Chapter 3 Cost Curves

Cost is the expenditure incurred in factor inputs by a firm to produce goods and services or cost refers to the all sorts of monetary expenditures incurred by the production of a commodity. Cost function can be expressed as:

C= F(Q) where C= Cost, F= function and Q= output.

Types of Cost:

1. Explicit and Implicit Cost:

Explicit cost is the amount paid for the use of the factors of production that the producer obtains from others. Actual payment by a firm for purchasing or hiring resources from the factor owners is called explicit cost. This cost is also known as accounting cost. Examples: payment for raw materials and powers, wages, rent of the factory, interest borrowed money.

Implicit cost is the value of inputs owned and used by the firms in its own production process. It is an opportunity cost of using the resources that is already owned to make the firm own product rather than selling them to others for cash. Examples: Rent of his own land, interest for his own capital, salary for own service as manager.

2. Money cost and Real cost:

Monetary cost is the payment made for the different factors of production in terms of money. It is the expenses incurred in the production of any goods and services.

Real cost is the pain, passion, sacrifice often the thing which cannot be expressed in terms of money borne by the various sections of the people during the process of production is real cost.

3. Opportunity cost and Actual cost:

It is the best forgone alternative that could be produced with the same monetary cost. The missed or forgone opportunity is the opportunity cost.

For example: A person with 1 lakhs uses the money to produce potato and makes a profit of Rs 50,000. If he uses same money to produce tomato and gains only 45000 then he misses the opportunity of producing tomato due to the production of potato.

Actual cost refers to the amount paid for the production of goods and services. The expenses incurred in the use of land, labor, capital and raw materials is real cost.

4. Accounting and Economic cost:

Accounting cost means the total payment that the accountant records in the accounting system. It includes:

Accounting cost: actual expenses+ Depreciation charges for capital requirement.

Economic cost is the sum of accounting cost, explicit and implicit costs. If the cost also comprises the real cost then it is known as economic cost.

5. Fixed cost and variable cost:

It is the expenses incurred in fixed factors of production and cannot be changed in short period of time. This cost also remains unchanged with even at varying level of output produced. Rent, salary of permanent workers, insurance premium. This cost is also known as overhead cost.

Variable cost is the expenses incurred in variable factors of productions which can be changed with in a short period of time. This cost varies with the change in level of output. Example: wage, cost of raw materials, fuel or power etc.

Difference between Fixed and Variable:

Concept of Total Cost, Average Cost and Marginal Cost:

1. **Total Cost:** **Total cost is the sum of Fixed and Variable cost or the cost incurred on both fixed factors and variable factors.**
   TC = Total Fixed Cost + Total Variable Cost.

2. **Average Cost:** **It is obtained by dividing the total cost by the units of output or fixed cost per unit of output.**
   AC = TFC / Q or AFC+AVC.

3. **Marginal Cost:** **MC is the change in total cost due to one unit change in output produced. It is additional made to the total cost due to one more unit increase in output produced.**
   MC = ΔTC/ ΔQ or MC= TC_n-TC_{n-1}

Diagram of TC, AC and MC:

Short-run Cost and Derivation of Short-run Cost Curves and Long-run Cost Curves:

Short-run Cost: **It is the time period in which a firm can vary its output by varying only variables inputs like raw materials, labors etc. It can't change fixed inputs like capital, machines, top management etc.**

Long-run Cost: **It is the time period which is enough for changing all the factors inputs by a firm to produce goods and services. All the factors can be changed and there are no any fixed factors. This cost curve is also known as planning curve.**

Types of Short-run Total Cost:

1. **Total Fixed Cost (TFC): It is defined as the expenditures incurred by a firm on fixed factor in production process. It includes salaries to permanent employees, interest on capital, depreciation cost and insurance premium.**
2. **Total Variable Cost): It is the expenditure incurred by a firm on variable factors of production process. It changes with level of output.**
3. **Total Cost (TC): It is the sum of total fixed and total variable costs. It is the cost incurred on both fixed and variable factors.**

The Relationship between TC, TFC and TVC is illustrated below:

Quantity Produced (Q)	TFC	TVC	TC= TFC+TVC
0	30	0	
1		20	
2		28	
3		39	
4		58	
5		84	
6		112	
7		114	

Diagram of TC, TFC and TVC:

#TVC and TC curves are inversed S-Shape due to operation of law of variable proportions.

Relationship between: TFC, TVC and TC in short run.

Types of Short-run Average Cost Curves:

1. **Average Fixed Cost: It is obtained by dividing total fixed cost by units of output produced. It is fixed cost per unit. It's shape is rectangular hyperbola.**
   AFC= TFC/ Q
2. **Average Variable Cost: It is obtained by dividing total variable cost by units of output produced. It is also called per unit variable cost of production.**
   AVC= TVC/Q
3. **Average Cost (AC) or Average Total Cost (ATC) : It is obtained by dividing total cost by units of output production. It is U shape curve.**
   AC= TC/ Q or AC= AFC+AVC

Marginal Cost: It is change in total cost due to one unit change in output produced Or MC is additional made to the total cost due to one more unit increase in output produced.

MC= ΔTC/ΔQ or MC= TC_n-TC_{n-1}

Why AC Curve is U-Shape in the Short-run?

The AC falls in initial stage, reaches minimum point and begins to rise in short-run. Due to this reason, shape of AC curve is U-shaped. The cause of U-shape AC curve are explained as follows:

1. **Economies of scale and dis-economies of scale:**

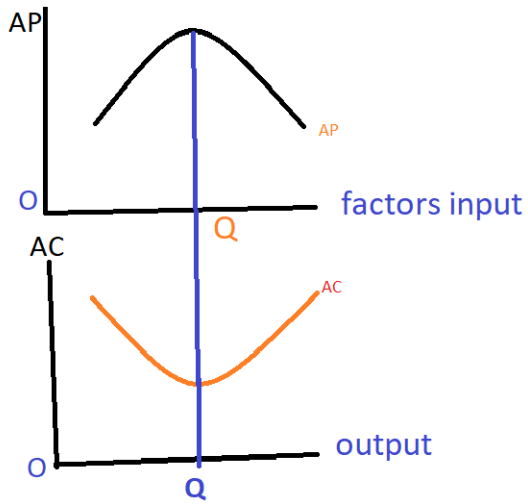
   AC falls due to the operation of economies of scale in production. Producer realizes the economies of scale in the initial stages of production due to the availability of raw materials in large scale at heavy discount, efficient workers, efficient managerial skills, innovation in production techniques.

   These types of internal economies of scale operate in initial stage of production. In this situation, AC of production declines up to the optimum level of output. However, economies of scale may not be long lasting in production process. Beyond the optimum level of output, AC begins to increase due to the operation of diseconomies of scale. Diseconomies occurs due to the overcrowding of labor force, difficulties in management

handling the management function, lacks the monitoring and supervision, over utilization of machineries and plant. Similarly, research and introduction of new marketing strategies require more expenditure. In this way, economies of scale lead to fall in AC whereas diseconomies of scale lead to increase in AC. Hence, AC is U-shaped.

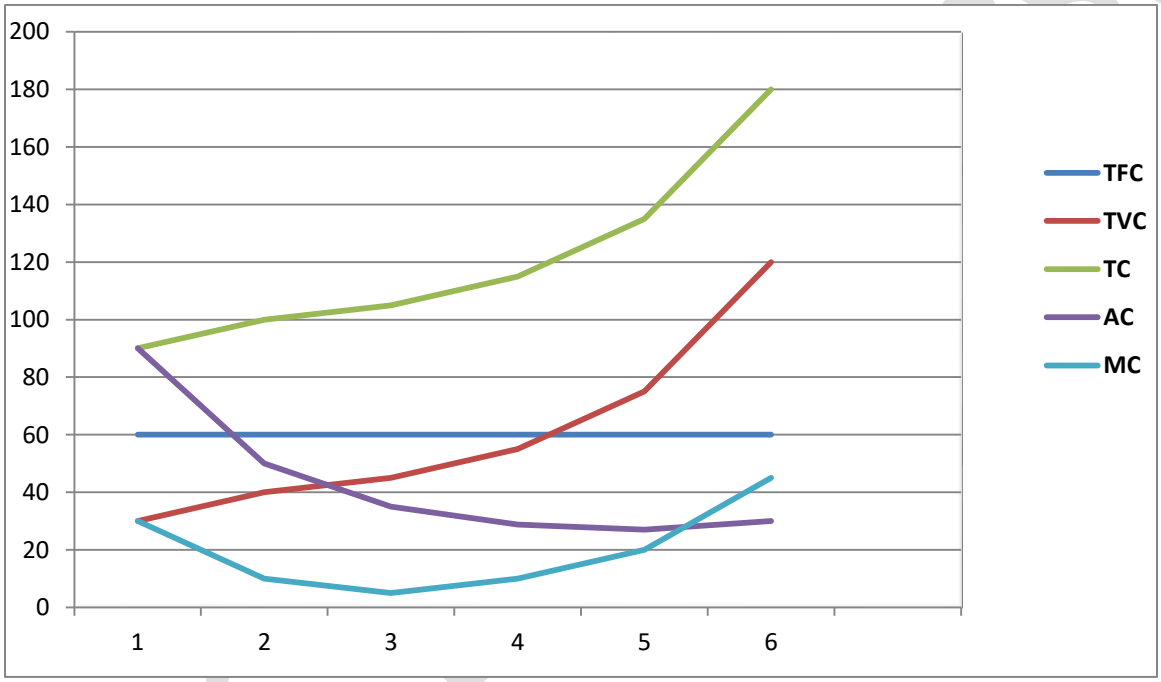
2. Law of Variable Proportion:

It states that when variable factors are increased, keeping fixed factors constant, marginal product (MP), and average product (AP) increase initially, reaches maximum point and then both decrease due to the operation of increasing and decreasing returns in production. It means, when AP increase, AC decrease. When AP decreases, AC starts to increase.



3. Basis of AFC and AVC:

In the short run, since AC = AFC + AVC. Therefore, the behavior of AC curve directly depends upon the behaviour Of AFC and AVC curves. AC curve is obtained by adding AFC and AVC curves and as a result AC curve gets U - shape.



Relationship between AC and MC:

Both AC and MC are derived from TC. In general both curves are U-shaped and MC =AC when AC is minimum. The relationship between AC and MC is shown below:

Diagram yourselves:

Relationship between AC and MC:

1. **Both AC and MC are calculated from TC.**
2. **Both AC and MC are U-shaped.**
3. **When AC is falling, the MC curve lies below AC and MC falls faster than AC.**
4. **When AC is rising, MC curve lies above the AC curve and MC rises faster than AC.**
5. **When AC is at minimum, MC equals to AC.**
6. **MC intersects at the minimum point of AC.**

The End