

Calculation is done in the following manner:

Column (4) = (2) + (3); (5) = (2) ÷ (1); (6) = (3) ÷ (1); (7) = (5) + (6); (8) = Δ (4) ÷ Δ (1)

### RELATIONSHIP BETWEEN AVERAGE COST AND MARGINAL COST

Average cost is obtained by dividing total costs by the units of output. Marginal cost is the change in total costs resulting from a unit increase in output. The relationships between the two are as follows:

1. When average cost falls with an increase in output, marginal cost is less than the average cost (before point P).
2. When average cost rises, marginal cost is greater than the average cost (after point P).
3. Marginal cost curve cuts the average cost curve at its minimum point (minimum point on the average cost curve is also the point of optimum capacity) i.e., at the point of optimum capacity, MC = AC (at point P).

With increase in average cost, marginal cost rises at a faster rate. This relationship between AC and MC is illustrated in the adjacent Fig. 8.8.

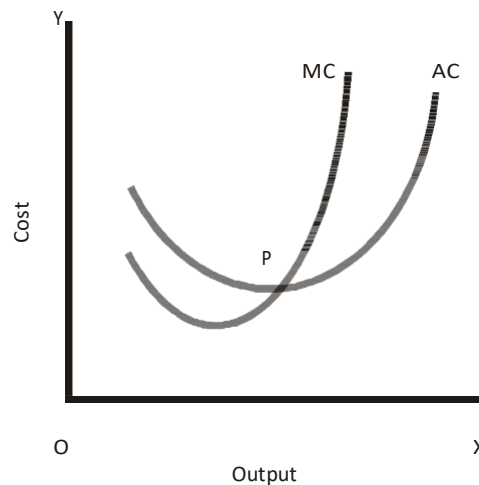


Fig. 8.8

### Questions for Review

1. What is meant by opportunity cost?
2. Give two examples of implicit cost of a firm.
3. What is meant by supplementary costs?
4. Give two examples of fixed costs.
5. Give two examples of variable cost.
6. What are explicit costs?
7. Give two examples of implicit cost of a firm.
8. Distinguish between fixed and variable costs.

9. Distinguish between explicit and implicit cost.
10. Give two examples each of implicit and explicit costs in a tailoring shop.
11. With the help of an appropriate diagram state the relationship between Average cost and Marginal cost.
12. Give meaning of real costs, private costs, social cost.
13. Differentiate between money cost and real cost.
14. From the cost function of a firm given below, find:

<i>Output (Units)</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
TC (Rs.)	60	90	100	105	115	135	180
TFC (Rs.)	60	60	60	60	60	60	60

- (1) TVC
- (2) AFC
- (3) AVC
- (4) ATC
- (5) MC
15. What is meant by money costs?
16. What is the significance of time element in determining costs of a firm?
17. How does total fixed cost change when output changes?
18. What is the general shape of the AFC curve?
19. What will happen to ATC when  $MC > ATC$ ?
20. What are volume discounts?
21. Why is the MC curve in the short run U-shaped?
22. What is the condition of profit maximization for a competitive firm?
23. What is the general profit maximizing condition of a firm?

# 9

## CONCEPTS OF REVENUE

Revenue refers to the payments received by an entrepreneur from the sale of the goods produced. If a producer can sell during a week 200 pens at the price of Rs.5 each his total revenue during the week equals Rs.  $5 \times 200 =$  Rs. 1, 000.

### Total Revenue

Total Revenue refers to the total amount of money that a firm receives from the sale of its products. By selling 20 apples at the rate of Rs. 2 each, the total revenue he gets is  $20 \times 2 =$  Rs. 40. Thus,

$$TR = Q \times P,$$

where Q is total quantity sold and P stands for price per unit.

### Average Revenue

Average revenue is obtained by dividing total revenue earned by the total number of units sold by a producer. Average revenue curve of a firm is same thing as the demand curve of the consumer. Thus, it means price of the product. Symbolically,

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

### Marginal Revenue

Marginal revenue is the change in total revenue resulting from a unit (one unit) change in the output sold. In other words, it is the revenue, which would be earned by a producer by selling an additional unit of his product.

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

Or,

$$MR = TR_n - TR_{n-1}$$

Where,  $TR_n$  is the current or selected value of total revenue and  $TR_{n-1}$  is the previous value of total revenue. For example, TR of selling first unit of a product is Rs. 12 and TR of selling one more unit is Rs. 20, then  $TR_n$  and  $TR_{n-1}$  are 20 and 12 respectively. Thus,  $MR = 20 - 12 = 8$ . It means, by selling one more unit the seller gets additional revenue of Rs. 8.

## RELATIONSHIP BETWEEN AVERAGE AND MARGINAL REVENUE

Let us explain the relationship between AR and MR with the help of a table below:

<i>Units</i>	<i>Price or Average Revenue</i>	<i>Total Revenue</i>	<i>Marginal Revenue</i>
1	15	15	15
2	14	28	13
3	13	39	11
4	12	48	9
5	11	55	7
6	10	60	5
7	9	63	3
8	8	64	1

Total revenue column is derived by multiplying 'units' column with 'AR or price' column. Marginal revenue has been derived from the total revenue column as explained earlier. It is seen that when AR is falling, MR is less than AR. It should be noted that under perfect competition (meaning of perfect competition is dealt in a separate chapter) average and marginal revenue curves coincide, i.e.,  $AR = MR$ . However, under imperfect competition,  $AR > MR$  as shown in the table above.

Under perfect competition, seller cannot influence price of the product. He has to sell at the ruling price prevailing in the industry. Thus, average revenue or price is same throughout. Marginal revenue curve coincides the average revenue curve because additional units are sold at the same price as before. This is shown in the table below:

<i>Units (Q)</i>	<i>Price or Average Revenue (P)</i>	<i>Total Revenue (Q × P)</i>	<i>Marginal Revenue</i>
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10
6	10	60	10
7	10	70	10
8	10	80	10

The relationship between AR and MR under perfect competition is illustrated in the Fig. 9.1.

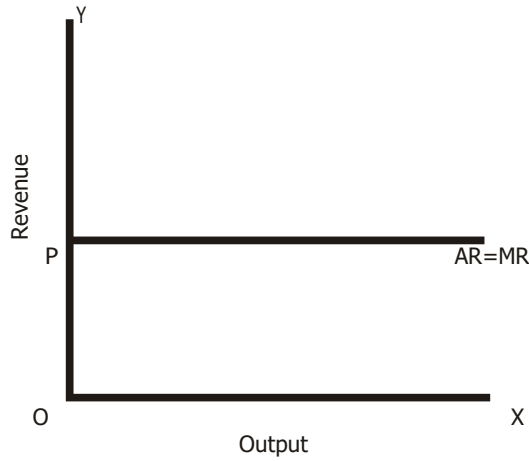


Fig. 9.1

The relationship between AR and MR under imperfect competition is illustrated in the Fig. 9.2 below. AR and MR are the average and marginal revenue curves. Along x-axis output is measured and along y-axis, revenue earned by the seller. It is seen that when AR is falling,  $MR < AR$ .

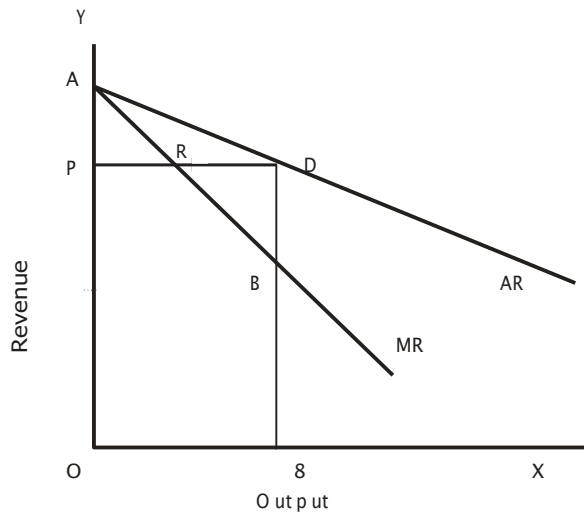


Fig. 9.2

A general relationship between AR and MR are as follows:

- (1) When AR is falling (sloping downwards), MR lies below AR ( $MR < AR$ ).
- (2) If AR is constant,  $AR = MR$  (under perfect competition, Fig. 9.1).
- (3) When AR and MR curves are straight lines perpendicular drawn from any point of the AR curve to the y-axis will cut into equal parts by MR curve.  $PR = RD$  in the diagram shown in Fig. 9.2.

- (4) When AR and MR curves are not straight lines, but either is convex and concave to the origin, the marginal revenue curve will not lie halfway from the average revenue curve.

### Questions for Review

1. What do you understand by the marginal revenue product?
2. What is meant by value of marginal product?
3. Explain the relationship between Average Revenue and the Marginal Revenue.
4. Explain the relationship between average revenue and the marginal revenue under monopoly.
5. What is the relationship between the total revenue, marginal revenue and average revenue?
6. Calculate TR, AR and MR from the following table:

<i>Price per unit (Rs.)</i>	<i>Demand (units)</i>
1	100
2	90
3	70
4	60
5	50
6	40

7. What is the relationship between price and marginal revenue for a competitive firm?
8. Why is the total revenue curve facing a competitive firm a straight line passing through the origin?
9. Why is AR always equal to MR for a competitive firm?