

UTILITY AND ITS VARIOUS ASPECTS ⁵

Bentham (1748-1831); an English philosopher introduced the concept of utility in social sciences. Jevons (1835-1882), a neo-classical economist incorporated this concept in economics literature to explain the consumer's behavior.

Now we define and discuss the various aspects of utility.

Utility:

Utility is the power of a good or service to satisfy human wants. It is the amount of satisfaction, which a consumer obtains from consuming a good or service during some specific period of time.

The various aspects of utility can be explained with the help of following table:

Units of commodity A (Q_a)	TU_a	MU_a
1	10	10
2	18	8
3	22	4
4	22	0
5	16	-6

Total utility:

The utility obtained from all the units of a good or service over a given period of time, is called total utility. We find total utility by adding marginal utilities of each successive unit of particular good or service during the given time period i.e. $TU_a = \sum MU_a$. In the given table, total utility by the consumption of 2 units is $10+8 = 18$; TU by the consumption of 3 units is $10+8+4=22$ and so on.

Marginal utility:

Net addition to the total utility due to the consumption of an extra unit of a good or service is called marginal utility, i.e. $MU_a = \frac{\Delta TU_a}{\Delta Q_a}$ or $\frac{dTU_a}{dQ_a}$. The given table shows that

when the consumer consumes 2nd unit, marginal utility i.e. net addition to the total utility is $18-10=8$ and when he consumes 3rd unit, MU_a will be $22-18=4$ and so on....

Initial utility:

The utility of very first unit of a good or service is called initial utility. At initial utility, $MU=TU$. In the given table, 10 is initial utility which is marginal as well as total utility.

Positive utility:

With the consecutive consumption of any good or service, marginal utility decreases and finally it reaches to zero. When marginal utility is equal to zero, total utility is maximum. Now if MU has not reached zero and TU is increasing, utility is positive until and unless $MU = 0$ and total utility is maximum. In a nutshell, if $MU > 0$, it reflects that utility is positive. In the given table, upto 3rd unit of commodity, utility is positive.

Zero utility: (Point of saturation)

If $MU = 0$, it is said that utility is zero. It declares saturation point. In the given schedule, saturation point appears on 4th unit at which $MU = 0$.

Negative utility:

If $MU < 0$, it is said that a consumer has negative utility. The given table shows that after the consumption of 4th unit, marginal utility is negative and which is enough to declare that utility is negative.

It is worth - mentioning here that:

- i. Utility is a psychological phenomenon; utility of an apple is higher for a Patient who has been advised by his doctor to eat apple as compared with an ordinary consumer of an apple.
- ii. Utility is subjective in nature; it differs from person to person.
- iii. Utility is value neutral; misuse of cell phone.
- iv. Utility and usefulness are entirely different concepts and should not be confused; smoking does provide satisfaction or utility to a smoker but it is injurious to health.

RELATIONSHIP BETWEEN MARGINAL UTILITY AND TOTAL UTILITY

The empirical evidence shows that MU and TU of any good or services are closely related. We can explain this close relationship between MU and TU in the light of given table.

- i. MU is the rate of change in TU due to change in quantity consumed, i.e.

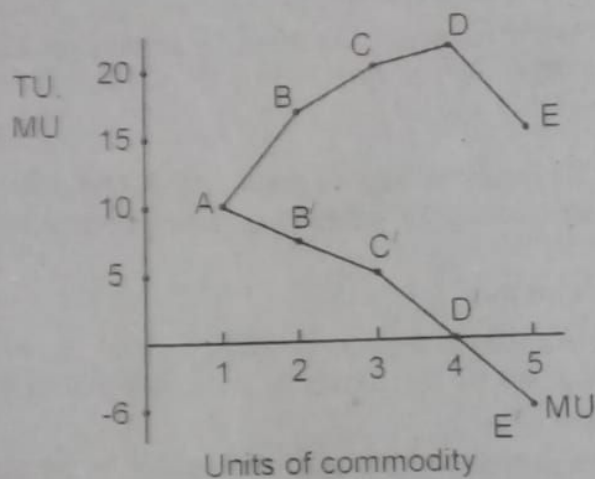
$$MU_a = \frac{dTU_a}{dQ_a}$$

For example, in the given table when the consumer consumes 2nd unit, $MU = \frac{8}{1} = 8$

- ii. As long as MU is positive, TU increases. In the given table upto 3rd unit, MU is positive and total utility increases.
- iii. When MU is zero, TU is maximum (saturation point). This stage appears in the table at the consumption of 4th unit.
- iv. When MU is negative, TU is diminishes. At 5th unit, MU is negative due to which TU decreases.
- v. $MU \text{ of } n \text{ unit} = TU \text{ of } n \text{ units} - TU \text{ of } n - 1 \text{ units, i.e. } MU_n = TU_n - TU_{n-1}$

In the given table, let $n = 3$ then $TU \text{ of } 3 \text{ units} = 22, TU \text{ of } 2 \text{ units} = 18, MU \text{ of } 3 \text{ units} = TU_3 - TU_2 = 22 - 18 = 6$

The relationship between TU and MU can further be explained with the help of the following diagram:



The diagram shows that $MU = \frac{dTU}{dQ}$. For example;

From point B to C = $\text{Change in } TU / \text{Change in quantity consumed} = \frac{4}{1} = 4$

From point D to E = $\frac{dTU}{dQ} = \frac{-6}{1} = -6$

Moreover the diagram shows that with the consecutive consumption of a good or service, MU decreases while TU increases. This increase in TU continues until the saturation point when $MU = 0$. At 4th unit, $MU = 0$ and TU is maximum. Hence 4th unit shows the saturation point. The diagram also shows that when MU is negative, the slope of TU curve is also negative which means that negative MU leads to decrease in TU.

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After clear comprehension of the concept of utility and its various aspects, now we discuss the basic pillars of the cardinal utility approach.

LAW OF DIMINISHING MARGINAL UTILITY

Introduction:

Major concern in the theory of consumer behaviour, is to find consumer's equilibrium i.e. consumer's maximum satisfaction within given conditions. Consumer's equilibrium can be discussed under the following three approaches:

- i. The cardinal utility approach.
- ii. The ordinal utility approach.
- iii. The revealed preference approach.

At present, we are concerned with law of diminishing marginal utility which provides the sound foundation to discuss consumer's equilibrium under the cardinal utility approach. The pivot of the law under discussion is the concept of marginal utility.

By **marginal utility** we mean net addition to the total utility due to consumption of an additional unit of a particular good or service.

Mr. Gossen, a German economist, was the first to explain this law in 1854. Later Alfred Marshall (1842-1924) refined this law and is considered the major exponent of this law.

STATEMENT

Dr. Alfred Marshall in his book "Principles of Economics" states that:

"The additional benefits which a person derives from an increase of his stock of a thing diminish with every increase in the stock he already has."

Paul A. Samuelson says that:

"As the consumed amount of a good increases, the marginal utility of that good ends to decrease."

Comprehensively speaking:

Law of diminishing marginal utility states that:

"Other thing being constant, marginal utility of a particular good or service continues to decrease with its consecutive consumption; it reaches zero and if consecutive consumption of successive units is continued, it becomes negative⁶."

ASSUMPTIONS

Law of diminishing marginal utility is valid only with the following assumptions.

1. Rationality:

The basic assumption is that the consumer aims at maximization of satisfaction within given conditions.

2. Constant Marginal Utility of Money:

Purchasing power per unit of money for successive units of money remains the same.

3. Additive Utility:

Additive utility implies independent utilities of various goods in a given bundle which can be added to find total utility. If there are n commodities in a bundle with the quantities x_1, x_2, \dots, x_n , then utility function is

$$U = f(x_1, x_2, \dots, x_n)$$

Here total utility is additive, i.e.

$$U = U_1(x_1) + U_2(x_2) + \dots + U_n(x_n)$$

4. Homogeneous Units:

All the successive units to be consumed must be homogeneous in all respects i.e. size, color, packing etc.

5. Suitable Quantity:

Suitable units of a commodity should be consumed otherwise this law will not be valid.

6. No Change in Consumer's Attitude:

Consumer's attitude towards a commodity should remain the same.

7. No Change in Taste:

This law will not be valid if there is a change in taste or fashion.

8. No Change in Quality:

Quality of successive units should be the same. For example, if quality of successive units improves, this law will not be valid.

9. No Change in Price:

In case of decrease in price, utility may increase for the successive unit. Thus price should remain the same for the validity of this law. Moreover, the price of substitutes should also remain the same.

10. No Change in Income:

Change in consumer's income brings about a change in purchasing power which may change the whole scenario. Hence consumer's income should remain the same.

11. Divisibility:

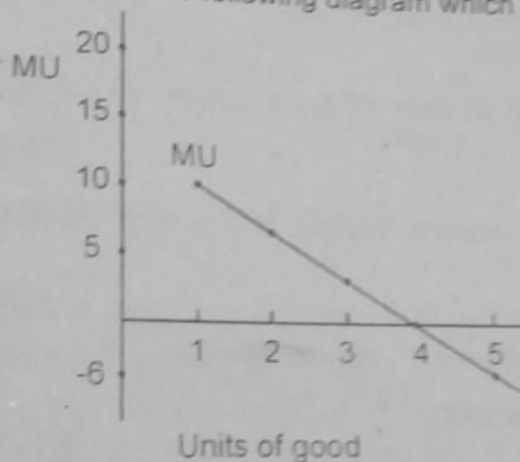
Commodity consumed should be divisible into smaller units.

We can illustrate this law with the help of the following table and diagram:

FRAMEWORK'

Units of good	TU	MU
1	10	10
2	18	8
3	22	4
4	22	0
5	16	-6

The table shows that with the consecutive consumption of successive units of the given particular commodity, marginal utility decreases. If this practice carries on, a consumer reaches the saturation point at the consumption of 4th unit. Here total utility is maximum while marginal utility is zero. The consumption of 5th unit shows that if consumption is continued even after the saturation point, marginal utility becomes negative and total utility decreases. Now we construct the following diagram which also explains this law.



The diagram shows that MU curve has negative slope which reveals that MU decreases as the consecutive consumption of successive units of the given commodity increases. It reaches zero at 4th unit and it becomes negative if consumption is continued even after the saturation point at the consumption of 4th unit.

Thus both the table and the diagram confirm law of diminishing marginal utility.

EXCEPTIONS / LIMITATIONS

We observe the following exceptions or limitations of law of diminishing marginal utility.

1. Money and Wealth:

The temptation of money and wealth has no end. This law is not applicable on money and wealth.

2. Knowledge:

If a person acquires more and more knowledge, his thrust for knowledge increases and the utility of further study also increases.

3. Art:

It has never been perfections in art and a true artist always remains ambitious towards the perfection.

4. Rare Collections:

This law does not hold in case of collection of antiques like diamonds, old coin, rare paintings etc.

5. Power:

This law does not hold for power and its externalities.

6. Taste for Display:

This law does not apply to things or activities which satisfy a consumer's taste for display of wealth or prestigious status in the society.⁷

7. Public Goods:

This law is not applicable in case of public goods as the utility of public goods like telephone facility goes on increasing.

8. Hobbies:

This law does not hold for personal hobbies like painting, gardening, ticket collecting etc.

9. Narcotics:

If a person is addicted to smoking; drinking or drugs, his utility for successive units increases. Hence this law does not apply to narcotics.

10. Fashion and Customs:

This law becomes inoperative in case of fashion and customs.

CRITICISM:

Same demerits as discussed under law of equi-marginal utility.

IMPORTANCE

Law of diminishing marginal utility is considered very important in Economics literature on the basis of the following facts:

1. Basis of the Law of Demand:

Law of diminishing marginal utility (LDMU) provides the basis of the law of demand. When we have higher stock of a commodity, its MU decreases and when MU decreases, price of the good decreases which results in higher demand.

2. Consumer's Equilibrium:

It provides sound foundation to meet ultimate objective of a consumer, i.e. maximum satisfaction within given conditions.

3. Consumer's Surplus:

Consumer's surplus is the difference between the price which he is willing to pay and what he actually pays. It is basically the difference between the total utility and the actually money spent. Thus the concept of consumer's surplus is based on LDMU.

4. Taxation Policy:

LDMU reveals that MU of money for rich is less than the poor. The finance minister seeks help from this law and imposes progressive tax, in which higher rate of tax is imposed on the rich and lower rate of tax is imposed on the poor.

5. Redistribution of Wealth:

Marginal utility of money for the rich is lower than for the poor. If some wealth is taken away from the rich minority and distributed among the poor majority, total utility of the society increases. Hence LDMU provides an inducement for redistribution of wealth.

6. Price Determination:

If supply of a good increases its MU decreases and as a result, price also decreases. Hence price is determined in the light of this law.⁹

7. Value in Exchange:

Value in exchange is determined on the basis of the concept of marginal utility. For example, air has value in use but no marginal utility and as a result no price. On the other hands the goods which have MU, these goods have value in exchange.

8. Household Expenditure:

A rational household settles his expenditures in the light of LDMU. He does not spend even a single penny on the good from which MU is less than price of that good.

9. Variety in Production:

Marginal utility of one product decreases sharply while the marginal utility of variety of products decreases slowly. Hence this law induces the producers to supply a variety of commodities in the market.

CONCLUSION

The above discussion reveals that LDMU is one of the basic laws of Economics literature. It provides foundation stone for consumer's equilibrium under classical approach. Moreover, many other very important economic theories developed on the basis of this law.

LAW OF EQUI- MARGINAL UTILITY

Introduction:

Major focus in the theory of consumer's behaviour is to find consumer's equilibrium, maximum satisfaction within given conditions. Consumer's equilibrium can be discussed under the following approaches.