

Chapter – 7
Cost & Revenue

In this chapter, we will discuss the different concepts of cost & revenue & with the help of those concepts will try to find out the profit & loss of the firm.

Types of cost:-

- Money cost:- It is that cost which a firm has to spend in terms of money for the production of a commodity. It can be discuss under the following parts:-
 - a) Explicit cost:- this is also called paid out cost. This is the cost of hiring & purchasing the factor of production. For eg:- exp on raw-material, electricity & telephone, rent, int., salary of workers, hiring of labor etc.
 - b) Implicit cost:- this is also called non-paid cost. This is the cost of owner's factors of production. It is incurred in the production process but not paid. For eg:- rent of own build, interest on own capital, services of entrepreneur as a manger etc.
 - c) Normal profit :- this is the min. Amount which a firm requires to continue in the production process. These are the minimum exp. of the firm as well as min. Exp of an entrepreneur.
- Real cost:- this is the cost of pain & sacrifice of a particular factor which they have to take for providing the services.
- Opportunity cost:- this is the cost of next best alternative use of the factor which a factor has to sacrifice at the cost of it's present use.
For eg:- if a C.A. works in a company, then he earns Rs. 25,000 as salary p.m. if he earn Rs. 23,000 then the opportunity cost of his job is Rs. 23,000.
- Private & social cost:- private cost is that cost which a producer has to spend on the production of a commodity in the form of rent, int., salary etc.
Social cost is that cost which whole society has to bear undesirably in the form of pollution. For eg:- private cost of a chemical plant is borne by the producer in the form of int., rent, salary etc, but due to this chemical plant, whole society has to bear additional washing & medical bills.

Fixed & variable cost:- fixed cost is the cost of fixed factor of production , which a producer has to incur, even at the zero level of output. This cost remains same even with the increase in output. For eg:- cost of rent, int., salary of permanent workers, min. Telephone & electricity bills, min. Dep., license fee, insurance prem etc.

Variable cost is the cost of variable factor of production. This cost remains zero at the zero level of output & increases with the increase in output. For eg:- cost raw-material, electricity, telephone bills, dep. Due to production, transportation cost, wages of casual workers etc.

Behavior of cost curves in short-period:-

- 1) Total cost :- This is the total amount which a firm has to spend on the production of a commodity. It can be discuss in two parts:-
 - a) Total fixed cost:- this is the cost of fixed factor of production. It remains parallel to X axis.
 - b) Total variable cost:- This is the cost of variable factors of production, which remains o at o level of output & increases with the increase in output
- 2) Average total cost (ATC or AC) :- this is the per unit cost of production of a commodity.

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

$$a) \text{ Average fixed cost} = \frac{TFC}{Q}$$

$$b) \text{ Average variable cost} = \frac{TVC}{Q}$$

- 3) Marginal cost :- It is a incremental change in T.C., due to change in no of units.

$$MC = T.C_n - T.C_{n-1} \quad \text{or} \quad \frac{\Delta TC}{\Delta Q}$$

Cost function:-

Units	TC	TFC	TVC	ATC	AFC	AVC	MC
0	50	50	0	∞	∞	-	-
1	70	50	20	70	25	20	20
2	85	50	35	42.5	16.6	17.5	15
3	110	50	60	36.6	12.5	20	25
4	150	50	100	37.5	10	25	40
5	195	50	145	39	8.3	29	45
6	240	50	190	40		31.7	45
7	287	50	237	41	7.2	33.9	47
8	336	50	286	42	6.2	35.8	49

- 1) Whatever is TC at zero level of output it is same as TFC.
- 2) $TC - TFC = TVC$

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

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

$$AVC = \frac{TVC}{Q} \quad \text{or} \quad ATC - AFC$$

$$EMPP = TPP$$

$$EMC = TVC$$

$$TC = EMC + TFC$$

$$EMU = TU$$

$$EMPP = TPP$$

$$EMR = TR$$

Num 1 :

Units	AVC	TVC	MC
1	30	30	-
2	25	50	20
3	22	66	16
4	19	76	10
5	16	80	4

$$\begin{aligned} TVC &= AVC \times Q \\ &= 30 \times 1 \\ &= 30 \end{aligned}$$

Num 2:

Units	MC	AVC	TVC
1	70	70	70
2	60	65	130
3	62	64	192
4	72	60	264

Num 3:

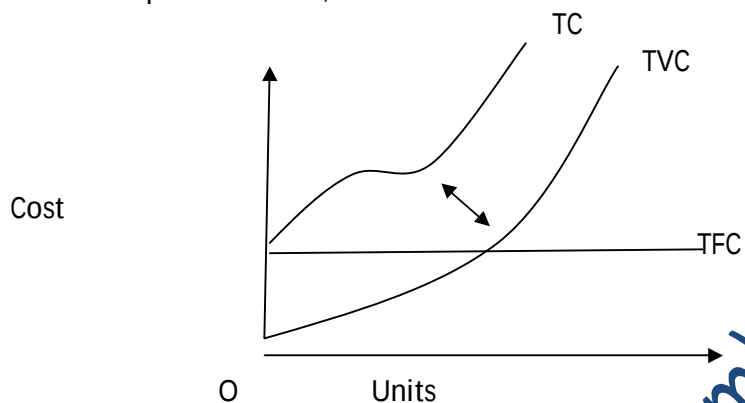
Units	TC	AFC	AVC	TVC	TFC
0	80	∞	-	-	80
3	194	26.6	8	24	80
8	152	10	9	72	80

Num 4:

Units	MC	TFC	AFC	AVC	ATC	TVC	TC
1	40	60	60	40	100	40	100
2	30	60	30	35	65	70	130
3	35	60	20	35	55	105	165
4	39	60	15	36	51	144	204

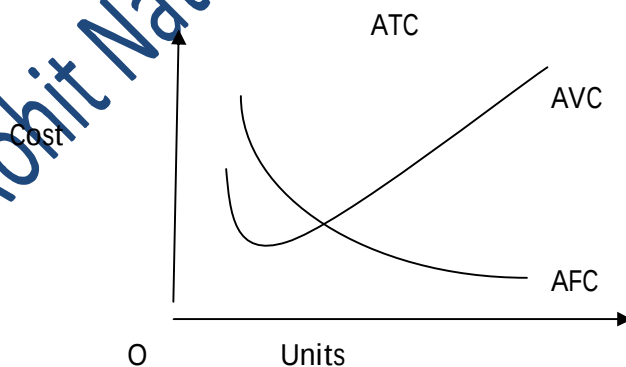
Num 5:Units	TC	TFC	TVC	ATC	AFC	AVC	MC	
0	60	60	-	∞	∞	-	-	-
1	140	60	80	140	60	80	80	
2	190	60	130	95	30	65	50	
3	240	60	180	80	20	60	50	
4	300	60	240	75	15	60	60	

Relationship between T.C, TFC & TVC:-



- 1) TFC is constant at all level of output. Hence it is parallel to X axis.
- 2) TC starts from the point of TFC & rises with the rise in output with a slight fall due to the application of law of a variable proportion.
- 3) TVC starts from o & then rises with the rise in output . but it runs 11 o TC because the gap between TC & TVC is constant due to TFC.

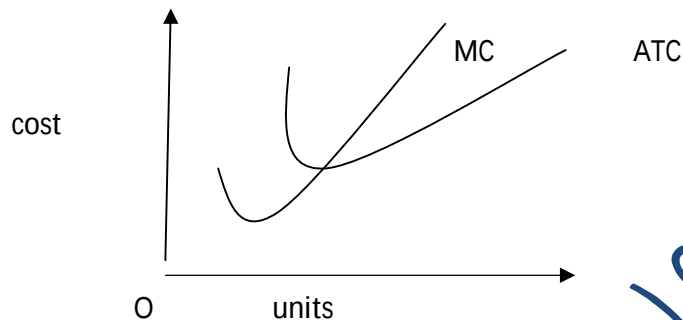
Relationship between ATC, AFC & AVC:-



- 1) ATC is U – Shaped in short period, hence initially it falls & then rises. But it remains above then AFC & AVC.

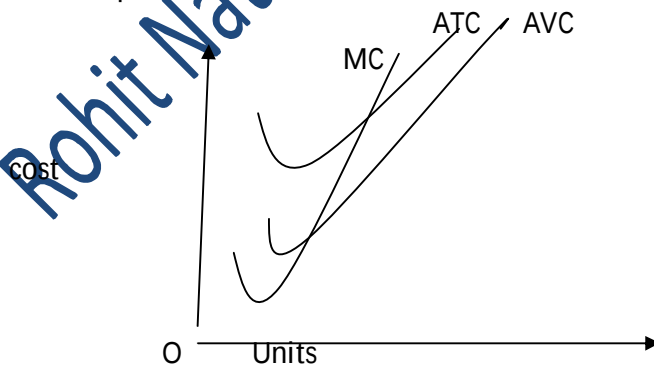
- 2) AFC curves starts falling right from the 1st units because the value of TFC is constant & no of units increasing
- 3) AVC initially falls & then rises with the rises in output because of law of variable proportion.
- 4) Initially the gap between ATC & AVC is greater because of higher value of AFC. But as AFC falls the gap reduces. But neither AFC touch to X axis nor AVC merge in ATC.

Relationship between ATC & MC



- 1) When MC is less than ATC, then ATC falls.
- 2) When MC is greater than ATC, then ATC increases.
- 3) When MC intersects to ATC, then ATC is at min. Point & constant.

Relationship between ATC, AVC & MC :-



- 1) When MC is less than ATC & AVC, then both falls.
- 2) When MC is greater than ATC & AVC, then both rises.

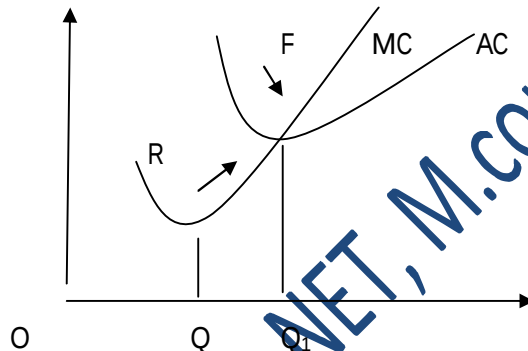
- 3) When MC intersects ATC & AVC, then both are at min. Point.

Why ATC is U-shaped – because of following reasons:-

- 1) Because of AFC & AVC, ATC initially falls due to AFC & AVC both falling, but after reaching at its min. Point, ATC starts rising because of AVC comparative forces AFC is very small now, hence it can't influence ATC.
- 2) Due to law of variable proportion:- Initially when firm gets increasing return then per unit cost falls. After a point, when a firm gets diminishing return then per unit cost rises.

Why MC is U-shaped :- because of law of variable proportion initially, when a firm increases the output then initially due to the application of increasing return per unit variable cost decreases, but after a certain point, when firm gets diminishing return then per unit variable cost increases.

Can AC fall when MC rises?



This condition is possible between Q & Q₁ in which MC is rising but AC is falling. The reason is MC is the individual change. Hence, it falls faster & reaches to the min. Point, but when it starts rising it is less than ATC. ATC will not rise until MC is greater than it.

DD FC affects MC:-

FC doesn't affect MC because

$$\begin{aligned} MC &= TC_n - TC_{n-1} \\ &= TFC_n + TVC_{n-1} - TFC_{n-1} + TVC_{n-1} \end{aligned}$$

$TFC_n - TFC_{n-1}$ are same

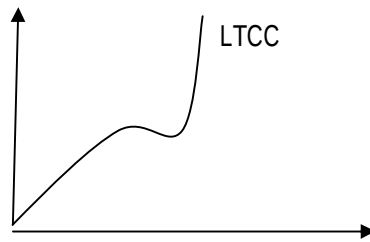
$$MC = TVC_n - TVC_{n-1}$$

Long run cost curve: - Long run is that period of time in which a firm can change all input.

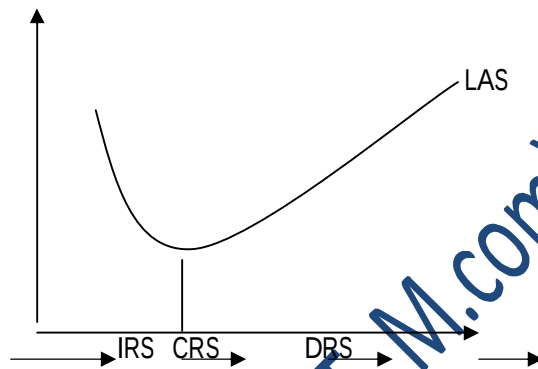
There is no different between fixed & variable factor. It can be discuss in three parts:-

- 1) Long run total cost curve
- 2) Long run average cost
- 3) Long run marginal cost.

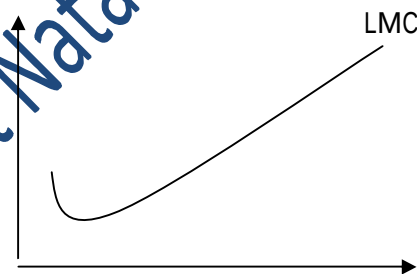
- 1) LTCC:- In long run, total cost curve starts from o & then rises with the rise in output with a slight falls because of the application of returns to scale.



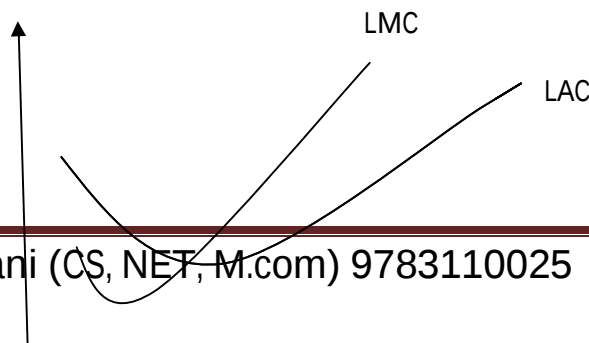
- 2) LAC:- It initially falls & then rises with rise in output because of the application of increasing returns to scale, CRS & DRS.



- 3) LMC :- This curve would also be more flatter than MCC because of the long-run.



Relationship between LAC & LMC





- 1) When LMC is less than LAC, then LAC falls.
- 2) When LMC is greater than LAC, then LAC rises.
- 3) When LAC is equal to LMC, LAC is at the min. Point & constant.

Num 6:- production department of the firm reported the following information:

- 1) No of units produced – 1,000
- 2) Exp on raw-material – 30,000
- 3) Electricity bill - 6,000
- 4) Rent of the shade- 5,000
- 5) Int. On the cap – 4,000
- 6) Wages of the workers – 12,000
- 7) Salary of the employees – 9,000

Cal AFC & AVC?

$$TFC = 3,000 + 6,000 + 12,000 = 18,000$$

$$AFC = \frac{48000}{1000}$$

$$= 48.$$

$$TVC = 5,000 + 4,000 + 9,000$$
$$= 18,000$$

$$AVC = \frac{18000}{1000}$$

$$= 18$$

Revenue :- It is that amount which a firm received by selling its goods in the market. It can be discuss in 3 parts :-

- 1) Total revenue (TR) :- This is the total amount which a firm received by selling its goods in the market.

$$TR = \text{Price per unit} \times \text{quantity sold}$$
$$P \times Q$$

- 2) Average revenue (AR) :- This is the price per unit of a product.

$$AR = \frac{TR}{Q}$$

$$AR = \frac{P \times Q}{Q}$$

$$AR = P$$

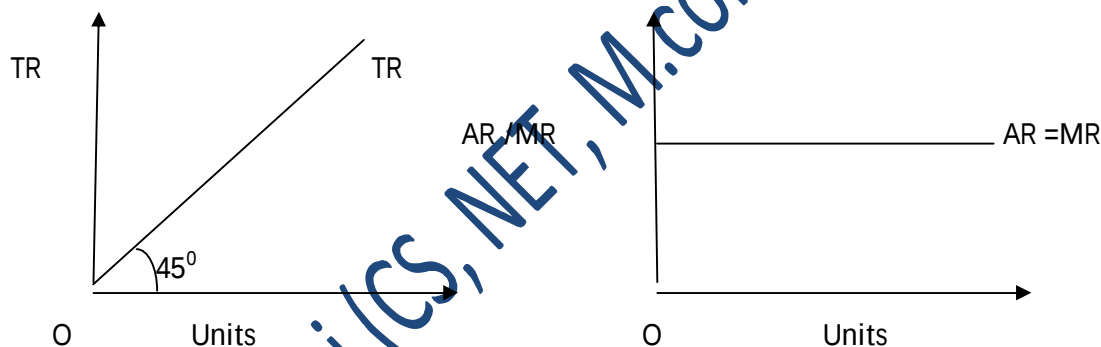
- 3) Marginal revenue (MR) :- It is the incremental change in TR, due to change in no of units.

$$MR = \frac{\Delta TR}{\Delta Q}$$

Relationship between TR, AR, & MR:-

- 1) When P is fixed:-

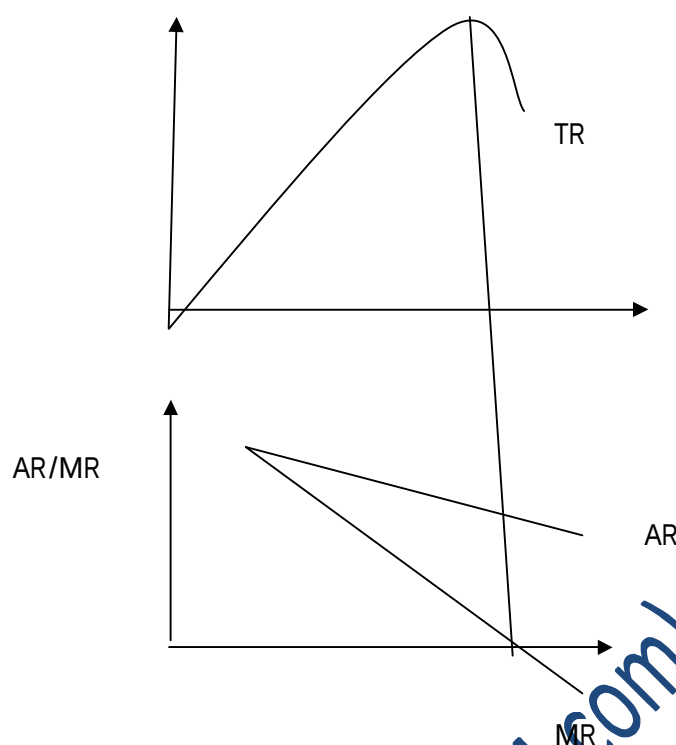
Price AR	Units	TR	MR
5	100	500	5
5	200	1000	5
5	300	1500	5
5	400	2000	5
5	500	2500	5



- 1) TR curve is at 45° angle because P is fixed. Change in TR & change in units are proportionate.
- 2) In this case, AR & MR would be 11 to x axis.

2. When P is changed:-

Price AR	Units	TR	MR
5	100	500	5
4.5	200	900	4
4	300	1200	3
3.5	400	1400	2
3	500	1500	1
2.5	600	1500	0
2	700	1400	-1



- 1) When TR increases at diminishing rate, then MR falls.
- 2) When TR is at the max point, then MR is zero
- 3) When TR starts falling then MR becomes negative.
- 4) When AR & MR both falls, then MR remains below then AR.