LESSON 8

CONCEPT OF COST

Every firm has to use some factors of production in the form of inputs for production, for example land, capital, labour, management, raw material etc. Any rational producer will increase the production of commodity to a point where marginal cost and price are equal.

Every firm tries to maximise its profit and minimise its cost. To understand these facts we have to study the concept of cost in detail.

Meaning of Cost:- In economics the expenditure of a firm on inputs for producing the output is called Cost. Classification of Cost is as follows:-

(i) Social Cost

(ii) Monetary Cost

(iii) Opportunity Cost

Similarly, Cost is divided in two types on the basis of accounts-

(i) Explicit Cost

(ii) Implicit Cost

Social Cost :- It includes all sacrifices and difficulties borne by the society indirectly during the production, e.g. loss of health, loss due to pollution, dust, smoke and noise etc. Similarly, it includes the inconvenience faced by public due to industrial and developmental projects. All of these are forms of social cost. It is difficult to estimate them exactly.

Opportunity Cost :- This is also known as Alternative cost. This is incurred mainly on rare and scarce resources. We know that each factor of production has alternative uses.

Opportunity Cost is equal to the value of next alternative use which is sacrified or given up. A firm in order to retain the services of factors has to pay a minimum amount which they could have earned in the best alternative use. This is called his opportunity cost. E.g. A labour is paid ₹ 400 per day, if he can get ₹ 500 per day in other place for the same work, then he has to be paid ₹ 100 extra to remain in present use. Thus, his opportunity cost would be ₹ 100.

Opportunity cost = Present Income – Alternative Income

Monetary Cost :-Whatever expenditure incurred on production or output, in form of money is called Monetary Cost. All types of cash payments are included in this.

Land	Rent
Capital	Interest
Labour	Wages
Management	Salary
Entrepreneur	Profit

Similarly, cost is divided in two types, on the basis of accounts-

Implicit(indirect) & Explicit(direct) Cost :-

Explicit Costs are those costs which are included in account of a firm. e.g. expenditure on raw material, payments of wages, payments of interest etc. These are also known as Direct Costs. They include the payments which are made by the employer to the factors of production which do not belong to himself. Where as Implicit Costs are those costs which are not included or written in accounts of a firm. e.g. value of his own services as entrepreneur, his own capital, furniture and vehicle etc. These are also called Indirect Cost. This includes cost of those factors of production which are owned and supplied by owner himself.

Short run Cost

We have read that time element has important influence on the production function, so we will separately study Short Run and Long Run production function. Similarly, cost is also affected by time element. Since in short run, some factors of production are fixed and others variables, so a firm has to bear fixed cost and variable cost in short-run.

Total Fixed Cost (TFC):-

Supply of some factor of production is constant in Short Run, so the total expenditure on these factors is called Total Fixed Cost. These costs are constant on each level of production. e.g. rent of building, plant or cost of machinery and capital equipments, premium etc. Even if a producer does not produce any thing or shuts down for sometime this cost will be incurred i.e. even at zero output level this cost is constant.

1. Total Variable Cost (TVC):-

In short run some factors of production are variable and total expenditure on these factors of production is known as Variable Cost. This cost increases with increase in the production. e.g. expenditure on raw material, electricity and water etc.

2. Total Cost (TC):-

In short run Total Cost of production is the sum of total Fixed Cost and Total Variable Cost, which is borne by a firm.

Formula : $TC = TFC + TVC$

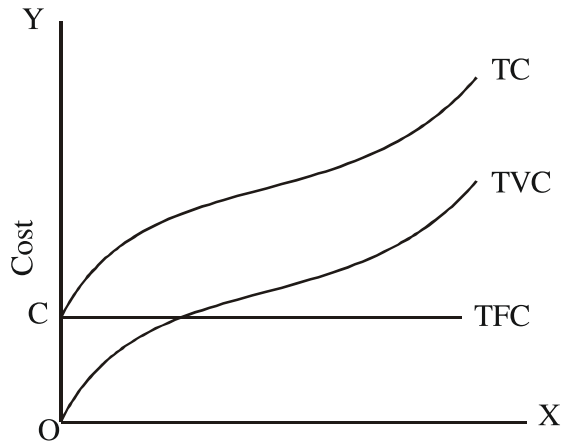


Figure 8.1 depicts the cost.

3. Average Fixed Cost (AFC):-

When total fixed cost is divided by total quantity of production, then we obtain Average Fixed Cost. This cost continuously decreases with increase in production. Due to this reason the shape of this curve is rectangular hyperbola.

Formula: $AFC = \frac{TFC}{Q}$

4. Average Variable Cost (AVC):-

When Short Run Total Variable Cost is divided by Total Quantity of output, it is known as Average Variable Cost.

$$AVC = \frac{TVC}{Q}$$

5. Average Cost (AC) -

In short run when Total Cost is divided by total quantity of production, then we obtain Average Cost. Alternatively, it can also be obtained by adding average fixed cost and average variable cost. Thus it becomes clear that in production process both fixed and variable factors are essential. It is a matter of time period, the factors which are fixed in short period can become variable in long period with expansion of plant.

$$AC = \frac{TC}{Q}$$

$$AC = AFC + AVC$$

6. Marginal Cost (MC):-

In short run, Marginal Cost is the change in total cost on producing an extra quantity of output.

$$MC = \frac{\Delta TC}{\Delta Q}$$

ΔTC = change in total cost

ΔQ = change in output

We can easily understand the above concept of cost with the help of following table:-

Table 8.1

Total, Average and Marginal Cost shedule

(in Rupees)

Quantity (Q)	Total Fixed Cost TFC	Total Variable Cost TVC	Total Cost TC	Average Fixed Cost AFC	Average Variable Cost AVC	Average Cost SAC	Marginal Cost SMC
0	10	0	10	∞	-	-	-
1	10	8	18	10	8	18	8
2	10	14	24	5	7	12	6
3	10	18	28	3.33	6	9.33	4
4	10	24	34	2.5	6	8.5	6
5	10	34	44	2	6.8	8.8	10
6	10	50	60	1.67	8.33	10	16

In above table 8.1 all values of various costs can be calculated by given formulas.

Explanation by Figure -

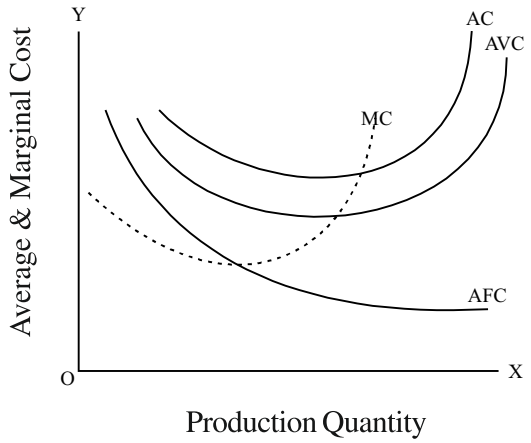
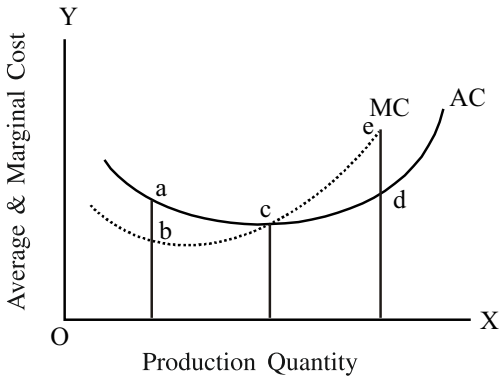


Figure 8.2

In the above figure, it is clear that almost all cost curves have the shape of english alphabet 'U'. When production is increased, then average fixed cost continuously decreases. Therefore, its shape is rectangular hyperbola. Similarly, initially average variable cost decreases, when production increases.



उत्पादन मात्रा **Figure 8.3** X

But after the minimum point is reached, it starts increasing. Average cost is the sum of Average Fixed Cost and Average Variable Cost. The Figure 8.2 shows the relationship between the average cost and marginal cost. It reveals AC and MC curves decrease up to the point c-MC curve falls more rapidly than AC curve.

MC and AC curve increases after c point but relatively MC curve increases more rapidly, then AC curve. At point c, AC curve is minimum, here AC=MC.

Relation between Average Cost and Marginal Cost -

The relationship between average cost and marginal cost is as follows:-

1. When average cost decrease, then marginal cost is less than average cost. MC < AC
2. When average cost is minimum, the marginal cost is equal to average cost. MC = AC
3. When average cost increases, then marginal cost is more than average cost. MC > AC

Long run Cost :-

In long run, change can be possible in all factors of production. They can be increased, to meet the increased demand. The size of plant can be increased if all the factors are variable, only a few factors can remain fixed in the long period. Thus, fixed cost exhibits less importance over long period. We study only Long Run Average Cost and Long Run Marginal Cost.

Long run Average Cost :-

In the long run, to find out the average cost of production, total cost is divided by total output or production.

$$\text{Long-run Average Cost} = \frac{\text{Total cost}}{\text{Total output}}$$

$$\text{LAC} = \frac{\text{TC}}{\text{Q}}$$

Long run Marginal Cost:-To find out the long run marginal cost, change in total cost is divided by per unit change in output.

$$\text{LMC} = \frac{\Delta\text{TC}}{\Delta\text{Q}}$$

Shape of Long run Average Cost Curve :-
Long run average cost curve comprises various short run average cost curves. Its shape is also that of the alphabet 'U' but it is comparatively flatter. It is also called 'envelope curve' and is tangent to SAC's curves. According the Figure 8.4 LAC curve is a tangent to SAC_1,SAC_2 ,SAC_3, SAC_4 and SAC_5

This indicates that firm can adjust the scale of

operation and produce any amount at lowest average cost according to the prevlant demand.

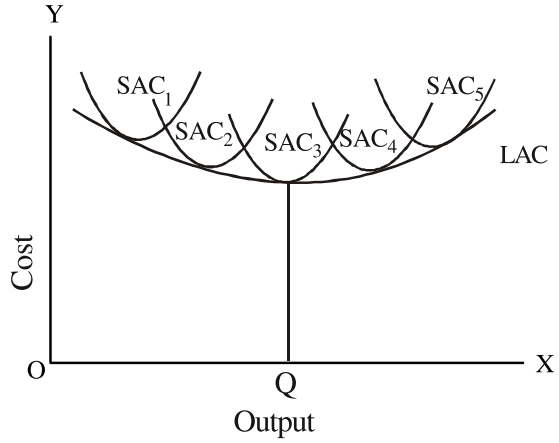


Figure 8.4

Figure 8.5 shows long term marginal cost curve (LMC) that intersects LAC curve at its lowest point and then goes upwards. As a firm establishes new plant in long term, the average production cost will decrease to certain level due to economies of scale after that the production cost increases due to dis-economies of scale.

Long Term Marginal Cost (LMC) :

The LMC curve depicts the change in long run total cost when an additional output is increased. The long run marginal cost curve has same shape as that of short run marginal cost curve (SMC).

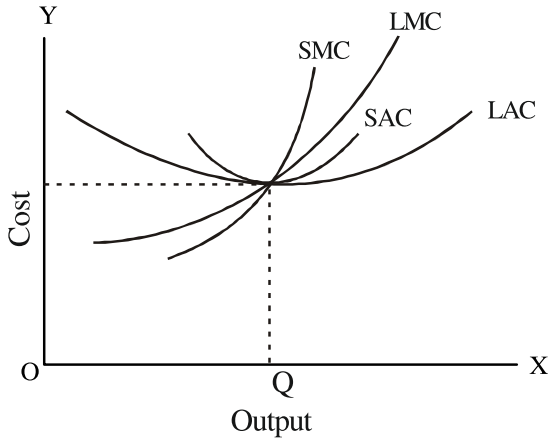


Figure 8.5

In Figure 8.5 LMC curve intersects the LAC curve at its lowest point. At this point SMC too intersects SAC curve.

Therefore, the optimum size of plant is where SMC and LMC curves cut the minimum point of SAC and LAC curves. Hence, all the four are equal.

LMC = LAC = SMC = SAC

Important Points:-

- All expenditures borne by a firm on inputs in production of product or output is called cost in economics.
- All the hardships and sacrifices borne by society indirectly during the production is called social cost for e.g. health loss due to pollution, dust fumes and noise.
- In order to retain the services of factors of production,a firm has to pay minimum amount, which they could have earned in alternative use, is called opportunity cost.
- All expenditure incurred the in form of money on production is called monetary cost.
- Explicit costs are those costs which are included in accounts of a firm e.g. expenditure on raw material, payments of wages, payments of interest etc. These are also known as direct cost.
- Implicit costs are those costs, which are not included or written in accounts of a firm e.g. value of individual labour of entrepreneur, his own capital, furniture and vehicle etc. It is also called indirect cost.
- Firms bear fixed cost in short run due to the fixed supply of some factors and variable cost on variable factors.
- As scale of production increases, the average fixed cost continuously decreases. Hence its shape is rectangular hyperbola.
- Average cost is the sum of average fixed cost and average variable cost.
- All factors of production can be changed in long run. Hence there is generally no fixed cost or it is of less importance.
- Long run average cost (LAC) curve is tangential to various short-run average cost (SAC) curves. It has shape of the alphabet 'U' but flatter and is also called envelope curve.

Exercise Questions

Objective type Questions :-

1. Which cost is borne indirectly by society during the production ?

   (A) Monetary cost

   (B) Average cost

   (C) Variable cost

   (D) Social cost

2. Which curve does not have 'U' shape?

   (A) AC (B) AFC

   (B) MC (D) AVC

3. Which of these costs is not included in accounts?

   (A) Monetary cost

   (B) Real cost

   (C) Explicit cost

   (D) Implicit cost

4. Which curve is also called 'envelope' curve?

   (A) SMC (B) LAC

   (C) SAC (D) LMC

5. If total cost is₹ 200 and quantity of output is 20 units the average cost will be-

   (A) 10 (B) 20

   (C) 30 (D) 40

Very Short Type Questions-

1. What is variable cost in economics?
2. What are Implicit Costs?
3. Define Cost.
4. Write the formula of marginal cost.
5. Which curve has shape of rectangular hyperbola?

Short Type Questions –

1. Give any two examples of fixed cost and variable cost each.
2. Explain the difference between Implicit and Explicit Cost.
3. Explain the relationship between Average Cost and Marginal Cost.
4. What is meant by opportunity cost?
5. Explain long run average cost (LAC).

Essay Type Question-

1. Explain in detail the concept of Cost.
2. Calculate the values of Cost in the given table with the help of formulas-

Q	TFC	TVC	TC	AFC	AVC	SAC	SMC
0	20		20				
1	20		30				
2	20		38				
3	20		44				
4	20		49				
5	20		53				
6	20		59				

Answer Table

1	2	3	4	5
D	B	D	B	A