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Introduction to Law of Variable Proportion - Its Meaning, Assumptions, Steps and Importance

Introduction- The law of variable proportion is referred to as the law that states the quantity of one factor of production is increased while keeping other factors constant will ultimately result in the decline of the marginal product of the factor. When the variable factor is increased, keeping other factors constant first, the total product will increase at an increasing rate. Then the total product will increase at a diminishing rate. Then, there will be a decline in the production rate. The law of variable proportion is generally used in the short-run production function. Under this function, one factor varies while keeping others the same. The law of variable proportion is also known as the law of proportionality.

Define Law of Variable Proportion

The Law of Variable Proportions, also known as the Law of Diminishing Marginal Returns, is an economic principle that describes the relationship between the varying input levels and the resulting output in a production process. According to this law, when one input factor is increased while keeping all other inputs constant, there comes a point at which the additional output (marginal product) produced by the variable input starts to diminish or decrease.

Assumptions of the Law Of Variable Proportion

There are certain assumptions of the law of variable proportion which directly or indirectly impact it. A few of the important assumptions of the law of variable proportion are discussed below.

- Continuous Technology support - Under this assumption, it assumes that the technology will be constant. When there is an improvement in technology, production will automatically improve.
- Variable factor proportion - The law of variable proportion is not valid if the factors are fixed. So it has been assumed that the factors of production are variable.
- Homogenous nature of factor unit - The law of variable proportion assumes that the units are homogeneous in nature. Under the law, it has been assumed that the units that are produced are the same. The units are the same in quality, quantity and price.

- Short-run program - The law of variable proportion is applied to the system which is operating for a short term.

Stages of the Law of Variable Proportion

There are three stages which describe the law of variable proportion. These three stages Depict the variable conditions and factors Positioning with their impacts. These three stages of the law of variable proportion are discussed below.

Stage 1

Under stage 1, the TPP increases at an increasing rate, and the MPP also increases. Due to the increase in the units of variable factor, MPP increases. This stage is also called the stage of increasing returns. Generally, in stage one, the producer does not operate. The marginal product increases in this stage. So that the producer can employ more units and make the proper utilization of resources.

Stage 2

Here the TPP increases at a diminishing rate. Though it increases at a diminishing rate, It stays positive. The MPP decreases due to the increase in the number of units of variables. This stage is called the stage of diminishing Returns. The producers most likely prefer to operate on the stage.

Stage 3

Here the TPP starts declining but stays positive, while MPP decreases and becomes negative. This stage is also called the stage of negative returns. Producers avoid operating in stage 1 as well as in stage 3. In this stage, there is a decline in the total product. The marginal product also becomes negative. In stage 3, the cost is higher, and the revenue decreases. This leads to a reduction in profits.

Law of Variable Proportion in Terms of TPP

The law of variable proportion generally shows the relationship between units of variable factor and TPP(Total Physical Product). When there is an increase in the units of variable factor, first, the TPP increases at an increasing rate in stage one. Then stage two increases at a diminishing rate. In stage 3, the TPP decreases but remains positive.

Law of Variable Proportion In Terms of MPP

When the units of variable factor increase, other things remain the same then at the first stage, MPP increases. In stage 2, MPP decreases, but it remains positive. In the last stage, MPP continues to decrease and becomes negative.

Reasons For The Law Of Variable Proportion

There are several reasons for the changes in the law of variable proportion. A few of the important reasons are discussed below.

- We cannot change all the production variables in the short term.
- There is one factor that changes; otherwise, the rest of the factors are fixed.
- All of the components work ideally in order to deliver the best results.
- In the initial stages, the TPP increases when the producer utilizes more units of variable factor to the fixed factor.
- Subsequently, when the producer employs more units of variable factor, then the proportion becomes efficient. Then The MPP starts to decline.
- Then the producers see a fall in the quantity of the fixed factors per unit as he increases the variable factor unit.

Importance Of The Law Of Variable Proportion

The law of variable proportion is important to find out the relationship between the variable factors and the fixed factors. There is numerous importance of the law of variable proportion. A few of the key importance are discussed below.

- The law of variable proportion is helpful in understanding the production process.

- It is helpful in clearly explaining the relationship between the input and output. This helps us to understand the change in output due to the changes in the input.
- The law of variable proportion states that an increase in the variable factor will lead to an increase in the total product at a diminishing rate.
- The law of variable proportions clearly shows that diminishing returns are found in all sectors of the economy.
- It helps in the proper usage of resources.

Conclusion

The law of variable proportion is a very important concept in the economy. This helps us understand the relationship between input and output in a very clear manner. The proper utilization of resources can be done through the law of the variable proportion. The law of variable proportion concludes that if the producer increases the units as are variable factor initially, the total product increases at an increasing rate. Then the total product increases but at a decreasing rate. In the last stage, the product decreases but remains positive. In all three stages, the producer aspires to operate in stage 2. In this stage, the proper utilization of resources is possible. The law of variable proportion is a very crucial concept which helps the producer to produce at an optimum level.