

## Chapter 4: Consumer's Behaviour

### Utility

Utility Means satisfying power of goods and services to the consumer. There are two types of utility approaches such as:

1. Cardinal Utility approach: Under this approach, utility can be measured in numerical value i.e. 1,2,3,4,5,6,7 etc., which is belong to Alfred marshal.
2. Ordinal Utility approach: This approach based on psychological process of the consumer that's why, utility cannot be measured in numerical value but can be expressed in order i.e. 1st, 2nd, 3rd, 4th, 5th etc. which is belong Hicks and Allen.

### Total Utility (TU)

Total Utility(TU): Total Utility means total satisfaction which is obtained from the consumption of various types of goods and services in specific period of time. Total utility means summation of marginal utility. In other words, total utility is obtained when average utility multiply with consumption unit. Mathematically, it can be expressed as:

$$T.U = \sum M.U \text{ OR } T.U = A.U \times Q$$

Where,  $\sum = \text{Sum}$

M.U.=Marginal Utility

A.U.=Average Utility

Q=Consumption Units

### Characteristics of TU

1. In the initial stage, total utility increases at decreasing ratio
2. Total utility reaches to maximum when M.U become-zero.
3. When marginal utility turns to negative than total utility curve also declines after the maximum point.

### Average Utility (AU)

Average utility means per unit utility which is obtain from the consumption of per unit of a commodity. Average utility is obtain when total utility is divided by consumption unit. Mathematically, it can be expressed as;

$$A.U = \frac{T.U.}{Q}$$

Where, T.U=Total Utility Q= Consumption Unit

### Characteristics of AU

1. From the initial stage, A.U. declines as a constant ratio.

2. A.U. is decline slower in comparison to M.U.
3. A.U. does not zero or negative.

### Marginal Utility (MU)

Marginal utility means extra utility which is obtain from the consumption of one extra unit of a commodity. In other word, marginal utility means ratio between change in total utility and change in consumption mathematically, it can be express as;

$$M.U. = \frac{\Delta T.U.}{\Delta Q} \quad \text{OR} \quad M.U = T.U._n - T.U._{n-1}$$

Where;

$\Delta T.U.$ = Change in total utility,  $\Delta Q$ = Change in consumption unit

$T.U_n$ =Total utility is obtained form the  $n^{\text{th}}$  commodity.

$T.U_{n-1}$ = Total utility is obtained from the  $(n-1)^{\text{th}}$  commodity.

Characteristics of Marginal Utility(M.U.)

1. Marginal utility is faster declining in comparison to average utility.
2. Marginal utility become zero or M.U is zero, total utility becomes highest.
3. Margin utility turns to negative than total utility also decline as the M.U negative

The following table is one of the examples showing TU, MU and AU. The first column shows the number of units taken/ consumed. When the total utility reaches its maximum value, marginal utility becomes zero. Before this point, though marginal utility falls, it always remains positive. In our example, this happens, when the consumer consumes sixth unit of the commodity. It is called the point of satiety. The total utility stops rising at this stage.

Number of Units	Total Utility (TU)	Marginal Utility (MU)	Average Utility (AU)
1	10	10	10
2	18	8	9
3	24	6	8
4	28	4	7
5	30	2	6
6	30	0	5
7	28	-2	4
8	24	-4	3

### ***Law of Diminishing Marginal Utility***

The Law of Diminishing Marginal Utility states that all else equal as consumption increases the marginal utility derived from each additional unit declines. Marginal utility is derived as the change in utility as an additional unit is consumed. Utility is an economic term used to represent satisfaction or happiness. Marginal utility is the incremental increase in utility that results from consumption of one additional unit.

Law of diminishing Marginal Utility was propounded by German Economist Herman Heinrich Gossen (H.H. Gossen) in 1854 A.D. It is also known as first law of Gossen. Latter on this law was Modified and popularized by Alfred Marshall in his book " The principles of economics", published in 1890 A.D. This law is developed on consumer's psychology or behavior regarding consumption of a commodity.

Marginal utility may decrease into negative utility, as it may become entirely unfavorable to consume another unit of any product. Therefore, the first unit of consumption for any product is typically highest, with every unit of consumption to follow holding less and less utility. Consumers handle the law of diminishing marginal utility by consuming numerous quantities of numerous goods.

For example, the utility derived from the first glass of water is high, but with successive glasses of water, the utility would keep diminishing. The law of diminishing marginal utility is applicable to all kinds of goods such as consumer goods, durable goods, and non-durable goods.

#### **Assumptions**

Consumer must be rational.

Utility obtained from the consumption of any commodity can be expressed in number or numerical value.

No change in income of a consumer and per unit price of a commodity.

Marginal utility of a money must be constant.

All the goods must be homogeneous.

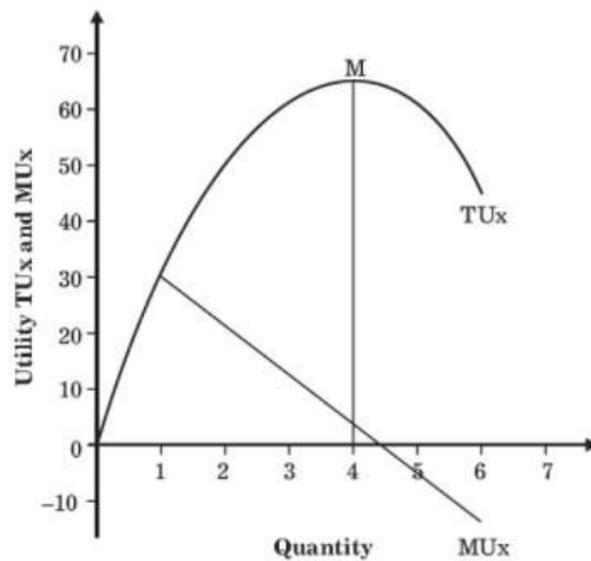
Nature of consumer, fashion, habit must be same.

An individual consumes only one commodity X and its utility is measured quantitatively. The total utility and marginal utility schedules are as shown in Table 1.

<b>UNITS OF COMMODITY X</b>	<b>TOTAL UTILITY (TU<sub>x</sub>)</b>	<b>MARGINAL UTILITY (MU<sub>x</sub>)</b>
1	30	30
2	50	30
3	60	20
4	65	10

UNITS OF COMMODITY X	TOTAL UTILITY (TU <sub>x</sub> )	MARGINAL UTILITY (MU <sub>x</sub> )
5	60	5
6	45	-5

The above table shows that as the number of units of commodity X consumed per unit of time increases, TU<sub>x</sub> increases but at a diminishing rate while marginal utility MU<sub>x</sub> decreases consistently. The rate of increase in TU<sub>x</sub> as a result of increase in the number of units consumed has been depicted through the MU<sub>x</sub> curve in the graph shown in Figure.



Law of Diminishing Marginal Utility

In the above figure, the downward sloping MU<sub>x</sub> curve shows that the marginal utility of a commodity consistently decreases as its consumption increases. When the consumption reaches to 4 units of commodity X, TU<sub>x</sub> reaches its maximum level (the point of saturation) marked as M. Beyond the point of saturation, MU<sub>x</sub> becomes negative and TU<sub>x</sub> begins to decline consistently. The downward slope of MU<sub>x</sub> explains the law of diminishing marginal utility. Therefore, according to the law of diminishing marginal utility, the utility gained from a unit of a commodity is dependent on the consumer's desire for the commodity.

When an individual continues to consume additional units of a commodity, the satisfaction that he/she derives from the consumption keeps decreasing. This is because his/ her need gets satisfied in the process of consumption. Therefore, the utility derived from successive units of the commodity decreases.

### Law of Substitution/ Law of Equi-Marginal Utility

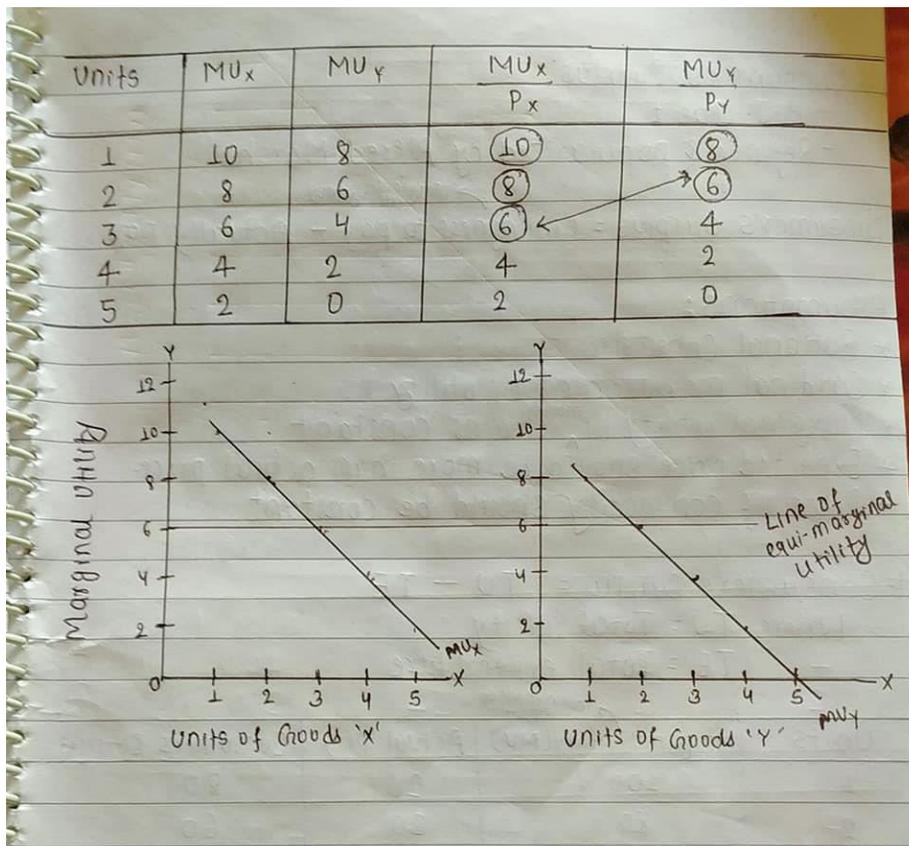
The law of substitution is also known as the law of equi-marginal utility or the law of maximum satisfaction. This law was first developed by Gossen. Therefore, this law is also known as second law of Gossen. Prof. Marshall has developed and given the present shape of this law.

According to this law, if a consumer is to use all the available resource in the consumption of a single commodity then marginal utility, derived from every additional unit will decrease successively. This law states that in order to get maximum satisfaction, a consumer should spend his limited income on different commodities in such a way that the last dollar spent on each commodity yield him equal marginal utility.

This law based on the following assumption:

- Consumer must be rational
- Cardinal measurement of utility is possible
- Income of a consumer is remains constant
- Price of commodity should be fixed and equal
- Commodity is divisible into small unit.
- Utilities are independent.

For example, let the income of the consumer be Rs 5. Also price of X ( $P_x$ ) is Rs 1 and Price of Y ( $P_y$ ) is also Rs 1.



## Consumer's Surplus

Consumer surplus is an economic measurement of consumer benefits. A consumer surplus happens when the price that consumers pay for a product or service is less than the price they're willing to pay.

Consumer's Surplus = Willingness to pay – Actual pay

The concept consumer's surplus is based on the law of diminishing marginal utility as we purchase more unit of a commodity, its marginal utility goes on diminishing. The consumer is in equilibrium when marginal utility become equal to the given price.

This law is based on the following assumption:

- Consumer must be rational.
- Utility can be measured in cardinal number.
- Marginal utility of money is remain constant.
- The expected price should be more than actual price.
- All units of commodity should be homogeneous.
- Price of a commodity should be constant.

# Consumer's Surplus  
- A.J. Jopit  
- Refined & popularized by Alfred Marshall

Consumer's surplus = <sup>marginal utility (MU)</sup>Willingness to pay - Actually pay

Assumptions:

- \* Rational Consumer.
- \* Cardinal measurement of utility
- \* Marginal utility of <sup>money</sup> remains constant
- \* Expected price should be more than actual price.
- \* Price of commodity should be constant

# Consumer's Surplus =  $TU - TE$   
Where,  $TU =$  Total utility  
 $TE =$  Total expenditure

Units	Marginal utility (MU) <sup>willingness to pay</sup>	Actual pay	Consumer's Surplus
1	100	20	80
2	80	20	60
3	60	20	40
4	40	20	20
5	20	20	-
	$TU = \sum MU = 300$	$TE = 100$	200

