

1. Details of Module and its structure

Module Detail	
Subject Name	Economics
Course Name	Economics 03 (Class XII, Semester - 1)
Module Name/Title	Micro economics / Demand theory with Utility Analysis – Part 2
Module Id	leec_10202
Pre-requisites	Meaning and nature of human wants, consumption
Objectives	After going through this lesson, the learner will understand: <ul style="list-style-type: none">• What is utility• Meaning and concept of total and marginal utility• What happens to total utility as one consumes more and more of a good
Keywords	Utility, Homogeneity of goods, Marginal utility

2. Development Team

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Table of Contents :

1. Introduction
2. Utility Vs. Usefulness
3. Marginal Utility
4. Law of diminishing marginal Utility
5. Summary

Introduction:

As mentioned in the previous module, consumer theory analyses decisions made by consumers regarding what goods to buy and in what quantities? What a consumer buys depends on two things:

1. What does the consumer want?
2. What can the consumer afford to buy?

In this module, we examine the first question. How does the consumer decide what to buy and how much of it to buy?

Many theories have been offered to explain this question, named after the famous economist Alfred Marshall.

Marshallian Utility Analysis assumes that consumers want to get the maximum possible satisfaction from consuming various commodities that they buy. We start with the notion that each commodity has some utility. We can define utility as “**want satisfying power of a commodity**”. We believe that consumers consume a commodity only when it gives them satisfaction. We are not concerned with whether the consumption of the commodity is ‘good’ or ‘bad’ for the consumer. Too much butter may be bad for one’s health, but as long as a consumer wants to eat butter, it is said to give her utility.

Marginal utility analysis of demand is based on the basic premise that utility can be measured in cardinal numbers such as 1,2,3 etc. We could even define an imaginary unit for utility, which is “Utils”.

Once we have done this, it is easy to see how much utility a consumer is getting from each unit she consumes.

Total Utility (TU):

We believe that the consumer's utility generally increases from consuming more and more of a commodity. Adding up the utility that a consumer gets by consuming each unit of a commodity, gives us Total Utility. Imagine you want to have a pizza. The intensity of wanting a pizza is so high that the first bite into it makes you say "Wow". Typically, as you go on having more and more pizza, you begin to feel satiated, so each extra bite gives you less satisfaction than before. Eventually, you may even begin to feel a little sick of pizza.

This brings us to the conclusion that as we have more and more of a commodity, the satisfaction derived from subsequent units goes on diminishing. Have a look at the table 1 below:

Table 1

Slices of Pizza consumed	Utility (satisfaction) from each slice of Pizza (in Utils)	Total Utility
1st	10	10
2nd	8	18
3rd	5	23
4th	0	23
5 th	-3	20

Notice that the utility derived from the 2nd slice is less than the 1st slice of pizza and that of the 3rd is less than the 2nd. The utility from the 4th slice is zero. This means that the consumer does not get any utility or satisfaction on consuming the 4th slice of pizza after having the 3rd slice of it. As shown in the table, Total Utility is increasing, but at a decreasing rate.

The addition to total utility from consuming an extra slice of pizza is called **Marginal Utility (M.U.)**. In other words, Marginal Utility is the addition to the total utility for each unit increase in consumption. M.U. derived from second slice of pizza is equal to 8 ($18 - 10 = 8$)

Law of diminishing marginal Utility: states that as the consumption of a commodity increases, the utility derived from subsequent units goes on decreasing.

The assumptions for the law are:

1. All units of the commodity are homogeneous

2. Time of consumption remains the same.

In general, Total Utility (TU) and Marginal Utility (MU) are related as follows:

1. As the marginal utility goes on decreasing but is positive, the total utility goes on increasing but increases at a diminishing rate.
2. When marginal utility becomes zero, total utility reaches its maximum value.
3. After the marginal utility reaches zero, additional unit of the commodity will give negative satisfaction, or in other words, marginal utility becomes negative. In such a case, total utility will start falling down. Eating the 5th slice of Pizza can cause stomach ache, and so, it will give you negative satisfaction.

We can state the relation between TU and MU, algebraically, as follows:

$$\text{Marginal Utility (MU)} = TU_n - TU_{(n-1)}$$

Where n = current unit of commodity consumed and (n-1) is the previous unit consumed.

$$MU = \frac{\Delta TU_x}{\Delta Q_x}$$

Where ΔTU_x = Change in TU and ΔQ_x = Change in Q_x

Try this example:

1. A consumer's total utility after consuming 6 commodities is 25 utils and after consuming 7 commodities is 29 utils. What is the marginal utility of 7th commodity?

Answer: 4 Utils

Limitations of the approach:

The most severe limitation of this approach is the assumption that satisfaction can be measured. Think about it! Can we really measure satisfaction that we get from eating a pizza or a mango or a banana? If utility cannot be measured, it would be difficult to give it a unit like 'utils'. So measuring Total Utility and Marginal Utility becomes difficult.

While we cannot measure utility, what we *can* do is rank goods in terms of the satisfaction that they give to us. So, it is possible for me to say that I like mangoes more than bananas, or even more specifically, I could say that I like 2 mangoes as much as I like 3 bananas. Such an approach allows me to rank commodities in the order in which I like them, without having to

measure the utility of any individual commodity. It is usual to use this concept when trying to analyze how consumers decide what to buy. We shall study one such approach - called the Indifference Curve Approach, in the next chapter.

Summary:

In this lesson, we studied the meaning of Utility and also the concepts of marginal and total utility. We also noticed how the level of satisfaction goes on decreasing when subsequent units of a commodity are consumed, provided the units of consumption are homogeneous and the time of consumption remains the same, or in other words, consumption happens continuously without any break. The limitation of Marshallian approach of Utility is that it measures utility in quantitative terms. However, measuring Utility, that is - Satisfaction of a person in cardinal numbers is a difficult and quite impractical task.