Law of Diminishing Marginal Utility – statement, assumptions of law, explanation, limitations of the law, Importance.

LAW OF DIMINISHING MARGINAL UTILITY (LDMU)

The law of diminishing marginal utility is a generalization drawn from the characteristics of human wants, H.H Gossen was the first to formulate this law in 1854.

Marshall has stated the law of diminishing marginal utility as follows "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". In other words, the law simply states that other things being equal, the marginal utility derived from successive units of a given commodity goes on decreasing. Hence the more we have of a thing; the less we want of it, because every successive unit gives less and less satisfaction.

Marginal Utility: The addition to the total utility by the consumption of the last unit considered just worthwhile.

Total utility : The sum total of utilities obtained by the consumer from consumption of different units of a commodity

ASSUMPTIONS :

1. There should be a single commodity with homogeneous units wanted by an individual consumer
2. There should not be any change in the taste, habit, custom, fashion and income of the consumer
3. There should be continuity in the consumption of the commodity
4. Units of the commodity should be of a suitable size
5. Pries of the different units of the commodity and of the substitutes of the commodity should remain the same
6. The commodity should be divisible
7. The consumer should be an economic man who acts rationally
8. Goods should be normal goods.

Schedule showing marginal utility and total utility

Units of apples consumed	Total utility in utils	Marginal utility in utils
1	7	7
2	11	4 (11 - 7)
3	13	2 (13 - 11)
4	14	1 (14 - 13)
5	14	0 (14 - 14)
6	13	-1 (13 - 14)

The above table shows that when a person consumes no apples, he gets no satisfaction. His total utility is zero. In case he consumes one apple, he gains seven units of satisfaction. His total utility is 7 and his marginal utility is also 7. In case he consumes second apple, he gains extra 4 utils (MU). Thus given him a total utility of 11 utils from two apples. His marginal utility has gone down from 7 utils to 4 utils because he has a less craving for the second apple. Same is the case with the consumption of third apple. The marginal utility has now fallen to 2 utils while the total utility of three apples has increased to 13 utils (7 + 4 + 2). In case the consumer takes fifth apple, his marginal utility falls to zero utils and if he consumes sixth apple also, the total utility starts declining and marginal utility becomes negative. Total utility and marginal utility from the successive utits of the commodity are plotted in the figure below:

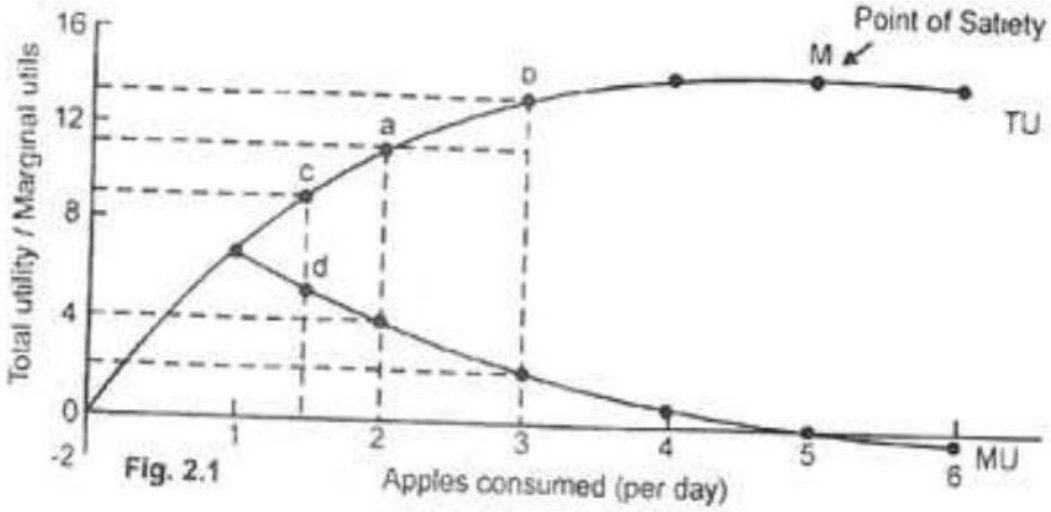


Fig. 2.1

i. The total utility curves starts at the origin as zero consumption of apples yield zero utility.

ii. The TU curve reaches at its maximum or a peak at M when MU is zero.

iii. The MU curve falls throughout the graph. A special point occurs when the consumer consumes fifth apple. He gains no marginal utility from it. After this point, marginal utility becomes negative.

$$\mathbf{MUa = TU_a - TU_{(a-1)}}$$

Importance of the Law:

1. The law of diminishing marginal utility is the basic law of consumption. The law of demand, the law of equimariginal utility and the concept of consumers surplus are based on it.
2. The law helps in bringing variety in consumption and production.
3. The law helps to explain the phenomenon in the value theory that the price of a commodity falls when its supply increases. It is because with the increase in the stock of a commodity its marginal utility diminishes.
4. The famous diamond –water paradox of Smith can be explained with the help of this law. Diamonds are scarce and hence possess high marginal utility and hence higher price. On the otherhand, water is relatively abundant because of which it possess low marginal utility and low price even though its total utility is high
5. The principle of progressive taxation is based on this law. As a person 's income increases, the rate of tax rises because the marginal utility of money to him falls with the rise in his income. The law underlines the socialist plea for an equitable distribution of wealth.

Exceptions to LDMU are as follows:

1. Hobbies: In case of certain hobbies like stamp collection or old coins, every additional unit gives more pleasure. MU goes on increasing with the acquisition of every unit.
2. Drunkards: It is believed that every dose of liquor Increases the utility of a drunkard.
3. Miser: In the case of miser, greed increases with the acquisition of every additional unit of money.
4. Reading: The habit of reading of more books gives more knowledge and in turn greater satisfactions.

Law of Equi-marginal Utility – Meaning, Assumptions, Explanation of the Law, Practical Importance, Limitations.

LAW OF EQUI MARGINAL UTILITY

The principle of equal marginal utility occupies an important place in the cardinal utility analysis. According to this, a consumer is in equilibrium when he distributes his given money income among various goods in such a way that marginal utility derived from the last rupee spent on each good is the same. The Marshallian approach to consumer's equilibrium is based on the following assumptions.

Assumptions

The main assumptions of the law of equi-marginal utility are as under:

(1) Independent utilities. The marginal utilities of different commodities are independent of each other and diminishes with more and more purchases.

(2) Constant marginal utility of money. The marginal utility of money remains constant to the consumer as he spends more and more of it on the purchases of goods.

(3) Utility is cardinally measurable.

(4) Every consumer is rational in the purchase of goods.

(5) Limited money income. A consumer has limited amount of money income to spend.

Definition and explanation of the law:

The law of equi-marginal utility is simply an extension of the law of diminishing marginal utility to two or more than two commodities. The law of equi-marginal, is known, by various names. It is named as the Law of Substitution, the Law of Maximum Satisfaction, the Law of Indifference, the Proportionate Rule and the Gossen's Second Law. In cardinal utility analysis, this law is stated by Lipsey in the following words. "The household maximizing the utility will so allocate the expenditure between commodities that the utilility of the last penny spent on each item is equal". As we know, every consumer has unlimited wants. However, the income at his disposal at any time is limited. The consumer is therefore, faced with a choice among many commodities that he can and would like to pay. He therefore, consciously or unconsciously compares the satisfaction which he obtains from the purchase of the commodity and the price which he pays for it. If he thinks the utility of the commodity is greater than the utility of money, he buys that commodity. As he buys more and more of that commodity, the utility of the successive units begins to diminish. He stops further purchase of the commodity at a point where the marginal utility of the commodity and its price are just equal. If he

pushes the purchase further from his point of equilibrium, then the marginal utility of the commodity will be less than that of price and the household will be a loser. A consumer will be in equilibrium with a single commodity symbolically when: $MU^x = P^x$

Consumer's equilibrium with two or more than two goods purchased. A prudent consumer in order to get the maximum satisfaction from his limited means compares not only the utility of a particular commodity and the price but also the utility of the other commodities which he can buy with his scarce resources. If he finds that a particular expenditure in one use is yielding less utility than that of other, he will try to transfer a unit of expenditure from the commodity yielding less marginal utility to commodity yielding higher marginal utility. The consumer will reach his equilibrium position when it will not be possible for him to increase the total utility by transferring expenditure from less advantageous uses to more advantageous uses.

The consumer will maximize total utility from his given income when the utility from the last rupee spent on each good is the same. Algebrically, this is

when; $\frac{MU_a}{P_a} = \frac{MU_b}{P_b} = \frac{MU_c}{P_c} = \dots \frac{MU_n}{P_n}$ Here (a), (b), (c), … n are large number goods consumed.

It may here be noted that when a consumer is in equilibrium there is no way to increase utility by reallocating his given money income.

The doctrine of equi-marginal utility can be explained by taking an example. Suppose a person has Rs.5 with him which he wishes to spend on two commodities, Pencil and Erasers. The marginal utility derived from both these commodities is as under:

Units of Money	MU of Pencils	MU of Erasers
1	10	12
2	8	10
3	6	8
4	4	6
5	2	3
Rs.5	Total Utility = 30	Total Utility = 39

A rational consumer would like to get maximum satisfaction from Rs. 5.00. He can spend this money in three ways.

(1) Rs. 5.00 may be spent on Pencils only

(2) Rs. 5.00 may be utilized for the purchase of Erasers only.

(3) Some rupees may be spent on the purchase of Pencils and some on the purchase of Erasers.

If the prudent consumer spends Rs. 5.00 on the purchase of Pencils, he gets 30 utility. If he spends Rs. 5.00 on the purchase of Erasers, the total utility derived is 39 which is higher than Pencils. In order to make the best of the limited resources, he adjusts his expenditure.

(1) By spending Rs. 4.00 on Pencils and Rs. 1.00 on Erasers, he gets 40 utility (10+8+6+4+12=40).

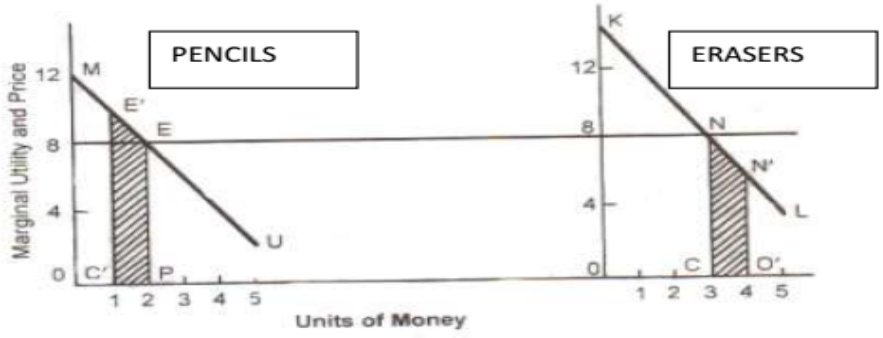
(2) By spending Rs. 3.00 on Pencils and Rs. 2.00 on Erasers, he derives 46 Utility (10+8+6+12+10=46).

(3) By spending Rs. 2.00 on Pencils and RPs. 3.00 on Erasers, he gets 48 utility (10+8+12+10+8=48).

(4) By spending Rs. 1.00 on Pencils and Rs. 4.00 on Erasers, he gets 46 utility (10+12+10+8+6=46).

The sensible consumer will spend Rs. 2.00 on Pencils and Rs. 3.00 on Erasers and will get the maximum satisfaction. When he spends Rs. 2.00 on Pencils and Rs. 3.00 on Erasers, the marginal utility derived from both these commodities is equal to 8. When the marginal utilities of the two commodities are equalized, the total utility is then maximum i.e., 48 as is clear from the schedule given above.

The law of equi-marginal utility can be explained with the help the diagrams.



In the diagram, MU is the marginal utility curve for Pencils and KL of Erasers. When a consumer spends OP amount (Rs.2) on Pencils and OC (Rs.3) on Erasers, the marginal utility derived from the consumption of both the items (Pencils and Erasers) is equal to 8

units (EP=NC). The consumer gets the maximum utility when he spends Rs. 2.00 on Pencils and Rs. 3.00 on Erasers and by no other alteration in the expenditure.

We now assume that the consumer spends Rs. 1.00 on Pencils (OC' amount) and Rs. 4.00 (OQ') on erasers. If CQ' more amount is spent on erasers, the added utility is equal to the area CQ' N'N. On the other hand, the expenditure on Pencils falls from OP amount (Rs.2) to OC' amount (Rs. 1.00). There is a loss of utility equal to the area C'PEE'. The loss in utility (Pencils) is greater than that of its gain in erasers. The consumer is not deriving maximum satisfaction except the combination of expenditure of Rs. 2.00 on Pencils and Rs. 3.00 on erasers.

This law is known as the Law of Maximum Satisfaction because a consumer tries to get the maximum satisfaction from his limited resources by so planning his expenditure that the marginal utility of a rupee spent in one use is the same as the marginal utility of a rupee spent on another use. It is known as the Law of Substitution because consumer continues substituting one good for another till he gets the maximum satisfaction. It is called the Law of Indifference because the maximum satisfaction has been achieved by equating the marginal utility in all the uses. The consumer then becomes indifferent to read just his expenditure unless some change fakes place in his income or the prices of the commodities, etc.

Limitations of the Law

(i) Effect of fashions and customs. The law of equi-marginal utility may become inoperative if people forced by fashions and customs spend money on the purchase of those commodities which they clearly know yield less utility but they cannot transfer the unit of money from the less advantageous uses to the more advantageous uses because they are forced by the customs of the country.

(ii) Ignorance or Carelessness. Sometimes people due to their ignorance of price or carelessness to weigh the utility of the purchased commodity do not obtain the maximum advantage by equating the marginal utility in all the uses.

(iii) Indivisible Units. If the unit of expenditure is not divisible, then again the law may become inoperative.

(iv) Freedom to Choose. If there is no perfect freedom between various alternatives, the operation of law may be impeded;