

**Laxmi Narain Dubey College, Motihari**

(a constituent unit of B.R.A. Bihar University, Muz.)

NAAC Accredited 'B+'

**Department of Economics**

**Topic: Production Function**

**Paper-I: MICROECONOMICS**

**Part-I**

**B.A. (Hons.)**

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## **BASIC CONCEPTS OF THE PRODUCTION FUNCTION**

- ✓ The price of a good is determined by its demand and its supply in the market.
- ✓ We now shift our attention to the supply of goods in the market.
- ✓ The supply of a good is determined, to a large extent, by the cost of production of the good.
- ✓ The cost of production depends not only on the techniques of production but also on the prices of the factors of production.
- ✓ Before we proceed further, let us understand what the **basic concepts** in product analysis are:

### **Input and output**

- ✓ An input is in the form of a service or a good that is used in the process of production.
- ✓ An input or a factor of production includes land, labour, capital, and other things.
- ✓ An output is a service or a good that results from the process of production.
- ✓ Output may also be referred to as product.

### **Total product, average product, and marginal product**

- ✓ The total output of a good that is produced during a specific time by using all the factors of production is called the total product.
- ✓ It can be increased by applying additional amounts of the variable factor.
- ✓ Average product is the total product divided by the amount of variable factor employed to produce the output.
- ✓ Marginal product is the change in the total product when additional amounts of the variable factor are employed.

### **Production**

- ✓ In the simplest terms, production is a process where inputs (factors of production) are converted into an output.
- ✓ Thus, through production, the resources of a society are converted into a good or a service.
- ✓ Production can be thought of as a process through which consumers are able to avail of goods and services.

### **Fixed and variable factors**

- ✓ Inputs or factors of production may be fixed or variable.
- ✓ A fixed factor is one where the supply is always inelastic in the short run.
- ✓ A variable factor is one where the supply is always elastic in the short run.
- ✓ It is important to note that this classification of inputs is valid only in the short run.
- ✓ In the long run, all inputs or factors of production are variable.

### **Short run and long run**

- ✓ The short run is the time in which the supply of some of the factors of production remains inelastic or fixed.
- ✓ The long run is the time in which the supply of most of the factors of production remains elastic, though the technology of production is assumed to remain unchanged.
- ✓ Thus, both the fixed and the variable factors can be changed in the long run.
- ✓ The **very long run** is that time in which the production technology can also undergo a change.

## PRODUCTION AND THE PRODUCTION FUNCTION

- ✓ In the simplest term, production is a process where inputs (factors of production) are converted into an output. Thus, through production, the resources of a society are converted into goods or a service. In other words, it is a process through which the consumer is able to avail goods and services.
- ✓ The production function is a technological relationship between the physical inputs and the physical outputs within a particular time, given the technology.
- ✓ The **characteristics** of a production function are as follows:
  - i. It depicts a technological relationship between the inputs and the outputs of a firm.
  - ii. It relates to a time where the inputs and the outputs are flow concepts.
  - iii. The state of technology is assumed to be given for that time.
  - iv. Only the technically efficient combinations of the factors of production are included in the production process.
  - v. The factors of production are used jointly to produce the output.
- ✓ A general production function can be expressed as:  $X = f(L, K, M, N, T)$  where X is output, L is labour, K is capital, M is materials, N is land, and T is technology.
- ✓ For the sake of convenience, when there are only two factors of production, the production function is written as  $X = f(L, K)$  ceteris paribus.