MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Unit- I: Introduction to Managerial Economics, Theory of Consumer Behaviour, Theory of Demand and Supply

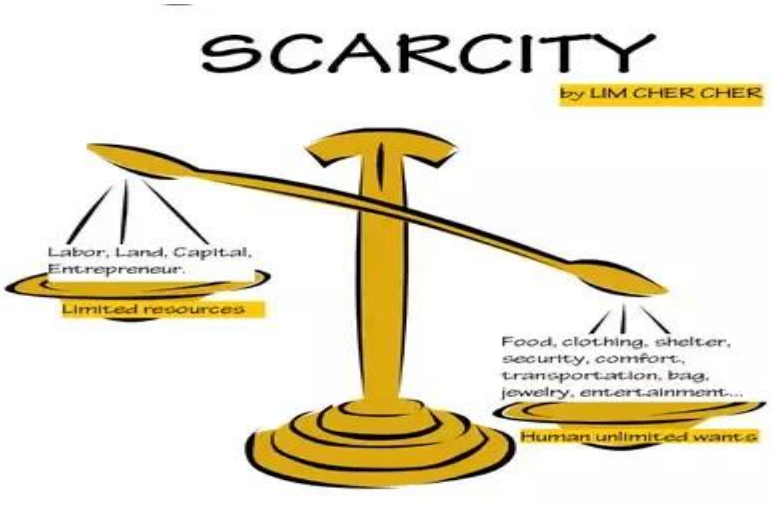
ORIGIN AND MEANING OF ECONOMICS:

The word Economics is derived from two Greek words "OIKOS and NEMO" that means "Household Management"

"Economics is a study of human activity both at individual level and national level."

We find that people aimed at earning money through in different activities like agriculture, trade, business, profession and industry and uses of this money for satisfaction of their wants such as food, clothing, shelter and other needs. These activities are called economic activities.

Economics is the study of how humans make decisions in the face of scarcity. Scarcity refers to a basic economic problem; it is the gap between limited resources and the limitless wants. Thus, the economics helps us to coordinates unlimited wants with limited resources.



Definitions:

According to Adam Smith – Economics as "the Science of Wealth" with the publication of famous book "An Enquiry into the Nature and Causes of Wealth of Nations" in 1776, thus economics saw the light of the day.

Features:
(a) The main objectivity of human activity is the acquisition of wealth
(b) Wealth refers to goods produced
(c) Man is treated as selfish (rational) whose objective is to accumulate more and more wealth.

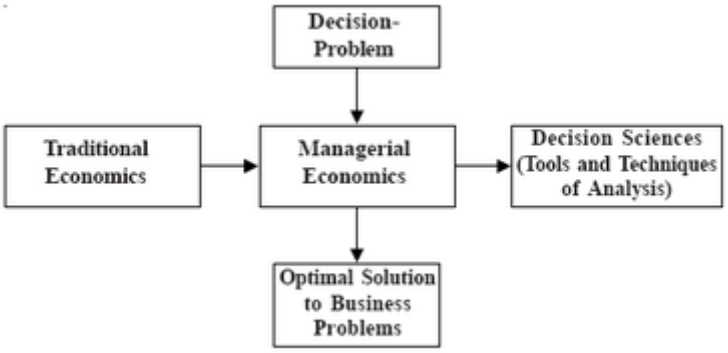
According to Alfred Marshall – Economics is a study of man actions in the ordinary business life. It enquires how he gets his income and how he uses it.

MANAGERIAL ECONOMICS - MEANING, DEFINITION, NATURE AND SCOPE

Introduction:

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

Managerial Economics is a stream of management studies. It bridges the gap between traditional economics and real life business practices by applying various theories, tools and techniques, and to find the optimum solutions for various business problems such as demand, production, cost, price, investment and profit etc and to make efficient managerial decisions. In a sense, Managerial Economics provides a link between traditional economics and the decision sciences for managerial decision-making as shown in Fig 1.1.



Definitions:

"Managerial Economics is the integration of economic theory with business practices for the purpose of facilitating decision-making and forward planning by management"

- Spencer and Siegelman

"Managerial Economics is the use of economic modes of thought to analyze business situation".

- M.C. Nair and M.C. Meriam

"The application of economic theory and methodology to business administration practice"

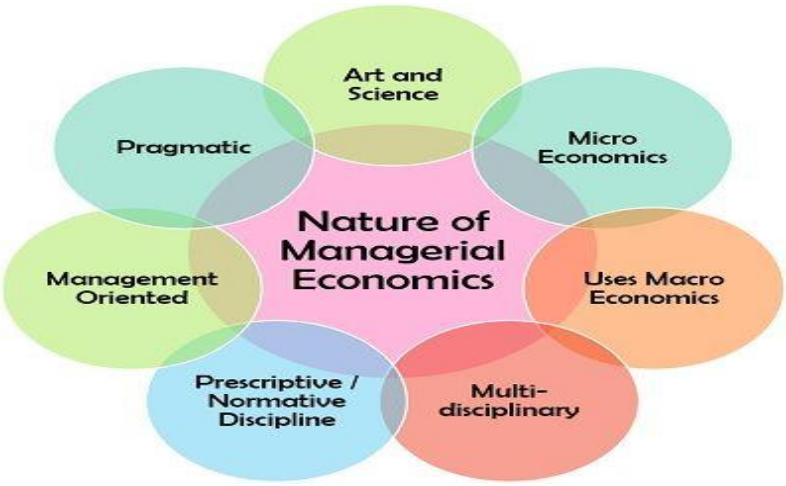
- Brigham and Pappas

NATURE OF MANAGERIAL ECONOMICS

You need to know about its various characteristics to get more information about managerial economics. In the mentioned below points let's read about the nature of this concept:

(A) Art and Science: Managerial Economics as an **art** provide a clue to the how a particular problem should be solved. In this connection, the management theory requires a lot of critical and logical thinking and analytical skills to make decisions or solve problems. Managerial Economics as a **science** that it establishes a cause and effect relationship by collecting, classifying and analyzing the facts on the basis of certain economic concepts, principles,

techniques and methods to solve business problems. Thus, Managerial Economics is a Science as well as an Art.



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

(C) Uses Macro Economics: Any organization is greatly affected by the external world in which it operates against the backdrop of macroeconomics. Thus, the managerial economist have to be aware of the various macroeconomic factors such as market dynamics, economic conditions, government policies, industrial policies, etc., and their effect on the company.

(D) Multidisciplinary: Managerial economics is a multidisciplinary course of action. The contents, tools and techniques of managerial economics are drawn from different subjects such as economics, management, mathematics, statistics, accountancy, production and operations research, psychology, organizational behavior, sociology and human resource management etc.

(E) Prescriptive Action / Normative Statement: *Prescriptive action* is goal oriented. By introducing corrective steps it aims at achieving the objective and solves specific problems with the available alternatives. *A normative statement* usually implies the words 'ought' or 'should'. They reflect people's moral attitudes, value judgments and are expressions of what is 'good' or 'bad', 'right' or ' wrong'. For instance, the fact that variable costs are marginal costs can be used to judge the feasibility of an export order.

(F) Management Oriented: It serves as an instrument in managers' hands to deal effectively with business-related problems and uncertainties. This also allows for setting priorities, formulating policies, and taking successful decision-making.

(G) Pragmatic: Managerial economics is realistic and rational. It's find the solution to day-to-day business challenges.

(H) Applied in Nature: Inventory control, project management, optimization, etc. models' are built to reflect the real life complex business situations and these models are of immense

help to managers for decision making. **For example:** The case study method to conceptualize the problem, identify that alternative and determine the best course of action.

(I) Offers Scope to Evaluate Each Alternative: Managerial economics provides an opportunity to evaluate each alternative in terms of its costs and revenue and select the best alternative to maximize the profits for the firm.

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

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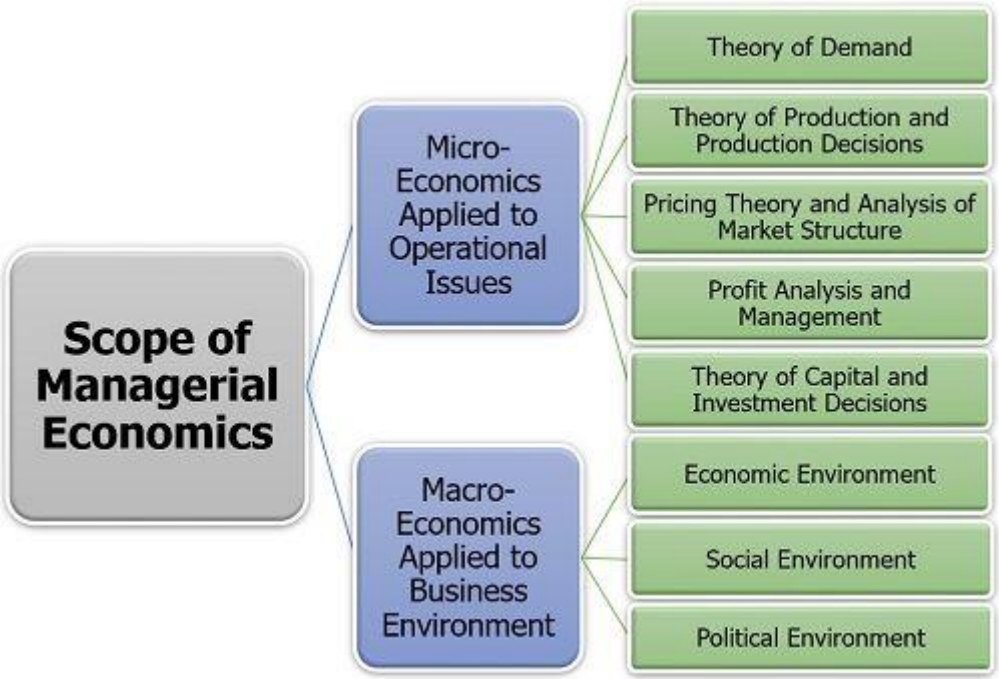
SCOPE OF MANAGERIAL ECONOMICS

Managerial economics is commonly used to deal with various business problems within organizations. Both micro and macroeconomics have an equal effect on the organization and its working. The points which follow illustrate its significance:



[I] Micro-Economics Applied to Operational Issues:

The various theories or principles of microeconomics used to solve the internal problems of the organization arising in the course of business operations are as follows:

(A) Demand Theory: Demand theory focus on the behavior of the consumer towards a product or service. In this connection, the managerial economist observes that desires expectations, preferences, and income conditions of consumers and to enhance the manufacturing process.

(B) Decisions on Production and Production Theory: This theory is primarily concerned with the volume of production, production process, capital and labour, costs involved, etc. It mainly focus on the behaviour of costs at different levels of production is assessed. This decision deals with changes in production following changes in input costs. It aims to maximise production with minimum cost and to meet customer demand.

(C) Pricing Theory and Analysis Market Structure: Here, the production process is over, the next task is to determining price in different market situations such as perfect, imperfect. So, the managerial economist taking into account the competition, market dynamics, production costs, sales volume, etc and to fix price of the product.

(D) Profit Analysis and Management: Profit is essential of any business organisation to boost operational performance. The profit analysis depends on demand from the market, input costs, level of competition, etc. Thus, the manager can apply the techniques such as Break-even analysis, cost reduction, cost control and ratio analysis to ascertain the level of profits.

(F) Decisions on Capital and Investment Theory: Capital is life blood of business organisation. Every business firm needed large amount of capital for purchasing of assets, modernization or modifications or replacement of the business. Hence, a need arise to acquire large funds from different sources and utilised in such a way as to maximise the returns of the capital. This philosophy takes priority over the proper distribution of the resources of the company and investments in productive programs to boost operational efficiency.

[II] Macro-Economic Applied to Business Environment

Any organization is greatly affected by the environment in which it operates. The business climate can be defined as:

(A) Economic Environment: A country's economic conditions, GDP, government policies, etc. have an indirect effect on the company and its operations.

(B) Social Environment: The society in which the organization, like employment conditions, trade unions, consumer cooperatives, etc., functions also affects it.

(C) Political Environment: a country's political system, whether authoritarian or democratic; political stability; and attitude towards the private sector, impact the growth and development of the organization.

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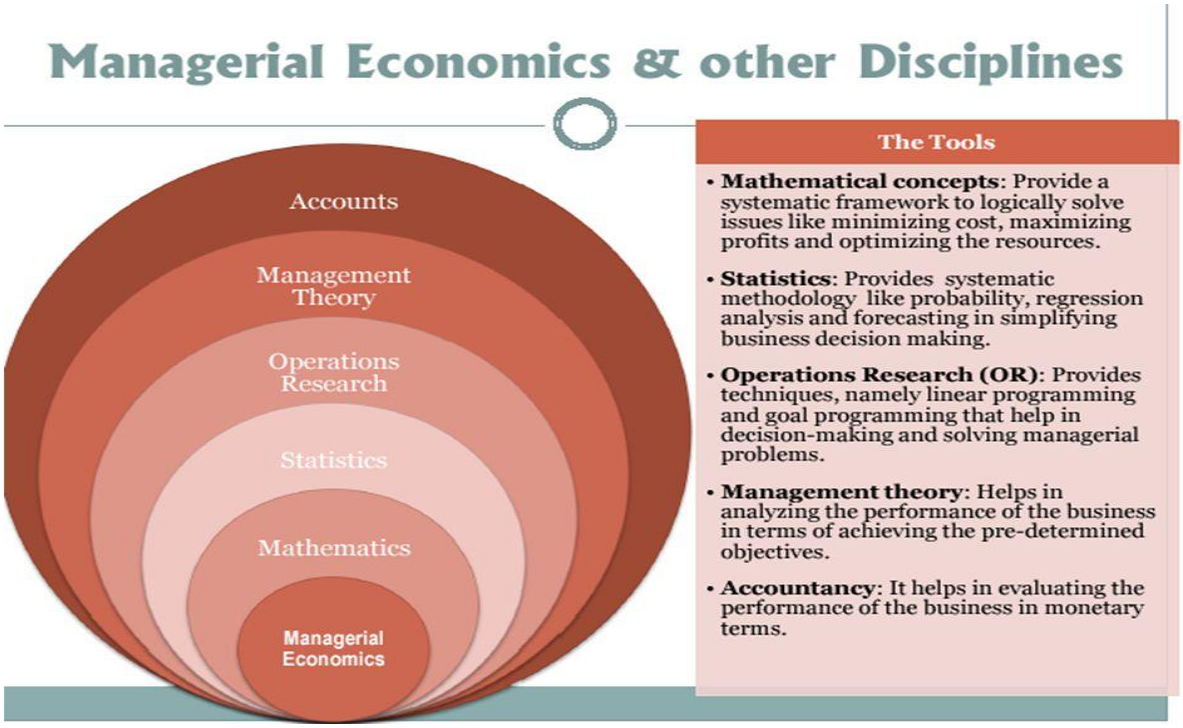
MANAGERIAL ECONOMICS IN RELATION WITH OTHER SUBJECTS

Managerial economics has a close linkage with other disciplines and its fields of study. The subject has gained by the interaction with economics, mathematics and statistics and has drawn upon management theory and accounting concepts. Managerial economics integrates concepts and methods from these disciplines and brings them to bear on managerial problems.



(A) Managerial Economics and Mathematics:

Mathematics is important subject closely related to managerial economics. Mathematics has helped in the development of economic theories and now mathematical economics has become a very important branch of economics. In this process, he extensively makes use of mathematical tools and techniques such as algebra, geometry, calculus, vectors; input-output tables such other for the estimation and prediction of economic factors and to make decisions and prepare a forward planning.

(B) Managerial Economics and Statistics:

Statistics is also important tool to managerial economics. It useful to analyze the cause and effect relationships in a given variable involved in decision making. Statistics supplies many tools to managerial economics such as averages, measures of dispersion, correlation, regression, time series, and probability and so on. These tools are widely used in the solution of managerial problems. **For example:** Sampling is very useful in data collection.

(C) Managerial Economics and Operations Research:

Mathematicians, statisticians, engineers and others join together and developed models and analytical tools which have grown into a specialized subject known as operation research. The basic purpose of the approach is to develop a scientific model of the system which may be utilised for policy making.

The development of techniques and concepts such as Linear Programming, Dynamic Programming, Input-output Analysis, Inventory Theory, Information Theory, Probability

Theory, Queuing Theory, Game Theory, Decision Theory, Symbolic Logic, transportation theory and so on, are extensively used in solving the managerial problems.

(D) Managerial Economics and Theory of Decision Making:

The theory of decision making is relatively a new subject that has significance for managerial economics. In the process of management such as planning, organising, leading and controlling, decision making is always essential. Decision making is an integral part of today's business management. A manager faces a number of problems connected with his/her business such as production, inventory, cost, marketing, pricing, investment and personnel. Hence, managerial economics is economics applied in decision making.

(E) Managerial Economics and Accounting:

Managerial economics is closely related to accounting. The accountant provides accounting information relating to costs, revenues, receivables, payables, profit and loss etc. Thus, the managerial economist acts upon for making decisions and foreword planning.

(F) Managerial Economics and Economics:

Managerial Economics is economics applied to decision making. It is a special branch of economics, bridging the gap between pure economic theory and managerial practice. In the process of addressing various managerial problems, several empirically estimated functions such as demand function, cost function, revenue function and so on are extensively used. Economics has two main branches—micro-economics and macro-economics.

(G) Managerial Economics and Computer Science:

Computers have changes the way of the world functions and economic or business activity is no exception. In fact computerization of business activities on a large scale has reduced the workload of managerial personnel. Computers are used in data and accounts maintenance, inventory and stock controls and supply and demand predictions. In most countries a basic knowledge of computer science, is a compulsory programme for managerial trainees.

(H) Managerial Economics and Psychology:

Psychology contributes towards understanding the behavioral implications, attitude and motivations of each of the micro economics variables such as consumer, supplier investor worker or an employee. The managerial economist acts upon how the customers react to a given change in price or supply and its consequential effect on demand / profits is the main focus of study in managerial economics.

(I) Managerial Economics and Organizational Behavior:

Organization Behavior enables the managerial economist to study and develop behavioral models of the firm integrating the manager is behaviour with that of the owner. This further analyse the economic rationality of the firm in a focused way.

To conclude, managerial economics, which is an offshoot traditional economics, has gained strength to be a separate branch of knowledge. It strength lies in its ability to integrate ideas from various specialized subjects to gain a proper perspective for decision-making.

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THEORY OF CONSUMERS' BEHAVIOUR *in terms of* UTILITY ANALYSIS

Consumer is an economic agent who consumes goods or services for consideration.

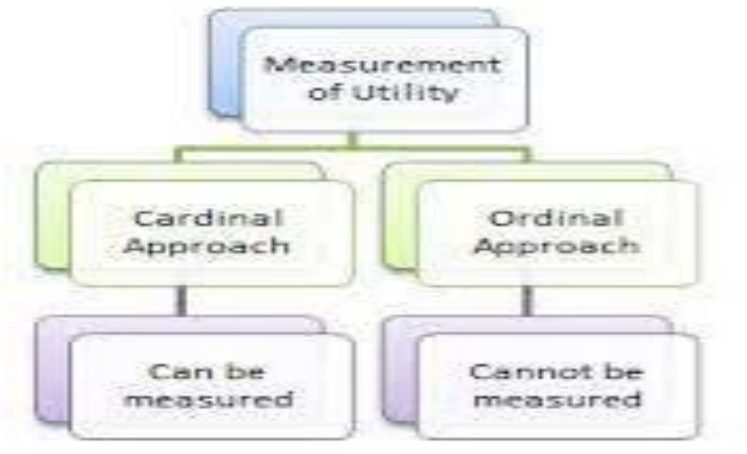
In this chapter, we will study the behaviour of an individual consumer. The consumer spends his income on different products in the best possible way and when he gets maximum utility. This depends on the likes or preferences of the consumers, prices of the goods and the income of the consumer.

Schiffman & Kanuk (1997) defines that consumer behaviour is the study of how individuals make decisions to spend their available resources (time, money, effort) on consumption-related items. It includes the study of what, why, when, where and how often they purchase and how they use the purchased product and that they expect will satisfy their needs.

This chapter presents two different approaches that explain consumer behaviour (i) Cardinal Utility Analysis and (ii) Ordinal Utility Analysis.

UTILITY:

The concept utility was introduced to social thoughts by Benham in 1789 and to economic thoughts by Jevans in 1871. Utility refers to the want-satisfying power of a commodity. It is the satisfaction of actual or expected, derived from the consumption of a commodity. Utility differs from person- to-person, place-to-place and time-to-time. As regards the measurement of utility, there are two different approaches- 1. Cardinal Utility 2. Ordinal Utility



CARDINAL UTILITY ANALYSIS:

In this approach, utility can be measured in terms of cardinal (utils), or quantitative numbers such as 1,2,3, and so on. Alfred Marshall, A.C Pigou followed the cardinal utility analysis.

The law of diminishing marginal utility and law of Equi-marginal utility are developed on the basis of cardinal utility analysis.

Assumptions:

The cardinal utility approach used in analyzing the consumer behavior depends on the following assumptions:

(a) Rationality: The consumer is rational. Every consumer aims at maximizing his satisfaction with limited amount of money spends on the goods and services which is at his disposal. This means they will purchase those commodities first which yields the highest utility and then the second highest and so on.

(b) Utility is Cardinally Measurable: It is assumed that the utility is measurable, and the utility derived from one unit of the commodity is equal to the amount of money, which a consumer is ready to pay for it, i.e. 1 Util = 1 unit of money.

(c) Marginal Utility of Money is Constant: It is assumed that the marginal utility of money remains constant irrespective of the level of a consumer's income.

(d) Diminishing Marginal Utility: This means, the commodity consumption increasing will result the utility of each successive unit goes on diminishing. This law holds true for the theory of consumer behavior.

(e) Utility is Additive: The cardinalists believe that not only the utility is measurable but also the utility derived from the consumption of different commodities are added up to realize the total utility.

(f) The hypothesis of Independent Utility: Utility of each commodity is experienced independently in a group of commodities.

(g) Introspective Method: which basis of own experience, economists' drew inferences about the behaviour of other consumers.

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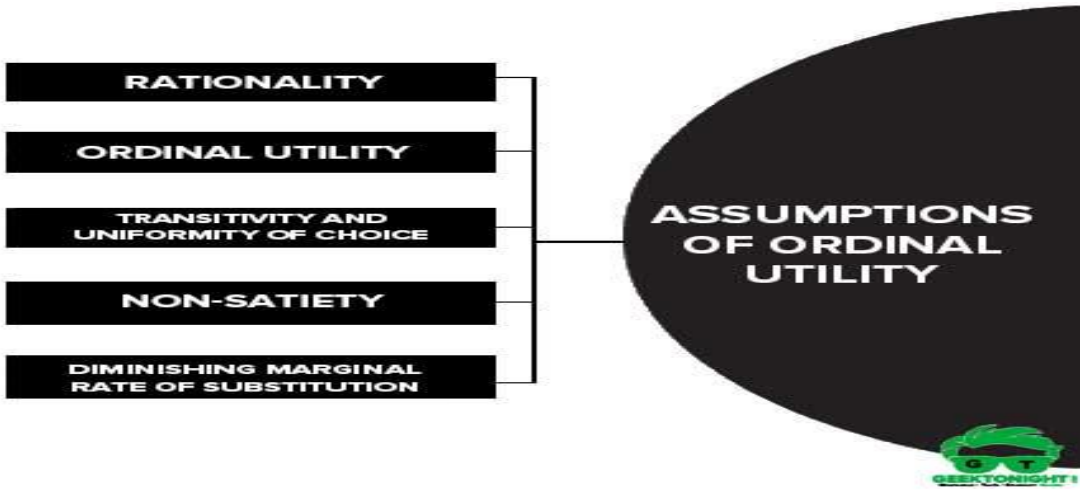
ORDINAL UTILITY ANALYSIS:

The Ordinal Utility approach is based on the fact that the utility cannot be measured in absolute quantity, but it can be arranged in ordered or ranked such as 1^{st}, 2^{nd}, 3^{rd}, 4^{th} etc., Modern economists, like J.R Hicks and R.J.D Allen have used the Ordinal approach. The theory of indifference curve is explained by using this approach.



Assumptions:

(a) Rationality: The consumer is rational. Every consumer aims at maximizing his satisfaction with limited amount of money spends on the goods and services which is at his disposal. This means they will purchase those commodities first which yields the highest utility and then the second highest and so on.

(b) Ordinal Utility: It explains that utility cannot be measured in absolute quantity, but it can be arranged in ordered or ranked such as 1^{st}, 2^{nd}, 3^{rd}, 4^{th} etc.,. This means the consumer can only tell his order of preference for the given goods and services.

(c) Transitivity and Uniformity (Consistency) of Choice: The consumer's choice is expected to be either transitive or uniformity. The transitivity of choice means, if the consumer prefers commodity X to Y and Y to Z, then he must prefer commodity X to Z. In other words, if X= Y, Y = Z, then he must treat X=Z. The uniformity of choice means that if a consumer prefers commodity X to Y at one point of time, he will not prefer commodity Y to X in another period or even will not consider them as equal.

(d) Non-satiety: It is assumed that the consumer has not reached the saturation point of any commodity and hence, he prefers larger quantities of all commodities.

(e) Diminishing Marginal Rate of Substitution (MRS): The marginal rate of substitution refers to the rate at which the consumer is ready to substitute one commodity (A) for another commodity (B) in such a way that his total satisfaction remains unchanged. The MRS is denoted as DB/DA. The ordinal approach assumes that DB/DA goes on diminishing if the consumer continues to substitute A for B.

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LAW OF DIMINISHING MARGINAL UTILITY *with the help of* CARDINAL UTILITY

The law of Diminishing Marginal Utility was originally explained by explained by H.H. Gossen in 1954. Hence it is called Gossen's first law of consumption. But Alfred Marshall popularised this law and analysed it in a scientific manner.

Definitions:

According to Marshall, "As the consumption (or possession) of a goods increases unit by unit, the marginal utility of the goods diminishes while its total utility increases, but at a diminishing rate".

According to Kenneth E. Boulding, "Keeping all other commodities consumption is constant, consumer consumed that only one commodity resulting in the marginal utility must eventually decline.

Explanation of the Law: The law refers to the common experience of every consumer. It explains that the marginal utility diminishes as the total quantity of the goods increases. According to this law, when we go on consuming anything more and more, the additional utility derived from the additional unit goes on diminishing. So, this law is called the law of diminishing marginal utility.

Two Concepts involved in the Law:

(I) Total Utility (TU): It is the total amount of satisfaction derived by the consumer from the consumption of total units of a commodity.

Mathematically, $TU_n = f(Q_n)$

Here, TU_n = Total utility of 'n' units, f = functional relationship, Q_n = Quantity of 'n' commodity.

(II) Marginal Utility (MU): It is the utility obtained by the consumer by the consumption of one additional unit of a commodity. The change in total utility resulting from the consumption of one additional unit is also called marginal utility.

Mathematically, $MU_n = TU_n - TU_{n-1}$

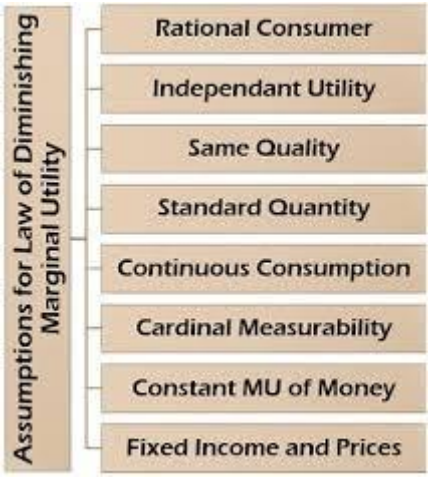
Here, MU_n = Marginal utility derived from the consumption of 'n' unit.

TU_n = Total utility derived from the consumption of 'n' units.

TU_{n-1} = Total utility derived from the consumption of 'n-1' units.

Assumption of the Law:

The law of Diminishing Marginal Utility is based on the following assumption:



(a) Rational Consumer: The consumer is rational who always tries to maximise his utility.

(b) Independent Utilities: The law assumes independence of commodities. It implies that consumers do not depend on other goods in the market.

(c) Same quality (Identical Units): The consumed goods are identical in size and quality. If the goods consumed are of uniform size and quality the marginal utility will diminish by each additional unit.

(d) Standard Quantity (Suitable units): It is assumed that units of commodity consumed are of standard size. For example, a glass of water, a complete rasagulla etc.

(e) Continues Consumption (No time gap): There should not be more time gap between consumption of two units. If one takes one rasagulla in the morning and one at night this law cannot work. So this law assumes that the consumption of various units of the commodity is continuous.

(f) Cardinal Measurability: The utility can be measured in terms of numbers like 5 units, 10 units etc,.

(g) Constant MU of Money: The marginal utility of money should be constant.

(h) Fixed Income and Prices: There should not be changes in consumer income and price of the product.

(i) Unchanged Tastes and Preferences: This law assumes that the tastes and preferences of the consumer remain constant during the period of consumption. If the taste of the consumer will change suddenly, he may get increasing satisfaction from additional units. This law also assumes that other things like habits, temperament and income of the consumer will remain constant.

For Example: A Person is extremely anxious of rasagullas and his friend offers him as many rasagullas as he can consume one by one. The person will be eager to have the first rasagulla and it gives him highest satisfaction. Having taken the first, he is less eager to have the second rasagulla and it will give him less satisfaction than the first.

The third one will give still less satisfaction than the second and so on. At a particular point will reach when the person refuses to take any more rasagulla as his want fully satisfied. If he is forced to take more then he will find negative satisfaction. This is the experience of every consumer when he consumes a commodity unit by unit during one setting. When the intensity of desire for a good is more it will have high utility for him. Gradually the utility for that good diminishes. But the total utility increases.

Illustration of the Law:

This law can be illustrated by considering a general example of consuming 6 units of a commodity x, say Rasagullas. It is explaining the following table:

Table 7.1

Units of Rasagulla consumed	Marginal utility	Total utility
1	100	100
2	80	180
3	50	230
4	20	250
5	0	250
6	–20	230

This table shows that as the consumer goes on consuming successive units of Rasagulla, the marginal utility of Rasagullas diminishes. **For example,** when the consumer consumes the first Rasagullas gives him 100 marginal utility. But it diminishes to 80 when he takes the second unit. He gets marginal utility 50 from the third, 20 from the 4th and 0 or no utility, when he consumes the 5th Rasagulla. Again if he tries to consume the one he finds negative utility i.e. -20. Thus, the marginal utility of rasagulla is diminishes but the total utility increases from 100 to 250 by additional consumption. At one point, it remains constant i.e. 250 in consumption of both 4th and 5th units of rasagullas. Then again it diminishes when 6th and additional units are consumed. For this reason, it is said that the total utility is increased at a diminishing rate.

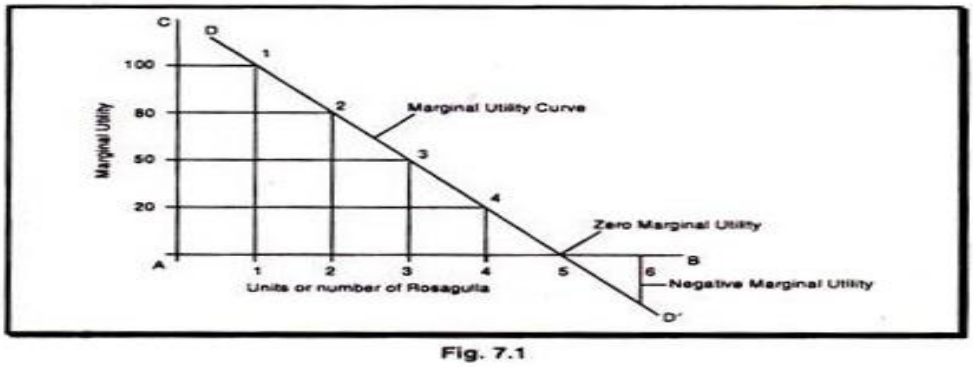


Fig. 7.1

This law of Diminishing Marginal Utility may also be graphically illustrated that units of rasagulla consumed are represented on the horizontal axis AB and marginal utility on the vertical axis AC. DD represents marginal utility curve. When the first rasagulla is consumed

the marginal utility is 100 marked as point 1, second unit i.e. 80 is marked as point 2. The third and fourth rasagulla gives the utility of 50 and 20 units respectively and indicated as point 3 and 4. When the 5th unit is consumed, the marginal utility becomes zero at this point the consumer stops consumption. If he continues 6th unit of rasagulla, he will get negative utility or dissatisfaction. We find that the marginal utility curve sloping downward from left to right.

Conclusions:
(A) When TU increases at diminishing rate, the MU decreases, being positive.
(B) When TU reaches its maximum, the MU becomes zero.
(C) When TU decreases, the MU takes negative values.

Exceptions (Or) Limitations of the Law:

There are certain limitations of the law of Diminishing Marginal Utility:

1. Rare collection: This law cannot be operated in case of collection of rare stamps, coins etc. A stamp collector gets increasing pleasure from the increase in the stock of his stamp. This is however an exception to the law.

2. Abnormal Consumer: A drunkard, madman and a miser are abnormal persons. They are all exception to this law. A miser is never satisfied with the acquisition of money. The more money he has, the more he runs after it and finds more utility from the additional unit. So this law is applicable to normal person.

3. Money: This law is not applicable to money. Money has the purchasing power over all commodities. The more money we have, the more we desire to have increasing amount of money. So the Law of Diminishing Marginal Utility is said to be inoperative in case of money.

4. Habit: The desire for a commodity sometimes arises from impulse, imitation or the possession of other individuals. In such cases, the law may not apply. Many commodities are purchased by us as a matter of habit. In these cases we do not consider marginal utilities.

Importance of the Law of Diminishing Marginal Utility:

1. The law helps to solve the paradox of value. The law tells us that when the stock of the commodity with the consumer is high, the marginal utility of the commodity to the consumer is low. Price of a commodity depends on its marginal utility and not on total utility.

2. The law tells us to justify progressive taxation.

3. The law is the basis of various law of consumption. **For example,** the law of demand is directly based on the law of diminishing marginal utility. The concept of consumer's surplus and the Law of equi-marginal utility are also based on this law.

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INDIFFERENCE CURVE ANALYSIS

In utility analysis, the modern economists have developed a new technique called the Indifference Curve Technique for the analysis of demand. This analysis is known as ordinal utility analysis of consumer behaviour and uses indifference curve to analyse consumer behaviour. It was in first used by Francis Y. Edgeworth (1881), but it could not gain popularity till the early 1930s. It was in 1934 that J.R Hicks and R.J.D Allen developed the ordinal utility theory as a powerful analytical tool of consumer analysis.

Indifference Curve- Meaning:

When a consumer consumes various goods and services, then there are some combinations, which give him exactly the same total satisfaction. The graphical representation of such combinations is termed as indifference curve.

Definition: An indifference curve is a graph showing combination of two goods that give the consumer equal satisfaction and utility. Each point on an indifference curve indicates that a consumer is indifferent between the two and all points give him the same utility.

Assumptions:

The various assumptions of indifference curve are:

1. The consumer acts rationally so as to maximise satisfaction.

2. There are two goods X and Y.

3. The consumer possesses complete information about the prices of the goods in the market.

4. The prices of the two goods are given.

5. The consumer's tastes, habits and income remain constant throughout the analysis.

6. He prefers more of X to less of Y or more of Y to less of X.

7. An indifference curve is negatively inclined sloping downward.

8. An indifference curve is always convex to the origin.

9. An indifference curve is smooth and continuous which means that the two goods are highly divisible and that level of satisfaction also change in a continuous manner.

10. The consumer arranges the two goods in a scale of preference which means that he has both 'preference' and 'indifference' for the goods. He is supposed to rank them in his order of preference and can state if he prefers one combination to the other or is indifferent between them.

11. Both preference and indifference are transitive. It means that if combination A is preferable to B, and B to C, then A is preferable to C. Similarly, if the consumer is indifferent

between combinations A and B and B and C, then he is different between A and C. This is an important assumption for making consistent choices among a large number of combinations.

12. The consumer is in a position to order all possible combinations of the two goods.

Schedule of Indifference:

Let us understand this with the help of following indifference schedule, which shows all the combinations giving equal satisfaction to the consumer.

Table-2.5 : Indifference Curve Schedule

Combination of Apples and Bananas	Apples (A)	Bananas (B)
P	1	15
Q	2	10
R	3	6
S	4	3
T	5	1

As seen in the schedule, consumer is indifferent between five combinations of apple and banana. Combination 'P' (1A + 15B) gives the same utility as (2A + 10B), (3A + 6B) and so on. When these combinations are represented graphically and joined together, we get an indifference curve 'IC1' as shown in Fig. 2.4.

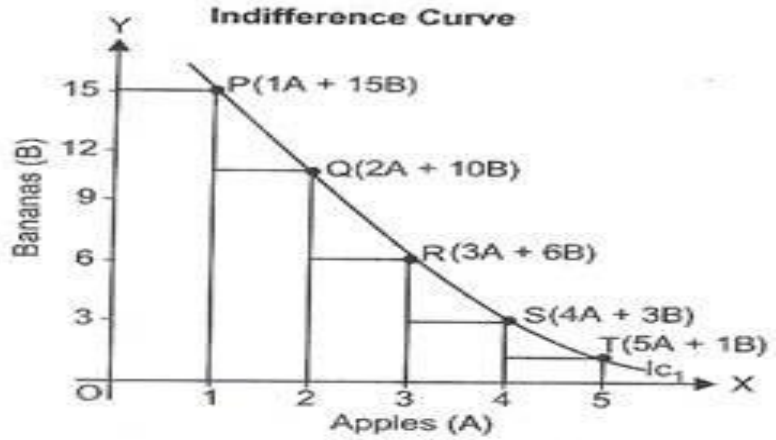


Fig. 2.4

In the diagram, apples are measured along the X-axis and bananas on the Y-axis. All points (P, Q, R, S and T) on the curve show different combinations of apples and bananas. These points are joined with the help of a smooth curve, known as indifference curve (IC1). An indifference curve is the locus of all the points, representing different combinations, which are equally satisfactory to the consumer.

Every point on IC1, represents an equal amount of satisfaction to the consumer. So, the consumer is said to be indifferent between the combinations located on Indifference Curve 'IC1'. The combinations P, Q, R, S and T give equal satisfaction to the consumer and therefore he is indifferent among them. These combinations are together known as 'Indifference Set'.

Properties of Indifference Curve:

1. Indifference Curves are always Convex to the Origin:

An indifference curve is convex to the origin because of diminishing MRS. MRS declines continuously because of the law of diminishing marginal utility. As seen in Table 2.6, when the consumer consumes more and more of apples, his marginal utility from apples keeps on declining and he is willing to give up less and less of bananas for each apple. Therefore, indifference curves are convex to the origin (see Fig. 2.6). It must be noted that MRS indicates the slope of indifference curve.

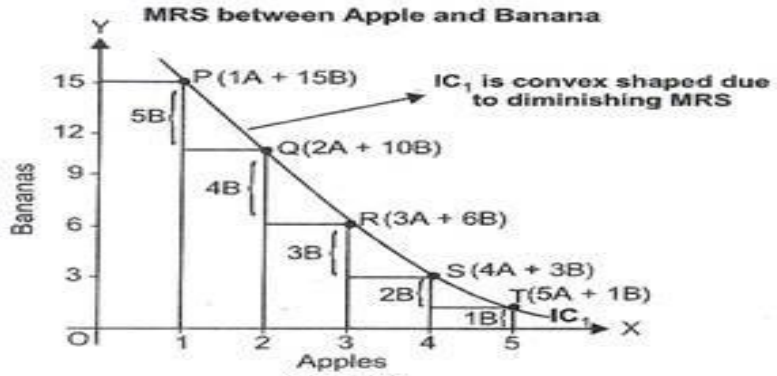


Fig. 2.6

2. Indifference Curve Slope Downwards:

It implies that as a consumer consumes more of one good, he must consume less of the other good. It happens because if the consumer decides to have more units of one good (say apples), he will have to reduce the number of units of another good (say bananas), so that total utility remains the same.

3. Higher Indifference Curves represent Higher Levels of Satisfaction:

Higher indifference curve represents large bundle of goods, which means more utility because of monotonic preference. Consider point 'A' on ICX and point 'B' on IC2 in Fig. 2.5. At 'A', consumer gets the combination (OR, OP) of the two commodities X and Y. At 'B', consumer gets the combination (OS, OP). As OS > OR, the consumer gets more satisfaction at IC2.

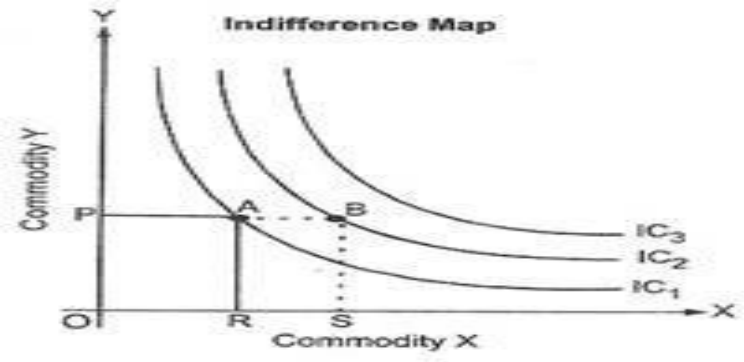


Fig. 2.5

4. Indifference Curves can never intersect each other:

As two indifference curves cannot represent the same level of satisfaction, they cannot intersect each other. It means, only one indifference curve will pass through a given point on an indifference map. In Fig. 2.7, satisfaction from point A and from B on IC1 will be the same.

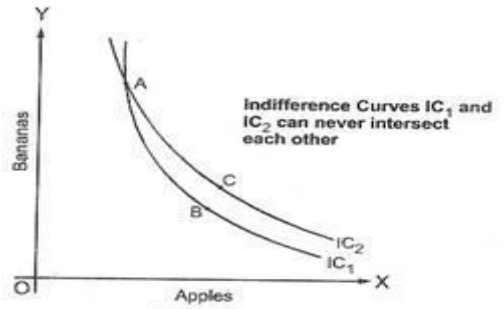


Fig. 2.7

Similarly, points A and C on IC2 also give the same level of satisfaction. It means, points B and C should also give the same level of satisfaction. However, this is not possible, as B and C lie on two different indifference curves, IC1 and IC2 respectively and represent different levels of satisfaction. Therefore, two indif-ference curves cannot intersect each other.

& & & & &

THEORY OF DEMAND

Demand-Meaning:

In general, demand means the desire for an object. But in economics sense, demand means the desire backed by willingness and ability to purchase a good or service at various prices during a given period of time. So, for a commodity to have a demand, the consumer must possess willingness to buy it, the ability to buy it, and it must be related to per unit of time i.e. per day, per week, per month or per year. Demand is an underlying force that drives economic growth and expansion.

Demand Function

Demand function is a mathematical expression it showing that relationship between the quantities demanded of a commodity and the factors influencing demand.

$Q_D = f$ (P, I, Pr, T, A, Sp, Ep, O)

In the above equation,

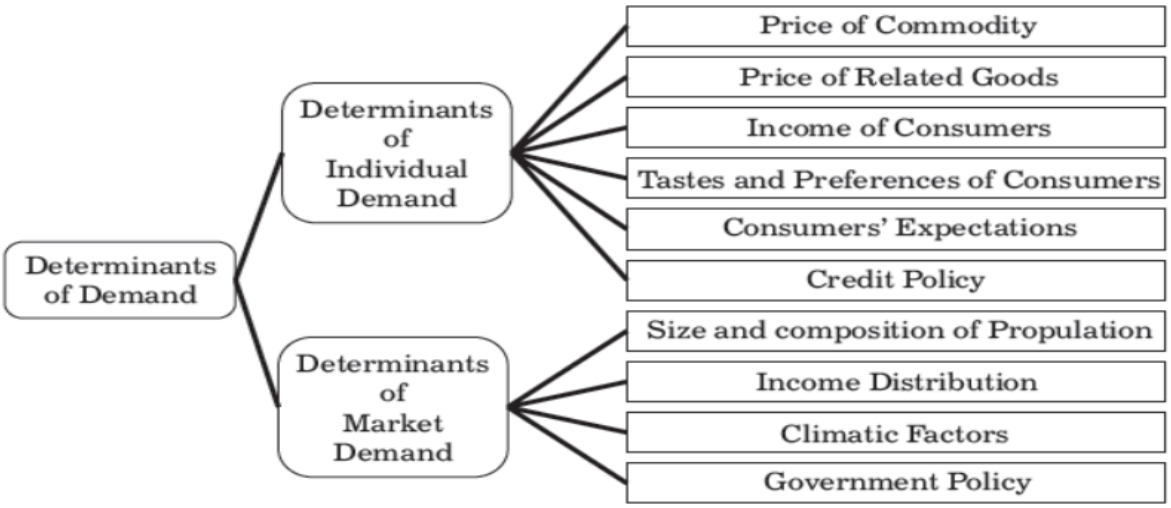
Q_D = Quantity demanded of a commodity
P = Price of the commodity
I = Income level of consumer
Pr = Price of related goods
T = Tastes and preferences of consumer

A = Advertising and promotional activities
Sp = Population (Size of the market)
Ep = Consumer's expectations about future prices
O = Specific factors affecting demand for a commodity such as seasonal changes, taxation policy, availability of credit facilities, etc.

It shows the "quantities of a commodity purchased at given prices. In the Marshallian analysis, the other determinants of demand are taken as given and constant.

Factors Determining the Demand:

The demand for a good depends on several factors, such as price of the good, perceived quality, advertising, income, confidence of consumers and changes in taste and fashion.



The factors which determine the level of demand for any commodity are the following:

[1] Price of Commodity: It is the most important factor that determines the demand of a commodity. As a matter of fact, there is inverse relationship between the price of the commodity and the quantity demanded.

It means that the price and quantity demanded move in opposite direction. For example, lower the price, higher is the demand. On the contrary, higher is the price; lower is the demand of the commodity.

[2] Price Related Goods: The demand for a good is also affected by the prices of other goods, especially those which are related to it as substitutes or complements.

(A) Prices of Substitutes: Substitutes are those goods which satisfy similar wants, such as tea and coffee. If a rise in the price of tea leads to an increase (or decline) in the demand for coffee, the two commodities are said to be substitutes. On the other hand, if the price of coffee rises, its demand will fall. But the demand for tea will rise because the consumers of coffee will shift their demand to tea.

(B) Price of Complementary: Complementary goods are those which cannot be used without each other. Where the demand for two commodities is linked to each other, such as cars and petrol, bread and butter, tea and sugar, etc., they are said to be complementary goods. If, say, the price of cars rises and they become expensive, the demand for them will fall and so will the demand for petrol. On the contrary, if the price of cars falls and they become cheaper, the demand for them will increase and so will the demand for petrol.

[3] Income of Consumers: An increase in consumers' income to be able to purchase more goods. Higher income could occur for a variety of reasons, such as higher wages and lower taxes. Thus, the relationship between income and quantity of demand is positive.

[4] Tastes and Preferences of the consumer: The tastes and preferences of the consumer directly influence the demand for a commodity. They include changes in fashion, customs, habits, etc. If a commodity is in fashion or is preferred by the consumers, then demand for such a commodity rises. On the other hand, demand for a commodity falls, if the consumers have no taste for that commodity.

[5] Consumer Expectation: If the price commodity is expected to increase in near future, then people will buy more of that commodity than what they normally buy. There exists a direct relationship between expectation of change in the prices in future and change in demand in the current period. **For example,** if the price of petrol is expected to rise in future, its present demand will increase.

[6] Credit Policy: A company provides credit facility to consumers for purchasing commodities will results the quantity of demand increases.

[7] Size and Composition of Population: An increase in population will result in an increased demand of various goods. Also, the composition of population determines the demand of certain goods proportionately. **For example,** an increased number of females in the region will generate more demand for sarees, ornaments, cosmetics etc.

[8] Income Distribution: Distribution of income in a society also affects the demand for goods. If distribution of income is more equal, then the propensity of the society will be relatively high which means greater demand for goods. On the other hand, if distribution of income is more unequal, then propensity of the society will be relatively less, for the propensity to consume of the rich people is less than that of the poor people.

[9] Climatic Factors: The demand for various household goods depends upon the changes in climate conditions. **For example,** the demand for woolen clothes, coal and electric heaters increases during winter and the demand for cold drinks, ice creams, room coolers, etc. go up during hot weather.

[10] Government Policy: Economic policy adopted by the government also influences the demand for commodities. If the government imposes taxes on various commodities in the form of sales tax, excise duties, octroi etc., the price of these commodities will increase. As a result, the demand of such commodities is very likely to fall.

[11] Technological Changes: Due to advancements in technology, new discoveries enter the market as a result; old goods are substituted by new goods. For Example: the demand for Cell Phones reduced the demand for land line phones.

[12] State of Business: During the period of prosperity demand for a commodity will expand and during depression demand will contract.

[13] Advertising: Advertisement expenditure can increase brand loyalty to its product is an important factor determining demand for a product. For example, higher spending on advertising by Coca Cola has increased global sales.

& & & & &

The Law of Demand:

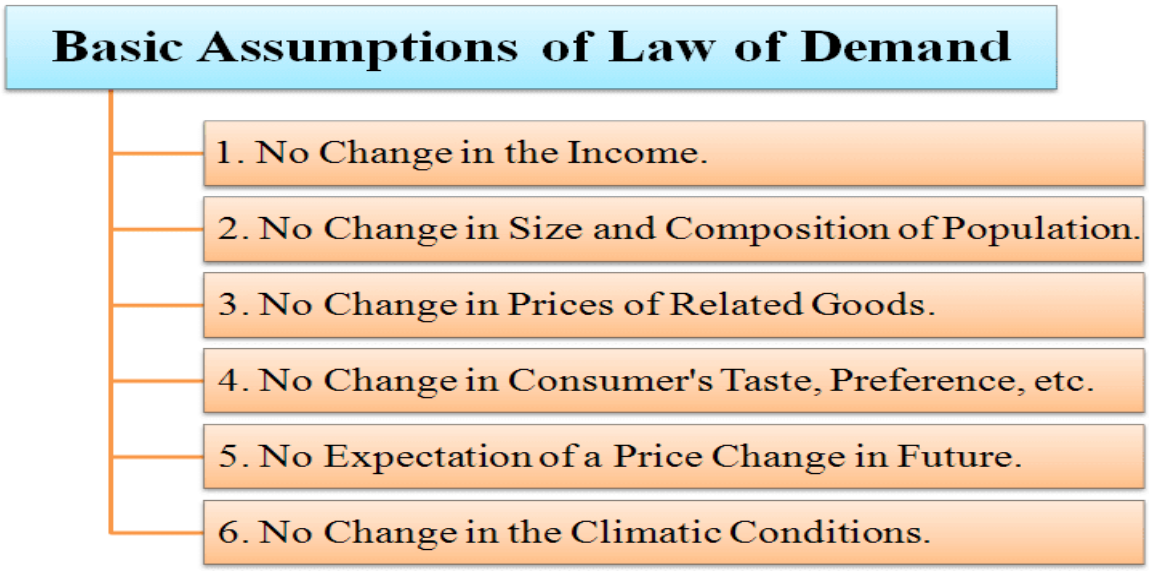
The law of demand expresses a relationship between the quantity demanded and its price. The law refers to the direction in which quantity demanded changes with a change in price. On the figure, it is represented by the slope of the demand curve which is normally negative throughout its length. The inverse price-demand relationship is based on other things remaining equal.

Definitions:

Alfred Marshall's defined as "the quantity of demand increases with a fall in price, and diminishes with a rise in price." If the other conditions of demand remains constant. Thus it expresses an inverse relation between price and demand.

According to Samuelson, "Other things being equal, the quantity of demanded increases with a fall in price and decreases with a rise in price".

This phrase points towards certain important assumptions on which this law is based.



Demand Schedule and Curve:

An individual's demand for commodity is shown on the demand schedule and on the demand curve. A demand schedule is a list of prices and quantities and its graphic representation is a demand curve.

Price (Rs.)	Demand in Quantity (units)
6	10
5	20
4	30
3	40
2	60
1	80

The demand schedule reveals that when the price is Rs. 6, the quantity demanded is 10 units. If the price happens to be Rs 5, the quantity demanded is 20 units, and as the price falls to Rs.1 the quantity of demand is 80 units. It is clear that there is an inverse relationship between price and quantity of demanded.

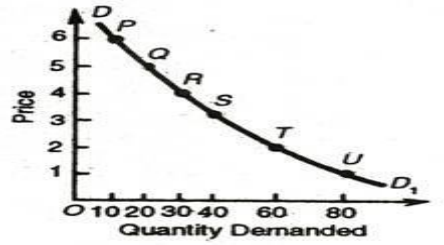


Figure 10.1

In Figure 10.1, DD1 is the demand curve drawn on the basis of the above demand schedule. The dotted points D, P, Q, R, S, T and U show the various price-quantity combinations. Marshall calls them "demand points". The first combination is represented by the first dot and the remaining price- quantity combinations move to the right toward D1.

& & & & &

Why does a demand curve slope downward from left to right?

CAUSES OF DEMAND CURVE SLOPING DOWNWARD:

The reasons for this also clarify the working of the law of demand. The following are the main reasons for the downward sloping demand curve.

(1) The law of demand is based on the law of Diminishing Marginal Utility: According to this law, if a consumer consumes more units of a commodity, the marginal utility of that commodity continues to decline. Therefore, the consumer will prefer to pay fewer prices to additional units of a good due to the marginal utility decreases. As a result, the demand curve is downward sloping.

(2) Old and New Buyers: Every commodity has certain consumers but when its price falls, new consumers start consuming it, as a result demand increases. On the contrary, increase the

price of the product, many consumers will either reduce or stop its consumption and the demand will be reduced. As a result, the demand curve slopes downwards from left to right.

(3) Income Effect: The consumer income rises due to a fall in the prices of a commodity. He spends the increased income on the same commodity and thus demand increases. On the contrary, with the rise in the price of the commodity, the real income of the consumer falls. This is called the income effect. The income effect of a change in the price of an ordinary commodity being positive, the demand curve slopes downward.

(4) Substitution Effect: The other effect of change in the price of the commodity is the substitution effect. With the fall in the price of a commodity, the prices of its substitutes remaining the same, consumers will buy more of this commodity rather than the substitutes. As a result, its demand will increase. On the contrary, with the rise in the price of the commodity its demand will fall, given the prices of the substitutes. **For example**, with the fall in the price of tea, the price of coffee being unchanged, the demand for tea will rise, and contrariwise, with the increase in the price of tea, its demand will fall. So, the demand curve slopes downward

(5) Income Group: Ordinary people buy more when price falls and less when price rises. The rich do not have any effect on the demand curve because they are capable of buying the same quantity even at a higher price. Hence, it is one of the reasons for the demand curve slopes downward

(6) Multiple Uses of a Commodity: There are some commodities having multiple uses like milk, coal and electricity etc. that are responsible for the negative slope of the demand curve. When increase in the price of such products, they will be used only for more important purposes and their demand will fall. On the other hand, with the fall in price, they will be put to various uses and their demand will rise. **For example:** with the increase in the electricity charges, power will be used primarily for domestic lighting, but if the electricity charges are reduced, people will use power for cooking, fans, heaters, etc.

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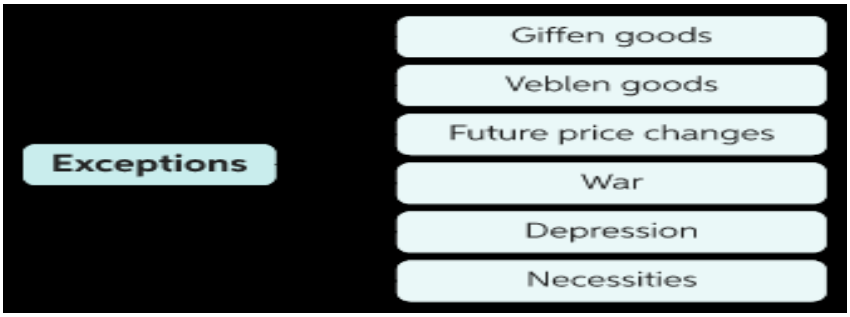
Exceptions to the Law of Demand:

In certain cases, the demand curve slopes up from left to right, i.e., it has a positive slope. Under certain circumstances, consumers buy more when the price of a commodity rises and less when price falls.



(i) Giffen Paradox: The law of demand does not apply to Giffen goods. Sir Robert Giffen observed that poor people will demand more of inferior goods such as Ragee, Jowar, Bajra, Broken Rice etc. that are necessary for survival. He also observed that purchasing behaviour of the industrial workers in England. He noticed that when the bread prices increases, workers spent more income on bread than meat while if fall the prices of bread, they spent more on meat. As a result, the demand for bread will fall. This is what Marshall called the Giffen Paradox which makes the demand curve to have a positive slope.

(ii) Veblen Effect (Prestigious Goods): The law of demand also does not operate in the case of Veblen goods. Veblen pointed that if the prices of prestigious goods like diamonds, precious stones, costly furniture etc., are demanded by very rich people for their social prestige. If fall the prices of these goods poor people also can buy. Hence, rich people stop buying these goods due they do not have any special status.

(iii) Future Prices Changes (Speculation): If consumers expect the price of a commodity to rise further in the future, a current increase in price will cause quantity demanded to increase as well, instead of declining.

(iv) War (Fears of Consumer): In case of war, where the general state is of freight and alarm, consumers try to hoard goods for future use. In such a case, an increase in price will not cause the quantity demanded to decline.

(v) Depression: Depression causes a reduction in the general price level. But despite this decline in prices, the quantity demanded will not increase as the purchasing power of consumers gets reduced as well.

(vi) Necessities: if a good is a necessity (eg. Food), consumers will continue to buy it regardless of changes in price.

Many causes are attributed to an upward sloping demand curve.

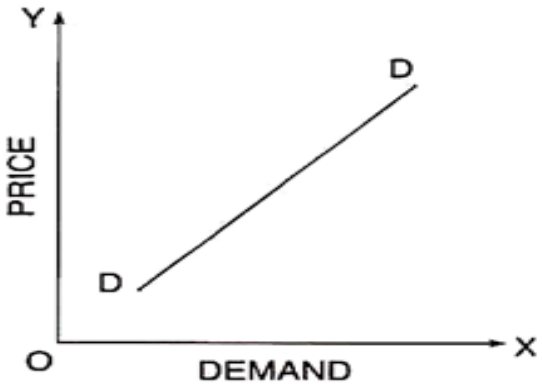


Fig. 7·5
Exceptional Demand Curve

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TYPES OF DEMAND

[1] Individual and Market Demand: Individual demand is the economic demand for a product at a certain price by one consumer. Customer tastes, perceived quality and brand loyalty etc. are affecting the individual demand. Market demand also known as aggregate demand, is the total economic demand of all individual demand in a particular market.

[2] Market and Market Segment Demand: Market demand is the aggregate demand of all consumers who purchase the same type of product. Market segment demand, on the other hand, refers to a particular subset of market demand, namely age, race, gender and a variety of other demographic factors.

[3] Derived and Autonomous Demand: Autonomous demand, also known as direct demand, when the demand for a product is independent of all other goods in the market. Derived demand is an economic demand that directly correlates with the demand for another product. **For example,** if the demand for tires goes up, the demand for rubber will increase proportionately.

[4] Company and Industry Demand: The demand for products at a certain price over a period of time from a single entity is known as company demand. Industry demand is the total aggregate demand for products in an industry. **For example,** the demand for Pepsi products is the company demand, but it only makes up a percentage of the total industry demand for beverages.

[5] Short-term and Long-term Demand: *Short-term* demand for a product is the economic demand over a shorter duration of time. **For example,** winter clothing is only worn during the colder months, making the demand short-term in comparison to clothes that are worn year-round. *Long-term* demand refers to the demand for products over a long period of time. This demand doesn't change nearly as much with respect to price.

[6] Durable and Perishable Demand: Durable goods like furniture, clothes, mobile phone etc. are any products that can be used more than once in their life cycle. Perishable goods are items that only have a single use such as vegetables, milk, eggs etc.

[7] Price Demand: Price demand explains the relation between various prices of goods and corresponding quantity of demand for a good. Here, other demand factors should be kept constant. When price goes up, demand falls and vice-versa. This is due to the inverse relation between price and demand. This can be explained with the following diagram.

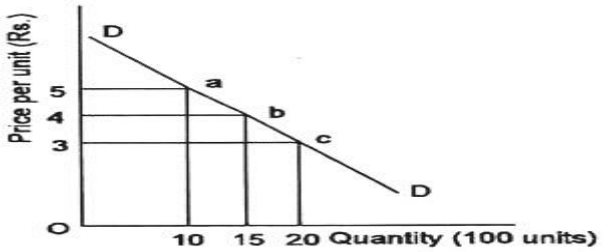

Fig. 1 : Downward-sloping Demand Curve

[8] Income Demand: Income demand explains the relationship between consumer income and economic demand for a product. If income goes down, demand goes down. If income goes up, demand goes up. This can be explained with the following diagrams.

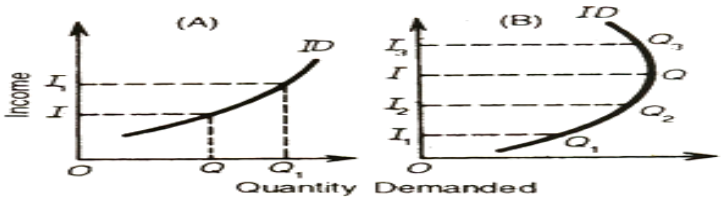

Figure 10.8

[9] Cross Demand: Cross demand is discussed in two cases.

Case-A: Prices of the substitutes: The product demand depends on the prices of substitutes. **For Example:** Tea is a substitute good for coffee. If the price of coffee increases then demand for tea also increases. Thus, there is a positive relation between demand of a good and price of its substitute.

Case-B: Prices of the Complementaries: A product demand depends on the prices of complementaries goods. For Example: Car is a complementary good for petrol. If the petrol price increases then demand for car decreases. Thus, there is an inverse relation between demand and price of the complementary products.

These can be understood with the following diagrams.

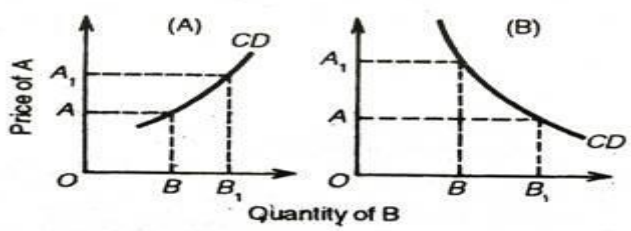

Figure 10.9

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ELASTICITY OF DEMAND

The demand for a product can be elastic or inelastic, depending on the rate of change in the demand with respect to change in price of a product.

Elastic demand is the one when the response of demand is greater with a small proportionate change in the price. On the other hand, inelastic demand is the one when there is relatively a less change in the demand with a greater change in the price.

Meaning of Elasticity of Demand:

Elasticity of demand means the percentage change in quantity demanded in response to the percentage change in one of the variables on which demand depends. These variables are price of the commodity, price related goods, income of the consumer, tastes and preferences of consumers etc. Elasticity of demand changes from person to person, place to place, time to time and one product to another.

Determinants of Elasticity of Demand

Definition: The Elasticity of Demand is a measure of sensitiveness of demand to the change in the price of the commodity.

Apart from the price, there are several other factors that influence the elasticity of demand. These are:

[A] Consumer Income Group: The income of the consumer also affects the elasticity of demand. In general, the demand of high-income groups will be inelastic as they do not bother about price changes. On the other hand, the demand of middle and low-income groups will be elastic as they will be very sensitive to price changes.

[B] Amount of Money Spent / Proportion of Income Spent: The elasticity of demand is determined by the proportion of income spent by the individual on a product. If a consumer spends a very small amount on particular goods like matchbox, news papers, salt etc. Thus, the demand for such products is said to be inelastic. Whereas consumer spends a major

portion on food, clothing, vehicles, air conditioning **etc., if there is any change in the price of these items, the demand will have elastic.**

[C] Nature of the Commodity: The elasticity of demand also depends on the nature of the commodity. The product can be categorized as necessary, convenience, and luxury goods. The demand for the necessities, such as rice, salt, sugar, lighter (match box) are inelastic as their demand cannot be postponed. The convenience goods have moderately demand is said to be neither elastic nor inelastic. On the other hand, the demand for the luxuries (prestige) goods such as gold, antiques, gems, stones, etc is said to be inelastic, because rich people are ready to buy these commodities at any price.

[D] Several Uses of Commodity: The elasticity of demand also depends on the number of uses of the commodity. If the commodity is used for a single purpose and thus the demand for that commodity is said to be inelastic. Whereas, if the product has several uses, such as raw material coal, iron, steel, electricity, milk etc., the demand for such products is said to be elastic. **For example:** Milk has several uses, if its price falls, it can be used for various purposes like preparation of curd, cream, ghee and sweets. But if its prices rises, its use will be restricted only to feed children and sick persons so it will have elastic demand.

[E] Postponement of Purchases: If the purchases of a life saving products like medicine, food cannot be postponed then, the demand is said to be inelastic. On the other hand, the items of vehicles, ornaments and air conditioning etc. demand can be postponed and they have elastic demand.

[F] Availability of Close Substitutes: The good has many substitutes are said to have elastic demand. Such as, tea and coffee are close substitutes and if the price of tea increases, then people will switch to the coffee and demand for the tea will decrease significantly. Whereas, there is no close substitute for a product, then its demand will be inelastic. Such as salt do not have their close substitutes and hence lower is their price elasticity.

[G] Joint Demand/Complimentary Goods: The elasticity of demand also depends on the complementary goods, the goods which are used jointly. Such as car and petrol, pen and ink, etc. Here the elasticity of demand of secondary (supporting) commodity depends on the elasticity of demand of the major commodity. Such as, if the demand for pen is inelastic, then the demand for the ink will also be less elastic.

[H] Range of Prices (Price Level): The price range in which the commodities lie also affects the elasticity of demand. The higher range products are usually bought by the rich people, and they do not care much about the change in the price of product and hence the demand for such commodities is said to be inelastic. While the lower range commodities have inelastic because these goods are already low priced and it can be purchased by any sections of the people.

Thus, these are some of the important determinants of elasticity of demand that every firm should understand properly before deciding on the price of their offerings.

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TYPES OF ELASTICITY OF DEMAND

Based on the variable that affects the demand, the elasticity of demand is of the following types. One point to note is that unless otherwise mentioned, whenever the elasticity of demand is mentioned, it implies price elasticity.

Price Elasticity of Demand (E_P): The price elasticity of demand is the response of the quantity demanded due to change in the price of a commodity. It is assumed that all other goods are remains constant such as the consumer's income, tastes, and prices of other goods etc. It is measured as follows:

$$E_P = \frac{\text{Percentage Change in Quantity of Demand}}{\text{Percentage Change in Price}} \quad \text{(or)} \; E_P = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \quad \text{(or)} \; E_P = \frac{\frac{(Q1-Q0)}{(Q1+Q0)}}{\frac{(P1-P0)}{(P1+P0)}}$$

Income Elasticity of Demand (E_Y): The income elasticity of demand is the response of the quantity demanded to a change in the consumer's income. Income elasticity of demand is positive in case of superior goods like milk and meat and negative in case of inferior goods like porridge and broken rice. Symbolically,

$$E_Y = \frac{\text{Percentage Change in Quantity of Demand}}{\text{Percentage Change in Income}} \; \text{(or)} \; E_Y = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q} \; \text{(or)} \; E_Y = \frac{\frac{(Q1-Q0)}{(Q1+Q0)}}{\frac{(Y1-Y0)}{(Y1+Y0)}}$$

Cross Elasticity of Demand (E_C): The cross elasticity of demand refers to the change in demand of commodity X due to a change in the price of commodity Y. The cross elasticity of demand of substitute goods like tea and coffee is positive and for complementary goods like car and petrol it is negative. Symbolically,

$$E_C = \frac{\text{Percentage Change in Quantity of Demand of Product A}}{\text{Percentage Change in Price of Product B}} \; \text{(or)} \; E_C = \frac{\Delta QA}{\Delta PB} \times \frac{PB}{QA}$$

Advertising Elasticity of Demand (EA): The advertising elasticity of demand measures the percentage change in demand that occurs percent change in advertising expenditure. The advertising elasticity of demand should be positive. A negative value would indicate the more you spend on advertising, the lower your sales. That is a really bad ad! You should probably fire whoever is in charge of advertising.

$$EA = \frac{\text{Percentage Change in Quantity of Demand}}{\text{Percentage Change in Advertising Expenses}} \quad (\text{or}) \; E_P = \frac{\Delta Q}{\Delta A} \times \frac{A}{Q} \quad (\text{or}) \; E_P = \frac{\frac{(Q1-Q0)}{(Q1+Q0)}}{\frac{(A1-A0)}{(A1+A0)}}$$

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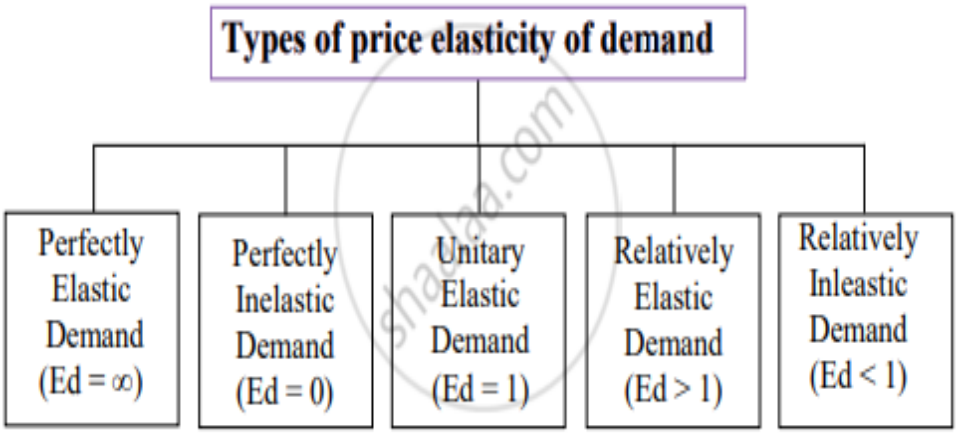
TYPES OF PRICE ELASTICITY OF DEMAND



(1) Perfectly Elastic Demand: When a small change in price of a product causes unlimited change in quantity of demand. However, a small rise in price would resist consumers to buy the product result in fall in demand to zero on the other hand a small fall in price unlimited rice in quantity of demand. The demand for a product is assumed to be perfectly elastic. Here, the demand curve is a horizontal straight line to 'X' axis. Thus, the numerical value of perfectly elasticity of demand is infinite (∞) ep = ∞. It can be applied in case of perfectly competitive market and homogeneity products.

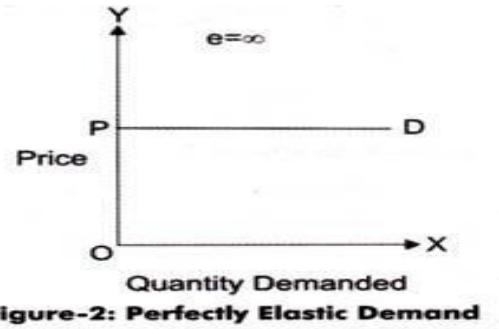


Figure-2: Perfectly Elastic Demand

From Figure-2 it can be interpreted that demand is infinite at price OP.

(2) Perfectly Inelasticity of Demand: In this case, the demand remains constant for any change in price. Perfectly inelastic demand is a theoretical concept and cannot be applied in a practical situation. However, in case of essential goods, such as salt, the demand does not change with change in price. Therefore, the demand for essential goods is perfectly inelastic. The numerical value for perfectly inelastic demand is zero (ep=0) and the demand curve will be vertical to the 'Y' axis.

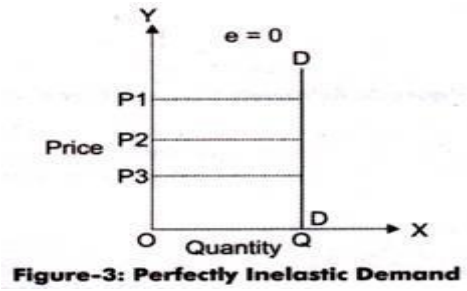
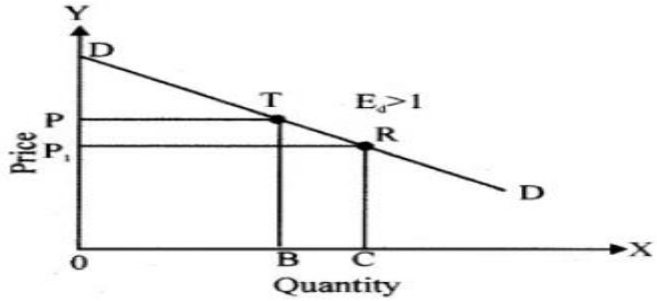


Figure-3: Perfectly Inelastic Demand

It can be interpreted from Figure-3 that the movement in price from OP1 to OP2 and OP2 to OP3 does not show any change in the demand of a product (OQ).

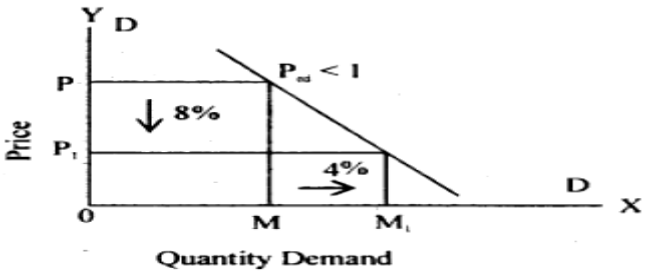
(3) Relatively Elasticity of Demand: Relatively elastic demand refers to a practical application of the demand when the proportionate change in demand is more than the proportionate change in price of a product. The numerical value of relatively elastic demand ranges between one to infinity. Mathematically, relatively elastic demand is known as more than unit elastic demand (ep>1).

For example: if the price of a product increases by 20% and the demand of the product decreases by 25%, then the demand would be relatively elastic.



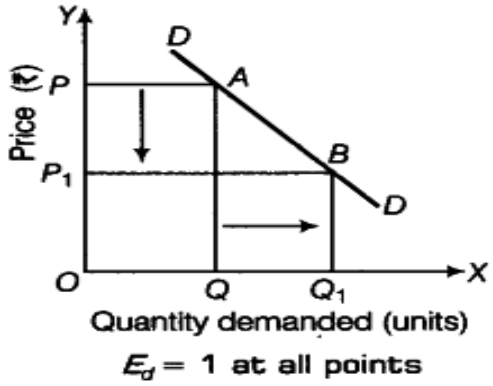
It can be interpreted that the proportionate change in demand from OB to OC is relatively more than the proportionate change in price from OP to OP1.

(4) Relatively Inelasticity of Demand: It refers to the percentage change in demand is less than the percentage change in the price of a product. **For example:** if the price of a product increases by 8% and the demand for the product decreases only by 4%, then the demand would be called relatively inelastic. The numerical value of relatively elastic demand ranges between zero to one (ep<1).



It can be observed that the proportionate change in demand from OM to OM1 is relatively smaller than the proportionate change in price from OP1 to OP.

(5) Unitary Elasticity of Demand: It refers to a situation where percentage changes in demand by the equal percentage change in the price of the product. Such elasticity of demand is said to be unitary elastic demand. The numerical value for unitary elastic demand is equal to one (ep=1).



It can be interpreted that change in price OP1 to OP produces the same change in demand from OQ to OQ1. Therefore, the demand is unitary elastic.

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IMPORTANCE OF PRICE ELASTICITY OF DEMAND

(1) Useful to Monopolist: if the demand for a product has different elasticities in different markets, the producer can fix different prices in different markets. A Monopolist will fix a higher price when the product has inelastic demand but he will fix a lower price when the product has elastic demand.

(2) Useful to Joint Product: This concept is useful in the price fixation of joint goods like Meat and fur, Sugar and Molasses etc. It is too difficult to ascertain separate costs of these joint goods. In such cases, the producer will be guided by elasticity of demand to fix the prices of the joint goods. So, a higher price is fixed for a good with inelastic demand and lower price for a good with elastic demand.

(3) Useful to the Government: The commodities of railways and drug industries have inelastic demand. So, the Government will undertake these industries declared as public utilities (welfare of the people).

(4) Useful to Finance Minister: The Government imposes taxes for revenue. While imposing taxes on commodities, the finance minister selects different goods based on their price elasticities. When the Government is need of more revenue it chooses those commodities which have inelastic demand for tax imposition.

(5) Useful to Management: If the demand for workers is inelastic, the demand of trade unions to raise wages will be fruitful. If the demand for workers is elastic, the efforts of trade unions to raise wages may not be successful.

(6) Useful to Producers: Number of goods produced in accordance with demand for the commodity. Whenever the demand for the commodity is inelastic, the producer will produce more commodities to take advantage of higher price. Hence, elasticity of demand helps in determining the volume of output.

(7) Useful to International Trade: In international trade, the 'terms of trade' implies that the rate at which one unit of domestic commodity will exchange for unit of a foreign commodity. In calculating the 'terms of trade, both countries have to take into account the mutual elasticities of demand for their products.

(8) Prosperity in the Midst of Plenty: The concept of elasticity explains the paradox of poverty i.e. poverty in the midst of plenty. For example: Bumper crop of food grains should bring agricultural prosperity. If the demand for food grains is inelastic, the agriculture sector will be the loser, if low price paid.

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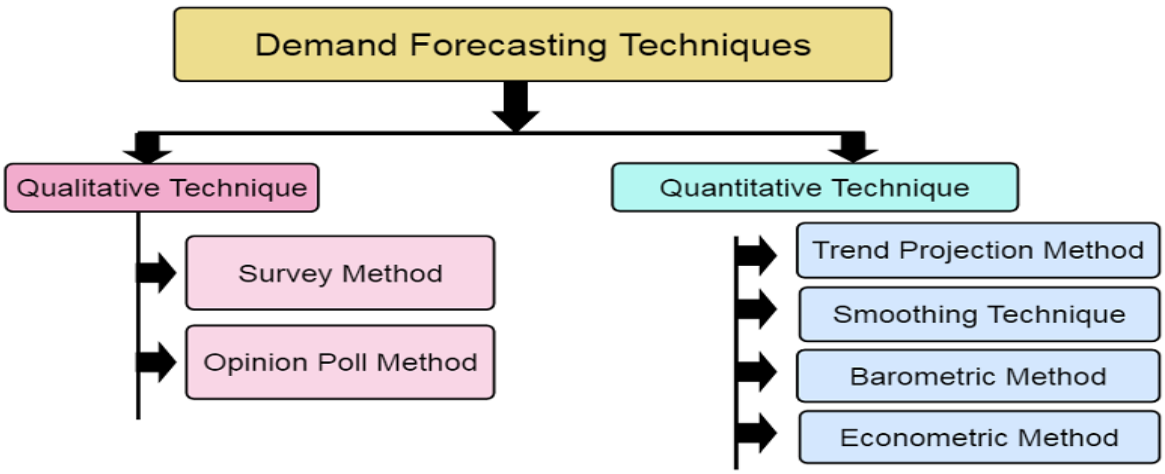
METHODS OF DEMAND FORECASTING

Definition: Demand forecasting is a systematic and scientific estimation of future demand. There are several methods available for forecasting demand and it selected on the purpose of forecasting, data required, data availability and the time frame etc. Each method varies from one another and hence the forecaster must select that method which best suits the requirement.

The demand forecasting techniques are divided into two: qualitative and quantitative techniques.



[I] Qualitative Techniques:

Qualitative techniques are especially useful when historical data is not available. These techniques rely on newly collected data through conducting surveys and opinion polls on the buying behaviour of consumers in order to forecasting demand in short run. These techniques

uses based on experience, judgment, intuition, conjecture, etc. Qualitative techniques can be further classified into two: Survey Method and Opinion Poll Method.

(A) Survey Method: Survey method is the most common and direct method of demand forecasting in the short term. This method relies on the future purchase plans of consumers and their intentions to anticipate demand. Thus, in this method, an organization conducts surveys with consumers to determine the demand for their existing products and services and anticipate the future demand accordingly. The two types of survey methods are explained as follows:

(i) Census Method: This method is also referred to as the complete enumeration survey of demand forecasting. In this method, almost all potential users of the product are contacted and surveyed about their purchasing plans. Based on these surveys, demand forecasts are made. The aggregate demand forecasts are attained by totaling the probable demands of all individual consumers in the market.

(ii) Sample Survey: In this method, only a few potential consumers (called sample) are selected from the market and surveyed. In this method, the average demand is calculated based on the information gathered from the sample.

(B) Opinion Poll Method: Opinion poll methods involve taking the opinion of those who possess knowledge of market trends, such as sales representatives, marketing experts, and consultants.

The most commonly used opinion polls methods are explained as follows:

(i) Executive Opinions: The opinions of experts from different departments are considered and averaged to forecast future sales. This method of forecasting can be done easily and quickly without the necessity of elaborate statistics.

(ii) Sales Force Opinion Method: In this method, the analyser should direct contact with sales representatives of different organisations get in touch with consumers in specific areas. They gather information related to consumers' buying behaviour, their reactions and responses to market changes, their opinion about new products, etc. This results help in forecasting future demand.

(iii) Delphi Method: : It refers to a group decision-making technique of demand forecasting In this method, panels of experts are selected and are individually questioned about the upcoming events. These questions are repeatedly asked until a consensus is obtained. For long-range forecasting, this method is beneficial and very effective.

(iv) Survey of Buyer Intentions: In this method, the analyser conducting opinion poll to obtain data of buyer intentions such as income level, cultural background, and tastes and preferences, pre-purchase and post-purchase experience etc directly get from the buyer through telephone contacts, personal interviews or questionnaires. So that the resultant changes in the demand are recorded. These results help in forecasting future demand.

[II) Quantitative Techniques

In this method, demand is forecasted based on historical data and cross-sectional data. Historical data refers to the past data obtained from various sources, such as previous years' balance sheets and market survey reports. On the other hand, cross-sectional data is collected by conducting interviews with individuals and performing market surveys. These techniques generally used statistical tools for make long-term demand forecasting. Unlike survey methods, statistical methods are cost effective and reliable. Let us discuss different types of quantitative methods:

(A) Trend Projection Method: Trend projection or least square or time series method is the classical method of demand forecasting in long run. In this method, a large amount of reliable data (a sequential order of values of a variable (called trend) at equal time intervals) is required for forecasting demand. In addition, this method assumes that the factors, such as sales and demand, responsible for past trends would remain the same in future. The trend projection method undertakes three more methods in account, which are as follows

(i) Graphical Method: It helps in forecasting the future sales of an organization with the help of a graph. The sales data is plotted on a graph and a line is drawn on plotted points. This method is very simple and less expensive; however, the projections made by this method may be based on the personal bias of the forecaster.

(ii) Fitting Trend Method: Implies a least square method in which a trend line (curve) is fitted to the time-series data of sales with the help of statistical techniques.

(iii) Box-Jenkins Method: This method refers to a method that is used only for short-term predictions. This method forecasts demand only with stationary time-series data that does not reveal the long-term trend. It is used in those situations where time series data depicts monthly or seasonal variations with some degrees of regularity. **For example,** this method can be used for estimating the sales forecasts of woolen clothes during the winter season.

(B) Smoothing Techniques: This helps in identifying demand patterns and demand levels that can be used to estimate future demand. The most common methods used in smoothing techniques of demand forecasting are simple moving average method and weighted moving average method.

(C) Barometric Methods: Barometric methods are used to speculate the future trends based on current developments. This method is also referred to as the leading indicators approach to demand forecasting. This method is also used to predict various economic indicators, such as saving, investment, and income. The basic approach followed in barometric methods of demand analysis is to prepare an index of relevant economic indicators and forecast future trends based on the movements shown in the index. This method was introduced by Harvard Economic Service in 1920 and further revised by National Bureau of Economic Research (NBER) in 1930s.

(D) Econometric Methods: Econometric methods make use of statistical tools combined with economic theories to assess various economic variables (for example, price change,

income level of consumers, changes in economic policies, and so on) for forecasting demand. An econometric model consists of two types of methods namely, regression model and simultaneous equations model.

These two types of methods are explained as follows:

(i) Regression Methods: It is most popular method of demand forecasting. In regression method, the demand function for a product is estimated where demand is dependent variable and variables that determine the demand are independent variable. If only one variable affects the demand, then it is called single variable demand function. Thus, simple regression techniques are used. If demand is affected by many variables, then it is called multi-variable demand function. Therefore, in such a case, multiple regression is used.

(ii) Simultaneous Equations: In this method, all variables are simultaneously used and estimate the future demand.

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THEORY OF SUPPLY

Demand and Supply are two pillars of business economics. We already know that demand is the quantity of a good or service that consumers are desired, willing and able to purchase at different prices during a period of time. In this article, we will understand the meaning and determinants of supply.

Meaning of Supply

Supply is the quantity of goods a firm offers to sell in the market at a given price. In this, the producers must possess willing and able to offer to the market at various prices during a period of time. There are two important aspects of supply:

Supply refers to what is offered for sale and not what is finally sold.
Supply is a flow. Hence, it is a certain quantity per day or week or month, etc.

Supply Function

It explains the relationship between the supply of a commodity and the factors determining its supply. Here we shall study the Supply Function in detail.

Thus, supply function is written as: **Q_S = f (P, Pr, Pi, T, W, GP)**

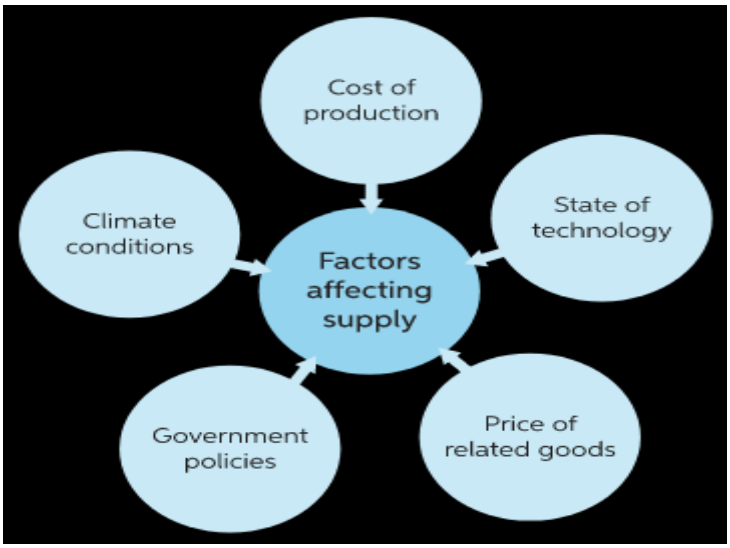
Where, Q_S = Supply of commodity
P = Price of commodity
Pr = Price related goods
Pi = Price of inputs
T = Technology
W = Weather conditions
GP = Government Policy

Determinants of Supply

There are several factors that influence the supply of a product. These factors are:

(A) Price of the Good: The most important factor determining the supply of a commodity is its price. As a general rule, price of a commodity and its supply are directly related. It means, as price increases, the quantity supplied commodity also rises and vice-versa. It happens because at higher prices, there are greater chances of making profit.

(B) Prices related Commodities: Price of related goods have a negative relationship with the supply of a product. If complementary goods prices increases also increase in the supply of commodity and vice-versa. While, when the price of the substitutes increases results in a decrease the supply of goods. **For example,** Wheat is substitute of Rice, when increase in the price of wheat will results the farmer to use land for cultivation of wheat in place of the rice.



(C) Price of the Production Factors (Inputs): The price of the production factors such as land, labor, capital, and entrepreneurship also determine the supply of the goods. When the price of inputs is low the cost of production is also low. Thus, the firms tend to supply more goods in the market and vice-versa. **For example:** A firm makes ice-cream, need various inputs like cream, sugar, machine, labour, etc. When price of one or more of these inputs rises, producing ice-creams will become less profitable and firms supply fewer ice-creams.

(D) State of Technology: Technological changes influence the supply of a commodity. Advanced and improved technology reduces the cost of production, which raises the profit margin will result the seller to increase the supply. However, out-dated technology will increase the cost of production and it will lead to decrease in supply.

(E) Government Policy (Taxation Policy): Commodity taxes like excise duty, import duties, and GST etc. have a huge impact on the cost of production. Increase in taxes raises the cost of production and, thus, reduces the supply, due to lower profit margin. On the other hand, tax concessions and subsidies increase the supply as they make it more profitable for the firms to supply goods.

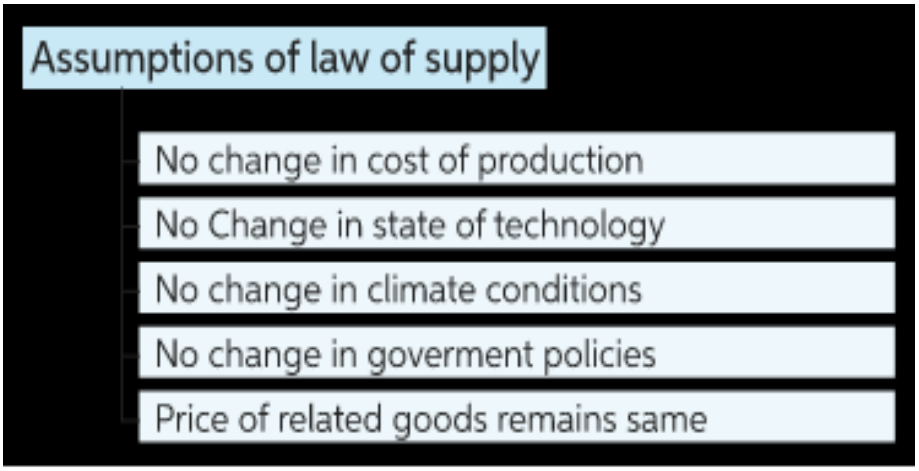
(F) Expectations about Future Prices: When the producers expect the prices raises in future they hold the goods, they can sell them at higher prices later. This will result in a decrease in the supply of goods. Similarly, in case they expect a fall in price, they will increase the supply of goods.

(G) Number of Firms (Competitors): When the number of firms in the market increase the supply of goods also increases and vice-versa.

(H) Natural Factors: The factors like weather conditions, flood, drought, pests, etc. also affect the supply of goods. Adverse climatic conditions cause the supply of a product to decrease. When these factors are favorable the supply will increase.

The Law of Supply

The law of supply refers to the functional relationship between prices of a commodity and its supply. It states that when the price of a commodity increases its supply also increases. Similarly, when the price of a commodity decreases its supply also decreases. Hence, there is a direct relationship between price and supply of a commodity and the supply curve slopes upward from left to right.



Assumptions Underlying the Law of Supply:

Important assumptions of the law of supply are as follows:

1. Cost of production can be unchanged: It is assumed that the price of the product changes, but there is no change in the cost of production. If the cost of production increases along with the rise in the price of product, the sellers will not find it worthwhile to produce more and supply more. Therefore, the law of supply will be valid only if the cost of production remains constant. It implies that the factor prices such as wages, interest, rent etc., are also unchanged.

2. No change in technique of production: This is essential for the cost to remain unchanged. With the improvement in technique if the cost of production is reduced, the seller would supply more even at falling prices.

3. There should be no change in transport cost: It is assumed that transport facilities and transport costs are unchanged. Otherwise, a reduction in transport cost implies lowering the cost of production, so that more would be supplied even at a lower price.

4. No change in Income of the Producer: If there is no change in the income of the producer. When increased the income of the producer will also increase of the quantity of sully and vice-versa.

5. There should be fixed scale of production: During a given period of time, it is assumed that the scale of production is held constant. If there is a changing scale of production the level of supply will change, irrespective of changes in the price of the product.

6. There should not be any speculation: The law also assumes that the sellers do not speculate about the future changes in the price of the product. If, however, sellers expect prices to rise further in future, they may not expand supply with the present price rise.

7. The prices of other goods should remain constant: Further, the law assumes that there are no changes in the prices of other products. If the price of some other product rises faster than that of the product in consideration, producers might transfer their resources to the other product which is more profit yielding due to rising prices. Under this situation and circumstances, more of the product in consideration may not be supplied, despite the rising prices.

8. There should not be any change in the government policies: Government policy is also important and vital for the law of supply. Government policies like taxation policy, trade policy etc., should remain constant.

Explanation of the Law:

This law can be explained with the help of a supply schedule as well as by a supply curve based on an imaginary figures and data.

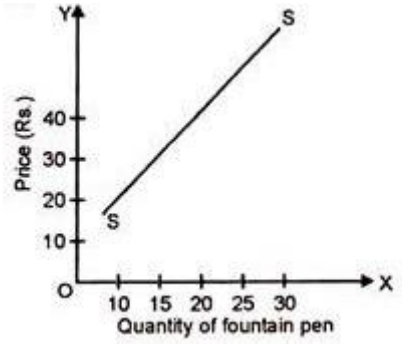
Supply Schedule: Supply schedule shows a tabular representation of law of supply. It presents the different quantities of a product that a seller is willing to sell at different price levels of that product. A supply schedule can be of two types, which are as follows:

i. Individual Supply Schedule: It refers to a supply schedule that represents the different quantities of a product supplied by an individual seller at different prices.

Table-1: Individual Supply Schedule

Price of cello pen (Rs.)	Quantity of Supplied (in '000' per week)
10	10
20	13
30	20
40	25

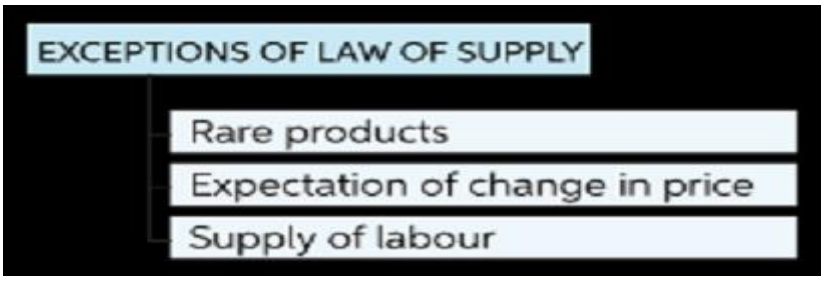
This can be shown by diagram as follows:



Here, in this diagram the supply curve SS is sloping upward. It suggests with the supply schedule, that the market supply tends to expand with the rise in price and vice-versa. Similarly, the upward slopping curve also depicts a direct correlation between price and supply.

Exceptions of the law of supply

As we have seen from the study above that supply of a commodity varies directly with its price. But in some exceptional cases where supply may tend to fall with the rise in price or tend to rise with the fall in price. There are a few exceptions associated with the law of supply.



[A] Rare Products: There are certain products that are rare like Agricultural Products, and their supply cannot be increased. In the case of such products, the supply will remain the same even if the price increases. The supply curve in this situation will be vertical instead of an upward sloping curve.

[B] Labor Supply: The supply of labor does not adhere to the law of supply. Labor supply tends to increase with an increase in wages, but after a certain point it starts decreasing with the workers preferring more leisure as they start earning higher wages.

[C] Exceptions about Future Price: if the seller expects a rise in the price in future, he may withhold his stock of the commodity. He will reduce his supply in the market at the present price. Similarly, if he expects a further fall in price in future, he will try to dispose of the commodity and will supply more even at a lower price.

From the points written above we can observe that the supply tends to fall with a rise in prices at a point. This paradoxical situation of supply behaviour is represented by a vertical or

backward sloping or regressive supply curve over a part of its length as shown in the figure given below:

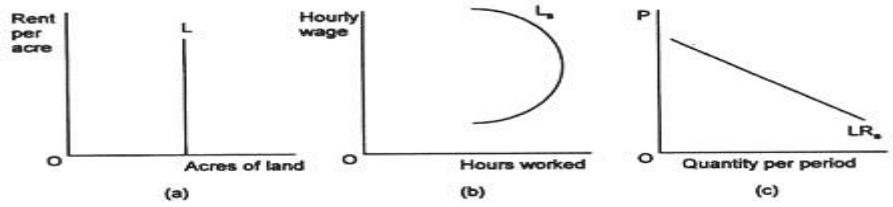


Fig. 2 : Exceptional supply curves

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