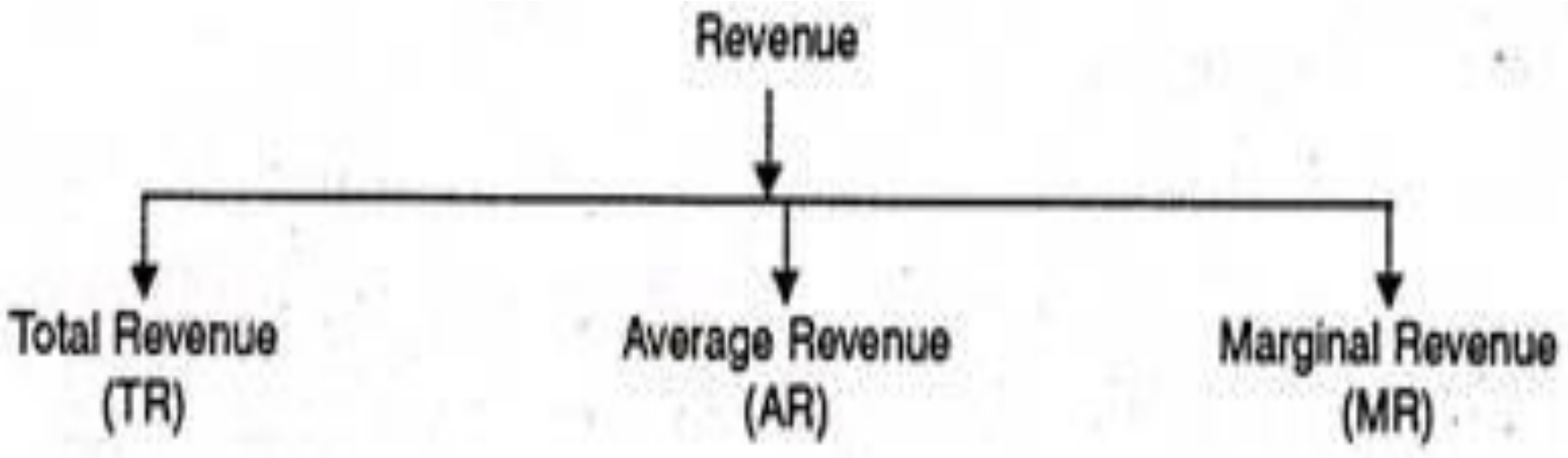
Revenue Types : Total, Average and Marginal Revenue

The term revenue refers to the income obtained by a firm through the sale of goods at different prices. In the words of Dooley, 'the revenue of a firm is its sales, receipts or income'.

The revenue concepts are concerned with Total Revenue, Average Revenue and Marginal Revenue.



1. Total Revenue:

The income earned by a seller or producer after selling the output is called the total revenue. In fact, total revenue is the multiple of price and output. The behavior of total revenue depends on the market where the firm produces or sells.

Thus,

$$TR = AR \times Q$$

where

TR = Total Revenue

AR = Average Revenue or Price per Unit

Q = Output

For example if the price of a commodity is Rs. 100 and total units sold are 20 in that case total revenue will be

$$TR = 100 \times 20 = 200$$

$$TR = 2000$$

2. Average Revenue:

Average revenue refers to the revenue obtained by the seller by selling the per unit commodity. It is obtained by dividing the total revenue by total output.

Thus :

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

where AR = Average Revenue

TR = Total Revenue

Q = Output

According to **McDonnell**, "Average Revenue is the per unit revenue received from the sale of one unit of a commodity."

$$TR = \text{Price} \times \text{Output}$$

$$TR = Pq$$

$$AR = \frac{Pq}{q} = P$$

and $P = f(Q)$ is an average curve which shows that price is a function of quantity demanded. It is also a demand curve.

3. Marginal Revenue:

Marginal revenue is the net revenue obtained by selling an additional unit of the commodity. “Marginal revenue is the change in total revenue which results from the sale of one more or one less unit of output.” Ferguson. Thus, marginal revenue is the addition made to the total revenue by selling one more unit of the good

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

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

Whereas

TR_n = Total Revenue of ‘n’ units

TR_{n-1} = Total Revenue from $(n - 1)$ units

$MR_{(nth)}$ = Marginal revenue from nth unit

n = Any given number

Table Representation:

The relationship between TR, AR and MR can be expressed with the help of a table 1.

Table 1

Unit (q)	TR/q AR or Price	(Pq) TR	($TR_n - TR_{n-1}$) MR
1	10	10	10
2	9	18	8
3	8	24	6
4	7	28	4
5	6	30	2
6	5	30	0
7	4	28	– 2
8	3	24	– 4
9	2	18	– 6
10	1	10	– 8

From the table 1 we can draw the idea that as the price falls from Rs. 10 to Re. 1, the output sold increases from 1 to 10. Total revenue increases from 10 to 30, at 5 units. However, at 6th unit it becomes constant and ultimately starts falling at next unit i.e. 7th. In the same way, when AR falls, MR falls more and becomes zero at 6th unit and then negative. Therefore, it is clear that when AR falls, MR also falls more than that of AR: TR increases initially at a diminishing rate, it reaches maximum and then starts falling.

In fig. 1 three concepts of revenue have been explained. The units of output have been shown on horizontal axis while revenue on vertical axis. Here TR, AR, MR are total revenue, average revenue and marginal revenue curves respectively.

In figure 1 (A), a total revenue curve is sloping upward from the origin to point K. From point K to K' total revenue is constant. But at point K' total revenue is maximum and begins to fall. It means even by selling more units total revenue is falling. In such a situation, marginal revenue becomes negative.

Similarly, in the figure 1 (B) average revenue curves are sloping downward. It means average revenue falls as more and more units are sold.

In fig. 1 (B) MR is the marginal revenue curve which slopes downward. It signifies the fact that MR with the sale of every additional unit tends to diminish. Moreover, it is also clear from the fig. that when both AR and MR are falling, MR is less than AR. MR can be zero, positive or negative but AR is always positive.

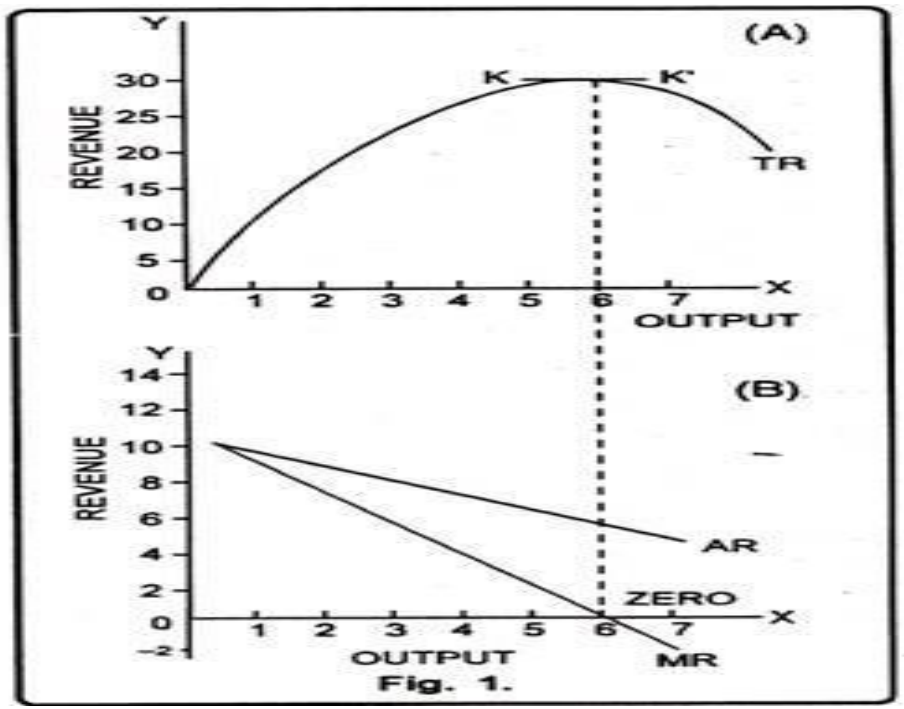


Fig. 1.

Revenue Curves under Different Markets (With Diagram)

(i) Revenue Curve under Perfect competition:

Perfect competition is the term applied to a situation in which the individual buyer or seller (firm) represent such a small share of the total business transacted in the market that he exerts no perceptible influence on the price of the commodity in which he deals.

Thus, in perfect competition an individual firm is price taker, because the price is determined by the collective forces of market demand and supply which are not influenced by the individual. When price is the same for all units of a commodity, naturally AR (Price) will be equal to MR i.e., AR = MR. The revenue schedule for a competitive firm is shown in the table 5.

Table 5

Units	TR	AR	MR
1	5	5	5
2	10	5	5
3	15	5	5
4	20	5	5
5	25	5	5

(iii) Revenue Curve under Imperfect Competition:

When a firm is working under conditions of monopoly or imperfect competition, its demand curve or AR curve is less than perfectly elastic, the exact degree of elasticity being different in different market situations depending upon the number of sellers and the nature of product.

In other words, the demand/AR curve has a negative slope and the MR curve lies below it. This is because the monopolist seller ordinarily has to accept a lower price for his product, as he increases his sales.

Under imperfect competition conditions, total revenue increases at a diminishing rate. It becomes maximum and then begins to decline.

The position of various revenue curves is shown in Table 7:

Table 7

Price	Units Sold	TR	AR	MR
6	1	6	6	6
5	2	10	5	4
4	3	12	4	2
3	4	12	3	0
2	5	10	2	–2

In table 7, 2 units can be sold at a unit price of Rs. 5, bringing in total revenue of Rs. 10. When 3 units are sold, the price per unit is lowered to Rs. 4 to make it possible for larger quantity to be sold. The total revenue in this case is Rs. 12.

The marginal unit is not bringing in Rs. 4 which is its price, but only Rs. 2. This is because the additional one unit is sold at Re. one less and the first 2 units which could have been sold for Rs. 5 are also sold at Rs. 4. i.e., Re. one less.

Fig. 10 A shows that as additional units are sold when price comes down not only for the marginal units but also for other previous units. As a result, marginal units do not bring revenue equal to its price. In fig. 10 B. TR increases at a diminishing rate, becomes maximum at point N and then begins to decline. This has been represented by the curve TR. AR at any point on the TR curve is given by the slope of straight line joining the point to the origin. For instance, AR at any point N on TR curve is given by the slope of line

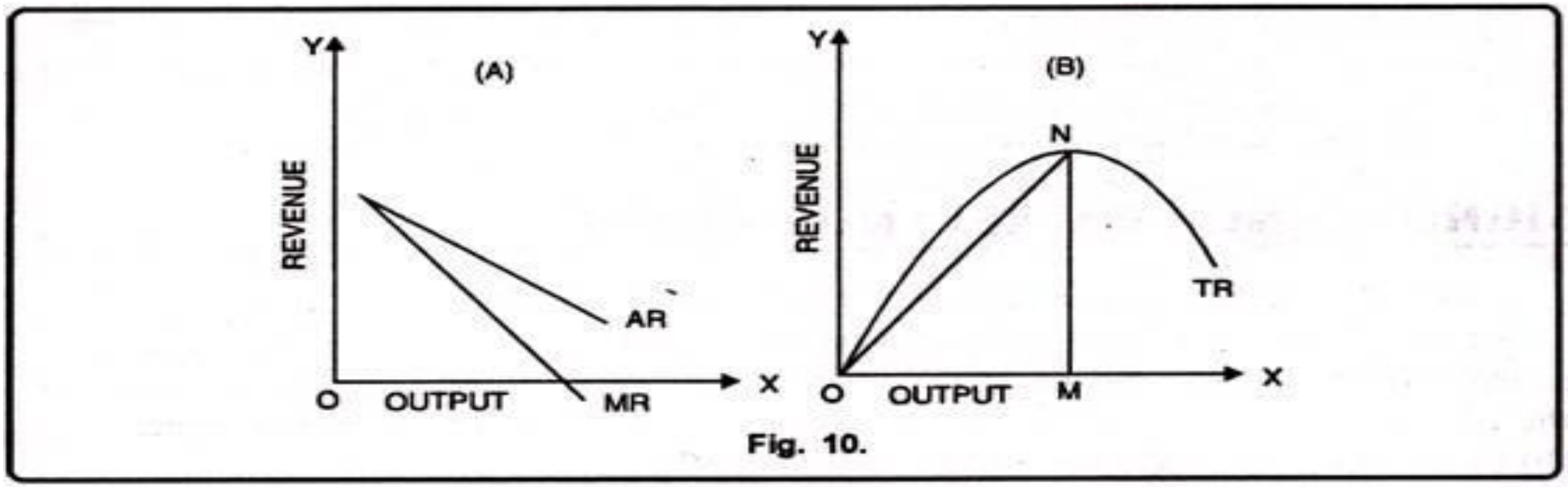


Fig. 10.

$$ON = \frac{NM}{OM} = \frac{TR}{output}$$