/v}
\end{aligned}$$

Break –Even Chart

Meaning of Break-Even Chart:

The Break-Even Chart is a graphical representation between cost, volume and profits. No doubt, it is an important tool which helps to make profit planning. It has been defined as, “a chart which shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made.”

Since it shows the effects of cost and revenue at varying level of sales it has been rightly called Cost-Volume-Profit graph (CVP graph).

BEC depicts the following information:

- (a) Cost (i.e. Fixed, Variable and Total);
- (b) Sales value and Profit/Loss;
- (c) Break-Even Point;
- (d) Margin of Safety.

Certain Assumption about the CVP Graph:

- (a) Fixed Cost, will remain constant during the relevant period;
- (b) Semi-Variable Cost can be bifurcated into variable and fixed components.
- (c) Variable cost per unit also will not make any change during the relevant period.
- (d) Selling price also will not make any change during the relevant period irrespective of the quantity sold.

(e) Operating efficiency also will remain constant.

(f) Product mix will remain unchangeable.

(g) Volume of production and sales are equal.

2. Construction of a Break-Even Chart:

A Break-Even Chart is constructed on a graph paper Activity or volume of production is plotted on the 'X' axis whereas, cost and revenue are plotted on the 'Y' axis.

Again, 'X' axis may be represented in the following manner, such as:

(1) Volume in units;

(ii) Sales value;

(iii) Standard Hours; and

(iv) Percentage level of activity.

The following illustration will help to understand the whole principal:

Units	Fixed Costs	Variable Cost	Total Cost	Sales
	Rs.	Rs.	Rs.	Rs.
—	40,000	—	40,000	—
1,250	40,000	5,000	45,000	25,000
3,750	40,000	15,000	55,000	75,000
5,000	40,000	20,000	60,000	1,00,000

3. Types of Break-Even Chart:

The BECs we have discussed so far are the common type. There are certain types of Break-Even Charts which are yet to be discussed and which are used for various purposes.

Some of them are discussed here under:

(a) Detailed Break-Even Chart;

(b) Control Break-Even Chart;

(c) Cash Break-Even Chart; and

(d) BEC to ascertain the optimum volume.

(a) Detailed Break-Even Chart:

Under this type of BEC, the total variable costs, i.e. direct materials, direct labour, variable overhead are represented in this graph together with the appropriation items, like dividend on equity shares, dividend on preference shares, income-tax and retentions are plotted. In this respect it may be mentioned that if this chart contains only the details of appropriation of profit it may be called profit-appropriations BEC.

The following illustration with help to understand the principle:

Illustration:

From the following particulars, draw up a detailed BEC:

Total Fixed Cost	Rs. 10,000
Dividend	Rs. 4,000
Income-Tax	@ 40% of profit
Maximum Sales	8,000 unit @ Rs. 20
Cost Structure	Rs. (per unit)
Direct Material	4
Direct Labour	2
Variable : Factory Overhead	2
Selling Distribution	2
TC	<u>10</u>

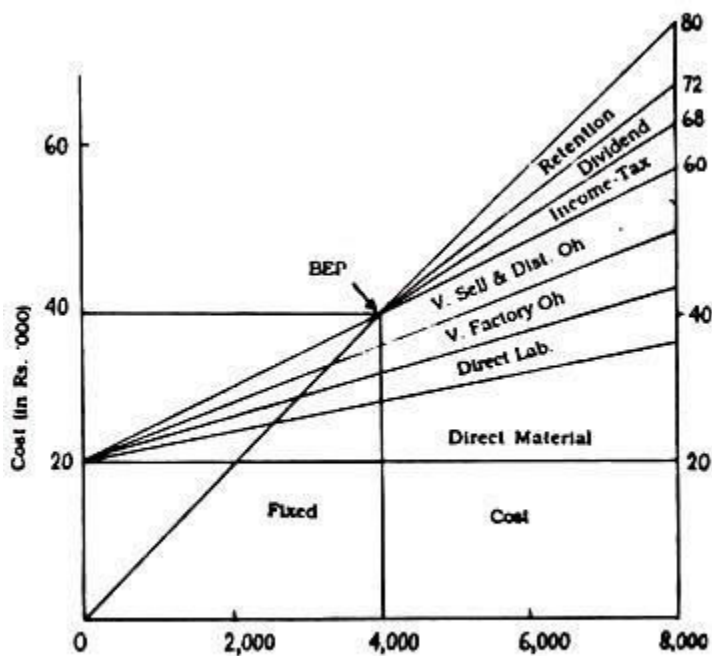


Fig. 4.7. Detailed Break-Even Chart

(b) Control Break-Even Chart:

Control Break-Even Chart is prepared in order to make a comparison between budgeted/standard and actual cost, sales and profits, particularly when the Budgetary Control Systems and Marginal Costing system are combined. After analysing the deviations between budgeted/standard and actual figures.

Control Break-Even Chart proves itself a very useful method which directly helps the management in taking decisions. It is to be remembered that the detailed information about deviations between budgeted figures and actual figures is not possible graphically.

(c) Cash Break-Even Chart:

Before preparing a Cash Break-Even Chart we are to divide the amount of fixed cost into two following groups:

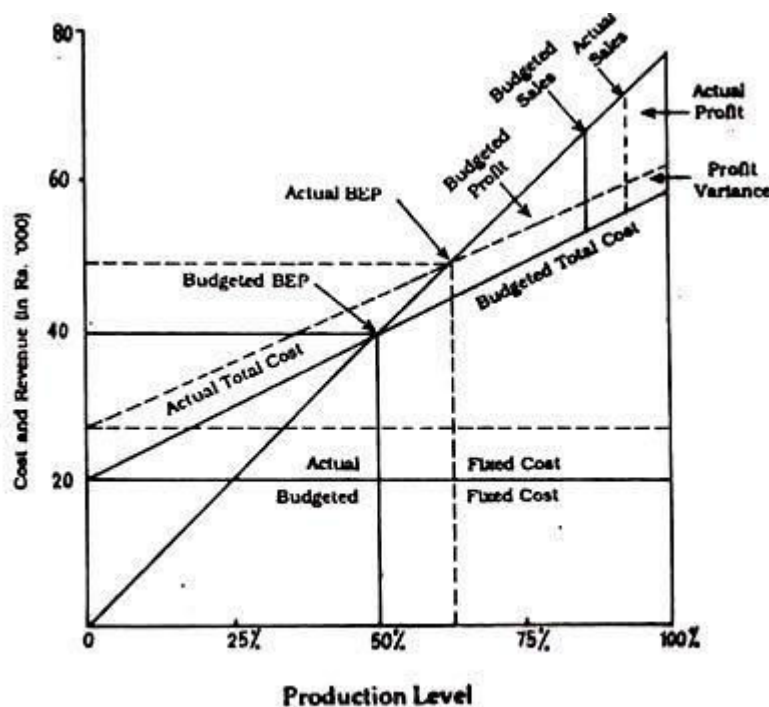


Fig. 4.8 Control Break-Even Chart.

Viz:

- (i) Fixed Cost which require cost outlay (like, Rent, Salary etc.);
- (ii) Fixed Cost which do not require immediate cost (like, deferred expenditure, Depreciation etc.).

In this chart, item

- (i) Is treated as base like ordinary BEP whereas item

(ii) Is shown last i.e., after variable cost, so that a comparison can be made easily.

Similarly variable costs which need immediate payment, are plotted as usual. But care should be taken if any credit transaction is included in the variable cost.

If that be so the same is to be treated as no. (ii) stated above. This Chart is very useful to those firms which suffer from short-term liquidity and solvency position as well. It is primarily used in cash flow analysis.

Illustration:

From the following information prepare a Cash-Break-Even Chart:

	Rs.
Fixed Cost :	
For immediate Cash Payment	10,000
Non-Cash item (Depreciation)	6,000
Variable Cost	10 per unit
Sales 4,000 units	@ 20 per unit
Tax @ 50%	
Prof. Dividend	Rs. 4,000

Solution:

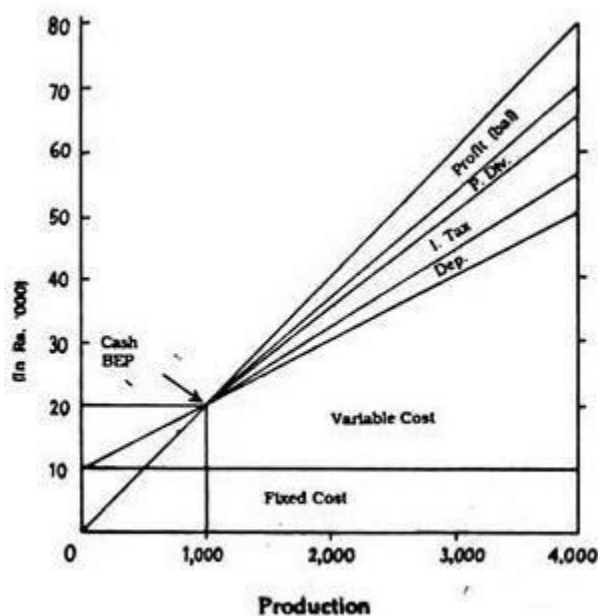


Fig. 4.9 Cash Break-Even Chart.

(d) BEC to ascertain the Optimum Volume:

This is particularly useful where the demand for a product is elastic. Because in case of perfect competition selling price of a product is to be reduced in order to earn more profit by increasing the volume of sales which ultimately gives a highest contribution. Now, the problem arises before us is that at what stage the amount of profit will be maximised since the volume of sales are fluctuating.

This can be solved with the help of a BEC which is shown below. In this regard, it may be said that if amount of sales and costs at different stages are plotted on a graph paper, it becomes possible for us to know at which point the profit will be maximized. Needless to mention that that point will be the optimum level and that selling price of the products will be the optimum selling price of the products of the firm.

All these information can be had with the help of a BEC which is presented below:

Illustration:

X Ltd. gives you the following particulars for which you are requested to ascertain the volume of sales and selling price at which the company can maximise profits with the help of a graph.

Expected Sales	Selling price (per unit)
	Rs.
1,000	20
2,000	19
3,000	18
4,000	17
5,000	16
6,000	15
6,500	14

Expected Sales	Selling price (per unit)
	Rs.
7,000	13
7,500	12
8,000	11

The fixed costs amount to Rs. 24,000 and the same is to increase by Rs. 8,000 if the output exceeds 4,000 units.

Solution:

Before preparing the graph the following table is prepared:

Unit	Sales Rs.	Fixed Cost Rs.	Variable Cost Rs.	Total Cost Rs.
1,000	20,000	24,000	5,000	29,000
2,000	38,000	24,000	10,000	34,000
3,000	54,000	24,000	15,000	39,000
4,000	68,000	24,000	20,000	44,000
5,000	80,000	32,000	25,000	57,000
6,000	90,000	32,000	30,000	62,000
6,500	91,000	32,000	32,000	64,500
7,000	91,000	32,000	35,000	67,000
7,500	90,000	32,000	37,500	69,500
8,000	88,000	32,000	40,000	72,000

Now taking the above data, we can plot the same on a graph which is depicted as under:

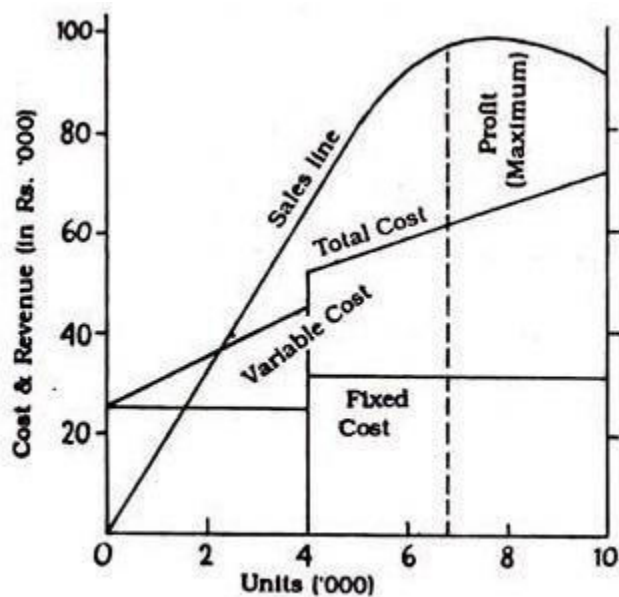


Fig. 4.10. Showing Optimum Volume.

From the above, it becomes clear that at 6,500 units, the profit can be maximised. In other words, at this level the sales value/line is higher than the total cost line resulting the highest margin. As such, this will be the optimum level of output at the prevailing selling price which will yield the maximum profit.

4. Method of Preparation of Break-Even Chart:

(a) Draw fixed Cost of Rs 40,000 line parallel to 'X' axis. Then plot the variable cost line over fixed cost level at various level of activity and join the variable cost line with fixed cost line at zero level of activity which will indicate total cost line — variable cost being over fixed cost line.

(b) At the same time, ascertain sales value at various activity level and plot them on the graph paper and then to zero which line indicates the volume of sales.

(c) It is interesting to note that where the sales line intersects the total cost line, that is known as Break-Even point. Needless to mention here that BEP will be ascertained by drawing a perpendicular to 'X' axis from the point of intersection which measures the horizontal distance from the zero point from where the perpendicular is drawn.

Similarly, in order to find out BES value, another perpendicular to the 'Y' axis from the point of intersection is drawn.

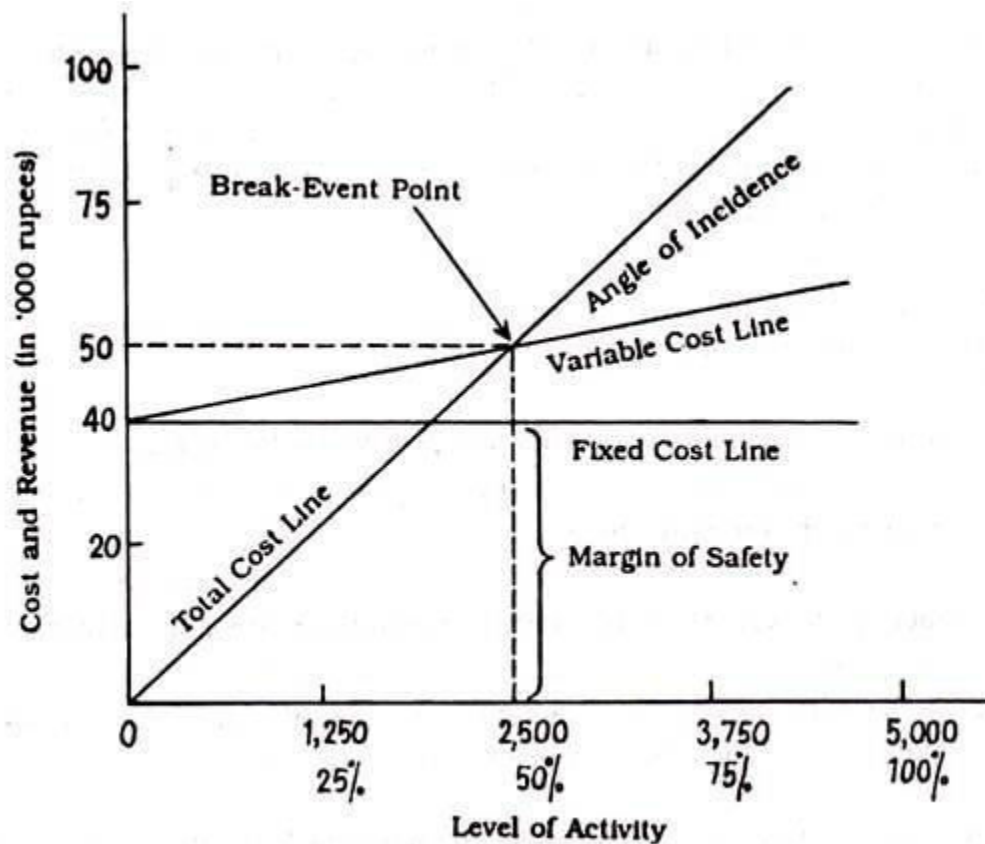


Fig 4.2 Break-Even Chart.

Comments:

From the above BEC, it becomes clear that profit/loss at different levels of activity can be understood from this chart. For example, if we find the sales line is above the total cost line, there will be profit and vice-versa. Similarly, if total cost is equal to total sales, there is no profit or no loss i.e., break-even point. In Fig. 4.2 diagram, 50% level of activity brings break-even level.

5. Advantages of Break-Even Chart:

The following advantages may be offered by a BEC:

(i) Easy to Construct and Easy to Understand:

A Break-Even Chart gives us very clear-cut information which helps the management to take correct decisions as it depicts a detailed picture of the entire undertaking.

(ii) Useful Tool to Help Management:

It has already been pointed out that a BEC gives us the relationship between Cost, Volume and Profit. Thus, the same may present the effect of changes in cost and selling price due to the change in variable cost and fixed cost.

(iii) Helps to Select the most Profitable Product Mix:

No doubt a BEC helps us to select the most profitable product mix or sales mix for earning more profits.

(iv) Helps to Ascertain the Strength of the Business:

This chart helps us to determine profit earning capacity after analysing together Angle of incidence and Margin of Safety.

Therefore, the Management obtains some important information relating to:

- (i) Increase the selling price,
- (ii) To reduce the cost;
- (iii) To substitute the less profitable product by more profitable products, and
- (iv) To increase the volume of production.

6. Limitations of Break-Even Chart:

The BEC is not free from snags. They are:

(i) Based on Unrealistic Assumptions some of them are:

- (a) Selling price remains constant irrespective of the volume of sales;
- (b) Production and sales are equal (i.e., without considering value of stock);
- (c) Variable cost remains same;
- (d) All indirect cost can be segregated into fixed and variable. In actual practice, however, all the above assumptions are not correct

(ii) Ignore the Concept and Effect of Capital Employed:

BEC ignores the basic accounting elements i.e., capital employed which is very significant for calculating the rate of profitability or earnings,

(iii) Construction of Multiple BEC Chart:

If different variety of products are produced, separate BEC should be drawn up which creates a problem of fixed overhead allocation.

7. Multi-Product of Break-Even Chart:

It is quite possible to produce different types of products for a firm and in that case, a Multi-product Break-Even Chart may be constructed for the firm as a whole. Naturally, in that case, BEP will be that point where the Average contribution line will intersect the fixed cost line assuming that there will be no change in sales-mix.

Method of Construction of Multi- Product Break-Even Chart:

- (a) Complete P/V ratio and arrange the products in descending order according to P/V ratios.
- (b) Y axis represents contribution and fixed cost while X axis represents sales value;
- (c) Then plot the total fixed cost line;
- (d) And then take the product which has highest P/V ratio, plot its contribution against sales and so on;
- (e) Now, get the average contribution line after joining the origin to the end of the last line so plotted.
- (f) The BEP will be that point where average contribution will cut fixed cost line of the products.

Illustration:

X Ltd products three types of products, viz. A, B and C.

Construct a BEC in order to determine their BEP from the following particulars:

	Total	A	B	C
	Rs.	Rs.	Rs.	Rs.
Sales	50,000	20,000	12,500	17,500
Fixed Cost	9,250	—	—	—
Variable Cost	31,500	10,000	7,500	14,000

Solution:

Before constructing the BEC, let us calculate the P/V ratio of each product first. Then according to the importance of P/V ratio, a table showing cumulative sales should also be prepared. At last, complete the graph.

$$P/V \text{ Ratio} = \frac{C}{S}$$

∴ For Products :

$$\begin{aligned} A &= \frac{\text{Rs. } 20,000 - \text{Rs. } 10,000}{\text{Rs. } 20,000} = \frac{\text{Rs. } 10,000}{\text{Rs. } 20,000} = \frac{1}{2} \text{ or } 50\% \\ B &= \frac{\text{Rs. } 12,500 - \text{Rs. } 7,500}{\text{Rs. } 12,500} = \frac{\text{Rs. } 5,000}{\text{Rs. } 12,500} = \frac{2}{5} \text{ or } 40\% \\ C &= \frac{\text{Rs. } 17,500 - \text{Rs. } 14,000}{\text{Rs. } 17,500} = \frac{\text{Rs. } 3,500}{\text{Rs. } 17,500} = \frac{1}{5} \text{ or } 20\% \end{aligned}$$

Now we are to prepare the following table:

Product	P/V Ratio	Sales		Contribution	
		Product wise	Cumulative	Product wise	Cumulative
A	50%	20,000	20,000	10,000	10,000
B	40%	12,500	32,500	5,000	15,000
C	20%	17,500	50,000	3,500	18,500

$$\begin{aligned} \therefore \text{BES will be} &= \frac{\text{Fixed Cost}}{\text{Total Contribution}} \times \text{Total Sales} \\ &= \frac{\text{Rs. } 9,250}{\text{Rs. } 18,500} \times \text{Rs. } 50,000 \\ &= \text{Rs. } 25,000 \end{aligned}$$

The same result can also be depicted by the following Multi-Product Break-Even Chart

(BEC) as under:

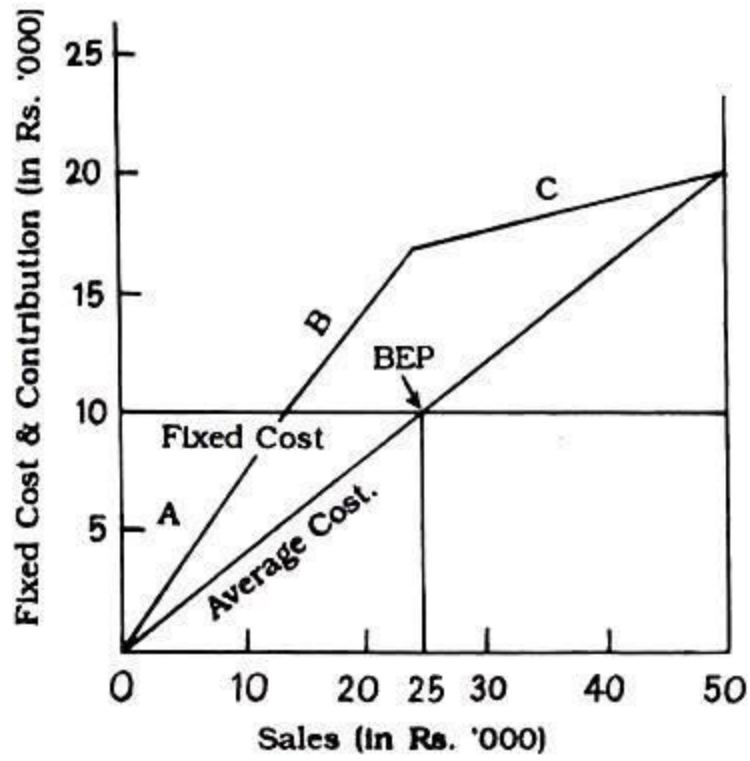


Fig. 4.6 Multi-Product BEC

MODULE-4

TOPIC: ELEMENTARY ECONOMIC ANALYSIS

Inflation is a rise in the general level of prices of goods and services in an economy over a period of time.

When the general price level rises, each unit of currency buys fewer goods and services. Therefore, inflation also reflects an erosion of purchasing power of money.

According to Crowther, "Inflation is State in which the Value of Money is Falling and the Prices are rising."

In Economics, the word 'inflation' refers to General rise in Prices Measured against a Standard Level of Purchasing Power.

Here are several variations on inflation used popularly to indicate specific meanings.

Deflation is when the general level of prices is falling. It is the opposite of inflation. Also referred to as Disinflation. The lack of inflation may be an indication that the economy is weakening.

Hyperinflation is unusually rapid inflation in very short span of time. In extreme cases, this can lead to the breakdown of a nation's monetary system with complete loss of confidence in the domestic currency. One of the earlier examples of hyperinflation occurred in Germany in early 1920s after the First World War, when prices rose 2,500% in one month.

Stagflation is the combination of high unemployment with high inflation. This happened in industrialized countries during the 1970s, when a bad economy was combined with OPEC raising oil prices led to low growth.

Inflation is all about prices going up, but for healthy economy wages should be rising as well. The question shouldn't be whether inflation is rising, but whether it's rising at a quicker pace than your wages, if the answer is a Yes only then inflation is problematic.

Finally, inflation is a sign that an economy is growing. The RBI considers the range of 4-5 % as comfort zone of inflation in India.

Impact or Effect of Inflation :

Inflation affects the pattern of production, a shift in production pattern takes place from consumer goods to luxury goods.

On Investment: Inflation discourages entrepreneurs in investing as the risk involved in the future production would be very high with less hope for returns. Uncertainty about the future purchasing power of money discourages investment and savings.

Inflation also results in black marketing. Sellers may stock up the goods to be sold in the future, anticipating further price rise.

The effect of inflation is felt on distribution of income and wealth and on production.

People with fixed income group are the worst sufferers of inflation. Those living off a fixed-income, such as retirees, see a decline in their purchasing power and, consequently, their standard of living.

The entire economy must absorb repricing costs ("menu costs") as price lists, labels, menus and more have to be updated.

If the inflation rate is greater than that of other countries, domestic products become less competitive.

They add inefficiencies in the market, and make it difficult for companies to budget or plan long-term.

On Exchange rate and trade: There can also be negative impacts to trade from an increased instability in currency exchange prices caused by unpredictable inflation.

On Taxes: Higher income tax rates on taxpayers. Government incurs high fiscal deficit due to decreased value of tax collections.

On Export and balance of trade: Inflation rate in the economy is higher than rates in other countries; this will increase imports and reduce exports, leading to a deficit in the balance of trade.

Causes of Inflation:

There is no one cause that's universally agreed upon, but at least two theories are generally accepted while the debate still goes on:

Demand-Pull Inflation – This theory can be summarized as "too much money chasing too few goods". It is a mismatch between demand and supply, if demand is growing faster than supply, prices will increase. This usually occurs in growing economies as more people gain purchasing power while the supply is not able to catch up to growing demand. When the government of a country prints money in excess, prices increase to keep up with the increase in currency, leading to inflation.

Cost-Push Inflation – When production costs go up, there is an increase in prices to maintain profit margins. Increased costs can include things such as wages, taxes, or increased costs of imports.

Demand pull vs Cost Push Inflation • If demand pull inflation is present in the economy, the government must bear the cost of excessive spending and monetary authorities are to be blamed for "cheap money policy" • On the contrary, if cost push is the real cause for inflation then the trade union are to be blamed for excessive wage claim, industries for acceding them and business firms for marking-up profits aggressively.

Measurement of Inflation

Inflation is measured by calculating the percentage rate of change of a price index, which is called the inflation rate.

Inflation is often measured either in terms of Wholesale Price Index or in terms of Consumer Price Index.

Wholesale Price Index(WPI) : The Wholesale Price Index is an indicator designed to measure the changes in the price levels of commodities that flow into the wholesale trade intermediaries. The index is



a vital guide in economic analysis and policy formulation. It is a basis for price adjustments in business contracts and projects. It is also intended to serve as an additional source of information for comparisons on the international front.

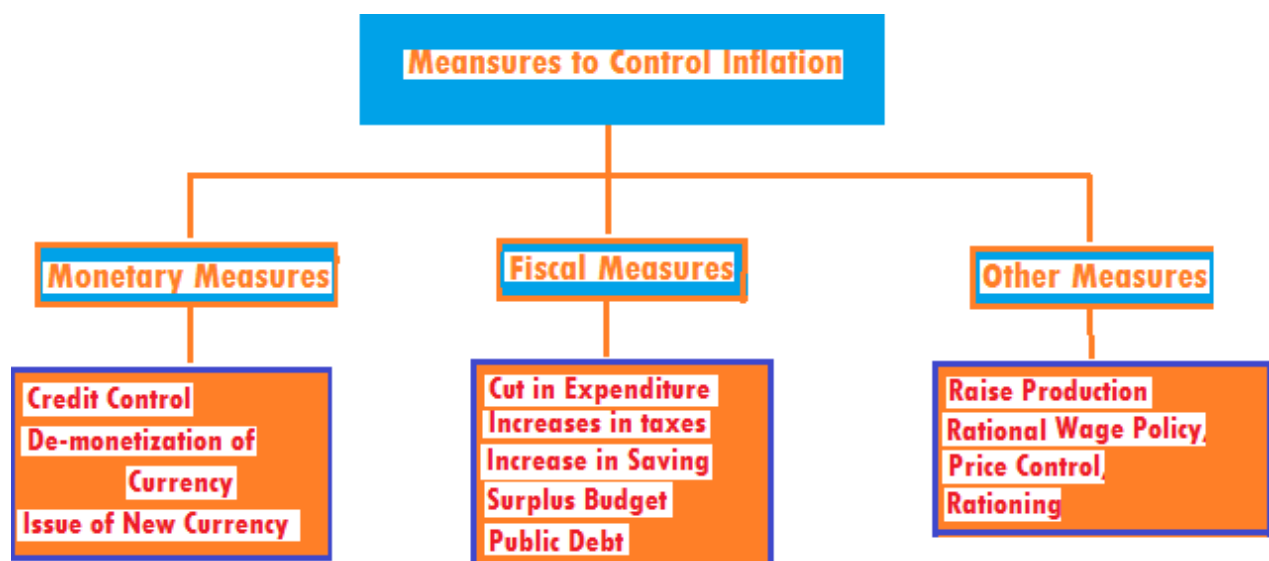
Consumer Price Index (CPI) : Consumer price index is specific to particular group in the population. It shows the cost of living of the group. It is based on the changes in the retail prices of goods or services. Based on their incomes, consumer spends money on these particular set of goods and services. There are different consumer price indices. Each index tracks the changes in the retail prices for different set of consumers.

Measures to control inflation:

Effective policies to control inflation need to focus on the underlying causes of inflation in the economy. There are two broad ways in which governments try to control inflation. These are-

1. Fiscal measures.

2. Monetary measures



Monetary Policy: Monetary policy can control the growth of demand through an increase in interest rates and a contraction in the real money supply. For example, in the late 1980s, interest rates went up to 15% because of the excessive growth in the economy and contributed to the recession of the early 1990s. Monetary measures of controlling the inflation can be either quantitative or qualitative. Bank rate policy, open market operations and variable reserve ratio are the quantitative measures of credit control, by which inflation can be brought down. Qualitative control measures involve selective credit control measures.

Bank rate policy is used as the main instrument of monetary control during the period of inflation. When the central bank raises the bank rate, it is said to have adopted a *dear money policy*. The increase in bank rate increases the cost of borrowing which reduces commercial banks borrowing from the central bank. Consequently, the flow of money from the commercial banks to the public gets reduced. Therefore, inflation is controlled to the extent it is caused by the bank credit.

Cash Reserve Ratio (CRR) : To control inflation, the central bank raises the CRR which reduces the lending capacity of the commercial banks. Consequently, flow of money from commercial banks to public decreases. In the process, it halts the rise in prices to the extent it is caused by banks credits to the public.

Open Market Operations: Open market operations refer to sale and purchase of government securities and bonds by the central bank. To control inflation, central bank sells the government securities to the public through the banks. This results in transfer of a part of bank deposits to central bank account and reduces credit creation capacity of the commercial banks.

National Income: Definition, Concepts and Methods of Measuring National Income

National income estimates are the most reliable macroeconomic indicators of an economy. Therefore, it is essential for students to be aware of National Income Concepts. Changes in national income measure the rate of growth of the economy.

Similarly, changes in the structure of national income of an economy reflect the changing significance of different sectors. In India, national income, as also per capita income, have been continuously increasing. In more recent years, the rate of growth of national income has accelerated. It indicates that the economy has been growing at a faster rate in recent years than in the past. Along with this, the structure of national income has also undergone a change, the tertiary sector has emerged as the dominant sector of the economy.

The task of preparing national income estimates has been assigned to the Central Statistical Organisation (CSO). The CSO has been producing annual official estimates of national income of India since 1955 and publishing the same in its annual report *National Accounts Statistics*.

Concept of National Income

The Marshallian Definition:

According to Marshall: "The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend." In this definition, the word 'net' refers to deductions from the gross national income in respect of depreciation and wearing out of machines. And to this, must be added income from abroad.

Fisher's Definition:

Fisher adopted 'consumption' as the criterion of national income whereas Marshall and Pigou regarded it to be production. According to Fisher, "The National dividend or income consists solely of services as received by ultimate consumers, whether from their material or from the human environments. Thus, a piano, or an overcoat made for me this year is not a part of this year's income, but an addition to the capital. Only the services rendered to me during this year by these things are income."

Fisher's definition is considered to be better than that of Marshall or Pigou, because Fisher's definition provides an adequate concept of economic welfare which is dependent on consumption and consumption represents our standard of living.

National income accounting comprises of four concepts of calculations- GDP, NDP, GNP, NNP.

Here, we discuss them and other related terms in a very objective way.

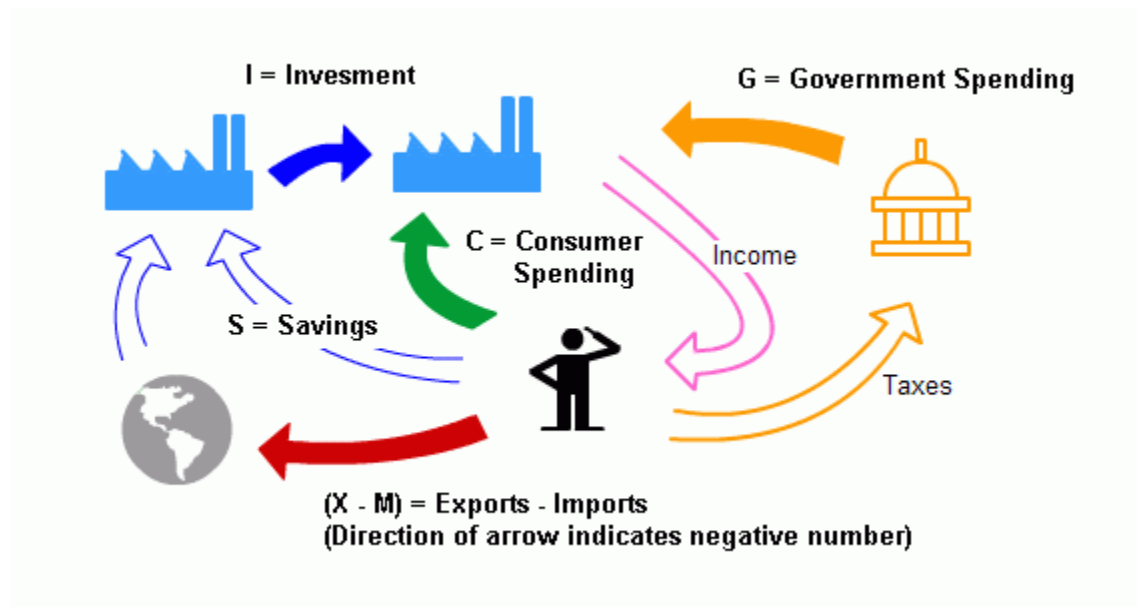
1. Factor cost is the input cost that producer has to incur in the process of production. It includes cost of capital – loan interest, prices of raw materials, labour, power, rent, etc. Can be termed as Production cost.

2. Market cost is calculated after adding indirect taxes to the factor cost of the product. It is basically the cost at which the goods reach the market. Also termed as EX-FACTORY PRICE. In India we calculate income at factor cost because of non-uniform taxes.

National Income: The sum total of factor of incomes accruing to the residents of the country, both from their activities within and outside the economic territory is the national income of the country.

National income is calculated for a particular period, normally a financial year (In India, financial year means April 1 to March 31 of next year). Net factor income from abroad is added to the domestic

product to get the value of National Income.



$$\text{National Income} = C + I + G + (X - M)$$

Where, C = Total consumption expenditure

I = Total investment expenditure

G = Total government expenditure ; X - M = Export - Import

The **National Income concepts** include the following important terms:

Gross Domestic Product (GDP)

Gross domestic product is the value of all final goods and services produced within the boundary of a nation during one year. In India one year means from 1st April to 31st March of the next year.

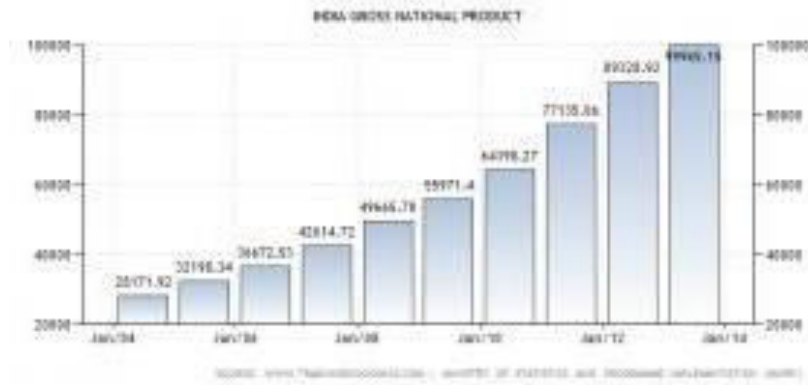
GDP calculation includes income of foreigners in a Country but excludes income of those people who are living outside of that country.

Net Domestic Product (NDP)

NDP is calculated by deducting the depreciation of plant and Machinery from GDP.

$$\text{NDP} = \text{Gross Domestic Product} - \text{Depreciation}$$

Gross National Product (GNP)



GNP of India

GNP is the value of all final goods and services produced by the residents of a country in a financial year (i.e., 1st April to 31st March of the next year in India).

While Calculating GNP, income of foreigners in a country is excluded but income of people who are living outside of that country is included. It is the GDP of a country added with its income from abroad.

$$\text{GNP} = \text{GDP} + X - M$$

Where, X = income of the people of a country who are living outside of the Country

and M = income of the foreigners in a country

India's GNP is always lower than its GDP.

This is the national income according to which the IMF ranks nations.

It allows for knowledge of factors in production behaviour and pattern of an economy's dependence on outside world, nature of human resources internationally, position in world economics.

It indicates both qualitative as well as quantitative aspects of an economy in a more exhaustive fashion than GDP.

Intermediate products = one production unit purchasing from other for resale

Final product = all goods and services purchased for consumption and investment, and not for resale

Value added = Value of output – Intermediate cost

Gross value added = net value added + depreciation

Indirect tax = all taxes levied on production, finally paid by consumer of buyer Ex – sales tax, excise, customs

Subsidies = Financial help given by the government to the production units for selling the product at lower prices

Net National Product (NNP)

Net National Product (NNP) in an economy is the GNP after deducting the loss due to depreciation.

$$\text{NNP} = \text{GNP} - \text{Depreciation}$$

NNP at Factor Cost: It is the value of NNP when the value of goods and services is taken at the production cost.

NNP at Market Price: It is the value of NNP at consumer cost.

$$\text{NNP at market cost} = \text{NNP at factor cost} + \text{Indirect taxes} - \text{Subsidies}$$

Closed Economy: An economy that does not maintain any economic relations with the rest of the world.

Economic Goods: Those goods which are scarce in supply and, hence, command a price.

Economic Growth: A sustained increase in real national income of a country.

Nominal National Income: The money value of all the final goods and services produced in an economy during a year, estimated at current prices.

Real National Income: The money value of all the final goods and services produced in an economy during a year, estimated at some fixed prices.

Subsidy: It is the grant given on current account by the Government to the private industries and public corporations for selling certain goods at a price fixed by the Government.

National Income Measurement:

Primary sector: all production units engaged in exploitation of natural resources like Agriculture, Fishing, Mining and Quarrying, Forestry and Logging

Secondary sector: all production units engaged in transforming one good to another like Registered manufacture, unregistered, Construction, Electricity Gas Water supply

Tertiary sector: all units engaged in producing services like Banking&Insurance, Trade, hotel, restaurant, transport, storage, Real estate dwelling, Public administration & defence, other services.

Methods of Measuring National Income:

There are four methods of measuring national income. Which method is to be used depends on the availability of data in a country and the purpose in hand.

(1) Product Method:

According to this method, the total value of final goods and services produced in a country during a year is calculated at market prices. To find out the GNP, the data of all productive activities, such as agricultural products, wood received from forests, minerals received from mines, commodities produced by industries, the contributions to production made by transport, communications, insurance companies, lawyers, doctors, teachers, etc. are collected and assessed at market prices. Only the final goods and services are included and the intermediary goods and services are left out.

(2) Income Method:

According to this method, the net income payments received by all citizens of a country in a particular year are added up, i.e., net incomes that accrue to all factors of production by way of net rents, net wages, net interest and net profits are all added together but incomes received in the form of transfer payments are not included in it. The data pertaining to income are obtained from different sources, for instance, from income tax department in respect of high income groups and in case of workers from their wage bills.

(3) Expenditure Method:

According to this method, the total expenditure incurred by the society in a particular year is added together and includes personal consumption expenditure, net domestic investment, government expenditure on goods and services, and net foreign investment. This concept is based on the assumption that national income equals national expenditure.

(4) Value Added Method:

Another method of measuring national income is the value added by industries. The difference between the value of material outputs and inputs at each stage of production is the value added. If all such differences are added up for all industries in the economy, we arrive at the gross domestic product.

Difficulties or Limitations in Measuring National Income:

The following problems arise in the computation of National Income by income method:

1. Owner-occupied Houses:

A person who rents a house to another earns rental income, but if he occupies the house himself, will the services of the house-owner be included in national income. The services of the owner-occupied house are included in national income as if the owner sells to himself as a tenant its services.

For the purpose of national income accounts, the amount of imputed rent is estimated as the sum for which the owner-occupied house could have been rented. The imputed net rent is calculated as that portion of the amount that would have accrued to the house-owner after deducting all expenses.

2. Self-employed Persons:

Another problem arises with regard to the income of self-employed persons. In their case, it is very difficult to find out the different inputs provided by the owner himself. He might be contributing his capital, land, labour and his abilities in the business. But it is not possible to estimate the value of each factor input to production. So he gets a mixed income consisting of interest, rent, wage and profits for his factor services. This is included in national income.

3. Goods meant for Self-consumption:

In under-developed countries like India, farmers keep a large portion of food and other goods produced on the farm for self-consumption. The problem is whether that part of the produce which is not sold in the market can be included in national income or not. If the farmer were to sell his entire produce in the market, he will have to buy what he needs for self-consumption out of his money income. If, instead he keeps some produce for his self-consumption, it has money value which must be included in national income.

4. Wages and Salaries paid in Kind:

Another problem arises with regard to wages and salaries paid in kind to the employees in the form of free food, lodging, dress and other amenities. Payments in kind by employers are included in national income. This is because the employees would have received money income equal to the value of free food, lodging, etc. from the employer and spent the same in paying for food, lodging, etc.

(B) Problems in Product Method:

The following problems arise in the computation of national income by product method:

1. Services of Housewives:

The estimation of the unpaid services of the housewife in the national income presents a serious difficulty. A housewife renders a number of useful services like preparation of meals, serving, tailoring, mending, washing, cleaning, bringing up children, etc.

She is not paid for them and her services are not including in national income. Such services performed by paid servants are included in national income. The national income is, therefore, underestimated by excluding the services of a housewife.

The reason for the exclusion of her services from national income is that the love and affection of a housewife in performing her domestic work cannot be measured in monetary terms. That is why when the owner of a firm marries his lady secretary, her services are not included in national income when she stops working as a secretary and becomes a housewife.

When a teacher teaches his own children, his work is also not included in national income. Similarly, there are a number of goods and services which are difficult to be assessed in money terms for the reason stated above, such as painting, singing, dancing, etc. as hobbies.

2. Intermediate and Final Goods:

The greatest difficulty in estimating national income by product method is the failure to distinguish properly between intermediate and final goods. There is always the possibility of including a good or service more than once, whereas only final goods are included in national income estimates. This leads to the problem of double counting which leads to the overestimation of national income.

3. Second-hand Goods and Assets:

Another problem arises with regard to the sale and purchase of second-hand goods and assets. We find that old scooters, cars, houses, machinery, etc. are transacted daily in the country. But they are not included in national income because they were counted in the national product in the year they were manufactured.

If they are included every time they are bought and sold, national income would increase many times. Similarly, the sale and purchase of old stocks, shares, and bonds of companies are not included in national income because they were included in national income when the companies were started for the first time. Now they are simply financial transactions and represent claims.

But the commission or fees charged by the brokers in the repurchase and resale of old shares, bonds, houses, cars or scooters, etc. are included in national income. For these are the payments they receive for their productive services during the year.

4. Illegal Activities:

Income earned through illegal activities like gambling, smuggling, illicit extraction of wine, etc. is not included in national income. Such activities have value and satisfy the wants of the people but they are not considered productive from the point of view of society. But in countries like Nepal and Monaco where gambling is legalised, it is included in national income. Similarly, horse-racing is a legal activity in England and is included in national income.

5. Consumers' Service:

There are a number of persons in society who render services to consumers but they do not produce anything tangible. They are the actors, dancers, doctors, singers, teachers, musicians, lawyers, barbers, etc. The problem arises about the inclusion of their services in national income since they do not produce tangible commodities. But as they satisfy human wants and receive payments for their services, their services are included as final goods in estimating national income.

6. Capital Gains:

The problem also arises with regard to capital gains. Capital gains arise when a capital asset such as a house, some other property, stocks or shares, etc. is sold at higher price than was paid for it at the time of purchase. Capital gains are excluded from national income because these do not arise from current economic activities. Similarly, capital losses are not taken into account while estimating national income.

7. Inventory Changes:

All inventory changes (or changes in stocks) whether positive or negative are included in national income. The procedure is to take changes in physical units of inventories for the year valued at average current prices paid for them.

The value of changes in inventories may be positive or negative which is added or subtracted from the current production of the firm. Remember, it is the change in inventories and not total inventories for the year that are taken into account in national income estimates.

8. Depreciation:

Depreciation is deducted from GNP in order to arrive at NNP. Thus depreciation lowers the national income. But the problem is of estimating the current depreciated value of, say, a machine, whose expected life is supposed to be thirty years. Firms calculate the depreciation value on the original cost of machines for their expected life. This does not solve the problem because the prices of machines change almost every year.

9. Price Changes:

National income by product method is measured by the value of final goods and services at current market prices. But prices do not remain stable. They rise or fall. When the price level rises, the national income also rises, though the national production might have fallen.

On the contrary, with the fall in the price level, the national income also falls, though the national production might have increased. So price changes do not adequately measure national income. To solve this problem, economists calculate the real national income at a constant price level by the consumer price index.

(C) Problems in Expenditure Method:

The following problems arise in the calculation of national income by expenditure method:

(1) Government Services:

In calculating national income by, expenditure method, the problem of estimating government services arises. Government provides a number of services, such as police and military services, administrative and legal services. Should expenditure on government services be included in national income?

If they are final goods, then only they would be included in national income. On the other hand, if they are used as intermediate goods, meant for further production, they would not be included in national income. There are many divergent views on this issue.

One view is that if police, military, legal and administrative services protect the lives, property and liberty of the people, they are treated as final goods and hence form part of national income. If they help in the smooth functioning of the production process by maintaining peace and security, then they are like intermediate goods that do not enter into national income.

In reality, it is not possible to make a clear demarcation as to which service protects the people and which protects the productive process. Therefore, all such services are regarded as final goods and are included in national income.

(2) Transfer Payments:

There arises the problem of including transfer payments in national income. Government makes payments in the form of pensions, unemployment allowance, subsidies, interest on national debt, etc. These are government expenditures but they are not included in national income because they are paid without adding anything to the production process during the current year.

For instance, pensions and unemployment allowances are paid to individuals by the government without doing any productive work during the year. Subsidies tend to lower the market price of the commodities. Interest on national or public debt is also considered a transfer payment because it is paid by the government to individuals and firms on their past savings without any productive work.

(3) Durable-use Consumers' Goods:

Durable-use consumers' goods also pose a problem. Such durable-use consumers' goods as scooters, cars, fans, TVs, furniture's, etc. are bought in one year but they are used for a number of years. Should they be included under investment expenditure or consumption expenditure in national income estimates? The expenditure on them is regarded as final consumption expenditure because it is not possible to measure their used up value for the subsequent years.

But there is one exception. The expenditure on a new house is regarded as investment expenditure and not consumption expenditure. This is because the rental income or the imputed rent which the house-owner gets is for making investment on the new house. However, expenditure on a car by a household is consumption expenditure. But if he spends the amount for using it as a taxi, it is investment expenditure.

(4) Public Expenditure:

Government spends on police, military, administrative and legal services, parks, street lighting, irrigation, museums, education, public health, roads, canals, buildings, etc. The problem is to find out which expenditure is consumption expenditure and which investment expenditure is.

Expenses on education, museums, public health, police, parks, street lighting, civil and judicial administration are consumption expenditure. Expenses on roads, canals, buildings, etc. are investment expenditure. But expenses on defence equipment are treated as consumption expenditure because they are consumed during a war as they are destroyed or become obsolete. However, all such expenses including the salaries of armed personnel are included in national income.

5. Importance of National Income Analysis:

The national income data have the following importance:

1. For the Economy:

National income data are of great importance for the economy of a country. These days the national income data are regarded as accounts of the economy, which are known as social accounts. These refer to net national income and net national expenditure, which ultimately equal each other.

Social accounts tell us how the aggregates of a nation's income, output and product result from the income of different individuals, products of industries and transactions of international trade. Their main constituents are inter-related and each particular account can be used to verify the correctness of any other account.

2. National Policies:

National income data form the basis of national policies such as employment policy, because these figures enable us to know the direction in which the industrial output, investment and savings, etc. change, and proper measures can be adopted to bring the economy to the right path.

3. Economic Planning:

In the present age of planning, the national data are of great importance. For economic planning, it is essential that the data pertaining to a country's gross income, output, saving and consumption from different sources should be available. Without these, planning is not possible.

4. Economic Models:

The economists propound short-run as well as long-run economic models or long-run investment models in which the national income data are very widely used.

5. Research:

The national income data are also made use of by the research scholars of economics. They make use of the various data of the country's input, output, income, saving, consumption, investment, employment, etc., which are obtained from social accounts.

6. Per Capita Income:

National income data are significant for a country's per capita income which reflects the economic welfare of the country. The higher the per capita income, the higher the economic welfare of the country.

7. Distribution of Income:

National income statistics enable us to know about the distribution of income in the country. From the data pertaining to wages, rent, interest and profits, we learn of the disparities in the incomes of different sections of the society. Similarly, the regional distribution of income is revealed.

It is only on the basis of these that the government can adopt measures to remove the inequalities in income distribution and to restore regional equilibrium. With a view to removing these personal and regional disequilibria, the decisions to levy more taxes and increase public expenditure also rest on national income statistics.

6. Inter-Relationship among different concept of National Income

The inter-relationship among the various concept of national income can be shown in the form of equations as under:

1. Gross National Product (GNP)	= Gross National Expenditure (GNE)
2. Gross Domestic Product (GDP)	= GNP – Net Income from abroad.
3. GNP at Market Prices	= GNP at Factor Cost + Indirect Taxes – Subsidies
4. NNP at Market Prices	= GNP at Market Prices – Depreciation or Capital Consumption Allowance
5. Net Domestic Product (NDP) at Market Prices	= NNP at Market Prices – Net Factor Income from abroad
6. NNP at Factor Cost or National Income or National Product	= NNP at Market Prices – Indirect Taxes + Subsidies
7. NDP at Factor Cost or Domestic Income or Domestic Product	= National Income – Net Factor Income from abroad
8. Private Income	= NNP at Factor Cost + Government and Business Transfer Payments + Current Transfers from abroad in the form of Gifts and Remittances + Windfall Gains + Net Factor Income from abroad + Interest on Public Debt and Consumer Interest – Social Security Contribution – Income from Government Departments and property – Profits and Surpluses of Public Corporations (or Undertakings)
	Or
	= Income from Domestic Product accruing to Private Sector + Interest on Public Debt + Net Factor Income from abroad + Transfer Payments + Current Transfers from the rest of the world (or abroad)
9. Income from Domestic Product accruing to Private Sector	= NDP at Factor Cost – Income from Domestic Product accruing to Government Departments – Saving of Non-Departmental Enterprises.
10. Personal Income	= Private Income – Saving of Private Corporate Sector (or Undistributed Corporate Profits) – Corporation Tax (or Profit Taxes)
11. Personal Disposable Income or Disposable Income	= Personal Income – Direct Taxes paid by Households (or Direct Personal Taxes) and Miscellaneous Fees, Fines, etc.
	Or
	= NDP at Factor Cost + Transfer Payments + Net Factor Income from abroad – Corporation Tax – Undistributed Corporate Profits – Social Security Payments – Direct Personal Taxes
	Or
	= National Income at Factor Cost + Transfer Payments + Net Income from abroad – Corporation Tax – undistributed Corporate Profits – Social Security payments – Direct Personal Taxes – Indirect Taxes + Subsidies.

MODULE-5

TOPIC:FINANCIAL ACCOUNTING

INTRODUCTION

Accounting is a system meant for measuring business activities, processing of information into reports and making the findings available to decision-makers. The documents, which communicate these findings about the performance of an organisation in monetary terms, are called financial statements.

Usually, accounting is understood as the Language of Business. However, a business may have a lot of aspects which may not be of financial nature. As such, a better way to understand accounting could be to call it The Language of Financial Decisions. The better the understanding of the language, the better is the management of financial aspects of living. Many aspects of our lives are based on accounting, personal financial planning, investments, income-tax, loans, etc. We have different roles to perform in life-the role of a student, of a family head, of a manager, of an investor, etc. The knowledge of accounting is an added advantage in performing different roles. However, we shall limit our scope of discussion to a business organisation and the various financial aspects of such an organisation.

When we focus our thoughts on a business organisation, many questions (is our business profitable, should a new product line be introduced, are the sales sufficient, etc.) strike our mind. To answer questions of such nature, we need to have information generated through the accounting process. The people who take policy decisions and frame business plans use such information.

All business organisations work in an ever-changing dynamic environment. Any new programme of the organisation or of its competitor will affect the business. Accounting serves as an effective tool for measuring the financial pulse rate of the company. It is a continuous cycle of measurement of results and reporting of results to decisionmakers. Just like arithmetic is a procedural element of mathematics, book keeping is the procedural element of accounting. Figure 1 shows how an accounting system operates in business and how the flow of information occurs.

DEVELOPMENT OF ACCOUNTING DISCIPLINE

The history of accounting can be traced back to ancient times.

According to some beliefs, the very art of writing originated in order to record accounting information. Though this may seem to be an exaggeration, but there is no denying the fact that accounting has a long history. Accounting records can be traced back to the ancient civilizations of China, Babylonia, Greece and Egypt. Accounting was used to keep records regarding the cost of labour and materials used in building great structures like the Pyramids.

During 1400s, accounting grew further because the needs for Information of merchants in the Venis City of Italy increased. The first known description of double entry book keeping was first published in 1494 by Lucas Pacioli. He was a mathematician and a friend of Leonardo lleda Vinci. The onset of the industrial revolution necessitated the development of more sophisticated accounting system, rather than pricing the goods based on guesses about the costs. The increase in competition and mass production of goods led to the rise of accounting as a formal branch of study.

UTILITY OF ACCOUNTING

The preceding section has just brought out the importance of information. Effective decisions require accurate, reliable and timely information. The need for quantity and quality of information varies with the importance of the decision that has to be taken on the basis of that information. The following paragraphs throw light on the various users of accounting information and what do they do with that information.

Individuals may use accounting information to manage their routine affairs like operating and managing their bank accounts, to evaluate the worthwhileness of a job in an organization, to invest money, to rent a house, etc.

Business Managers have to set goals, evaluate progress and initiate corrective action in case of unfavourable deviation from the planned course of action. Accounting information is required for many such decisions—purchasing equipment, maintenance of inventory, borrowing and lending, etc.

Investors and creditors are keen to evaluate the profitability and solvency of a company before they decide to provide money to the organisation. Therefore, they are interested to obtain financial information about the company in which they are contemplating an investment. Financial statements are the principal source of information to them which are published in annual reports of a company and various financial dailies and periodicals.

Government and Regulatory agencies are charged with the responsibility of guiding the socio-economic system of a country in such a way that it promotes common good. For example, the Securities and Exchange Board of India (SEBI) makes it mandatory for a company to disclose certain financial information to the investing public. The government's task of managing the industrial economy becomes simplify if the accounting information such as profits, costs, taxes, etc. is presented in a uniform manner without any manipulation or 'window dressing'.

Central and State governments levy various taxes. The taxation authorities, therefore, need to know the income of a company to calculate the amount of tax that the company would have to pay. The information generated by accounting helps them in such computations and also to detect any attempts of tax evasion.

Employees and trade unions use the accounting information to settle various issues related to wages, bonus, profit sharing, etc.

Consumers and general public are also interested in knowing the amount of income earned by various business houses. Accounting information helps in finding whether or not a company is over charging or exploiting the customers, whether or not companies are showing improved business performance, whether or not the country is emerging from the economic recession, etc. All such aspects draw heavily on accounting information and are closely related to our standard of living.

Financial accounting

As mentioned earlier, financial accounting deals with the preparation of financial statements for the basic purpose of providing information to various interested groups like creditors, banks, shareholders, financial institutions, government, consumers, etc. Financial statements, i.e. the income statement and the balance sheet indicate the way in which the activities of the business have been conducted during a given period of time. Financial accounting is charged with the primary responsibility of external reporting. The users of information generated by financial accounting, like bankers, financial institutions, regulatory authorities, government, investors, etc. want the accounting information to be consistent so as to facilitate comparison. Therefore, financial accounting is based on certain concepts and conventions which include separate business entity, going concern concept, money measurement concept, cost concept, dual aspect concept, accounting period concept, matching concept, realization concept and conventions of conservatism, disclosure, consistency, etc. All such concepts and conventions would be dealt with detail in subsequent lessons. The significance of financial accounting lies in the fact that it aids the management in directing and controlling the activities of the firm and to frame relevant managerial policies related to areas like production, sales, financing, etc.

KEYWORDS

Accrual: Recognition of revenues and costs as they are earned or incurred. It includes recognition of transaction relating to assets and liabilities as they occur irrespective of the actual receipts or payment.

Cost: The amount of expenditure incurred on or attributable to a specified article, product or activity.

Expenses: A cost relating to the operations of an accounting period.

Revenue: Total amount received from sales of goods/services.

Income: Excess of revenue over expenses.

Loss: Excess of expenses over revenue.

Capital: Generally refers to the amount invested in an enterprise by its owner.

Fund: An account usually of the nature of a reserve or provision which is represented by specifically Ear Market Assets.

Gain: A monetary benefit, profit or advantage resulting from a transaction or group of transactions.

Investment: Expenditure on assets held to earn interest, income, profit or other benefits.

Liability: The financial obligation of an enterprise other than owners' funds.

Net Profit: The excess of revenue over expenses during a particular accounting period.

ACCOUNTING CONCEPTS

The more important accounting concepts are briefly described as follows:

1. Separate Business Entity Concept

In accounting we make a distinction between business and the owner. All the books of accounts records day to day financial transactions from the view point of the business rather than from that of the owner. The proprietor is considered as a creditor to the extent of the capital brought in business by him. For instance, when a person invests Rs. 10 lakh into a business, it will be treated that the business has borrowed that much money from the owner and it will be shown as a 'liability' in the books of accounts of business. Similarly, if the owner of a shop were to take cash from the cash box for meeting certain personal expenditure, the accounts would show that cash had been reduced even though it does not make any difference to the owner himself. Thus, in recording a transaction the important question is how does it affects the business? For example, if the owner puts cash into the business, he has a claim against the business for capital brought in. In so-far as a limited company is concerned, this distinction can be easily maintained because a company has a legal entity like a natural person it can engage itself in economic activities of buying, selling, producing, lending, borrowing and consuming of goods and services.

However, it is difficult to show this distinction in the case of sole proprietorship and partnership. Nevertheless, accounting still maintains separation of business and owner. It may be noted that it is only for accounting purpose that partnerships and sole proprietorship are treated as separate from the owner (s), though law does not make such distinction. In fact, the business entity concept is applied to make it possible for the owners to assess the performance of their business and performance of those whose manage the enterprise. The managers are responsible for the proper use of funds supplied by owners, banks and others.

2. Money Measurement Concept

In accounting, only those business transactions are recorded which can be expressed in terms of money. In other words, a fact or transaction or happening which cannot be expressed in terms of money is not recorded in the accounting books. As money is accepted not only as a medium of exchange but also as a store of value, it has a very important advantage since a number of assets and equities, which are otherwise different, can be measured and expressed in terms of a common denominator.

We must realise that this concept imposes two severe limitations.

Firstly, there are several facts which though very important to the business, cannot be recorded in the books of accounts because they cannot be expressed in money terms. For example, general health condition of the Managing Director of the company, working conditions in which a worker has to work, sales policy pursued by the enterprise, quality of product introduced by the enterprise, though exert a great influence on the productivity and profitability of the enterprise, are not recorded in the books. Similarly, the fact that a strike is about to begin because employees are dissatisfied with the poor

working conditions in the factory will not be recorded even though this event is of great concern to the business. You will agree that all these have a bearing on the future profitability of the company.

Secondly, use of money implies that we assume stable or constant value of rupee. Taking this assumption means that the changes in the money value in future dates are conveniently ignored. For example, a piece of land purchased in 1990 for Rs. 2 lakh and another bought for the same amount in 1998 are recorded at the same price, although the first purchased in 1990 may be worth two times higher than the value recorded in the books because of rise in land prices. In fact, most accountants know fully well that purchasing power of rupee does change but very few recognise this fact in accounting books and make allowance for changing price level.

3. Dual Aspect Concept

Financial accounting records all the transactions and events involving financial element. Each of such transactions requires two aspects to be recorded. The recognition of these two aspects of every transaction is known as a dual aspect analysis. According to this concept every business transactions has dual effect. For example, if a firm sells goods of Rs. 5,000 this transaction involves two aspects. One aspect is the delivery of goods and the other aspect is immediate receipt of cash (in the case of cash sales). In fact, the term 'double entry' book keeping has come into vogue and in this system the total amount debited always equals the total amount credited. It follows from 'dual aspect concept'

that at any point of time owners' equity and liabilities for any accounting entity will be equal to assets owned by that entity. This idea is fundamental to accounting and could be expressed as the following equalities:

$$\text{Assets} = \text{Liabilities} + \text{Owners Equity} \dots(1)$$

$$\text{Owners Equity} = \text{Assets} - \text{Liabilities} \dots(2)$$

The above relationship is known as the 'Accounting Equation'. The term 'Owners Equity' denotes the resources supplied by the owners of the entity while the term 'liabilities' denotes the claim of outside parties such as creditors, debenture-holders, bank against the assets of the business.

Assets are the resources owned by a business. The total of assets will be equal to total of liabilities plus owners capital because all assets of the business are claimed by either owners or outsiders.

4. Going Concern Concept

Accounting assumes that the business entity will continue to operate for a long time in the future unless there is good evidence to the contrary. The enterprise is viewed as a going concern, that is, as continuing in operations, at least in the foreseeable future. In other words, there is neither the intention nor the necessity to liquidate the particular business venture in the predictable future. Because of this assumption, the accountant while valuing the assets does not take into account forced sale value of them. In fact, the assumption that the business is not expected to be liquidated in the foreseeable future establishes the basis for many of the valuations and allocations in accounting. For example, the

accountant charges depreciation on fixed assets. It is this assumption which underlies the decision of investors to commit capital to enterprise. Only on the basis of this assumption accounting process can remain stable and achieve the objective of correctly reporting and recording on the capital invested, the efficiency of management, and the position of the enterprise as a going concern.

However, if the accountant has good reasons to believe that the business, or some part of it is going to be liquidated or that it will cease to operate (say within six-month or a year), then the resources could be reported at their current values. If this concept is not followed, International Accounting Standard requires the disclosure of the fact in the financial statements together with reasons.

5. Accounting Period Concept

This concept requires that the life of the business should be divided into appropriate segments for studying the financial results shown by the enterprise after each segment. Although the results of operations of a specific enterprise can be known precisely only after the business has ceased to operate, its assets have been sold off and liabilities paid off, the knowledge of the results periodically is also necessary. Those who are interested in the operating results of business obviously cannot wait till the end. The requirements of these parties force the businessman 'to stop' and 'see back' how things are going on. Thus, the accountant must report for the changes in the wealth of a firm for short time periods. A year is the most common interval on account of prevailing practice, tradition and government requirements. Some firms adopt financial year of the government, some other calendar year.

Although a twelve month period is adopted for external reporting, a shorter span of interval, say one month or three month is applied for internal reporting purposes. This concept poses difficulty for the process of allocation of long term costs. All the revenues and all the cost relating to the year in operation have to be taken into account while matching the earnings and the cost of those earnings for the any accounting period. This holds good irrespective of whether or not they have been received in cash or paid in cash. Despite the difficulties which stem from this concept, short term reports are of vital importance to owners, management, creditors and other interested parties. Hence, the accountants have no option but to resolve such difficulties.

6. Cost Concept

The term 'assets' denotes the resources land building, machinery etc. owned by a business. The money values that are assigned to assets are derived from the cost concept. According to this concept an asset is ordinarily entered on the accounting records at the price paid to acquire it. For example, if a business buys a plant for Rs. 5 lakh the asset would be recorded in the books at Rs. 5 lakh, even if its market value at that time happens to be Rs. 6 lakh. Thus, assets are recorded at their original purchase price and this cost is the basis for all subsequent accounting for the business. The assets shown in the financial statements do not necessarily indicate their present market values. The term 'book value' is used for amount shown in the accounting records.

The cost concept does not mean that all assets remain on the accounting records at their original cost for all times to come. The asset may systematically be reduced in its value by charging 'depreciation',

which will be discussed in detail in a subsequent lesson. Depreciation has the effect of reducing profit of each period. The prime purpose of depreciation is to allocate the cost of an asset over its useful life and not to adjust its cost. However, a balance sheet based on this concept can be very misleading as it shows assets at cost even when there are wide difference between their costs and market values. Despite this limitation you will find that the cost concept meets all the three basic norms of relevance, objectivity and feasibility.

7. The Matching concept

This concept is based on the accounting period concept. In reality we match revenues and expenses during the accounting periods.

Matching is the entire process of periodic earnings measurement, often described as a process of matching expenses with revenues. In other words, income made by the enterprise during a period can be measured only when the revenue earned during a period is compared with the expenditure incurred for earning that revenue. Broadly speaking revenue is the total amount realised from the sale of goods or provision of services together with earnings from interest, dividend, and other items of income.

Expenses are cost incurred in connection with the earnings of revenues.

Costs incurred do not become expenses until the goods or services in question are exchanged. Cost is not synonymous with expense since expense is sacrifice made, resource consumed in relation to revenues earned during an accounting period. Only costs that have expired during an accounting period are considered as expenses. For example, if a commission is paid in January, 2002, for services enjoyed in November, 2001, that commission should be taken as the cost for services rendered in November 2001. On account of this concept, adjustments are made for all prepaid expenses, outstanding expenses, accrued income, etc, while preparing periodic reports.

8. Accrual Concept

It is generally accepted in accounting that the basis of reporting income is accrual. Accrual concept makes a distinction between the receipt of cash and the right to receive it, and the payment of cash and the legal obligation to pay it. This concept provides a guideline to the accountant as to how he should treat the cash receipts and the right related thereto. Accrual principle tries to evaluate every transaction in terms of its impact on the owner's equity. The essence of the accrual concept is that net income arises from events that change the owner's equity in a specified period and that these are not necessarily the same as change in the cash position of the business. Thus it helps in proper measurement of income.

9. Realisation Concept

Realisation is technically understood as the process of converting non-cash resources and rights into money. As accounting principle, it is used to identify precisely the amount of revenue to be recognised and the amount of expense to be matched to such revenue for the purpose of income measurement. According to realisation concept revenue is recognised when sale is made. Sale is considered to be made

at the point when the property in goods passes to the buyer and he becomes legally liable to pay. This implies that revenue is generally realised when goods are delivered or services are rendered. The rationale is that delivery validates a claim against the customer. However, in case of long run construction contracts revenue is often recognised on the basis of a proportionate or partial completion method. Similarly, in case of long run instalment sales contracts, revenue is regarded as realised only in proportion to the actual cash collection. In fact, both these cases are the exceptions to the notion that an exchange is needed to justify the realisation of revenue.

ACCOUNTING CONVENTIONS

1. Convention of Materiality

Materiality concept states that items of small significance need not be given strict theoretically correct treatment. In fact, there are many events in business which are insignificant in nature. The cost of recording and showing in financial statement such events may not be well justified by the utility derived from that information. For example, an ordinary calculator costing Rs. 100 may last for ten years. However, the effort involved in allocating its cost over the ten year period is not worth the benefit that can be derived from this operation. The cost incurred on calculator may be treated as the expense of the period in which it is purchased. Similarly, when a statement of outstanding debtors is prepared for sending to top management, figures may be rounded to the nearest ten or hundred.

This convention will unnecessarily overburden an accountant with more details in case he is unable to find an objective distinction between material and immaterial events. It should be noted that an item material for one party may be immaterial for another. Actually, there are no hard and fast rules to draw the line between material and immaterial events and hence, It is a matter of judgement and common sense. Despite this limitation, It is necessary to disclose all material information to make the financial statements clear and understandable. This is required as per IAS-1 and also reiterated in IAS-5. As per IAS-1, materiality should govern the selection and application of accounting policies.

2. Convention of Conservatism

This concept requires that the accountants must follow the policy of “playing safe” while recording business transactions and events. That is why, the accountant follow the rule anticipate no profit but provide for all possible losses, while recording the business events. This rule means that an accountant should record lowest possible value for assets and revenues, and the highest possible value for liabilities and expenses. According to this concept, revenues or gains should be recognised only when they are realised in the form of cash or assets (i.e. debts) the ultimate cash realisation of which can be assessed with reasonable certainty. Further, provision must be made for all known liabilities, expenses and losses, Probable losses regarding all contingencies should also be provided for. ‘Valuing the stock in trade at market price or cost price which ever is less’, ‘making the provision for doubtful debts on debtors in anticipation of actual bad debts’, ‘adopting written down value method of depreciation as against straight line method’, not providing for discount on creditors but providing for discount on debtors’, are some of the examples of the application of the convention of conservatism.

The principle of conservatism may also invite criticism if not applied cautiously. For example, when the accountant create secret reserves, by creating excess provision for bad and doubtful debts, depreciation, etc. The financial statements do not present a true and fair view of state of affairs. American Institute of Certified Public Accountant have also indicated that this concept need to be applied with much more caution and care as over conservatism may result in misrepresentation.

3. Convention of Consistency

The convention of consistency requires that once a firm decided on certain accounting policies and methods and has used these for some time, it should continue to follow the same methods or procedures for all subsequent similar events and transactions unless it has a sound reason to do otherwise. In other words, accounting practices should remain unchanged from one period to another. For example, if depreciation is charged on fixed assets according to straight line method, this method should be followed year after year. Analogously, if stock is valued at 'cost or market price whichever is less', this principle should be applied in each subsequent year.

However, this principle does not forbid introduction of improved accounting techniques. If for valid reasons the company makes any departure from the method so far in use, then the effect of the change must be clearly stated in the financial statements in the year of change.

The application of the principle of consistency is necessary for the purpose of comparison. One could draw valid conclusions from the comparison of data drawn from financial statements of one year with that of the other year. But the inconsistency in the application of accounting methods might significantly affect the reported data.

RECORDING OF TRANSACTIONS- VOUCHER

SYSTEM, ACCOUNTING PROCESS, JOURNAL

Accounting is the process of identifying, measuring, recording, and communicating an organization's economic activities to users. Users need information for decision making.

Generally Accepted Accounting Principles (GAAP)

The goal of accounting is to ensure information provided to decision makers is useful. To be useful, information must be relevant and faithfully represent a business's economic activities. This requires ethics, beliefs that help us differentiate right from wrong, in the application of underlying accounting concepts or principles. These

underlying accounting concepts or principles are known as generally accepted accounting principles (GAAP).

A business enterprise generally prepares the following two basic financial statements: Profit and Loss Account to ascertain the profit earned or loss incurred during an accounting period.

Balance Sheet to ascertain the financial position of the business as on a particular date.

Generally, a business enterprise has numerous transactions every day during an accounting period. Unless the transactions are recorded and analysed, it is not possible to determine the impact of each transaction in the above two basTraditionally, accounting is a method of collecting, recording, classifying, summarising, presenting and interpreting financial data aspect of an economic activity.ic statements.

An accounting process is a complete sequence of accounting procedures which are repeated in the same order during each accounting period.

Therefore, accounting process involves the following steps or stages:

Identification of transaction

In accounting, only business transactions are recorded. A transaction is an event which can be expressed in terms of money and which brings change in the financial position of a business enterprise.

Illustration: State with reasons whether the following events are transactions or not to Mr. K. Mondal, Proprietor.

(i) Mr. Mondal started business with capital (brought in cash)Rs. 40,000.

(ii) Paid salaries to staff Rs. 5,000.

(iii) Purchased machinery for Rs. 20,000 in cash.

(iv) Placed an order with Sen & Co. for goods for Rs. 5,000.

(v) Opened a Bank account by depositing Rs. 4,000.

(vi) Received pass book from bank.

(vii) Appointed Sohan as Manager on a salary of Rs. 4,000 per month.

(viii) Received interest from bank Rs. 500.

(ix) Received a price list from Lalit.

Solution: Here, each event is to be considered from the view point of Mr. Mondal's business. Those events which will change the financial position of the business of Mr. Mondal, should be regarded as transaction.

(i) It is a transaction, because it changes the financial position of Mr. Mondal's business. Cash will increase by Rs. 40,000 and Capital will increase by Rs. 40,000.

(ii) It is a transaction, because it changes the financial position of Mr. Mondal's business. Cash will decrease by Rs. 5,000 and Salaries (expenses) will increase by Rs. 5,000

(iii) It is a transaction, because it changes the financial position of Mr. Mondal's business. Machinery comes in and cash goes out.

(iv) It is not a transaction, because it does not change the financial position of the business.

(v) It is a transaction, because it changes the financial position of the business. Bank balance will increase by Rs. 4,000 and cash will decrease by Rs. 4,000.

(vi) It is also not a transaction, because it does not change the financial position of Mr. Mondal.

(vii) It is also not a transaction, because it does not change the financial position of Mr. Mondal.

(viii) It is a transaction, because it changes the financial position of Mr. Mondal's business. Bank interest will increase by Rs. 500 and cash will increase by the same amount.

(ix) It is not a transaction, because it does not change the financial position of the business of Mr. Mondal.

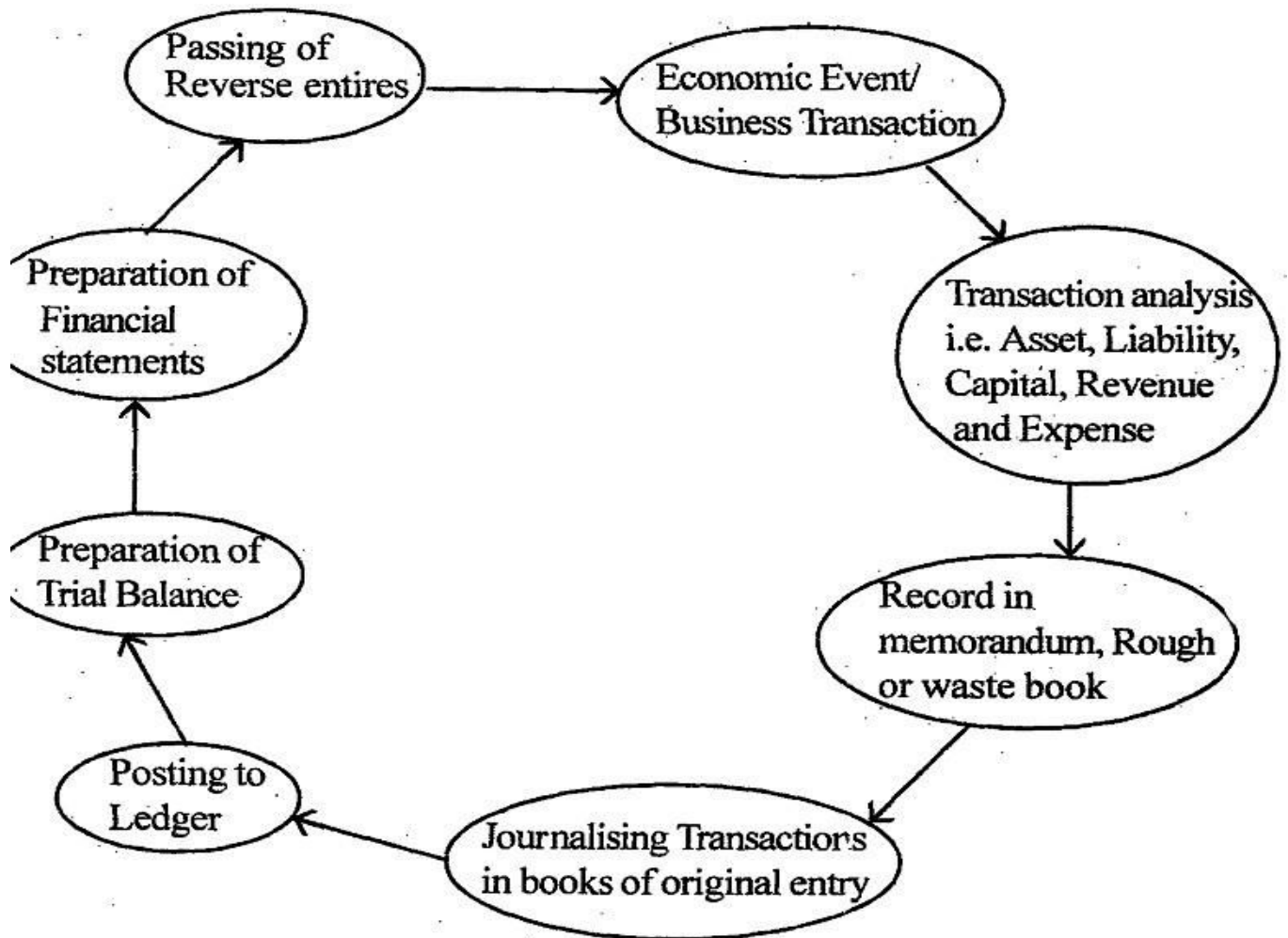
2. Recording the transaction

Journal is the first book of original entry in which all transactions are recorded event wise and date-wise and presents a historical record of all monetary transactions. It may further be divided into sub-journals as well which are also known subsidiary books.

3. Classifying

Accounting is the art of classifying business transactions.

Classification means statement setting out for a period where all the similar transactions relating to a person, a thing, expense, or any other subject are grouped together under appropriate heads of accounts.



4. Summarising

Summarising is the art of making the activities of the business enterprise as classified in the ledger for the use of management or other user groups i.e. Sundry debtors, Sundry creditors etc. Summarisation helps in the preparation of Profit and Loss Account and Balance sheet for a particular fiscal year.

5. Analysis and Interpretation

The financial information or data as recorded in the books of a account must further be analysed and interpreted so to draw useful conclusions. Thus, analysis of accounting information will help the management to assess in the performance of business operation and forming future plans also.

6. Presentation or reporting of financial information

The end users of accounting statements must be benefited from analysis and interpretation of data as some of them are the 'stock holders' and other one the 'stake holders'. Comparison of past and present statement and reports, use of ratio and trend analysis are the different tools of analysis and interpretation.

From the above discussion one can conclude that accounting is a art which starts and includes steps right from recording of business transactions of monetary character to the communicating or reporting the results thereof to the various interested parties.

VOUCHER

Each transaction is recorded in books of accounts providing all the required information of the transaction. Since each transaction has an effect on the financial position of the business, there should be a documentary evidence to establish the monetary accounts at which transactions are recorded and also the transactions are properly

authorised. The common documents that are generally used are as under:

- (i) Payment voucher;
- (ii) Receipt voucher; and
- (iii) Transfer voucher.

(i) A *Payment voucher* usually on a printed standard form, is a record of payment. When payment is made for an expense, generally a bills is prepared to record full particulars of the claim by the person or organisation receiving payment. From the bill, the accounting department prepares a voucher for each payment to be made, no matter whether the amount that is paid for the goods purchased, or to pay employee's salaries, or to pay for services or to pay for any other asset acquisition.

(ii) A *Receipt voucher* is a document which is issued against cash receipts. It may also be a printed standard form. This document shows that a certain sum of money was received from a person or organisation and also, contains information of the purpose for which the money is received. It is signed by a responsible employee, authorised by the management to receive the money.

(iii) A *Transfer voucher* is used to record the residuary transactions. An internal transaction or a transaction not involving any cash payment or cash receipt, is recorded in the transfer voucher. Examples are: Goods purchased on credit; depreciation of assets, outstanding expenses, accrued income, etc.

3.3 JOURNAL

Journal is a historical record of business transaction or events. The word journal comes from the French word "Jour" meaning "day". It is a book of original or prime entry. Journal is a primary book for recording the day to day transactions in a chronological order i.e. the order in which they occur. The

journal is a form of diary for business transactions. This is called the book of first entry since every transaction is recorded firstly in the journal.

Journal Entry

Journal entry means recording the business transactions in the journal. For each transaction, a separate entry is recorded. Before recording, the transaction is analysed to determine which account is to be debited and which account is to be credited.

The perform of journal is shown as follows:

The perform of journal is shown as follows:

JOURNAL

Date	Particulars	L.F.	Debit (Amount)	Credit (Amount)
(1)	(2)	(3)	(4)	(5)

Column 1 (Date): The date of the transaction on which it takes place is written in this column.

Column 2 (Particulars): In this column, the name of the accounts to be debited is written first, then the names of the accounts to be credited and lastly, the narration (i.e. a brief explanation of transaction) are entered.

Column 3 (L.F.): L.F. stands for ledger folio which means page of the ledger. In this column are entered the page numbers on which the various accounts appear in the ledger.

Column 4 (Dr. Amount): In this column, the amount to be debited against the 'Dr.' Account is written along with the nature of currency.

Column 5 (Cr. Amount): In this column the amount to be credited against the 'Cr.' Account is written along with the nature of currency.

Advantages of Using Journal

Journal is used because of the following advantages: · A journal contains a permanent record of all the business transactions.

.The journal provides a complete chronological (in order of the time of occurrence) history of all business transactions and the task of later tracing of some transactions is facilitated.

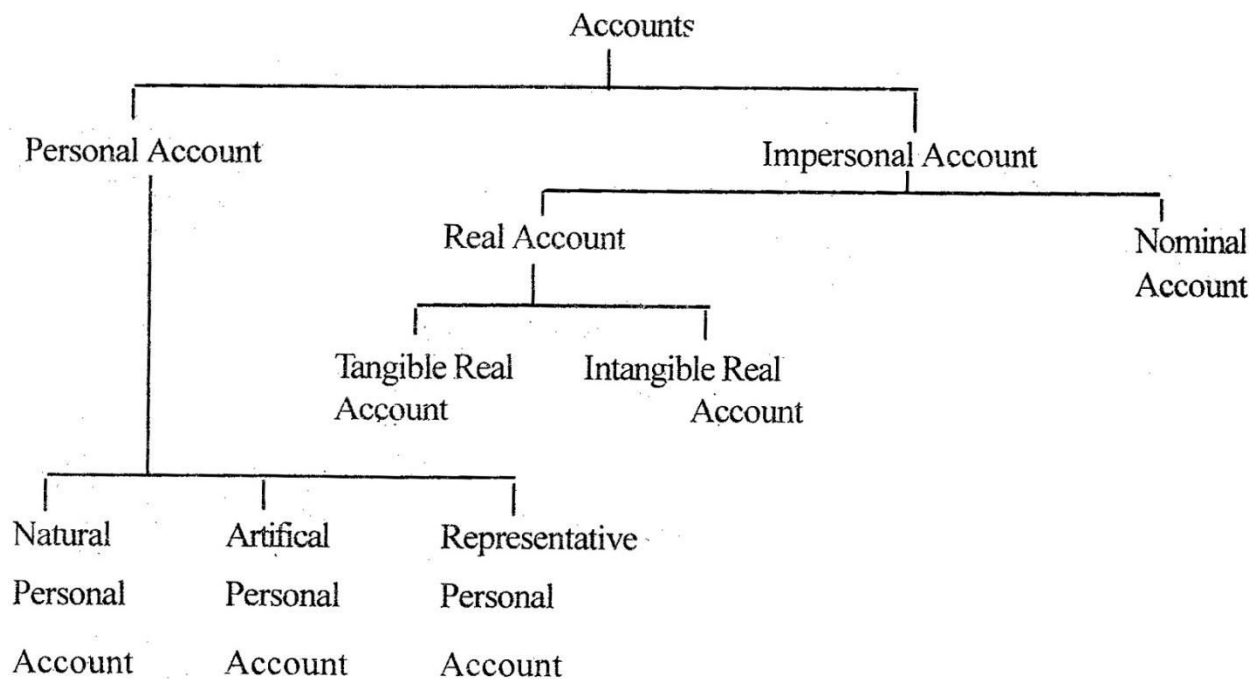
- A complete information relating to one single business transaction is available in one place with all its aspects.
- The transaction is provided with an explanation technically called a narration.
- Use of the journal reduces the possibility of an error when transactions are first recorded in this book.
- The journal establishes the quality of debits and credits for a transaction and reconciles any problems. If a business purchases a bicycle, it is necessary to decide whether the bicycle represents ordinary goods or machinery. Further any amount paid is debited to bicycle account and credited to cash account.
- The use of journals avoids omission or duplication of transactions or parts of transaction. Without the journal the accountant would be forced to go to the individual account to enter debits and credits. Therefore it is possible for accountant to miss part of a transaction, duplicate all or part of a transaction or incorrectly record debits and credits. Even with the Journal, it is still possible to omit transactions and make other errors. However, the Journal reduces these problems.
- Once a transaction is recorded in the journal, it is not necessary to post it immediately in the ledger accounts. In this, way, the journal allows the delayed posting.

In connection with the journal, the following points are to be remembered:

- For each transaction, the exact accounts should be debited and credited. For that, the two accounts involved must be identified to pass a proper journal entry.
- Sometimes, a journal entry may have more than one debit or more than one credit. This type of journal entry is called compound journal entry. Regardless of how many debits or credits are contained in a compound journal entry, all the debits are entered before any credits are entered. The aggregate amount of debits should be equal to the aggregate amount of credits.
- For a business, journal entries generally extend to several pages. Therefore, the total are cast at the end of each page, against the debit and credit columns, the following words are written in the particular column, which indicates, carried forward (of the amount on the next page) "Total c/f".

The debits and credits totals of the page are then written on the next page in the amount columns; and opposite to that on the left, the following words are written in the particulars column to indicate brought forward (of the amount of the previous page) "Total b/f". This process is repeated on every page and on the last page, "Grand Total" is cast.

Classification of Accounts:



1. Personal Accounts

Accounts which are related with accounts of individuals, firms, companies are known as personal accounts. The personal accounts may further be classified into three categories:

- (i) Natural Personal Accounts: Accounts of individuals relating to natural persons such as Akhil's A/c, Rajesh's A/c, Sohan's A/c are natural personal accounts.
- (ii) Artificial Personal Accounts: Accounts of companies, institutions such as Reliance Industries Ltd; Lions Club, M/s Sham & Sons, National College account are artificial personal accounts. These exist only in the eyes of law.
- (iii) Representative Personal Accounts: The accounts which represent some person such as wage outstanding account, prepaid insurance account, accrued interest account are considered as representative personal accounts.

2. Real Accounts

Real accounts are the accounts related to assets/properties. These may be classified into tangible real account and intangible real account.

The accounts relating to tangible assets such as building, plant, machinery, cash, furniture etc. are classified as tangible real accounts.

Intangible real accounts are the accounts related to intangible assets such as goodwill, trademarks, copyrights, franchisees, Patents etc.

3. Nominal Accounts

The accounts relating to income, expenses, losses and gains are classified as nominal accounts. For example Wages Account, Rent Account, Interest Account, Salary Account, Bad Debts Accounts.

Rules for Dedit(Dr) and Credit(Cr)

Type of Accounts	Rules for Debit	Rules for Credit
Personal Account	Debit the receiver	Credit the giver
Real Account	Debit what comes in	Credit what goes out
Nominal Account	Debit all expenses and losses	Credit all incomes and gains

Journalizing

Journalism is the process of recording journal entries in the Journal. It is a systematic act of entering the transaction in a day book in order of their occurrence i.e., date-wise or event-wise. After analysing the business transactions, the following steps in journalising are followed:

- (i) Find out what accounts are involved in business transaction.
- (ii) Ascertain what is the nature of accounts involved?
- (iii) Ascertain the golden rule of debit and credit is applicable for each of the accounts involved.
- (iv) Find out what account is to be debited which is to be credited.
- (v) Record the date of transaction in the “Date Column”.
- (vi) Write the name of the account to be debited very near to the left hand side in the ‘Particulars Column’ along with the word ‘Dr’ on the same line against the name of the account in the ‘Particulars Column’ and the amount to be debited in the ‘Debit Amount column’ against the name of the account.
- (vii) Record the name of the account to be credited in the next line preceded by the word ‘To’ at a few space towards right in the ‘Particulars Column’ and the amount to be credited in the ‘Credit Amount Column’ in front of the name of the account.
- (viii) Record narration (i.e. a brief explanation of the transaction) within brackets in the following line in ‘Particulars Column’.

(ix) A thin line is drawn all through the particulars column to separate one Journal entry from the other and it shows that the entry of a transaction has been completed.

Illustration: Analyse the following transactions.

- (a) Ramesh started his business with cash
- (b) Borrowed from Nikhil
- (c) Purchased furniture
- (d) Purchased furniture from Mohan on credit
- (e) Purchased goods for cash
- (f) Purchased goods from Ram on credit
- (g) Sold goods for cash
- (h) Sold goods to Hari on credit
- (i) Received cash from Hari

Solution

ANALYSIS OF TRANSACTIONS

Transaction	Accounts involved	Nature of accounts	How affected	Whether to be debited or credited
(a)	Cash A/c	Real	Cash is coming in	Debit
	Capital A/c	Personal	Ramesh is the giver	Credit
(b)	Cash A/c	Real	Cash is coming in	Debit
	Loan from Nikhil A/c	Personal	Nikhil is the giver	Credit
(c)	Furniture A/c	Real	Furniture is coming in	Debit
	Cash A/c	Real	Cash is going out	Credit
(d)	Furniture A/c	Real	Furniture is coming in	Debit
	Mohan's A/c	Personal	Mohan is the giver	Credit
(e)	Purchases A/c	Real	Goods are coming in	Debit
	Cash A/c	Real	Cash is going out	Credit
(f)	Purchases A/c	Real	Goods are coming in	Debit
	Ram's A/c	Personal	Ram is the giver	Credit
(g)	Cash A/c	Real	Cash is coming in	Debit
	Sales A/c	Real	Goods are going out	Credit
(h)	Hari's A/c	Personal	Hari is the receiver	Debit
	Sales A/c	Real	Goods are going out	Credit
(i)	Cash A/c	Real	Cash is coming in	Debit
	Hari's A/c	Personal	Hari is the giver	Credit

Illustration: Prepare Journal in the books of K.K. Co. from the

following transactions:

1999		Rs.	1999		Rs.
Dec. 1	Started business with a capital of	50,000	Dec. 15	Purchased goods from Ram	4,000
Dec. 6	Paid into bank	20,000	Dec. 18	Paid wages to workers	300
Dec. 8	Purchased goods for cash	4,000	Dec. 20	Recd. from Pankaj	1,000
				Allowed him discount Rs. 50	
Dec. 9	Paid to Ram	1,980	Dec. 22	Withdrawn from bank	3,000
Dec. 9	Discount allowed by him	20	Dec. 25	Paid Ram by cheque	500
Dec. 10	Cash sales	3,000	Dec. 31	Withdrawn for personal use	200
Dec. 12	Sold to Hari for cash	2,000			

Solution

IN THE BOOKS OF K.K. CO.

Journal

Date	Particulars	L.F.	Dr.	Cr.
			Rs.	Rs.
1999				
Dec. 1.	Cash A/c Dr. To Capital A/c (Being business started with capital)		50,000	50,000
6.	Bank A/c Dr. To Cash A/c (Being cash paid into bank)		20,000	20,000
8.	Purchase A/c Dr. To Cash A/c (Being goods purchased for cash)		4,000	4,000
9.	Ram A/c Dr.		2,000	
	To Cash A/c To Discount Received A/c (Being cash paid to Ram and discount received Rs. 20)			1,980 20
10.	Cash A/c Dr. To Sales A/c (Being goods sold for cash)		3,000	3,000
12.	Cash A/c Dr. To Sales A/c (Being goods sold for cash)		2,000	2,000
15	Purchases A/c Dr. To Ram A/c (Being goods purchased from Ram)		4,000	4,000
18.	Wages A/c Dr. To Cash A/c (Being wages paid)		300	300

20.	Cash A/c	Dr.	1,000	
	Discount Allowed A/c	Dr.	50	
	To Pankaj A/c			1,050
	(Being cash received from Pankaj and allowed him discount Rs. 50)			
22.	Cash A/c	Dr.	3,000	
	To Bank A/c			3,000
	(Being cash withdrawn from bank)			
25.	Ram A/c	Dr.	500	
	To Bank A/c			500
	(Being paid by cheque)			
31.	Drawings A/c	Dr.	200	
	To Cash A/c			200
	(Being withdrawn for personal use)			
	Grand Total		90,050	90,050

Goods Account

Generally, the term goods include every type of property such as Land, Building, Machinery, Furniture, Cloth etc. However, in accountancy its meaning is restricted to only those articles which are purchased by a businessman with an intention to sell it. For example, if a businessman purchased typewriter, it will be goods for him if he deals

in typewriter but if he deals in other business say clothes then typewriter will be asset for him and clothes will be goods.

Sub-Division of Goods Accounts

The goods account is not opened in accounting books and it is to be noted goods includes purchases, sales, sales returns, purchases return of goods. However, purchase account, sales account, sales return account and purchase return account are opened in the books of account.

Purchases Account: This is opened for goods purchased on cash and credit.

Sales Account: This account is opened for the goods sold on cash and credit.

Purchase Returns Account or Return Outward Account: This account is opened for the goods returned to suppliers.

When any amount becomes irrecoverable from any costumer or debtor his account is closed in the books. If in future any amount is recovered from him then his personal account will not be credited because that does not exist in the books. So the following entry is passed:

Cash Account Dr.

To Bad Debts Recovered Account

Loss of Goods by Fire/Accident/theft

A business may suffer loss of goods on account of fire, theft or accident. It is a business loss and a nominal account. It also reduces the goods at cost price, and increases the loss/expenses of the business. The entry will be passed as:

Loss by fire/Accident/theft Account Dr (for loss)

Insurance Company Account Dr. (for insurance claim admitted)

To Purchases Account

Drawings Account

It is a personal account of the proprietor. When the businessman withdraws cash or goods form the business for his personal/domestic use it is called as 'drawings'. Drawings reduce the capital as well as goods/cash balance of the business. The journal entry is:

Drawings Account Dr.

To Cash Account

To Purchases Account

LEDGER POSTING AND TRIAL BALANCE

Ledger is a book which contains various accounts. In simple words, ledger is a set of accounts. It includes all accounts of the business enterprise whether Real, Nominal or Personal.

POSTING

The term 'Posting' means transferring the debit and credit items from the Journal to their respective accounts in the ledger. It is important to note that the exact names of accounts used in the Journal should be carried to the ledger.

The Ledger posting may be made by the book-keeper from the Journal to the Ledger by any of the following methods:

- He may take a particular side first. For example, he may take the debits first and make the complete postings of all debits from Journal to the Ledger.

· He may take a particular account first and post all debits and credits relating to that account appearing on one

particular page of Journal. He may then take some other account and follow the same procedure.

· He may complete posting of each journal entry before proceeding to the next entry.

The Ledger Folio (L.F.) column in the Journal is used at the time when debits and credits are posted to the Ledger. The page number of the Ledger on which the posting has been done is mentioned in the L.F.

Column of the Journal. Similarly a folio column in the Ledger can also be kept where the page from which posting has been made from the Journal. Thus, these are cross references in both the Journal and the Ledger. A proper index must be maintained in the Ledger giving the names of the accounts and the page number. A specimen of Ledger is given below:

DALMIA'S A/C

Dr.

Cr.

Date	Particular	J.F.	Amount (Rs.)	Date	Particular	J.F.	Amount (Rs.)

Rules Regarding Posting

The following rules must be observed while posting transactions in the Ledger from the Journal:

- Separate accounts should be opened in the Ledger for posting transactions relating to different accounts recorded in the Journal. For example, separate accounts may be opened for sales, purchases, sales returns, purchases returns, salaries, rent, cash, etc.
- The concerned account which has been debited in the Journal should also be debited in the Ledger. However, a reference should be made of the other account which has been credited in the Journal. For example, for salaries paid, the salaries account should be debited in the Ledger, but reference should be given of the Cash Account which has been credited in the Journal.
- The concerned account, which has been credited in the Journal; should also be credited in the Ledger, but reference should be given of the account, which has been debited in the Journal. For example, for salaries paid, Cash Account has been credited in the Journal. It will be credited in the Ledger also, but reference will be given of the Salaries Account in the Ledger.

Thus, it may be concluded that while making posting in the Ledger, the concerned account which has been debited or credited in the Journal should also be debited or credited in the Ledger, but reference

has to be given of the other account which has been credited or debited in the Journal, as the case may be. This will be clear with the following example:

Suppose salaries of Rs. 10,000 have been paid in cash, the following entry will be passed in the Journal:

Salaries Account Dr. 10,000

To Cash Account 10,000

In the Ledger two accounts will be opened (i) Salaries Account, and (ii) Cash Account. Since Salaries Account has been debited in the Journal, it will also be debited in the Ledger. Similarly Cash Account has been credited in the Journal and, therefore, it will also be credited in the Ledger, but reference will be given of the other account involved. Thus, the accounts will appear as follows in the Ledger:

SALARIES ACCOUNT

Dr.		Cr.	
Cash A/c (i)	Rs. 10,000		

CASH ACCOUNT

Dr.		Cr.	
		Salaries A/c (ii)	Rs. 10,000

Use of the words “To” and “By”: It is customary to use words ‘To’ and ‘By’ while making posting in the Ledger. The word ‘To’ is used with the accounts which appear on the debit side of a Ledger Account.

Balancing of an Account

In business, there may be several transactions relating to one particular account. In Journal, these transactions appear on different pages in a chronological order while they appear in a classified form under that particular account in the Ledger. At the end of a period (say a month, a quarter or a year), the businessman will be interested in knowing the position of a particular account. This means, he should total the debits and credits of his account separately and find out the net balance. This technique of finding out the net balance of an account, after considering the totals of both debits and credits appearing in the account is known as ‘Balancing the Account’. The balance is put on the side of the account which is smaller and a reference is given that it has been carried forward or carried down (c/f or c/d) to the next period. On the other hand, in the next period a reference is given that the opening balance has been brought forward or brought down (b/f or b/d) from the previous period. This will be clear with the help of the following

illustration.

Illustration 1: Journalise the following transactions, post them in the Ledger and balance the accounts as on 31st March, 2006.

1. Ram started business with a capital of Rs. 10,000.
2. He purchased goods from Mohan on credit Rs. 2,000.
3. He paid cash to Mohan Rs. 1,000.
4. He sold goods to Suresh Rs. 2,000.
5. He received cash from Suresh Rs. 3,000.
6. He further purchased goods from Mohan Rs. 2,000.
7. He paid cash to Mohan Rs. 1,000.
8. He further sold goods to Suresh Rs. 2,000.
9. He received cash from Suresh Rs. 1,000

Solution**JOURNAL**

Date	Particulars	L.F.	Debit Amount (Rs.)	Credit Amount (Rs.)
	Cash Account Dr. To Capital Account (Being commencement of business)		10,000	10,000
	Purchase Account Dr. To Mohan (Being purchase of goods on credit)		2,000	2,000
	Mohan Dr. To Cash (Being payment of cash to Mohan)		1,000	1,000
	Suresh Dr. To Sales (Being good sold to Suresh)		2,000	2,000
	Cash Account Dr. To Suresh (Being cash received from Suresh)		3,000	3,000
	Purchases Account Dr. To Mohan (Being purchase of goods from Mohan)		2,000 2,000	
	Mohan Dr. To Cash Account (Being payment of cash to Mohan)		1,000	1,000
	Suresh Dr. To Sales Account (Being goods sold to Suresh)		2,000	2,000
	Cash Account Dr. To Suresh (Being cash received from Suresh)		1,000	1,000
			24,000	24,000

LEDGER
CASH ACCOUNT

Dr.			Cr.		
Date	Particular	Amount Rs.	Date	Particular	Amount Rs.
April 1	To Capital A/c	10,000	Mar. 31	By Mohan	1,000
	To Suresh	3,000		By Mohan	1,000
	To Suresh	1,00		By Balance c/d	12,000
		14,000			14,000
	To Balance b/d	12,000			

CAPITAL ACCOUNT

		Rs.			Rs.
Mar. 31	To Balance c/d	10,000	Apr. 1	By Cash A/c	10,000
		10,000			10,000
				By Balance b/d	10,000

PURCHASE ACCOUNT

		Rs.			Rs.
April 1.	To Mohan	2,000	March. 31	By Balance c/d	4,000
	To Mohan	2,000			
		4,000			4,000
	To Balance b/d	4,000			

MOHAN

		Rs.			Rs.
	To Cash	1,000		By Purchases	2,000
	To Cash	1,000		By Purchases	2,000
	To Balance c/d	2,000			
		4,000			4,000
			Apr. 1	By Balance b/d	2,000

SURESH

		Rs.			Rs.
	To Sales	2,000		By Cash A/c.	3,000
	To Sales	2,000		By Cash A/c.	1,000
		4,000			4,000

SALES ACCOUNT

		Rs.			Rs.
Mar. 31	To Balance c/d	4,000		By Suresh	2,000
				By Suresh	2,000
		4,000			4,000
			April. 1	By Balance b/d	4,000

It is to be noted that the balance of an account is always known by the side which is greater. For example, in the above illustration, the debit side of the Cash Account is greater than the credit side by Rs. 12,000. It will be therefore said that Cash Account is showing a debit balance of Rs. 12,000. Similarly, the credit side of the Capital Account is greater than debit side by Rs. 10,000. It will be, therefore, said that the Capital Account is showing a credit balance of Rs. 10,000.

What is a 'Trial Balance'

A trial balance is a bookkeeping worksheet in which the balances of all ledgers are compiled into debit and credit columns. A company prepares a trial balance periodically, usually at the end of every reporting period. The general purpose of producing a trial balance is to ensure the entries in a company's bookkeeping system are mathematically correct.

There are various objectives of preparing Trial balance which are mentioned below:

To have balances of all the accounts of the ledger in order to avoid the necessity of going through the pages of the ledger to find it out.

To have material for preparation of the financial statement of the organization.

To have the arithmetic accuracy of the books of accounts because of the agreement of the trial balance.

To have a proof that the double entry of each transaction has been recorded because of its agreement.

To provide guidance in an identification of errors.

ERRORS IN TRIAL BALANCE

Error of omission – If the entry has not been recorded in a subsidiary book both the debit and credit of that transaction would be omitted and the agreement of the trial balance will not be affected in any way.

Compensating errors – These are the errors which compensate themselves in the net result, i.e. over debit or under credit of various accounts being neutralized by the over credits or under credit to the same extent of some other accounts. For example, under the posting of Rs. 500 on the debit side of a certain account would be compensated by under posting of Rs. 100 on the credit side of another account and an omission of credit posting of Rs. 400 to a third account. It is quite possible that this error may also be neutralized by over posting of Rs. 500 on the debit side in some other account or accounts.

Errors of principle – These errors will not affect the agreement of the trial balance as they arise from the debiting or crediting of wrong heads of accounts as would be inconsistent with the fundamentals principles of double entry accounting. For example, Rs. 1,500 spent on the extension of building wrongly debited to repairs account instead of building account will not affect the agreement of the Trial Balance. Thus, such errors arise whenever an asset is treated as an expense or vice versa or a liability is treated as an income or vice versa.

A wrong entry in a subsidiary book – If a credit purchase of Rs 450 from James is wrongly written as Rs. 540 in the purchase book, such an error will not be disclosed by the Trial Balance. As the posting on both

the debit side of purchase account and credit side of account of James will be with the wrong amount Rs. 540, so the trial balance will agree.

Posting an item to the correct side but in the wrong account – If a purchase of Rs 100 from C has been credited to M instead of C, it will not detect such an error.

Through the following three methods a trial balance will be prepared:

Total method. This method states, the total of debit and credit amount respectively of each account are displayed in the two columns of amount against it i.e. one for the debit balance and another for credit balance.

Balancing Method. In this method, the difference of each amount is taken out. In case debit balance is larger in amount than the credit balance, the difference is put in the debit columns of the trial balance.

Combined Method: It's a combination of Balancing as well as Total Method.

Of the two methods of preparation mentioned above, the balance method that is the second one is usually used in practice because it facilitates the preparation of financial statements.

Format of a Trial Balance under Balancing Method:

TRIAL BALANCE
(AS ON 31ST JANUARY, 2006)

Particular	Debit Amount	Credit Amount
Cash Account	580	
Interest Account		200
Bank Account	25,000	
Stock Account	20,000	

PREPARATION OF PROFIT AND LOSS ACCOUNT

AND BALANCE SHEET

INTRODUCTION

The transactions of a business enterprise for the accounting period are first recorded in the books of original entry, then posted therefrom into the ledger and lastly tested as to their arithmetical accuracy with the help of trial balance. After the preparation of the trial balance, every businessman is interested in knowing about two more facts. They are: (i) Whether he has earned a profit or suffered a loss during the period covered by the trial balance, and (ii) Where does he stand now? In other words, what is his financial position? For the above said purposes, the businessman prepares financial statements for his

business i.e. he prepares the Trading and Profit and Loss Account and Balance Sheet at the end of the accounting period. These financial statements are popularly known as final accounts. The preparation of financial statements depends upon whether the business concern is a trading concern or manufacturing concern. If the business concern is a trading concern, it has to prepare the following accounts along with the Balance Sheet: (i) Trading Account; and (ii) Profit and Loss Account.

But, if the business concern is a manufacturing concern, it has to prepare the following accounts along with the Balance Sheet:

(i) Manufacturing Account; (ii) Trading Account; and (iii) Profit and Loss Account.

Trading Account is prepared to know the Gross Profit or Gross Loss. Profit and Loss Account discloses net profit or net loss of the business. Balance sheet shows the financial position of the business on a given date. For preparing final accounts, certain accounts representing incomes or expenses are closed either by transferring to Trading Account or Profit and Loss Account. Any Account which cannot find a place in any of these two accounts goes to the Balance Sheet.

TRADING ACCOUNT

After the preparation of trial balance, the next step is to prepare Trading Account. Trading Account is one of the financial statements which shows the result of buying and selling of goods and/or services during an accounting period. The main objective of preparing the Trading Account is to ascertain gross profit or gross loss during the accounting period. Gross Profit is said to have made when the sale proceeds exceed the cost of goods sold. Conversely, when sale proceeds are less than the cost of goods sold, gross loss is incurred. For the purpose of calculating cost of goods sold, we have take into consideration opening stock, purchases, direct expenses on purchasing or manufacturing the goods and closing stock. The balance of this account i.e. gross profit or gross loss is transferred to the Profit and Loss Account. The specimen of a Trading Account is given below:

PROFIT AND LOSS ACCOUNT

Trading Account results in the gross profit/loss made by a businessman on purchasing and selling of goods. It does not take into consideration the other operating expenses incurred by him during the course of running the business. Besides this, a businessman may have other sources of income. In order to ascertain the true profit or loss which the business has made during a particular period, it is necessary that all such expenses and incomes should be considered. Profit and Loss Account considers all such expenses and incomes and gives the net profit made or net loss suffered by a business during a particular period. All the indirect revenue expenses and losses are shown on the debit side of the Profit and Loss Account, where as all indirect revenue incomes are shown on the credit side of the Profit and Loss Account.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To opening stock	By sales	.....
To purchases	less: returns	.....
less: returns	By closing stock	.....
To carriage inward		
To wages		
To gross profit c/d (in case of gross profit)	By gross loss c/d (in case of gross loss)	.....

To gross loss b/d (in case of gross loss)	By gross profit b/d (in case of gross profit)	.....
To salaries	By interest earned	.....
To carriage outward	By dividend earned	.....
To rates and taxes	By rent earned	.....
To insurance	By discount received	.....
To depreciation	By profit on sale of fixed assets	.....
To bad debts	By profit on sale of investments	.....
To advertising		
To interest paid		
To travelling expenses		
To discount allowed		
To loss on sale of fixed assets		
To loss on sale of investments		
To loss by fire		
To net profit transferred to B/S (in case of net profit)	By net loss transferred to B/S (in case of net loss)	.....

BALANCE SHEET

A Balance Sheet is a statement of financial position of a business concern at a given date. It is called a Balance Sheet because it is a sheet of balances of those ledger accounts which have not been closed till the preparation of Trading and Profit and Loss Account. After the preparation of Trading and Profit and Loss Account the balances left in the trial balance represent either personal or real accounts. In other words, they either represent assets or liabilities existing on a particular date. Excess of assets over liabilities represent the capital and is indicative of the financial soundness of a company.

A Balance Sheet is also described as a “Statement showing the Sources and Application of Capital”. It is a statement and not an account and prepared from real and personal accounts. The left hand side of the Balance Sheet may be viewed as description of the sources from which the business has obtained the capital with which it currently operates and the right hand side as a description of the form in which that capital is invested on a specified date. Balance Sheet may be viewed as description of the sources from which the business has obtained the capital with which it currently operates and the right hand side as a description of the form in which that capital is invested on a specified date.

Characteristics

The characteristics of a Balance Sheet are summarised as under:

- (a) A Balance Sheet is only a statement and not an account. It has no debit side or credit side. The headings of the two sides are ‘Assets’ and ‘Liabilities’.
- (b) A Balance Sheet is prepared at a particular point of time and not for a particular period. The information contained in the Balance Sheet is true only at that particular point of time at which it is prepared.
- (c) A Balance Sheet is a summary of balances of those ledger accounts which have not been closed by transfer to Trading and Profit and Loss Account.
- (d) A Balance Sheet shows the nature and value of assets and the nature and the amount of liabilities at a given date.

Classification of assets and liabilities

Assets

Assets are the properties possessed by a business and the amount due to it from others. The various types of assets are:

(a) Fixed Assets

All assets that are acquired for the purpose of using them in the conduct of business operations and not for reselling to earn profit are called fixed assets. These assets are not readily convertible into cash in the normal course of business operations. Examples are land and building, furniture,

(b) Current Assets

All assets which are acquired for reselling during the course of business are to be treated as current assets. Examples are cash and bank balances, inventory, accounts receivables, etc.

(c) Tangible Assets

There are definite assets which can be seen, touched and have volume such as machinery, cash, stock, etc.

(d) Intangible Assets

Those assets which cannot be seen, touched and have no volume but have value are called intangible assets. Goodwill, patents and trade marks are examples of such assets.

(e) Fictitious Assets

Fictitious assets are not assets at all since they are not represented by any tangible possession. They appear on the asset side simply because of a debit balance in a particular account not yet written off, e.g. provision for discount on creditors, discount on issue of shares etc.

(f) Wasting Assets

Such assets as mines, quarries etc. that become exhausted or reduce in value by their working are called wasting assets.

(g) Contingent Assets

Contingent assets come into existence upon the happening of a certain event or the expiry of a certain time. If that event happens, the asset becomes available otherwise not, for example, sale agreement to acquire some property, hire purchase contracts etc.

In practical no reference is made to contingent assets in the Balance Sheet. At the most, they may form part of notes to the Balance Sheet.

Liabilities

A liability is an amount which a business is legally bound to pay. It is a claim by an outsider on the assets of a business. The liabilities of a business concern may be classified as:

(a) Long Term Liabilities

The liabilities or obligations of a business which are not payable within the next accounting period but will be payable within next five to ten years are known as long term liabilities. Public deposits, debentures, bank loan are the examples of long term liabilities.

(b) Current Liabilities

All short term obligations generally due and payable within one year are current liabilities. This includes trade creditors, bills payable etc.

(c) Contingent Liabilities

A contingent liability is one which is not an actual liability. They become actual on the happenings of some event which is uncertain. In other words, they would become liabilities in the future provided the contemplated event occurs. Since such a liability is not actual liability it is not shown in the Balance Sheet. Usually it is mentioned in the form of a footnote below the Balance Sheet.

Marshalling of assets and liabilities

The arrangement of assets and liabilities in a particular order is called marshalling of the Balance Sheet. Assets and liabilities can be arranged in the Balance Sheet into two ways:

(a) In order of liquidity.

(b) In order of permanence.

When assets and liabilities are arranged according to their reliability and payment preferences, such an order is called liquidity order. Such arrangement is given below in Balance Sheet (a). When the order is reversed from that what is followed in liquidity, it is called order of permanence. In other words, assets and liabilities are listed in order of permanence. This order of Balance Sheet is given below in Balance Sheet (B).

BALANCE SHEET (A)
(IN ORDER OF LIQUIDITY)

Liabilities	Rs.	Assets	Rs.
Bills payable		Cash in hand	
Loans		Cash at bank	
Sundry creditors		Investments	
Outstanding expenses		Sundry debtors	
Reserves		Bills receivable	
Capital		Stock-in-trade	
<i>Add</i> Net Profit		Loose tools	
<i>Add</i> Interest		Fixtures and fittings	
<i>Less</i> Drawings		Plant and machinery	
		Building	
		Land	
		Goodwill	

BALANCE SHEET (B)
(IN ORDER OF PERMANENCE)

Liabilities	Rs.	Assets	Rs.
Capital		Goodwill	
<i>Add</i> Net Profit		Land	
<i>Add</i> Interest		Building	
<i>Less</i> Drawings		Plant and machinery	
Reserves		Fixtures and fittings	
Outstanding expenses		Loose tools	
Sundry creditors		Stock-in-trade	
Loans		Bills receivable	
Bills payable		Sundry debtors	
		Investments	
		Cash at bank	
		Cash in hand	

Illustration III: The following balances are extracted from the books of Kautilya & Co. on 31st March, 2006. You are required prepare the Trading and Profit and Loss Account and a Balance Sheet as on that date.

	Rs.		Rs.
Stock on April, 1	500	Commission (Cr.)	200
B/R	2,250	Returns Outwards	250
Purchases	19,500	Trade Expenses	100
Wages	1,400	Office Fixtures	500
Insurance	550	Cash in Hand	250
Sundry Debtors	15,000	Cash at Bank	2,375
Carriage Inwards	400	Rent & Taxes	550
Commission (Dr.)	400	Carriage Outwards	725
Interest on Capital	350	Sales	25,000
Stationary	225	Bills Payable	1,500
Returns Inwards	650	Creditors	9,825
		Capital	8,950

The closing stock was valued Rs.12500.

Solution:

TRADING & PROFIT AND LOSS A/C OF MESSRS KAUTILYA & CO.
FOR THE YEAR ENDED 31ST MARCH, 2006

	Rs.	Rs.		Rs.	Rs.
To Opening stock		500	By Sales	25,000	
To Purchases	19,500		Less returns	650	24,350
Less returns	250	19,250	By Closing Stock		12,500
To Wages		1,400			
To Carriage Inwards		400			
To Gross Profit c/d		15,300			
		36,850			36,850
To Insurance		550	By Gross Profit b/d		15,300
To Commission		400	By Commission		200
To Interest on Capital		350			
To Stationary		225			
To Trade Expenses		100			
To Rent and Taxes		550			
To Carriage Outwards		725			
To Net Profit transferred to Capital A/c		12,600			
		15,500			15,500

BALANCE SHEET OF MESSERS KAUTILYA & CO
AS ON 31ST MARCH, 2006

Liabilities	Amount (Rs.)	Assets	Amount (Rs.)
Creditors	9,825	Cash in Hand	250
Bills Payable	1,500	Cash at Bank	2,375
Capital	8,950	Bill Receivable	2,250
Add Net Profit	12,600	Stock	12,500
	21,550	Sundry Debtors	15,000
		Office Fixtures	500
	32,875		32,875

ADJUSTMENTS

While preparing trading and Profit and Loss account one point that must be kept in mind is that expenses and incomes for the full trading period are to be taken into consideration. For example if an expense has been incurred but not paid during that period, liability for the unpaid amount should be created before the accounts can be said to show the profit or loss. All expenses and incomes should properly be adjusted through entries. These entries which are passed at the end of the accounting period are called adjusting entries. Some important adjustments which are to be made at the end of the accounting year are discussed in the following pages.

1. Closing Stock

This is the stock which remained unsold at the end of the accounting period. Unless it is considered while preparing the trading account, the gross profit shall not be correct. Adjusting entry for closing stock is as under:

Closing stock Account Dr.

To Trading account

(Being closing stock brought in to books)

Treatment in final accounts

(i) Closing stock is shown on the credit side of Trading account.

(ii) At same value it will be shown as an asset in the balance sheet.

2. Outstanding Expenses

Those expenses which have become due and have not been paid at the end of the accounting year, are called outstanding expenses. For example, the businessman has paid rent only for 4 months instead of one year. This means 8 months' rent is outstanding. In order to bring this fact into books of accounts, the following adjustment entry will be passed at the end of the year:

Rent A/c Dr.

To outstanding Rent A/c

(Being rent outstanding for 8 months)

The two fold effect of the above adjustment will be (i) the amount of outstanding rent will be added to the rent on the debit side of Profit and Loss Account, and (ii) outstanding rent will be shown on the liability side of the Balance Sheet.

Prepaid Expenses

There are certain expenses which have been paid in advance or paid for the future period which is not yet over or not yet expired. The benefit of such expenses is to be enjoyed during the next accounting period. Since, such expenses have already been paid, they have also recorded in the books of account of that period for which they do not relate. For example, insurance premium paid for one year Rs.3,600 on 1st July, 1996. The final accounts are prepared on 31st March, 1997. The benefit of the insurance premium for the period from 1st April to 30th June, 1997 is yet to expire. Therefore, the insurance premium paid for the period from 1st April 1997 to 30th June, 1997, i.e. for 3 months, shall be treated as "Prepaid Insurance Premium".

The adjustment entry for prepaid expenses is as under:

Prepaid Expenses Account Dr.

To Expenses Account

(Being the adjustment entry for prepaid expenses)

The amount of prepared expenses will appear as an asset in the Balance Sheet while amount of appropriate expense account will be shown in the Profit and Loss Account by way of deduction from the said expense.

Depreciation

Depreciation is the reduction in the value of fixed asset due to its use, wear and tear or obsolescence. When an asset is used for earning purposes, it is necessary that reduction due to its use, must be charged to the Profit and Loss account of that year in order to show correct profit or loss and to show the asset at its correct value in the Balance Sheet.

There are various methods of charging depreciation on fixed assets.

Suppose machinery for Rs.10,000 is purchased on 1.1.98, 20% p.a. is the rate of depreciation. Then Rs.2,000 will be depreciation for the year 1998 and will be brought into account by passing the following adjusting entry:

Depreciation A/c Dr. Rs. 2,000

To Machinery A/c Rs.2,000

Bad Debts

Debts which cannot be recovered or become irrecoverable are called bad debts. It is a loss for the business. Such a loss is recorded in the books by making following adjustment entry:

Bad Debts A/c Dr.

To Sundry Debtors A/c

(Being the adjustment entry for bad debts)

Provisions for Doubtful Debts

In addition to the actual bad debts, a business unit may find on the last day of the accounting period that certain debts are doubtful, i.e., the amount to be received from debtors may or may not be received. The amount of doubtful debts is calculated either by carefully examining the position of each debtor individually and summing up the amount of doubtful debts from various debtors or it may be computed (as is usually done) on the basis of some percentage (say 5%) of debtors at the end of the accounting period. The percentage to be adopted is usually based upon the past experience of the business. The reasons for making provision for doubtful debts are two as discussed below:

(i) Loss caused by likely bad debts must be charged to the Profit and Loss of the period for which credit sales have been made to ascertain correct profit of the period.

(ii) For showing the true position of realisable amount of debtors in the Balance Sheet, i.e., provision for doubtful debts will be deducted from the amount of debtors to be shown in the balance sheet.

For example, sundry debtors on 31.12.1998 are Rs.55,200. Further bad debts are Rs.200. Provision for doubtful debts @ 5% is to be made on debtors. In order to bring the provision for doubtful debts of Rs.2,750,

i.e., 5% on Rs.55,000 (55,200-200), the following entry will be made:

Profit and Loss A/c Dr. Rs.2,750

To Provision for Doubtful Debts A/c Rs.2,750

(Being Provision for Doubtful Debts provided)

Loss of Stock by Fire

In business, the loss of stock may occur due to fire. The position of the stock may be:

(a) all the stock is fully insured.

(b) the stock is partly insured.

(c) the stock is not insured at all.

If the stock is fully insured, the whole loss will be claimed from the insurance company. The following entry will be passed:

Insurance Co. A/c Dr.

To Trading A/c

(Being the adjustment entry for Loss of goods charged from

insurance Co.)

The value of goods lost by fire shall be shown on the credit side of the trading Account and this is shown as an asset in the Balance Sheet.

If the stock is not fully insured, the loss of stock covered by insurance policy will be claimed from the insurance company and the rest of the amount will be loss for the business which is chargeable to Profit and Loss Account. In this case, the following entry will be passed:

Insurance Co. A/c Dr.

Profit and Loss A/c Dr.

To Trading A/c

(Being the adjustment entry for Loss of goods)

The amount of goods lost by fire is credited to Trading Account, the amount of claim accepted by insurance company shall be treated as an asset in the Balance Sheet, while the amount of claim not accepted is a loss so it will be debited to Profit and Loss Account.

If the stock is not insured at all, the whole of the loss will be borne by the business and the adjusting entry shall be:

Profit and Loss A/c Dr.

To Trading A/c

(Being the adjustment entry for Loss of goods)

The double effect of this entry will be (a) it is shown on the credit side of the Trading Account (b) it is shown on the debit side of the Profit and Loss Account.

14. Manager's Commission

Sometimes, in order to increase the profits of the business, manager is given some commission on profits of the business. It can be given at a certain percentage on the net profits but before charging such commission or on the net profits after charging such commission. In both the cases, the adjustment entry will be:

Profit and Loss A/c Dr.

To Commission Payable A/c

(Being the adjustment entry for manager's commission)

Illustration:

From the following Trial Balance of Mr. Garg as on

31st March, 2006, prepare Trading Account, Profit and Loss Account and

Balance Sheet.

TRIAL BALANCE

Debit Balance	Rs.	Credit Balance	Rs.
Stock on 1 st April, 2005	500	Capital	2,000
Purchases	1,500	Sales	3,500
Land and Building	2,000	Sunday Creditors	750
Bills Receivable	300	Commission	50
Wages	300	Bills payable	300
Machinery	800	Loan	600
Carriage Inward	100		
Carriage Outward	100		
Power	150		
Salaries	200		
Discount Allowed	30		
Drawings	100		
Insurance Premium	20		
Cash at Bank	500		
Cash in Hand	100		
Investments	500		
	7,200		7,200

Adjustments

1. Stock as on 31st March 2006 is valued at Rs. 200.
2. Provide depreciation @ 10% on Machinery and @ 5% on Land and Building.
3. Outstanding salaries amounted to Rs.50.
4. Insurance premium is paid in advance to the extent of Rs.10.
5. Allow interest on Capital @ 6% per annum.
6. Interest on loan @ 12% per annum is due for one year.

Solution

TRADING & PROFIT AND LOSS A/C
FOR THE YEAR ENDED 31ST MARCH, 2006

Particulars		Rs.	Particulars	Rs.
To Opening stock		500	By Sales	3,500
To Purchases		1,500	By Closing Stock	200
To Wages		300		
To Carriage Inward		100		
To Power		150		
To Gross Profit c/d		1,150		
		3,700		3,700
To Salaries	200		By Gross profit b/d	1,150
Add Outstanding Salaries	50	250	By Commission	50
To Carriage Inward		100		
To Insurance Premium	20			
Less prepaid Ins.	10	10		
To Discount allowed		30		
To Depreciation on:				
Machinery	80			
Land and Building	100	180		
To Interest on Loan		72		
To Interest on Capital		120		
To Net Profit (Transferred to capital account)		435		
		1,200		1,200

BALANCE SHEET AS ON 31ST MARCH 2006

Liabilities		Rs.	Assets		Rs.
Capital	2,000		Land and Building	2,000	
Add Interest on Capital	120		Less Dep.	100	1,900
Add Net profit	438		Machinery	800	
	2,558		Less Dep.	80	720
Less Drawings Loan	100	2,458	Investments		500
	600		Closing stock		200
Add Interest O/S	72	672	Bills Receivable		300
Sundry Creditors		750	Cash at Bank		500
Bills payable		300	Cash in Hand		100
Outstanding Salaries		50	Prepaid Insurance		10
		4,230			4,230

MODULE-6

TOPIC: INVESTMENT DECISION

INTRODUCTION

The word Capital refers to be the total investment of a company of firm in money, tangible and intangible assets. Whereas budgeting defined by the “Rowland and William” it may be said to be the art of building budgets. Budgets are a blue print of a plan and action expressed in quantities and manners. Investment decision is the process of making investment decisions in capital expenditure. A capital expenditure may be defined as an expenditure the benefits of which are expected to be received over period of time exceeding one year. The main characteristic of a capital expenditure is that the expenditure is incurred at one point of time whereas benefits of the expenditure are realized at different points of time in future. The examples of capital expenditure:

1. Purchase of fixed assets such as land and building, plant and machinery, good will, etc.
2. The expenditure relating to addition, expansion, improvement and alteration to the fixed assets.
3. The replacement of fixed assets.
4. Research and development project.

MEANING

The process through which different projects are evaluated is known as capital budgeting. Capital budgeting is defined “as the firm’s formal process for the acquisition and investment of capital. It involves firm’s decisions to invest its current funds for addition, disposition, modification and replacement of fixed assets”.

DEFINITION

Capital budgeting (investment decision) as, “Capital budgeting is long term planning for making and financing proposed capital outlays.”----- Charles T.Horngreen

“Capital budgeting consists in planning development of available capital for the purpose of maximizing the long term profitability of the concern” – Lynch

NEED AND IMPORTANCE OF CAPITAL BUDGETING

1. Huge investments: Capital budgeting requires huge investments of funds, but the available funds are limited, therefore the firm before investing projects, plan are control its capital expenditure.
2. Long-term: Capital expenditure is long-term in nature or permanent in nature. Therefore financial risks involved in the investment decision are more. If higher risks are involved, it needs careful planning of capital budgeting.
3. Irreversible: The capital investment decisions are irreversible, are not changed back. Once the decision is taken for purchasing a permanent asset, it is very difficult to dispose of those assets without involving huge losses.

4. Long-term effect: Capital budgeting not only reduces the cost but also increases the revenue in long-term and will bring significant changes in the profit of the company by avoiding over or more investment or under investment. Over investments leads to be unable to utilize assets or over utilization of fixed assets. Therefore before making the investment, it is required carefully planning and analysis of the project thoroughly.

DEVELOPING CASH FLOW DATA (cash inflow and cash outflow)

Before we can compute a project's value, we must estimate the cash flows both current and future associated with it. We therefore begin by discussing cash flow estimation, which is the most important and perhaps the most difficult, step in the analysis of a capital project. The process of cash flow estimation is problematic because it is difficult to accurately forecast the costs and revenues associated with large, complex projects that are expected to affect operations for long periods of time.

Calculation of cash inflow

Sales	xxxx
Less: Cash expenses	xxxx
PBDT	xxxx
Less: Depreciation	xxxx
PBT	xxxx
less: Tax	xxxx
PAT	xxxx
Add: Depreciation	xxxx
Cash inflow p.a	xxxx

Calculation of cash outflow

Cost of project/asset	xxxx
Transportation/installation charges	xxxx
Working capital	xxxx
Cash outflow	xxxx

CAPITAL BUDGETING TECHNIQUES

At each point of time a business firm has a number of proposals regarding various projects in which it can invest funds. But the funds available with the firm are always limited and it is not possible to invest

funds in all the proposals at a time. Hence, it is very essential to select from amongst the various competing proposals, those which give the highest benefits. The crux of the capital budgeting is the allocation of available resources to various proposals.

There are many methods of evaluating profitability of capital investment proposals. The various commonly used methods are as follows:

(A) Traditional methods:

(1) Pay-back Period Method or Pay out or Pay off Method.

(2) Improvement of Traditional Approach to pay back Period Method.(post payback method)

(3) Accounting or Average Rate of Return Method.

(B) Time-adjusted method or discounted methods:

(4) Net Present Value Method.

(5) Internal Rate of Return Method.

(6) Profitability Index Method.

(A) TRADITIONAL METHODS:

1. PAY-BACK PERIOD METHOD

The 'pay back' sometimes called as pay out or pay off period method represents the period in which the total investment in permanent assets pays back itself. This method is based on the principle that every capital expenditure pays itself back within a certain period out of the additional earnings generated from the capital assets.

Under this method, various investments are ranked according to the length of their payback period in such a manner that the investment within a shorter payback period is preferred to the one which has longer pay back period. (It is one of the non-discounted cash flow methods of capital budgeting).

$$\text{Pay-back period} = \frac{\text{Initial investment}}{\text{Annual cash inflows}}$$

MERITS

The following are the important merits of the pay-back method:

1. It is easy to calculate and simple to understand.

2. Pay-back method provides further improvement over the accounting rate return.

3. Pay-back method reduces the possibility of loss on account of obsolescence.

DEMERITS

1. It ignores the time value of money.
2. It ignores all cash inflows after the pay-back period.
3. It is one of the misleading evaluations of capital budgeting.

ACCEPT /REJECT CRITERIA

If the actual pay-back period is less than the predetermined pay-back period, the project would be accepted. If not, it would be rejected.

3. AVERAGE RATE OF RETURN:

This method takes into account the earnings expected from the investment over their whole life. It is known as accounting rate of return method for the reason that under this method, the Accounting concept of profit (net profit after tax and depreciation) is used rather than cash inflows. According to this method, various projects are ranked in order of the rate of earnings or rate of return. The project with the higher rate of return is selected as compared to the one with lower rate of return. This method can also be used to make decision as to accepting or rejecting a proposal. Average rate of return means the average rate of return or profit taken for consideration.

Average Return on Average Investment = (Average Annual Profit after depreciation and taxes)/ (Average Investment) x 100

Merits

1. It is easy to calculate and simple to understand.
2. It is based on the accounting information rather than cash inflow.
3. It is not based on the time value of money.
4. It considers the total benefits associated with the project.

Demerits

1. It ignores the time value of money.
2. It ignores the reinvestment potential of a project.
3. Different methods are used for accounting profit. So, it leads to some difficulties in the calculation of the project.

If the actual accounting rate of return is more than the predetermined required rate of return, the project would be accepted. If not it would be rejected.

The traditional methods of capital budgeting suffer from serious limitations that give the equal weights to present and future flow of income. These do not take into accounts the time value of money. Following are the discounted cash flow methods:

Net Present Value Method: This method is the modern method of evaluating the investment proposals. This method takes into consideration the time value of money and attempts to calculate the return in investments by introducing the factor of time element. It recognizes the fact that a rupee earned today is more valuable earned tomorrow. The net present value of all inflows and outflows of cash occurring during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital.

Following are the necessary steps for adopting the net present value method of evaluating investment proposals.

1. Determine appropriate rate of interest that should be selected as the minimum required rate of return called discount rate.
2. Compute the present value of total investment outlay.
3. Compute the present value of total investment proceeds.
4. Calculate the net present value of each project by subtracting the present value of cash inflows from the present value of cash outflows for each project.
5. If the net present value is positive or zero, the proposal mat be accepted otherwise rejected.

Advantages of Net Present Value

1. It recognizes the time value of money and is suitable to be applied in situations with uniform cash outflows and cash flows at different period of time.
2. It takes into account the earnings over the entire life of the projects and the true profitability of the investment proposal can be evaluated.
3. It takes into consideration the on\objective of maximum profitability.

Disadvantages of Net Present Value

1. This method is more difficult to understand and operate.
2. It is not easy to determine an appropriate discount rate.
3. It may not give good results while comparing projects with unequal lives and investment of funds.

NPV = Total Present value of cash inflows – Net Investment

Illustration 1:

From the following information, calculate the net present value of the two project and suggest which of the two projects should be accepted a discount rate of the two.

	Project X	Project Y
Initial Investment	Rs. 20,000	Rs. 30,000
Estimated Life	5 years	5 years
Scrap Value	Rs. 1,000	Rs. 2,000

The profits before depreciation and after taxation (cash flows) are as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
	Rs.	Rs.	Rs.	Rs.	Rs.
Project x	5,000	10,000	10,000	3,000	2,000
Project y	20,000	10,000	5,000	3,000	2,000

Note : The following are the present value factors @ 10 % p.a.

Year	1	2	3	4	5	6
Factor	0.909	0.826	0.751	0.683	0.621	0.564

Solution

Year	Cash Inflows		Present Value of Rs. 1 @ 10%	Present Value of Net Cash Inflow	
	Project X Rs.	Project Y Rs.		Project X Rs.	Project Y Rs.
1	5,000	20,000	0.909	4,545	18,180
2	10,000	10,000	0.826	8,260	8,260
3	10,000	5,000	0.751	7,510	3,755
4	3,000	3,000	0.683	2,049	2,049
5	2,000	2,000	0.621	1,242	1,242
Scrap Value	1,000	2,000	0.621	621	1,245
Total present valueInitial investments				24,227 20,000	34,728 30,000
Net present value				4,227	4,728

Project Y should be selected as net present value of project Y is higher.

Illustration2:

Initial Outlay	Rs. 1,00,000
Estimated life	5 Years
Scrap Value	Rs. 10,000
Profit after tax :	
End of year 1	Rs. 6,000
2	Rs. 14,000
3	Rs. 24,000
4	16,000
5	Nil

Solution Depreciation has been calculated under straight line method. The cost of capital may be taken at 10 % . P.a. is given below.

Year	1	2	3	4	5
PV factor @ 10%	0.909	0.826	0.751	0.683	0.621

$$\begin{aligned}
 \text{Depreciation} &= \frac{\text{Initial cash outflow} - \text{scrap value}}{\text{Estimated Life of the project}} \\
 &= \frac{1,00,000 - 10,000}{5} \\
 &= \frac{90,000}{5} = \text{Rs.18,000}
 \end{aligned}$$

Year	Profit after Tax	Depreciation	Cash Inflow
1	6,000	18,000	24,000
2	14,000	18,000	32,000
3	24,000	18,000	42,000
4	16,000	18,000	34,000
5	Nil	18,000	18,000

Net Present Value

Year	Cash Inflow	Discount factor @ 10%	Present value (Rs.)
1	24,000	0.909	21,816
2	32,000	0.826	26,432
3	42,000	0.751	31,542
4	34,000	0.683	23,222
5	18,000	0.621	11,178

Total present value of cash inflows	1,14,190
Less : Initial cash investment	1,00,000
Net present value	<u>1,41,90</u>

Internal Rate of Return

Internal rate of return is time adjusted technique and covers the disadvantages of the traditional techniques. In other words it is a rate at which discount cash flows to zero. It is expected by the following ratio:

$$\frac{\text{Cash inflow}}{\text{Investment initial}}$$

Steps to be followed:

Step 1. find out factor

Factor is calculated as follows:

$$F = \frac{\text{Cash outlay (or) initial investment}}{\text{Cash inflow}}$$

Step 2. Find out positive net present value

Step 3. Find out negative net present value

Step 4. Find out formula net present value

Formula

$$\text{IRR} = \text{Base factor} + \frac{\text{Positive net present value}}{\text{Difference in positive and Negative net present value}} \times \text{DP}$$

Internal Rate of Return

Internal rate of return is time adjusted technique and covers the disadvantages of the traditional techniques. In other words it is a rate at which discount cash flows to zero.

Merits

1. It consider the time value of money.
2. It takes into account the total cash inflow and outflow.
3. It does not use the concept of the required rate of return.
4. It gives the approximate/nearest rate of return.

Demerits

1. It involves complicated computational method.
2. It produces multiple rates which may be confusing for taking decisions.
3. It is assume that all intermediate cash flows are reinvested at the internal rate of return.

Accept/Reject criteria

If the present value of the sum total of the compounded reinvested cash flows is greater than the present value of the outflows, the proposed project is accepted. If not it would be rejected.

A company has to select one of the following two projects:

	Project A	Project B
Cost	Rs.22,000	20,000
Cash inflows:		
Year 1	12,000	2,000
Year 2	4,000	2,000
Year 3	2,000	4,000
Year 4	10,000	20,000

Using the Internal Rate of Return method suggest which is Preferable.

Solution

$$F = \frac{\text{Cash outlay}}{\text{Cash inflow}}$$

Project A

$$\begin{aligned} \text{Cash Inflow} &= \frac{\text{Total cash inflow}}{\text{No. of years}} \\ &= \frac{28,000}{4} = 7000 \end{aligned}$$

$$= \frac{22000}{7000} = 3.14$$

The factor thus calculated will be located in table II below. This would give the estimated rate of return to be applied discounting the cash for the internal rate of returns. In this of project A the rate comes to 10 % while in case of project B it comes to 15 %.

Project A

Year	Cash Inflows Rs.	Discounting Factor at 10%	Present Value Rs.
1	12000	0.909	10908
2	4000	0.826	3304
3	2000	0.751	1502
4	10000	0.683	6830
			<u>22544</u>
	Less: Initial Investment.		<u>22000</u>
	Net Present Value		<u>544</u>

The present value at 10 % comes to Rs. 22,544. The initial investment is Rs. 22,000. Interest rate of return may be taken approximately at 10 %.

In the case more exactness is required another trial which is slightly higher than 10 % (since at this rate the present value is more than initial investment) may be taken. Taking a rate of 12 % the following results would emerge.

Year	Cash Inflows Rs.	Discounting Factor at 12.6%	Present Value Rs.
1	12,000	0.893	10,716
2	4,000	0.794	3,188
3	2,000	0.712	1,424
4	10,000	0.636	6,380
			<u>21,688</u>
Less:	Initial Investment Value		<u>22,000</u>
	Net Present Value		<u>(-)312</u>

$$\text{IRR} = \text{Base factor} + \frac{\text{Positive net present value}}{\text{Difference in positive and Negative net present value}} \times \text{DP}$$

$$\text{Base factor} = 10 \%$$

$$\text{DP} = 2 \%$$

$$\begin{aligned}
 &= 10\% + \frac{544}{544 - (-312)} \times 2\% \\
 &= 10\% + \frac{544}{856} \times 2 \\
 &= 10 + 1.27 \\
 &= 11.27\%
 \end{aligned}$$

Project B

Year	Cash Inflows Rs.	Discount Factor at 15%	Present value Rs.
1	2,000	0.909#	1,818
2	2,000	0.826	1,652
3	4,000	0.751	3,004
4	20,000	0.683	13,660
		Total present value	20,134
Less:		Initial investment	20,000
		Net present value	134

$$\begin{aligned}
 \text{IRR} &= 10\% + \frac{134}{134 - (-2676)} \times 5\% \\
 &= 10\% + 0.24\% \quad \text{IRR} = 10.24\%
 \end{aligned}$$

Thus, internal rate of return in project 'A' is higher as compared to project 'B'. Therefore project 'A' is preferable.

PROFITABILITY INDEX METHOD

The *profitability index* (PI) is the ratio of the present value of change in operating cash inflows to the present value of investment cash outflows:

$$\text{PI} = \frac{\text{Present value of the change in operating cash inflows}}{\text{Present value of the investment cash outflows}}$$

Instead of the *difference* between the two present values, as in equation NPV, PI is the *ratio* of the two present values. Hence, PI is a variation of NPV. By construction, if the NPV is zero, PI is one.

If $\text{PI} > 1$ project will be accepted, if $\text{PI} < 1$ then project is rejected and if $\text{PI} = 1$ then decision is based on non-financial consideration.

Advantages of PI method

1. It considers Time value of money
2. It considers all cash flow during life time of project.
3. More reliable than NPV method when evaluating the projects requiring different initial investments.

Disadvantages of PI method

1. This method is difficult to understand.
2. Calculations under this method are complex

REFERENCE BOOKS:

1. Riggs, Bedworth and Randhwa, "Engineering Economics", McGraw Hill Education India
2. Principles of Economics, Deviga Vengedasalam; Karunagaran Madhavan, Oxford University Press.
3. Engineering Economy by William G.Sullivan, Elin M.Wicks, C. Patric Koelling, Pearson
4. R.Paneer Seelvan, " Engineering Economics", PHI
5. Ahuja,H.L., "Principles of Micro Economics" , S.Chand & Company Ltd
6. Jhingan,M.L., "Macro Economic Theory"
7. Macro Economics by S.P.Gupta, TMH
- 8.Haniff and Mukherjee,Modern Accounting,Vol-1,TMG
- 9.Modern Economic Theory – K.K. Dewett (S.Chand)