UNIT 2 : THEORY OF CONSUMER BEHAVIOUR

LEARNING OUTCOMES

At the end of this Unit, you should be able to:

- Explain the meaning of utility.
- Describe how consumers try to maximize their satisfaction by spending on different goods.
- Explain the Law of Diminishing Marginal Utility with examples.
- Describe the concept of Consumer Surplus with examples.
- Describe the meaning of Indifference Curve and Price Line and how these help in explaining consumer equilibrium.

2.0 NATURE OF HUMAN WANTS

All desires, tastes and motives of human beings are called wants in Economics. Wants may arise due to elementary and psychological causes. Since the resources are limited, we have to choose between the urgent wants and the not so urgent wants.

All wants of human beings exhibit some characteristic features.

1. Wants are unlimited in number. They are never completely satisfied.

2. Wants differ in intensity. Some are urgent ,others are felt less intensely.

3. Each want is satiable.

4. Wants are competitive. They compete each other for satisfaction because resources are scarce to satisfy all wants.

5. Wants are complementary. Some wants can be satisfied only by using more than one good or group of goods.

6. Wants are alternative.

7. Wants are subjective and relative.

8. Wants vary with time, place, and person.

9. Some wants recur again whereas others do not occur again and again.

10. Wants may become habits and customs.

11. Wants are affected by income, taste, fashion, advertisements and social customs.

12. Wants arise from multiple causes such as natural instincts, social obligation and individual's economic and social status.

Classification of wants

In Economics, wants are classified into three categories, viz., necessaries, comforts and luxuries.

Necessaries

Necessaries are those which are essential for living. Necessaries are further sub-divided into necessaries for life or existence, necessaries for efficiency and conventional necessaries. Necessaries for life are things necessary to meet the minimum physiological needs for the maintenance of life such as minimum amount of food, clothing and shelter. Man requires something more than the necessities of life to maintain longevity, energy and efficiency of work, such as nourishing food, adequate clothing, clean water, comfortable dwelling, education, recreation etc. These are necessaries for efficiency. Conventional necessaries arise either due to pressure of habit or due to compelling social customs and conventions. They are not necessary either for existence or for efficiency.

Comforts

While necessaries make life possible comforts make life comfortable and satisfying. Comforts are less urgent than necessaries. Tasty and wholesome food, good house, clothes that suit different occasions, audio-visual and labour saving equipments etc .make life more comfortable.

Luxuries

Luxuries are those wants which are superfluous and expensive. They are not essential for living. Items such as expensive clothing, exclusive motor cars, classy furniture, goods used for vanity etc fall under this category.

The above categorization is not rigid as a thing which is a comfort or luxury for one person or at one point of time may become a necessity for another person or at another point of time. As all of us are aware, the things which were considered luxuries in the past have become comforts and necessaries today.

What is Utility?

The concept of utility is used in neo classical Economics to explain the operation of the law of demand. Utility is the want satisfying power of a commodity. It is the expected satisfaction to a consumer when he is willing to spend money on a stock of commodity which has the capacity to satisfy his want. Utility is the anticipated satisfaction by the consumer, and satisfaction is the actual satisfaction derived.

A commodity has utility for a consumer even when it is not consumed .It is a subjective entity and varies from person to person. A commodity has different utility for the same person at different places or at different points of time. It should be noted that utility is not the same thing as usefulness. From the economic standpoint, even harmful things like liquor, may be said to have utility because people want them. Thus, in Economics, the concept of utility is ethically neutral.

Utility hypothesis forms the basis of the theory of consumer behaviour. From time to time, different theories have been advanced to explain consumer behaviour and thus to explain his demand for the product. Two important theories are (i) Marginal Utility Analysis propounded by Marshall, and (ii) Indifference Curve Analysis propounded by Hicks and Allen.

2.1 MARGINAL UTILITY ANALYSIS

This theory which is formulated by Alfred Marshall, a British economist, seeks to explain how a consumer spends his income on different goods and services so as to attain maximum satisfaction. This theory is based on certain assumptions. But before stating the assumptions, let us understand the meaning of total utility and marginal utility.

Total utility: Assuming that utility is measurable and additive, total utility may be defined as the sum of utility derived from different units of a commodity consumed by a consumer. Total utility is the sum of

marginal utilities derived from the consumption of different units i.e.

$$TU = MU_1 + MU_2 + ... + MU_n$$

Where MU_1, MU_2,.....,MU_n etc are marginal utilities of the successive units of a commodity.

Marginal utility: It is the addition made to total utility by the consumption of an additional unit of a commodity. In other words, it is the utility derived from the marginal or one additional unit consumed or possessed by the individual.

Marginal utility = the addition made to the total utility by the addition of consumption of one more unit of a commodity.

Symbolically,

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

Where,

  MU_n is the marginal utility of the nth unit,

  TU_n is the total utility of the nth unit, and

  TU_{n-1} is the total utility of the (n-1)th unit.

2.1.0 Assumptions of Marginal Utility Analysis

(1) *Rationality:* A consumer is rational and attempts to attain maximum satisfaction from his limited money income.

(2) *Cardinal Measurability of Utility:* According to neoclassical economists, utility is a cardinal concept i.e., utility is a measurable and quantifiable entity. It implies that utility can be measured in cardinal numbers and assigned a cardinal number like 1, 2, 3 etc. Marshall and some other economists used a psychological unit of measurement of utility called utils. Thus, a person can say that he derives utility equal to 10 utils from the consumption of 1 unit of commodity A and 5 from the consumption of 1 unit of commodity B. Since a consumer can quantitatively express his utility, he can easily compare different commodities and express which commodity gives him greater utility and by how much. Utilities from different units of the commodity can be added as well.

According to this theory, money is the measuring rod of utility. The amount of money which a person is prepared to pay for a unit of a good, rather than go without it, is a measure of the utility which he derives from the good.

(3) *Constancy of the Marginal Utility of Money:* The marginal utility of money remains constant throughout when the individual is spending money on a good. This assumption, although not realistic, has been made in order to facilitate the measurement of utility of commodities in terms of money. If the marginal utility of money changes as income changes, the measuring-rod of utility becomes unstable and therefore would be inappropriate for measurement.

(4) *The Hypothesis of Independent Utility:* The total utility which a person gets from the whole collection of goods purchased by him is simply the sum total of the separate utilities of the goods. The theory ignores complementarity between goods.

2.1.1 The Law of Diminishing Marginal Utility

One of the important laws under Marginal Utility analysis is the Law of Diminishing Marginal Utility.

The law of diminishing marginal utility is based on an important fact that while total wants of a person are virtually unlimited, each single want is satiable i.e., each want is capable of being satisfied. Since each want

is satiable, as a consumer consumes more and more units of a good, the intensity of his want for the good goes on decreasing and a point is reached where the consumer no longer wants it. Thus, the greater the amount of a good a consumer has, the less an additional unit is worth to him or her.

Marshall who was the exponent of the marginal utility analysis, stated the law as follows:

"The additional benefit which a person derives from a given increase in the stock of a thing diminishes with every increase in the stock that he already has."

In other words, as a consumer increases the consumption of any one commodity keeping constant the consumption of all other commodities, the marginal utility of the variable commodity must eventually decline.

This law describes a very fundamental tendency of human nature. In simple words it says that as a consumer takes more units of a good, the extra satisfaction that he derives from an extra unit of a good goes on falling. It is to be noted that it is the marginal utility and not the total utility which declines with the increase in the consumption of a good.

Table 6 : Total and marginal utility schedule

Quantity of chocolate bar consumed	Total utility	Marginal utility
1	30	30
2	50	20
3	65	15
4	75	10
5	83	8
6	89	6
7	93	4
8	96	3
9	98	2
10	98	0
11	94	−4

Let us illustrate the law with the help of an example. Consider Table 6, in which we have presented the total utility and marginal utility derived by a person from the chocolate bars consumed. When one chocolate bar is consumed, the total utility derived by the person is 30 utils (unit of utility) and the marginal utility derived is also 30 utils. With the consumption of 2nd chocolate bar, the total utility rises to 50 but marginal utility falls to 20. We see that till the consumption of chocolate bars increases to 9, the marginal utility from the additional chocolate bars goes on diminishing (i.e., the total utility goes on increasing at a diminishing rate). The 10th chocolate bar adds no utility and therefore, the total utility remains the same at 98. However, when the chocolate bars consumed increases to 11, instead of giving positive marginal utility, the eleventh chocolate bar gives negative marginal utility or disutility as it may cause him discomfort.

From Table 6, we can conclude the following important relationships between total utility and marginal utility

1. Total utility rises as long as MU is positive, but at a diminishing rate because MU is diminishing.

2. Marginal utility diminishes throughout.

3. When marginal utility is zero, total utility is maximum. It is a saturation point.

4. When marginal utility is negative, total utility is diminishing.

5.   MU is the rate of change of TU or the slope of TU.

6.   MU can be positive ,zero or negative.

Graphically we can represent the relationship between total utility and marginal utility (fig. 11).
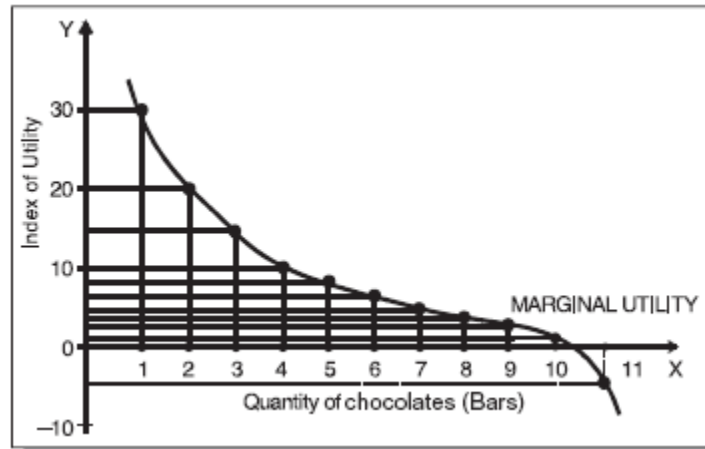

Fig. 11 : Marginal utility of chocolates consumed

As will be seen from the figure, the marginal utility curve goes on declining throughout. The diminishing marginal utility curve applies to almost all commodities. A few exceptions however, have been pointed out by some economists. According to them, this law does not apply to money, music and hobbies. While this may be true in initial stages, beyond a certain limit these will also be subjected to diminishing utility.

The Law of diminishing marginal utility helps us to understand how a consumer reaches equilibrium in case of a single good. It states that as the quantity of a good with the consumer increases, marginal utility of the good decreases. In other words, the marginal utility curve is downward sloping. Now, a consumer will go on buying a good till the marginal utility of the good becomes equal to the market price. In other words, the consumer will be in equilibrium (will be deriving maximum satisfaction) in respect of the quantity of the good when marginal utility of the good is equal to its price. Here his satisfaction will be maximum.

 What happens when there is a change in the price of the good? The equality between marginal utility and price is disturbed when the price of the good falls. The consumer will consume more of the good so as to restore the equality between the marginal utility and price. The marginal utility from the good will fall when he consumes more of the good. He will continue consuming more till the marginal utility becomes equal to the new lower price. On the other hand, when price of the good increases, he will buy less so as to equate the marginal utility to the higher price. We can say that the downward sloping demand curve is directly derived from the marginal utility curve.

In reality, a consumer spends his income on more than one good. In such cases, consumer equilibrium is explained with the law of Equi-Marginal utility. According to this, the consumer will be in equilibrium when he is spending his money on goods and services in such a way that the marginal utility of each good is proportional to its price and the last rupee spent on each commodity yields him equal marginal utility.

The law states that the consumer is said to be at equilibrium, when the following condition is met:

$$(MU_X/P_X) = (MU_Y/P_Y) \text{ or}$$

$$(MU_x / MU_Y) = (P_x /P_Y)$$

Limitations of the Law

The law of diminishing marginal utility is applicable only under certain assumptions.

(i) Homogenous units: The different units consumed should be identical in all respects. The habit, taste, temperament and income of the consumer also should remain unchanged.

(ii) Standard units of Consumption: The different units consumed should consist of standard units. If a thirsty man is given water by successive spoonfuls, the utility of the second spoonful of water may conceivably be greater than the utility of the first.

(iii) Continuous Consumption: There should be no time gap or interval between the consumption of one unit and another unit i.e. there should be continuous consumption.

(iv) The Law fails in the case of prestigious goods: The law may not apply to articles like gold, cash, diamonds etc. where a greater quantity may increase the utility rather than diminish it. It also fails to apply in the case of hobbies, alcohol, cigarettes, rare collections etc.

(v) Case of related goods: Utility is not in fact independent. The shape of the utility curve may be affected by the presence or absence of articles which are substitutes or complements. The utility obtained from tea may be seriously affected if no sugar is available and the utility of bottled soft drinks will be affected by the availability of fresh juice.

(vi) *Based on unrealistic assumptions*: The assumptions of cardinal measurability of utility, constancy of marginal utility of money, continuous consumption and consumer rationality are unrealistic.

2.1.2 Consumer's Surplus

The concept of consumer's surplus was propounded by Alfred Marshall. This concept occupies an important place not only in economic theory but also in economic policies of government and in decision-making of monopolists.

The demand for a commodity depends on the utility of that commodity to a consumer. If a consumer gets more utility from a commodity, he would be willing to pay a higher price and vice-versa. It has been seen that consumers generally are ready to pay more for certain goods than what they actually pay for them. This extra satisfaction which consumers get from their purchase of a good is called by Marshall as consumer's surplus.

Marshall defined the concept of consumer's surplus as the "excess of the price which a consumer would be willing to pay rather than go without a thing over that which he actually does pay", is called consumer's surplus."

Thus consumer's surplus = what a consumer is ready to pay - what he actually pays.

The concept of consumer's surplus is derived from the law of diminishing marginal utility. As we know from the law of diminishing marginal utility, the more of a thing we have, the lesser marginal utility it has. In other words, as we purchase more of a good, its marginal utility goes on diminishing. The consumer is in equilibrium when the marginal utility of a good is equal to its price i.e., he purchases that many number of units of a good at which marginal utility is equal to price (It is assumed that perfect competition prevails in the market). Since the price is the same for all units of the good he purchases, he gets extra utility for all units consumed by him except for the one at the margin. This extra utility or extra surplus for the consumer is called consumer's surplus.

Consider Table 7 in which we have illustrated the measurement of consumer's surplus in case of commodity X. The price of X is assumed to be ₹ 20.

Table 7: Measurement of Consumer's Surplus

No. of units	Marginal Utility (worth ₹)	Price (₹)	Consumer's Surplus
1	30	20	10
2	28	20	8
3	26	20	6
4	24	20	4
5	22	20	2
6	20	20	0
7	18	20	–

We see from the above table that when consumer's consumption increases from 1 to 2 units, his marginal utility falls from ₹ 30 to ₹ 28. His marginal utility goes on diminishing as he increases his consumption of good X. Since marginal utility for a unit of good indicates the price the consumer is willing to pay for that unit, and since price is assumed to be fixed at ₹ 20, the consumer enjoys a surplus on every unit of purchase till the 6th unit. Thus, when the consumer is purchasing 1 unit of X, the marginal utility is worth ₹ 30 and price fixed is ₹ 20, thus he is deriving a surplus of ₹ 10. Similarly, when he purchases 2 units of X, he enjoys a surplus of ₹ 8 [₹ 28 – ₹ 20]. This continues and he enjoys consumer's surplus equal to ₹ 6, 4, 2 respectively from 3rd, 4th and 5th unit. When he buys 6 units, he is in equilibrium because his marginal utility is equal to the market price or he is willing to pay a sum equal to the actual market price and therefore, he enjoys no surplus. Thus, given the price of ₹ 20 per unit, the total surplus which the consumer will get, is ₹ 10 + 8 + 6 + 4 + 2 + 0 = 30.

The concept of consumer's surplus can also be illustrated graphically. Consider figure 12. On the X-axis we measure the amount of the commodity and on the Y-axis the marginal utility and the price of the commodity. MU is the marginal utility curve which slopes downwards, indicating that as the consumer buys more units of the commodity, its marginal utility falls. Marginal utility shows the price which a person is willing to pay for the different units rather than go without them. If OP is the price that prevails in the market, then the consumer will be in equilibrium when he buys OQ units of the commodity, since at OQ units, marginal utility is equal to the given price OP. The last unit, i.e., Qth unit does not yield any consumer's surplus because here price paid is equal to the marginal utility of the Qth unit. But for units before Qth unit, marginal utility is greater than price and thus these units fetch consumer's surplus to the consumer.
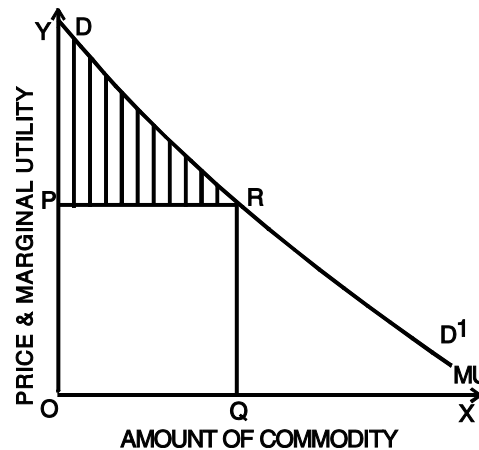
Fig. 12 : Marshall's Measure of Consumer's Surplus

In Figure 12, the total utility is equal to the area under the marginal utility curve up to point Q i.e. ODRQ. But, given the price equal to OP, the consumer actually pays OPRQ. The consumer derives extra utility equal to DPR which is nothing but consumer's surplus.

Limitations:

It is often argued that this concept is hypothetical and illusory. The surplus satisfaction cannot be measured precisely.

(1) Consumer's surplus cannot be measured precisely - because it is difficult to measure the marginal utilities of different units of a commodity consumed by a person.

(2) In the case of necessaries, the marginal utilities of the earlier units are infinitely large. In such case the consumer's surplus is always infinite.

(3) The consumer's surplus derived from a commodity is affected by the availability of substitutes.

(4) There is no simple rule for deriving the utility scale of articles which are used for their prestige value (e.g., diamonds).

(5) Consumer's surplus cannot be measured in terms of money because the marginal utility of money changes as purchases are made and the consumer's stock of money diminishes. (Marshall assumed that the marginal utility of money remains constant. But this assumption is unrealistic).

(6) The concept can be accepted only if it is assumed that utility can be measured in terms of money or otherwise. Many modern economists believe that this cannot be done.

The concept of consumer surplus has important practical applications. Few such applications are listed below:

◆ Consumer surplus is a measure of the welfare that people gain from consuming goods and services. It is very important to a business firm to reflect on the amount of consumer surplus enjoyed by different segments of their customers because consumers who perceive large surplus are more likely to repeat their purchases.

◆ Understanding the nature and extent of surplus can help business managers make better decisions about setting prices. If a business can identify groups of consumers with different elasticity of demand within their market and the market segments which are willing and able to pay higher prices for the same products, then firms can profitably use price discrimination.

◆ Large scale investment decisions involve cost benefit analysis which takes into account the extent of consumer surplus which the projects may fetch.

◆ Knowledge of consumer surplus is also important when a firm considers raising its product prices Customers who enjoyed only a small amount of surplus may no longer be willing to buy products at higher prices. Firms making such decisions should expect to make fewer sales if they increase prices.

◆ Consumer surplus usually acts as a guide to finance ministers when they decide on the products on which taxes have to be imposed and the extent to which a commodity tax has to be raised. It is always desirable to impose taxes or increase the rates of taxes on commodities yielding high consumer's surplus because the loss of welfare to citizens will be minimal.

2.2 INDIFFERENCE CURVE ANALYSIS

In the last section, we have discussed the marginal utility analysis of demand. A very popular alternative and a more realistic method of explaining consumer's demand is the ordinal utility approach used a different tool namely indifference curve to analyse consumer behaviour. This approach to consumer behaviour is based on consumer preferences. It believes that human satisfaction, being a psychological phenomenon, cannot be measured quantitatively in monetary terms as was attempted in Marshall's utility analysis. In this approach, it is felt that it is much easier and scientifically more sound to order preferences than to measure them in terms of money.

The consumer preference approach is, therefore, an ordinal concept based on ordering of preferences compared with Marshall's approach of cardinality.

2.2.0 Assumptions Underlying Indifference Curve Approach

(i)   The consumer is rational and possesses full information about all the relevant aspects of economic environment in which he lives.

(ii) The indifference curve analysis assumes that utility is only ordinally expressible. The consumer is capable of ranking all conceivable combinations of goods according to the satisfaction they yield. Thus, if he is given various combinations say A, B, C, D and E, he can rank them as first preference, second preference and so on. However, if a consumer happens to prefer A to B, he cannot tell quantitatively how much he prefers A to B.

(iii) Consumer's choices are assumed to be transitive. If the consumer prefers combination A to B, and B to C, then he must prefer combination A to C. In other words, he has a consistent consumption pattern.

(iv) If combination A has more commodities than combination B, then A must be preferred to B.

2.2.1 Indifference Curves

What are Indifference Curves? The ordinal analysis of demand (here we will discuss the one given by Hicks and Allen) is based on indifference curves. **An indifference curve is a curve which represents all those combinations of two goods which give same satisfaction to the consumer. Since all the combinations on an indifference curve give equal satisfaction to the consumer, the consumer is indifferent among them. In other words, since all the combinations provide the same level of satisfaction the consumer prefers them equally and does not mind which combination he gets.**

If a consumer equally prefers two product bundles, then the consumer is indifferent between the two bundles. An Indifference curve is also called iso- utility curve or equal utility curve.

To understand indifference curves, let us consider the example of a consumer who has one unit of food and 12 units of clothing. Now, we ask the consumer how many units of clothing he is prepared to give up to get an additional unit of food, so that his level of satisfaction does not change. Suppose the consumer says that he is ready to give up 6 units of clothing to get an additional unit of food. We will have then two combinations of food and clothing giving equal satisfaction to the consumer: Combination A which has 1 unit of food and 12 units of clothing, and combination B which has 2 units of food and 6 units of clothing. Similarly, by asking the consumer further how much of clothing he will be prepared to forgo for successive increments in his stock of food so that his level of satisfaction remains unaltered, we get various combinations as given below:

Table 8 : Indifference Schedule

Combination	Food	Clothing	MRS
A	1	12	
B	2	6	6
C	3	4	2
D	4	3	1

Now, if we plot the above schedule, we will get the following figure.

In Figure 13, an indifference curve IC is drawn by plotting the various combinations given in the indifference schedule. The quantity of food is measured on the X axis and the quantity of clothing on the Y axis. As in indifference schedule, the combinations lying on an indifference curve will give the consumer the same level of satisfaction.
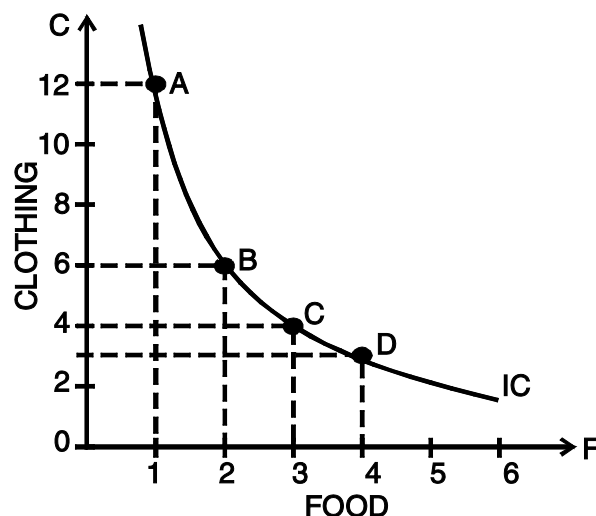
Fig. 13 : A Consumer's Indifference Curve

2.2.2 Indifference Map

An Indifference map represents a collection of many indifference curves where each curve represents a certain level of satisfaction. In short, a set of indifference curves is called an indifference map.

An indifference map depicts the complete picture of consumer's tastes and preferences. In Figure 14, an indifference map of a consumer is shown which consists of three indifference curves.

We have taken good X on X-axis and good Y on Y-axis. It should be noted that while the consumer is indifferent among the combinations lying on the same indifference curve, he certainly prefers the combinations on the higher indifference curve to the combinations lying on a lower indifference curve because a higher indifference curve signifies a higher level of satisfaction. Thus, while all combinations of IC_1 give him the same satisfaction, all combinations lying on IC_2 give him greater satisfaction than those lying on IC_1.
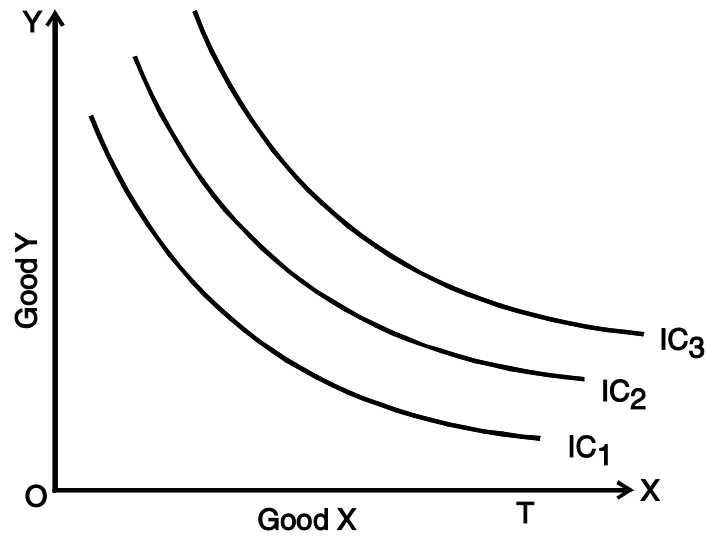
Fig. 14 : Indifference Map

2.2.3. Marginal Rate of Substitution

Marginal Rate of Substitution (MRS) is the rate at which a consumer is prepared to exchange goods X and Y. Consider Table-8. In the beginning the consumer is consuming 1 unit of food and 12 units of clothing. Subsequently, he gives up 6 units of clothing to get an extra unit of food, his level of satisfaction remaining the same. The MRS here is 6. Likewise when he moves from B to C and from C to D in his indifference schedule, the MRS are 2 and 1 respectively. Thus, we can define MRS of X for Y as the amount of Y whose loss can just be compensated by a unit gain of X in such a manner that the level of satisfaction remains the same.

$$\text{The marginal rate of substitution of X for Y (MRSxy) is equal to } \frac{MU_x}{MU_y}$$

We notice that MRS is falling i.e., as the consumer has more and more units of food, he is prepared to give up less and less units of clothing. There are two reasons for this.

1. The want for a particular good is satiable so that when a consumer has more of it, his intensity of want for it decreases. Thus, in our example, when the consumer has more units of food, his intensity of desire for additional units of food decreases.

2. Most goods are imperfect substitutes of one another. MRS would remain constant if they could substitute one another perfectly.

2.2.4 Properties of Indifference Curves

The following are the main characteristics or properties of indifference curves:

(i) *Indifference curves slope downward to the right:* This property implies that the two commodities can be substituted for each other and when the amount of one good in the combination is increased, the amount of the other good is reduced. This is essential if the level of satisfaction is to remain the same on an indifference curve.

(ii) *Indifference curves are always convex to the origin :* It has been observed that as more and more of one commodity (X) is substituted for another (Y), the consumer is willing to part with less and less of the commodity being substituted (i.e. Y). This is called diminishing marginal rate of substitution. Thus, in our example of food and clothing, as a consumer has more and more units of food, he is prepared

to forego less and less units of clothing. This happens mainly because the want for a particular good is satiable and as a person has more and more of a good, his intensity of want for that good goes on diminishing. In other words, the subjective value attached to the additional quantity of a commodity decreases fast in relation to the other commodity whose total quantity is decreasing. This diminishing marginal rate of substitution gives convex shape to the indifference curves. However, there are two extreme situations. When two goods are perfect substitutes of each other, the indifference curve is a straight line on which MRS is constant. And when two goods are perfect complementary goods (e.g. printer and cartridge), the indifference curve will consist of two straight lines with a right angle bent which is convex to the origin, or in other words, it will be L shaped.

(iii) *Indifference curves can never intersect each other:* No two indifference curves will intersect each other although it is not necessary that they are parallel to each other. In case of intersection the relationship becomes logically absurd because it would show that higher and lower levels are equal, which is not possible. This property will be clear from Figure 15.
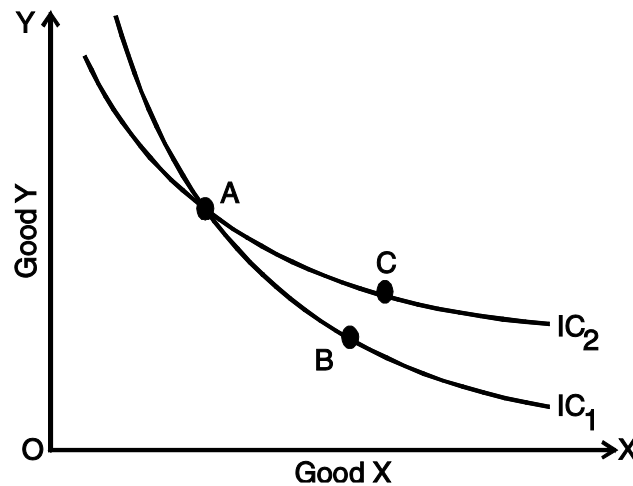

Fig. 15 : Intersecting Indifference Curves

In figure 15, IC_1 and IC_2 intersect at A. Since A and B lie on IC_1, they give same satisfaction to the consumer. Similarly since A and C lie on IC_2, they give same satisfaction to the consumer. This implies that combination B and C are equal in terms of satisfaction. But a glance will show that this is an absurd conclusion because certainly combination C is better than combination B because it contains more units of commodities X and Y. Thus we see that no two indifference curves can touch or cut each other.

(iv) *A higher indifference curve represents a higher level of satisfaction than the lower indifference curve:* This is because combinations lying on a higher indifference curve contain more of either one or both goods and more goods are preferred to less of them.

(v) *Indifference curve will not touch either axes:* Another characteristic feature of indifference curve is that it will not touch the X axis or Y axis. This is born out of our assumption that the consumer is considering different combination of two commodities. If an indifference curve touches the Y axis at a point P as shown in the figure 16, it means that the consumer is satisfied with OP units of y commodity and zero units of x commodity. This is contrary to our assumption that the consumer wants both commodities although in smaller or larger quantities. Therefore an indifference curve will not touch either the X axis or Y axis.
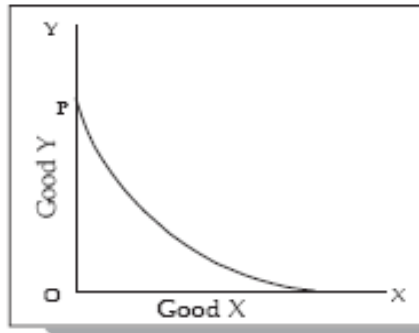
Fig. 16: Indifference Curve

2.2.5 The Budget Line

A higher indifference curve shows a higher level of satisfaction than a lower one. Therefore, a consumer, in his attempt to maximise satisfaction will try to reach the highest possible indifference curve. But in his pursuit of buying more and more goods and thus obtaining more and more satisfaction, he has to work under two constraints: first, he has to pay the prices for the goods and, second, he has a limited money income with which to purchase the goods.

A consumer's choices are limited by the budget available to him. As we know, his total expenditure for goods and services can fall short of the budget constraint but may not exceed it.

Algebraically, we can write the budget constraint for two goods X and Y as:

$$P_X Q_X + P_Y Q_Y \leq B$$

Where

P_X and P_Y are the prices of goods X and Y and Q_X and Q_Y are the quantities of goods X and Y chosen and B is the total money available to the consumer.

The budget constraint can be explained by the budget line or price line. In simple words, a budget line shows all those combinations of two goods which the consumer can buy spending his given money income on the two goods at their given prices. All those combinations which are within the reach of the consumer (assuming that he spends all his money income) will lie on the budget line.
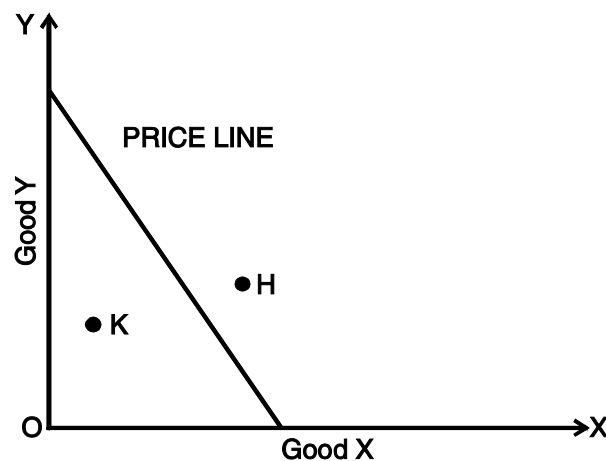

Fig. 17 : Price Line

It should be noted that any point outside the given price line, say H, will be beyond the reach of the consumer and any combination lying within the line, say K, shows under spending by the consumer.

This slope of budget line is equal to 'Price Ratio' of two goods. i.e. P_X / P_Y

2.2.6 Consumer's Equilibrium

Having explained indifference curves and budget line, we are in a position to explain how a consumer reaches equilibrium position. A consumer is in equilibrium when he is deriving maximum possible satisfaction from the goods and therefore is in no position to rearrange his purchases of goods. We assume that:

(i)   The consumer has a given indifference map which shows his scale of preferences for various combinations of two goods X and Y.

(ii)   He has a fixed money income which he has to spend wholly on goods X and Y.

(iii) Prices of goods X and Y are given and are fixed.

(iv) All goods are homogeneous and divisible, and

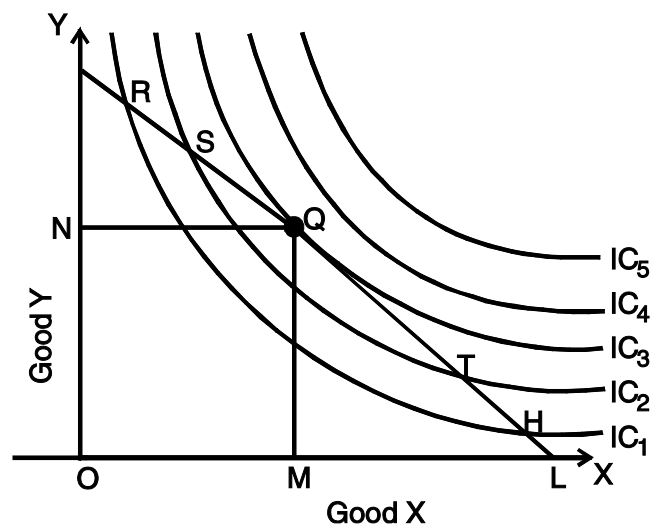(v)   The consumer acts 'rationally' and maximizes his satisfaction.

Fig. 18 : Consumer's Equilibrium

To show which combination of two goods X and Y the consumer will buy to be in equilibrium we bring his indifference map and budget line together.

We know by now, that the indifference map depicts the consumer's preference scale between various combinations of two goods and the budget line shows various combinations which he can afford to buy with his given money income and prices of the two goods. Consider Figure 18, in which IC_1, IC_2, IC_3, IC_4 and IC_5 are shown together with budget line PL for good X and good Y. Every combination on the budget line PL costs the same. Thus combinations R, S, Q, T and H cost the same to the consumer. The consumer's aim is to maximise his satisfaction and for this, he will try to reach the highest indifference curve.

Since there is a budget constraint, he will be forced to remain on the given budget line, that is he will have to choose combinations from among only those which lie on the given price line.

Which combination will our hypothetical consumer choose? Suppose he chooses R. We see that R lies on a lower indifference curve IC_1, when he can very well afford S, Q or T lying on higher indifference curves. Similar

is the case for other combinations on IC$_1$, like H. Again, suppose he chooses combination S (or T) lying on IC$_2$. But here again we see that the consumer can still reach a higher level of satisfaction remaining within his budget constraints i.e., he can afford to have combination Q lying on IC$_3$ because it lies on his budget line. Now, what if he chooses combination Q? We find that this is the best choice because this combination lies not only on his budget line but also puts him on the highest possible indifference curve i.e., IC$_3$. The consumer can very well wish to reach IC$_4$ or IC$_5$, but these indifference curves are beyond his reach given his money income. Thus, the consumer will be at equilibrium at point Q on IC$_3$. What do we notice at point Q? We notice that at this point, his budget line PL is tangent to the indifference curve IC$_3$. In this equilibrium position (at Q), the consumer will buy OM of X and ON of Y.

We have seen that the consumer attains equilibrium at the point where the budget line is tangent to the indifference curve and

$$MUx / Px = MUy /Py$$

At the tangency point Q, the slopes of the price line PL and the indifference curve IC$_3$ are equal. The slope

of the indifference curve shows the marginal rate of substitution of X for Y (MRSxy) which is equal to $\dfrac{MU_x}{MU_y}$

while the slope of the price line indicates the ratio between the prices of two goods i.e., $\dfrac{P_x}{P_y}$

At equilibrium point Q,

$$MRS_{xy} = \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

Thus, we can say that the consumer is in equilibrium position when the price line is tangent to the indifference curve or when the marginal rate of substitution of goods X and Y is equal to the ratio between the prices of the two goods.

The indifference curve analysis is superior to utility analysis: (i) it dispenses with the assumption of measurability of utility (ii) it studies more than one commodity at a time (iii) it does not assume constancy of marginal utility of money (iv) it segregates income effect from substitution effect.

📑 SUMMARY

- The existence of human wants is the basis for all economic activities in the society. All desires, tastes and motives of human beings are called wants in Economics.

- In Economics, wants are classified in to necessaries, comforts and luxuries.

- Utility refers to the want satisfying power of goods and services. It is not absolute but relative. It is a subjective concept and it depends upon the mental attitude of people.

- There are two important theories of utility, the cardinal utility analysis and ordinal utility analysis.

- The law of diminishing marginal utility states that as a consumer increases the consumption of a commodity, every successive unit of the commodity gives lesser and lesser satisfaction to the consumer.

- Consumer surplus is the difference between what a consumer is willing to pay for a commodity and what he actually pays for it.

- The indifference curve theory, which is an ordinal theory, shows the household's preference between alternative bundles of goods by means of indifference curves.

- Marginal rate of substitution is the rate at which the consumer is prepared to exchange goods X and Y.

- The important properties of an Indifference curve are: Indifference curve slopes downwards to the right, it is always convex to the origin, two ICs never intersect each other, it will never touch the axes and higher the indifference curve higher is the level of satisfaction.

- Budget line or price line shows all those combinations of two goods which the consumer can buy spending his given money income on the two goods at their given prices.

- A consumer is said to be in equilibrium when he is deriving maximum possible satisfaction from the goods and is in no position to rearrange his purchase of goods.

- The consumer attains equilibrium at the point where the budget line is tangent to the indifference curve and $MU_x / P_x = MU_y / P_y = MU_z / P_z$