

Demand Analysis

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Demand Analysis for Various Products and Situations

3.1 INTRODUCTION

In economics, demand for a commodity does not simply mean desire or need or want. In addition to these, the consumer must be **able** and **willing** to pay the price. Whenever desire for anything is backed by ability and willingness to pay for that thing it flows out in the form of effective demand. Thus demand in economics is '**desire backed by ability and willingness to pay.**'

In words of **Prof. J. Harvey**, "**Demand in Economics is the desire to possess something and the willingness and ability to pay a certain price in order to possess it.**"

A complete statement of demand must include the market-dimension, the price- dimension and the time- dimension i.e. whose demand, at what price and for what period of time.

A simple statement saying 'demand for milk is 30 litres,' is an incomplete statement.

To be a complete and meaningful statement it should read 'when the price of milk is Rs. 23/ - per litre then family X demands 30 litres of milk per month.'

This makes sense.

3.2 DETERMINANTS OF DEMAND

The quantity demanded of any commodity say X, will depend on several factors.

1. **The price of commodity X:** Demand for any commodity is primarily influenced by its price. Normally, at higher price, less of it is demanded and at lower price more of it will be demanded.
2. **The price of substitutes of X:** When the consumer goes to the market to purchase some commodity X, he also tries to find out the price of substitutes of X and then takes the decision to buy.
3. **Income of the consumer:** The demand for a commodity depends on the income of the consumer. The disposable income of the consumer has a direct influence on demand for the commodity that the consumer wants to buy.

4. **Utility of the commodity:** Demand for any commodity X arises because of its utility to the consumer.
5. **Quality of the commodity:** Demand for any good is also influenced by the quality of that good. The better the quality of the good, the more will be the demand for it.
6. **Taste and fashion:** The taste of the consumer for a particular commodity influences the extent of its demand. If a particular good is favoured over others then more of it will be demanded in the market.
7. **Size of Population:** Demand for any good also depends on the number of buyers or consumers in the market.
8. **Expectations about future prices:** Our expectations regarding prices that would prevail in the market in the near or distant future also affects the demand for the product in the present.
9. **Climatic conditions:** Demand for commodity is also influenced by climatic changes.
10. **Psychology of the consumers:** Demand for a good depends also on the psychological behaviour of the consumer. There is the possibility that as more and more consumers possess a particular good, others are also psychologically activated to buy that good. This is commonly called the **Bandwagon effect**. On the other hand, some consumers display opposite attitude. Just because others demand a particular good, they would not like to demand that good. They may prefer to have something which is not commonly demanded by others. This is called the **Snob effect**. They simply will not buy what others are buying.
11. **Advertisements and salesmanship:** In modern markets the demand for a product can be created through appropriate advertisements and salesmanship.

3.3 DEMAND FUNCTION

As the quantity demanded of commodity X is a function of (depends on) so many variables the demand function can be written as

$$Q_x^d = f (P_x, P^I, Y_d, U, Q, T, A \dots \dots \text{etc})$$

Where,

P_x : Price of x

P^I : Price of substitute of x

Y_d : Disposable income of the consumer

U : Utility of the commodity

Q : Quality

T : Tastes & Fashion

A : Advertisement

As this is a complicated functional relationship it would become difficult to develop a simple theory of demand if we simultaneously consider the effect of changes in all variables on demand for X. Therefore we assume that all the other variables are held constant and establish relation between price of X and quantity demanded of X.

Mathematically stated:

$$Q_x^d = f (P_x)$$

$$P^I = P_0$$

$$Y_d = Y_{d0}$$

$$U = U_0$$

$$Q = Q_0$$

$$T = T_0$$

3.4 THE LAW OF DEMAND

The law of demand establishes the functional relationship between price of X and the quantity demanded of commodity X, assuming factors other than price of commodity X, remain constant.

The law of demand states "**other things remaining the same quantity demanded of a commodity is inversely related to its price,**" i.e. when the price of commodity X rises, the demand for it declines and when the price of commodity X falls, the demand for it rises. The law of demand can be explained with the help of a demand schedule and the corresponding demand curve.

The Demand Schedule

The Demand Schedule is a tabular representation expressing the various amounts of commodity X demanded at different possible prices of X at any given time. Thus a tabular statement showing the relationship between different alternative prices of commodity X and the different quantities of X demanded at these prices is technically referred to as **demand schedule**.

A Demand Schedule

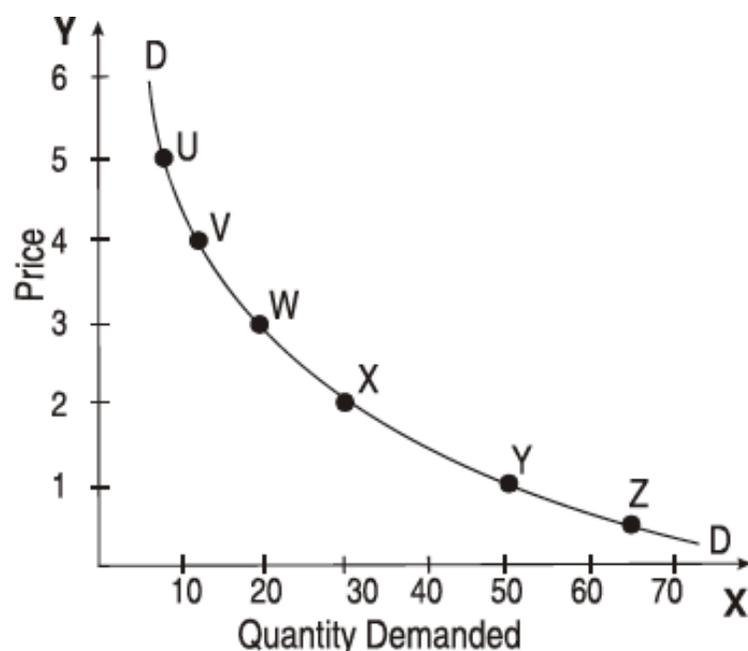
A Demand Schedule	Price per unit of Commodity X (Rs)	Quantity demanded of Commodity X per day (Units)
U	5	8
V	4	12
W	3	20
X	2	30
Y	1	50

The demand schedule shows the inverse relationship between price and quantity demanded, i.e., at lower price more units are demanded and at higher price few units are demanded.

The Demand Curve

On the basis of the demand schedule when we plot points on a graph and join these points we get the Demand Curve. **A demand curve refers to a**

graphical presentation of the relation between price and quantity demanded. It is customary to represent price on the Y-axis and the quantity demanded on the X-axis



The demand curve slopes downwards from left to right indicating an inverse or a negative relationship between price and quantity demanded.

Assumptions underlying the Law of Demand

The law of demand is based on the assumption, viz, "other things remaining the same".

What then are the 'other things remaining the same'?

- I. The income of the consumer must remain the same.
- II. Prices of other commodities must remain the same.
- III. The taste of the consumer must remain the same.
- IV. The consumer should not anticipate further changes in prices.
- V. The size and the composition of population must remain reasonably stable etc.

3.5 EXCEPTIONS TO THE LAW OF DEMAND

- I. **Expectations of further changes in Prices and Speculation:** The law of demand will not hold good when people expect prices to rise still further. In that case although the prices have risen today consumers will demand more in anticipation of further increase in price. This type of behaviour can be observed on the Stock Exchange.
- II. **Giffen's Paradox:** Once it so happened in England that when the price of

bread declined the demand for bread also declined and when price of bread increased the demand for bread also increased. This was against the law of demand. **Sir Robert Giffen** said that in case of bread, which is an inferior good of a special kind, when price of bread declined, the real income of the consumer increased and out of this increase in real income, the consumers decided to consume more of some other commodities, instead of demanding more of bread. This explanation came to be called the **Giffen's Paradox**, which is an exception to the law of demand.

III. **Qualitative changes:** The law of demand does not consider qualitative changes in the commodity. If the price is taken by the consumer as the yardstick of quality of commodity, mere rise in price of the commodity may raise the demand for it.

IV. **Price-illusions:** Consumers are, in modern world, governed more by price-illusions e.g. the consumer strongly believes that 'higher the price, better the product', and thus greater is the demand for it.

V. **Display of Standard of Living:** The law of demand fails to operate in the case of prestige articles having snob appeal. The consumer is very often governed by what is called as **demonstration effect**. Expensive jewellery, paintings, antique and other similar commodities are bought not because they are needed but the purchase of such articles will enable the possessor to display his wealth.

3.6 WHY DOES THE DEMAND CURVE SLOPE DOWNWARDS ?

The downward slope of demand curve can be explained by referring to relationship between Marginal Utility and Price of commodity. The following example will make the point clear.

As such the Law of Diminishing Marginal Utility states that the Marginal Utility of the additional unit consumed goes on diminishing as the consumer consumes more and more units of commodity. Suppose the commodity in question is Mangoes and that all units of Mangoes are identical; the consumer goes on consuming unit after unit of Mangoes, and if utility is measured in terms of 'Utils' then we can prepare the following utility schedule:

If one unit of utility i.e. 1 Util = Re 1 then we can prepare another column to express utility in terms of Money. The first unit of Mango possesses 10 units of Util. if market price of mango is Rs 5/- per unit then the first unit of mango will

TABLE 3.1

Units of Mangoes	Total Utility	Marginal Utility	1 unit = 1 Re of Util	Actual Price is Rs 5/- (Rs)
1	10	10	10	5
2	18	08	08	5
3	25	07	07	5
4	30	05	05	5
5	32	02	02	5
6	32	0	0	
7	30	-2	-2	

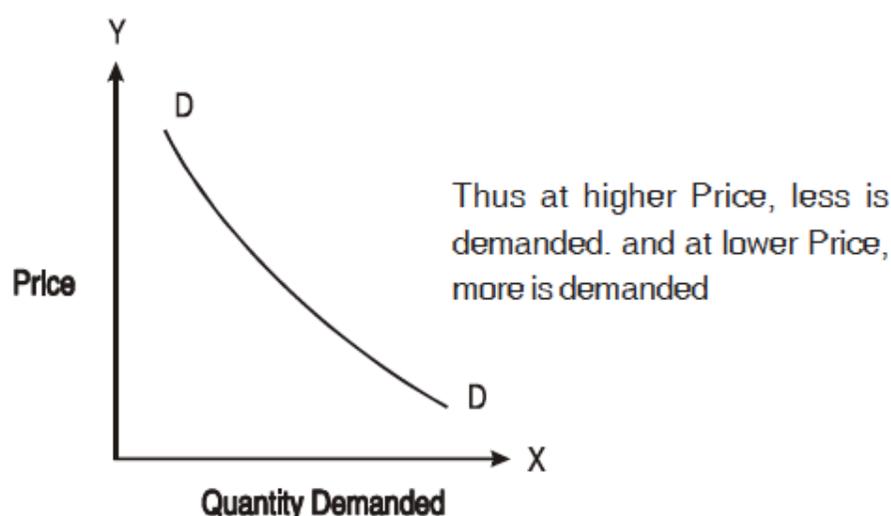
be consumed because utility is worth Rs 10/- whereas its price is Rs 5/-. The consumer will go on consuming 4 units of Mangoes where $MU_x = P_x$. If he consumes more than 4 units then Marginal Utility of 5th unit in terms of money is 02 but the price remains Rs 5/- the consumer will not consume the 5th unit. He stops at 4 units. But if price is Rs 2 per unit then consumer will

have 5 units. If the price is Rs 7/- then the consumer will demand only 3 units.

We can prepare the demand schedule on the basis of this analysis and derive the corresponding demand curve; which is downward sloping.

When

P_x	Q_x^d
7	3
5	4
2	5



This gives rise to the Law of Demand i.e. "Other things remaining the same quantity demanded of X is inversely related to price of X." And therefore the demand curve slopes downward from left to right.

3.7 MOVEMENT ALONG THE CURVE V/S SHIFT OF CURVES

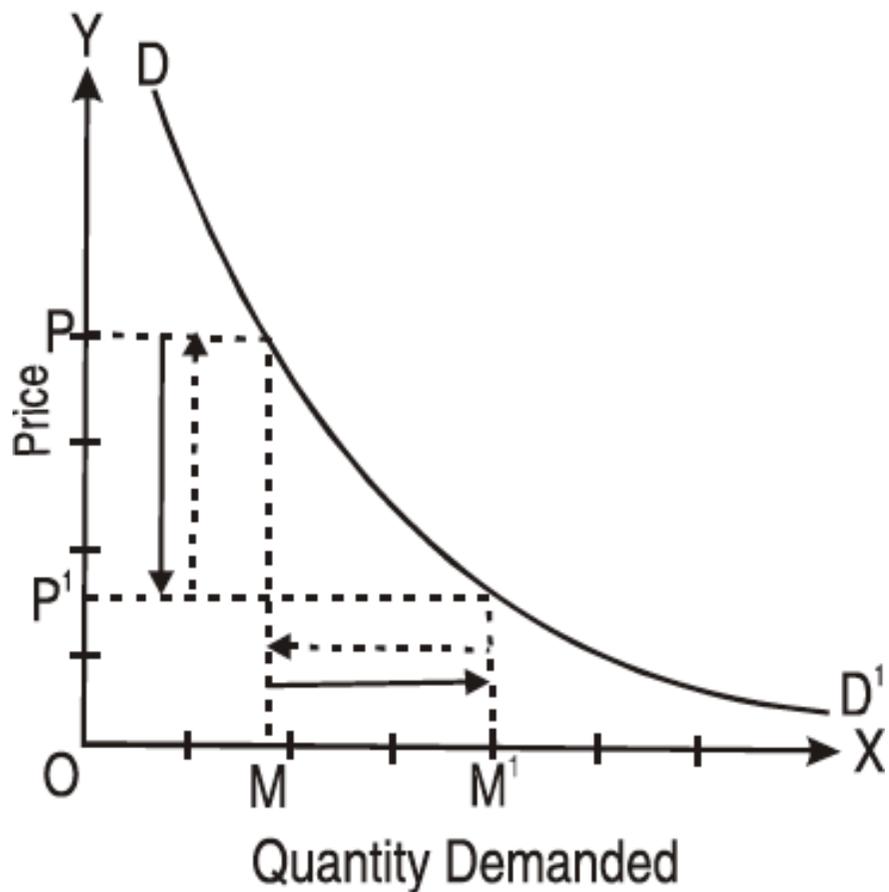
It is important to distinguish between a movement along a demand curve and a shift of the entire demand curve.

Extension and Contraction of Demand

If we consider changes in the price of a commodity as the only factor influencing its quantity demanded, then we experience movements on the same curve. We either have extension or contraction of demand.

When the price of a commodity falls from OP to OP¹, the demand for it goes up from OM to OM¹. This is what is called Extension of Demand.

When the price of the commodity rises from OP¹ to OP the demand for it contracts from OM¹ to OM. This is called Contraction of Demand.



Extension and Contraction of Demand

Both extension and contraction of demand can be shown by movement along the same demand curve.

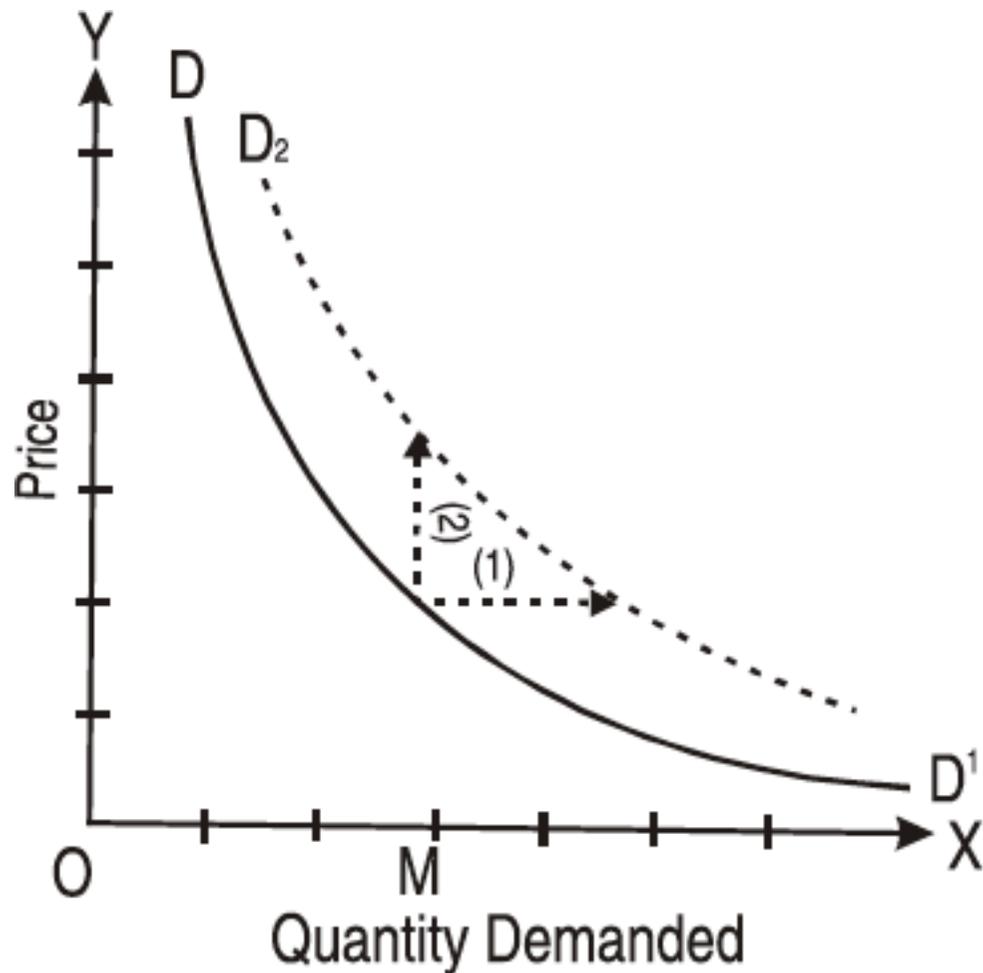
Increase and Decrease in Demand

When factors other than price of the commodity influence the demand for that commodity, then we have either increase or decrease in demand shown by complete shifts in the demand curve.

Demand is said to have increased when:

- i) At the same price more is demanded.

ii) At higher price same quantity is demanded.

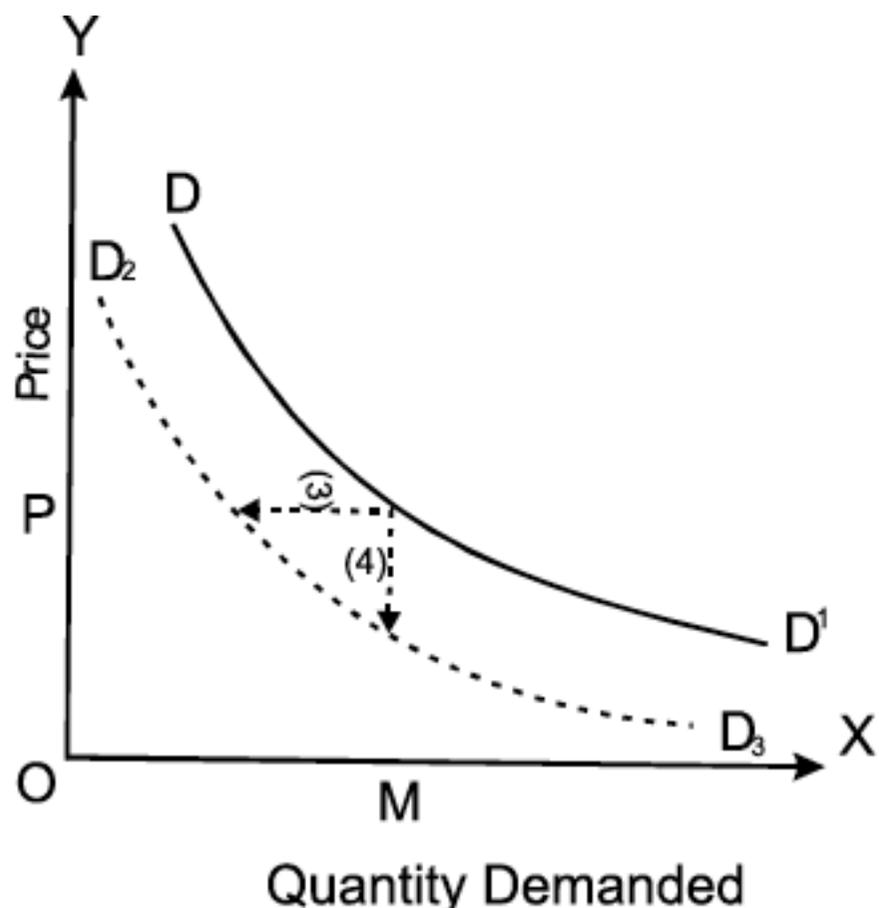


Increase in demand

Let us assume, to begin with, that when price is OP , quantity demanded is OM . Now at the same price, OP more is demanded or at a higher price the same quantity, i.e. OM , is demanded, both these conditions tend to reveal that the demand curve will shift to the right and we have the demand curve D_2D_3 . Therefore, when demand increases, the demand curve shifts to the right.

Demand is said to have decreased when:

- i) At same price, less quantity is demanded.
- ii) At a lower price, the same quantity is demanded.



Decrease in Demand

Both the arrows point to the fact that there is the tendency for the demand curve to shift to the left and we have the new demand curve D_2D_3 which is to left of the original. Therefore, **when demand decreases, the demand curve shifts to the left.**

Hence extension and contraction of demand are shown by movement along the curve; whereas increase or decrease in demand will be shown by shifts in the curve.

3.8 DEMAND ANALYSIS FOR VARIOUS PRODUCTS AND SITUATIONS

A. Demand for Durable and Non-Durable Goods:

Non- durable goods are also referred to as Perishables. These perishable goods loose their utility in the very short period whereas **durable goods are long lasting** and are not perishable in the short run. They can retain their utility over a considerably long period.

Durable goods are storable whereas non-durable goods i.e. perishable goods cannot be stored for a long period.

Demand for non-durables depends largely on the prevailing conditions, such as style, income or convenience whereas durable goods are mostly bought for future use and hence expectations play a vital role in influencing demand for durable goods.

Expectations regarding availability or shortages exert a greater influence than those concerning price changes. The decision to purchase durables is viewed in the light of maintenance and operating costs in relation to future income. Demand for durables, thus, depends not only on present prices or present incomes but also upon the expected changes, the state of optimism, the rate of obsolescence etc.

Storability and postponability are the two peculiar characteristics of durables. As a result of storability, the buyers build up inventories during a temporary fall in price. During recession, normally people postpone replacement of durables whereas during the period of expected shortages they increase their replacement demand. Technological upheaval produces a blast of obsolescence and influences the changing pattern of demand for novel durable.

B. Long- run and Short- run Demand:

Short run demand refers to the demand that exists **at a point of time** with its immediate reaction to change in price and income. **Long-run demand** refers to the demand that will ultimately exist **over a period of time** as a result of price changes, competition, product improvement etc.

Short-run elasticity of industry demand is normally less than long-run elasticity. However if price changes are just temporary the short-run elasticity of industry demand will be high, instead of being low. Under such situations the consumers will postpone the purchases when the prices rise and do the opposite when prices decline.

The two major factors that distinguish short-run and long-run demand are: i) Cultural lags in information and experience and ii) Capital investments required by buyers to shift consumption patterns.

Very often consumers are sticky in their consumption habits. They take time to adjust to a new situation. It also takes time to finance the purchase of new equipment that is needed to use the commodity, the price of which has fallen. The example that is often quoted is that of petrol and vehicles using it;

e.g. the full advantage of reduction in price of petrol will not be felt until consumers have had enough time to purchase vehicles using petrol.

C. Direct Demand (Autonomous Demand) And Derived Demand:

Demand is direct if the good is required for direct consumption to satisfy a human want. Example: demand for food is direct demand or autonomous demand. To understand the meaning of derived demand, let us consider a very simple example: Labour is demanded not for its own sake, we demand labour because we can use labour to produce goods which in turn are demanded by consumers to satisfy their want. Thus **demand for labour is derived from demand for goods. Hence demand for labour or for any factor of production is a derived demand.** Similarly demand for cement is derived demand, for it is needed not for its own sake but for satisfying the demand for construction of buildings.

The demand for most of the consumer goods is generally autonomous whereas the demand for producer's goods is always derived because these goods are demanded to produce other goods. The direct demand or autonomous demand is also called **Pure Demand or Conventional Demand.**

D. Joint Or Complimentary Demand:

Some goods are such which have to be jointly consumed if the want is to be fully satisfied. They are **jointly demanded**; e.g. tea, milk, water and sugar; or tubes and tyres. In such cases we have the joint demand. Such goods are called complimentaries. One without the other cannot satisfy our want. Thus demand for **complimentaries** is a joint demand.

E. Cross Demand:

Some goods are in the nature of **substitutes** i.e. we either want X1 or X2 and not both at the same time. If we demand X1 then at the same time we will not demand X2. In this case demand for one good is affected by the price of other good. We may demand more of tea not because price of tea has fallen but because price of coffee has risen. Thus **demand for substitutes take the form of cross demand.**

F. Composite Demand:

Composite demand implies that a commodity under consideration can be put to several uses. Demand for electricity is a Composite demand. It can be used for lighting, or cooking, or ironing, or for washing machine, or for radio, television, air conditioner, computer etc., same is the case with steel, or coal and many other commodities.

G. Industry Demand and Firm Demand:

Firm Demand (company demand) denotes the demand for the product/s of a particular firm. While **Industry demand** means the demand for the product of a particular industry. For e.g. the demand for steel produced by TISCO (Tata Iron and Steel Company) is a company demand while demand for steel produced by all companies in India is industry demand for steel in India. An industry comprises all the firms or companies producing similar products which are quite close substitutes to each other irrespective of the differences in their brand names.

To understand the relation between company and industry demand necessitates an understanding of different market structures. The demand curve of an individual firm is not the same as the industry or market demand curve except in case of monopoly. **Monopoly** is that market category in which there is only a single seller and therefore **there is no difference between a firm and an industry. The firm is itself an industry and therefore the demand curve of the individual firm as well as the industry demand curve under monopoly will be the same** and as we shall see later is **downward sloping**. Moreover as there are no close substitutes under monopoly the demand curve is relatively steeper showing relatively inelastic demand under monopoly.

Under Perfect Competition industry demand is completely different from the individual firm demand. The industry demand curve is downward sloping. The price in the market is determined by the interactions of the forces of demand and supply. The point of intersection between demand and supply curves determines the equilibrium price of the product. Now the number of firms under Perfect Competition is so large that a single firm has no influence on either the total output or the price. Its contribution to total output is just microscopic. If a new firm enters or an existing firm takes an exit the total output does not get affected much. A firm under Perfect

Competition cannot fix the price of its product. It will have to sell its product at the going market price as it is determined by demand and supply forces in the market. **A firm under Perfect Competition is a price taker and not a price maker.** Price is given to the firms and each unit of its output is sold at the given market price and thus the demand curve of firm or its average revenue curve becomes horizontal. Horizontality of average revenue curve (demand curve) is the acid test of a firm under Perfect Competition.

Under Monopolistic Competition there is competition among a group of monopolists producing differentiated product. The product of each firm is slightly different from that of other. There are also substitutes and therefore the demand curve of each firm's product is downward sloping and is relatively elastic in nature. In monopolistic competition there are many sellers with differentiated product and hence industry demand curve hardly has any meaning.

In case of Oligopoly market there are few sellers producing either differentiated or homogenous products. The demand for a firm's product is influenced by the actions of its rivals. **The demand curve of a firm under oligopoly has a kink.**

So far we have considered only the price elasticity relationship which is easily and usually portrayed as demand schedule. However, we must consider factors that cause shifts in the demand function; such as incomes, sales promotion and product improvement. The level and distribution of income, the volume of sales and the quality and frequency of advertisement also determine the position and slope of the demand curves. While studying the effect of these forces, industry demand requires a different framework of analysis as against the firm's demand curve. The management also distinguishes between short-term demand fluctuations and the long-run trends and also between total market and market segments.

H. Total Market Demand and Market Segments Demand:

Total market demand refers to the total overall demand for the product whereas **market segments demand** refers to the demands arising from different segments of the market. A firm or an industry may be interested not only in the total demand for its product but more so in the demand for its product arising from different market segments such as different regional markets, different distribution channels etc. each segment may differ with

respect to delivered prices, competition, seasonal patterns and net profit margins. When these differences are great, the demand analysis should be confined to the individual market segments. The knowledge of these segment demands will help the firm in understanding its total demand.