Concept of Utility: Marshallian Approach

There are two basic approaches to the study of consumer demand theory. The first approach is the utility approach. It involves the use of measurable (cardinal) utility to study consumer behaviour. Marshall is the chief exponent of the utility approach to the theory of demand. It is known as cardinal utility analysis or marginal utility analysis or Marshallian utility analysis. The second approach is the indifference curve approach which uses the idea of comparable utility (ordinal utility). J.R.Hicks and R.G.D.Allen introduced the indifference curve approach.

Concept of Utility

In the ordinary language, 'utility' means 'usefulness'. In Economics, utility is defined as the power of a commodity or a service to satisfy a human want. Utility is a subjective or psychological concept. The same commodity or service gives different utilities to different people. For a vegetarian, mutton has no utility. Warm clothes have little utility for the people in hot countries. So utility depends on the consumer and his need for the commodity.

Total Utility

Total Utility refers to the sum of utilities of all units of a commodity consumed. For example, if a consumer consumes ten biscuits, then the total utility is the sum of satisfaction of consuming all the ten biscuits.

Marginal Utility

Marginal Utility is the addition made to the total utility by consuming one more unit of a commodity. For example, if a consumer consumes 10 biscuits, the marginal utility is the utility derived from the 10_{th} unit. It is nothing but the total utility of 10 biscuits minus the total utility of 9 biscuits.

Thus

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

Where

MU_n = Marginal Utility of 'n_{th}' commodity.

TU_n = Total Utility of n units.

TU_{n-1} = Total Utility of n-1 units.

Relationship between Marginal Utility and Total Utility

Law of Diminishing Marginal Utility

The law of diminishing marginal utility explains an ordinary experience of a consumer. If a consumer takes more and more units of a commodity, the additional utility he derives from an extra unit of the commodity goes on falling. Thus, according to this law, the marginal utility decreases with the increase in the consumption of a commodity. When marginal utility decreases, the total utility increases at a diminishing rate.

Gossen, Bentham, Jevons, Karl Menger contributed initially for the development of these ideas. But Alfred Marshall perfected these ideas and made it as a law. This Law is also known as Gossen's I Law.

Definition

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

Assumptions of the Law

1. The units of consumption must be in standard units e.g., a cup of tea, a bottle of cool drink etc.
2. All the units of the commodity must be identical in all aspects like taste, quality, colour and size.

3. The law holds good only when the process of consumption continues without any time gap.
4. The consumer's taste, habit or preference must remain the same during the process of consumption.
5. The income of the consumer remains constant.
6. The prices of the commodity consumed and its substitutes are constant.
7. The consumer is assumed to be a rational economic man. As a rational consumer, he wants to maximise the total utility.
8. Utility is measurable.

Explanation

Suppose Mr X is hungry and eats apple one by one. The first apple gives him great pleasure (higher utility) as he is hungry; when he takes the second apple, the extent of his hunger will reduce. Therefore he will derive less utility from the second apple. If he continues to take additional apples, the utility derived from the third apple will be less than that of the second one. In this way, the additional utility (marginal utility) from the extra units will go on decreasing. If the consumer continues to take more apples, marginal utility falls to zero and then becomes negative.

Tables 3.1

Total and Marginal utility schedule

Units of apple	Total utility	Marginal utility
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5
7	35	-10

Figure: 3.1

Total and Marginal utility curves

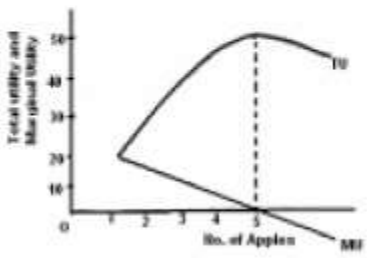


Table 3.1 gives the utility derived by a person from successive units of consumption of apples. From Table 3.1 and figure 3.1 it is very clear that the marginal utility (addition made to the total utility) goes on declining. The consumer derives 20 units of utility from the first apple he consumes. When he consumes the apples continuously, the marginal utility falls to 5 units for the fourth apple and becomes zero for the fifth apple. The marginal utilities are negative for the 6th and 7th apples. Thus when the consumer consumes a commodity continuously, the marginal utility declines, reaches zero and then becomes negative.

The total utility (sum of utilities of all the units consumed) goes on increasing and after a certain stage begins to decline. When the marginal utility declines and it is greater than zero, the total utility increases. For the first four units of apple, the total utility increases from 20 units to 50 units. When the marginal utility is zero (5th apple), the total utility is constant (50 units) and reaches the maximum. When the marginal utility becomes negative (6th and 7th units), the total utility declines from 50 units to 45 and then to 35 units.

Importance of Law of DMU

(i) The Law of Diminishing Marginal Utility (DMU) is the foundation for various other economic laws. For example, the Law of Demand is the result of the operation of the Law of Diminishing Marginal Utility. In other words, as more and more units of a commodity are consumed, each of them gives less

and less marginal utility.This is due to the operation of the Law of DMU. As utility falls, consumer is therefore willing to pay a lower price only.

(ii) The Law of DMU operates in the case of money also. A rich man already possesses a lot of money. If more and more money is newly added to his income, marginal utility of money begins to fall. Alfred Marshall assumed that the marginal utility of money remains constant

(iii) This law is a handy tool for the Finance Minister for increasing tax rate on the rich.

(iv) Producers are guided by the operation the Law of DMU, unconsciously. They constantly change the design, the package of their goods so that the goods become more attractive to the consumers and they appear as 'new goods'. Or else, the consumers would think that they are using the same commodity, over and over. In such a situation, the Law of DMU operates in the minds of the consumers. Demand for such commodities may fall.

Criticism

The Law of DMU is criticised on the following grounds.

(i) Deriving utility is a psychological experience, When we say a unit of X gives ten units of utility, this means that utility can be measured precisely. In reality, utility cannot be measured. For example, when a person sees a film and says it is very good, we cannot measure the utility he has derived from it. However, we can measure utility indirectly by the cinema fare he is willing to pay.

(ii) The Law is based on a single commodity consumption mode. That is, a consumer consumes only one good at a time. This is an unrealistic assumption. In real life, a consumer consumes more than one good at a time.

(iii) According to the Law, a consumer should consume successive units of the same good continuously. In real life it is not so.

(iv) The Law assumes constancy of the marginal utility of money. This means the marginal utility of money remains constant, even when money stock changes. In real life, the marginal utility derived from the consumption of a good cannot be measured precisely in monetary terms.

(v) As utility itself is capable of varying from person to person, marginal utility derived from the consumption of a good cannot be measured precisely.

Demand

Demand for a commodity refers to the desire backed by ability to pay and willingness to buy it. If a person below poverty line wants to buy a car, it is only a desire but not a demand as he cannot pay for the car. If a rich man wants to buy a car, it is demand as he will be able to pay for the car. Thus, desire backed by purchasing power is demand. The demand for any commodity mainly depends on the price of that commodity. The other determinants include price of related commodities, the income of consumers, tastes and preferences of consumers, and the wealth of consumers. Hence the demand function can be written as

$D_x = F (P_x, P_s, Y, T, W)$

where D_x represents demand for good x

P_x is price of good X

P_s is price of related goods

Y is income

T refers to tastes and preferences of the consumers
W refers to wealth of the consumer.

Law of Demand

The law of demand states that there is a negative or inverse relationship between the price and quantity demanded of a commodity over a period of time.

Definition: Alfred Marshall stated that " the greater the amount sold, the smaller must be the price at which it is offered, in order that it may find purchasers; or in other words, the amount demanded increases with a fall in price and diminishes with rise in price". According to

Ferguson, the law of demand is that the quantity demanded varies inversely with price.

Thus the law of demand states that people will buy more at lower prices and buy less at higher prices, other things remaining the same. By other things remaining the same, we mean the following assumptions.

Assumptions of the Law

1. No change in the consumer's income
2. No change in consumer's tastes and preferences
3. No changes in the prices of other goods
4. No new substitutes for the goods have been discovered
5. People do not feel that the present fall in price is a prelude to a further decline in price.

Demand Schedule

Demand schedule is a tabular statement showing how much of a commodity is demanded at different prices.

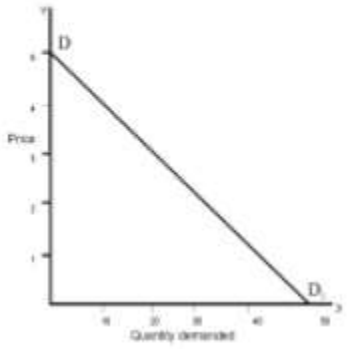
Demand Schedule and Demand curve

Table 4.1 is a hypothetical demand schedule of an individual consumer. It shows a list of prices and corresponding quantities demanded by an individual consumer. This is an individual demand schedule.

Table 4.1 Demand Schedule

Price (Rs)	Quantity Demanded (Units)
5	10
4	20
3	30
2	40
1	50

Figure 4.1 Demand Curve



Demand Curve

The demand schedule can be converted into a demand curve by measuring price on vertical axis and quantity on horizontal axis as shown in Figure 4.1.

In Figure, 4.1 DD_1 is the demand curve. The curve slopes downwards from left to right showing that, when price rises, less is demanded and vice versa. Thus the demand curve represents the inverse relationship between the price and quantity demanded, other things remaining constant.

Why does the demand curve slope downwards?

The demand curve slopes downwards mainly due to the law of diminishing marginal utility. The law of diminishing marginal utility states that an additional unit of a commodity gives a lesser satisfaction. Therefore, the consumer will buy more only at a lower price. The demand curve slopes downwards because the marginal utility curve also slopes downwards.

Factors determining demand

1. Tastes and preferences of the consumer

Demand for a commodity may change due to a change in tastes, preferences and fashion. For example, the demand for Nepali dress has come down and demand for trouser cloth and jeans has gone up due to change in fashion.

2. Income of the consumer

When the income of the consumer increases, more will be demanded. Therefore, we can say that as income increases, other things being equal, the demand for a commodity also increases. Comforts and luxuries belong to this category.

3. Price of substitutes

Some goods can be substituted for other goods. For example, tea and coffee are substitutes. If the price of coffee increases while the price of tea remains the same, there will be increase in the demand for tea and decrease in the demand for coffee. The demand for substitutes moves in the opposite direction.

4. Number of consumers

Size of population of a country is an important determinant of demand. For instance, larger the population, more will be the demand, for certain goods like food grains, and pulses etc. When the number of consumers increases, there will be greater demand for goods.

5. Expectation of future price change

If the consumer believes that the price of a commodity will rise in the future, he may buy a larger quantity in the present. Suppose he expects the price to fall, he may defer some of his purchases to a future date.

6. Distribution of income

Distribution of income affects consumption pattern and hence the demand for various goods. If the government attempts redistribution of income to make it equitable, the demand for luxuries will decline and the demand for necessities of life will increase.

7. Climate and weather conditions

Demand for a commodity may change due to a change in climatic conditions. For example, during summer, demand for cool drinks, cotton clothes and air conditioners will increase. In winter, demand for woolen clothes increases.

8. State of business

During boom, demand will expand and during depression demand will contract.

9. Consumer Innovativeness

When the price of wheat flour or price of electricity falls, the consumer identifies new uses for the product. It creates new demand for the product.

LAW OF SUPPLY

Supply means the goods offered for sale at a price during a specific period of time. It is the capacity and intention of the producers to produce goods and services for sale at a specific price.

The supply of a commodity at a given price may be defined as the amount of it which is actually offered for sale per unit of time at that price.

The law of supply establishes a direct relationship between price and supply. Firms will supply less at lower prices and more at higher prices. “Other things remaining the same, as the price of commodity rises, its supply expands and as the price falls, its supply contracts”.

Supply schedule and supply curve
A supply schedule is a statement of the various quantities of a given commodity offered for sale at various prices per unit of time. With the help of the supply schedule, a supply curve can be drawn.

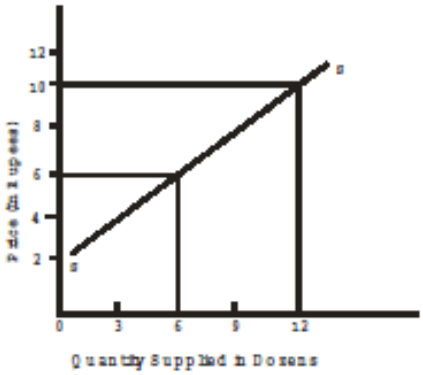
Individual supply schedule and curve
Individual supply schedule is a list of prices and quantities of a given commodity offered for sale by an individual seller or producer.

It is seen that when the price is Rs.4 three dozens are offered for sale. As the price increases, the quantity supplied also increases. With the help of the supply schedule, we can construct supply curve. On the basis of the schedule, supply curve SS is drawn. It has a positive slope. It moves upward to the right. The price of the product and quantity supplied are directly related to each other.

Table 4.7Supply Schedule of A

Price (in Rs.)	quantity supplied in dozens
4	3
6	6
8	9
10	12

Figure 4.13 Supply Curve



Factors determining supply
1. Production technology
State of production technology affects the supply function. If advanced technology is used in the country, large scale production is possible. Hence supply will increase. Old technology will not increase the supply.
2. Prices of factors
When the prices of factors rise, cost of production will increase. This will result in a decrease in supply.
3. Prices of other products
Any change in the prices of other products will influence the supply. An increase in the price of other products will influence the producer to shift the production in favour of that product. Supply of the original product will be reduced.
4. Number of producers or firms
If the number of producers producing the product increases, the supply of the product will increase in the market.
5. Future price expectations
If producers expect that there will be a rise in the prices of products in future, they will not supply their products at present.
6. Taxes and subsidies
If tax is imposed by the government on the inputs of a commodity, cost of production will go up. Supply will be reduced. When subsidy is given to the producer, it will encourage them to produce and supply more. Subsidy means a part of the cost of a commodity will be borne by the government.
7. Non-economic factors
Non-economic factors like, war, political climate and natural calamities create scarcity in supply.