

# VIDYA BHAWAN BALIKA VIDYA PITH

शक्तिउत्थानआश्रमलखीसरायबिहार

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Teacher name – Ajay Kumar Sharma

## Consumer's Equilibrium and Demand

### 2.2.2 The Law of Diminishing Marginal Utility

The law states that as a consumer consumes more and more units of a commodity, marginal utility derived from each successive unit goes on diminishing.

A stage comes when marginal utility becomes zero. At this point total utility becomes maximum. If the consumer consumes beyond this stage, marginal utility becomes negative and total utility falls. It means that consumer starts getting disutility *i.e.*, dissatisfaction instead of getting satisfaction. Since, economists believe that a consumer is a rational being, he wants to maximize his satisfaction. A consumer would not like to go beyond zero marginal utility.

This law can be explained with the help of following numerical example:

Units of apple consumed	<i>MU</i> from apple (Utils)	<i>TU</i> from apple (Utils)
1	10	10
2	8	18
3	6	24
4	4	28
5	2	30

The above table shows that as a consumer consumes first unit of apple, he gets 10 utils as marginal utility. When he consumes 2nd unit he gets 8 utils as marginal utility and so on. This proves that marginal utility declines continuously as the consumer consumes more and more units of the same commodity.

**Assumptions of the Law of DMU.** The law of *DMU* holds good when the following assumptions are satisfied:

- 1. Standard unit of measurement is used.** If the unit of measurement is very large or very small then the law will not hold. Examples of inappropriate units are: rice measured in grammes, water in drops, diamonds in kilograms.
- 2. Homogeneous commodity.** All units of the commodity consumed are homogeneous and perfect substitutes.
- 3. Continuous consumption.** The law of *DMU* holds only when consumption of successive units of a commodity is without a time gap.
- 4. Mental and social condition of the consumer must be normal.** The law will hold when consumer's mental condition is normal. His income and tastes are unchanged and his behaviour is rational.

### 2.2.3 Assumptions of the Utility Approach

The assumptions of the cardinal utility approach are:

1. Utility can be **measured**, *i.e.* can be expressed in exact units. Utility is measurable in **monetary** terms.
2. Consumer's income is given.
3. Prices of commodities are given and remain constant.
4. Constant Marginal Utility of Money. It means that importance of money remains unchanged. Marginal utility of money is addition made to utility of the consumer as he spends one more unit of the money income. This is assumed to be constant.

### 2.2.4 Consumer's Equilibrium: Meaning

**A consumer is said to be in equilibrium when he maximizes his satisfaction, given income and prices of the commodities.** In economics, consumer is the one who takes decisions about what to buy for satisfaction of wants. Consumer takes decision on the basis of his preferences, his income and the prices of the commodities which are prevailing in the market.

#### Case I. One Commodity Case

Let us suppose that a consumer has a given income with which he consumes only one commodity *X*. Since both his money income and commodity *X* have utility for him, he can either spend his money income on commodity *X* or retain it with himself. If the consumer holds his income, the marginal utility of commodity ( $MU_x$ ) becomes greater



than marginal utility of money income ( $MU_M$ ). In that case, total utility can be increased by exchanging money for good  $X$ .

Thus, a consumer is in equilibrium when he satisfies the following condition:

*i.e.*,  **$MU$  of the good = Price of the product**

or  **$MU_X = P_X$**

Consumer's equilibrium in case of single commodity can be explained with the help of following schedule. Given that utility is a cardinal concept, the  $MU$  from different units of a good  $X$  can be measured in terms of money. Suppose price of good  $X$  is ₹ 5 per unit.

**Table 2.2 Consumer's equilibrium**

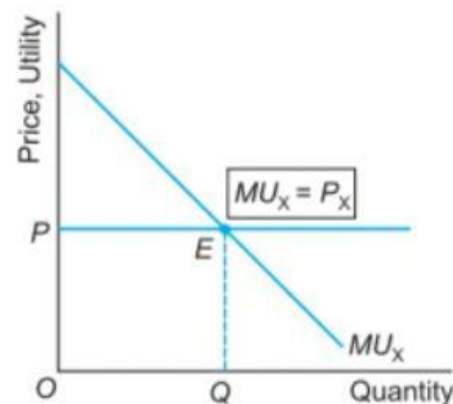
Units of good (x)	$MU_X$ (₹)	Price (₹)
1	8	5
2	6	5
3	5	5
4	4	5
5	3	5

Table 2.2 shows that if  $P_X = ₹ 5$ , then the consumer will buy three units of good  $X$ . If the consumer buys less than 3 units say 2 units then the  $MU$  he derives from 2 units is worth ₹ 6 and the price he pays is ₹ 5. Since his  $MU_X > P_X$ , he buys more. In other words, since price is less, he buys more which is the logical basis of the law of demand.

A consumer will not buy more than 3 units of  $X$ . This is because if he buys 4 units of  $X$  then the price he pays (₹ 5) will be more than the  $MU$  he derives which is worth ₹ 4. Hence, in order to maximise utility a consumer will buy that quantity of the good where the  $MU$  of the good is equal to the price that he has to pay.

Therefore, a consumer is in equilibrium when he consumes three units of good  $X$  because at three units of good  $X$ ,  $MU$  of good = Price of the product.

The consumer's equilibrium condition is geometrically illustrated in Fig. 2.2 at point  $E$ , where  $MU_X = P_X$ . The equilibrium price is given at  $OP$ . The consumer will buy  $OQ$  quantity of  $X$  in order to maximise his utility. **Total gain falls if more is purchased after equilibrium.**



**Fig. 2.2 Consumer's Equilibrium—Case of One Good**