

**8**

COST AND REVENUE

A producer has to work very hard to produce a good or service. He has to make a lot of effort in the process. In the beginning, the producer must arrange money to organize the production activity. We have already said that various factors in the form of land, labour, and capital are required to produce goods. These factors are not available for free. The producer must purchase them in the right quantity needed for production. Similarly, raw materials and other things have to be purchased and stored. To purchase these things, the producer must be ready to pay the price for them.

Once the goods or services are produced, the producer sells them in the market to various consumers. At this time, the consumers pay price to the producer to purchase the goods and services. With this the producer starts earning money. So, in order to produce goods and services, the producer first incurs expenditure to purchase factors of production and then receives money from the consumers by selling those goods and services to them.



OBJECTIVES

After completing this lesson, you will be able to:

- *know different types of cost;*
- *calculate different types of cost;*
- *know the concept of revenue.*

8.1 MEANING OF COST

In order to understand the meaning of cost let us take the example of a farmer who is producing rice/paddy. You know that, it normally takes 5 to 6 months to produce rice. The production of rice involves the following:



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- (i) getting the land for cultivation
- (ii) using labour to prepare the land and make it suitable for growing the crop. This includes tilling the soil, sowing seed, fertilizing and irrigating the land and finally harvesting.
- (iii) Transporting rice to godown/mandi.

How does the farmer get land? It could be possible that, the farmer has ancestral land. Otherwise he has to hire land from others by paying rent. He has also the option of purchasing land by paying a very heavy amount. In the present example, let us say, that the farmer hires 5 acres of land on rent.

Suppose, he has to pay Rs. 5,000 as rent to the owner of the land for the whole period he uses it.

The farmer also needs labourers to work on the field for 5 months. Let us say the farmer hires 4 labourers. In the first two months he uses the labourers to till the soil, sow seeds, transporting the seedlings and planting them by hand, fertilising and irrigating the field. In order to hire a labourer, the farmer must pay wage. The wage rate prevailing in the market on an average is say, Rs. 75 per worker per day. When the farmer used only two labourers for two months to look after the standing crop. When the time of harvesting arrives, he again hires 4 labourers for 15 days. What is the total amount paid to the labourers by the farmer? First, 4 labourers work for two months or sixty days. So at Rs. 75 per worker it comes to $75 \times 4 \times 60 =$ Rs.18,000. Then two labourers work for two months. This comes to $75 \times 2 \times 60 =$ Rs.9,000. Finally 4 labourers worked for 15 days. This comes out to be $75 \times 4 \times 15 =$ Rs.4,500. The total money paid to the labourers was $18,000 + 9,000 + 4,500 =$ Rs.31,500

To grow the crop, the farmer uses some raw materials such as seeds, water, fertilizer, pesticides etc. for which he spends, say, Rs. 3,000. He also uses tractor for which he pays rent of Rs. 2,500. After harvesting the farmer produces, say, 30 quintals of rice.

Now, calculate the total money spent by the farmer to produce rice? We can do it in the following manner.

Items	Expenditure (Rs.)
Rent paid to Landlord	5,000
Wages to labour	31,500
Raw materials	3,000
Service of Tractor	2,500
Total	42,000

We can say that, the farmer spent Rs.42,000 to produce 30 quintals of rice.

Definition of Cost

Cost is defined as the money expenditure incurred by the producer to purchase (or hire) factors of production and raw materials to produce goods and services.

In a way, cost is a kind of sacrifice made by the producer. In this example, the sacrifice was made in terms of making payments; such as wages to labourers, rent for the use of land and tractor and incurring expenditure on raw materials etc.



INTEXT QUESTIONS 8.1

1. Name the payments made by the farmer to the factors of production?
2. Who bears cost?

8.2 TYPES OF COST

From the example above we can distinguish between following types of costs.

- (a) Fixed cost
- (b) Variable cost
- (c) Explicit cost
- (d) Implicit cost

Let us discuss them one by one.

(a) Fixed Cost

In the above example, we said that the farmer paid Rs. 5,000 as rent to the owner of the land. Once the land is procured for cultivation, the farmer must pay rent for it, even if he does not produce any thing on it. The land is also fixed factor of production here. Because, whether or not the farmer cultivates on the entire 5 acres of land, he has to pay rent for the whole 5 acres. This is fixed. **So fixed cost is defined as the expenditure, on hiring or purchasing of fixed factors/inputs, which are compulsory and has nothing to do with the amount of production of the good or service.** Similarly, rent paid for the use of tractor is also a fixed cost.

(b) Variable Cost

In the above example, the farmer paid Rs.31,500 towards wage for labourers and Rs.3000 for purchase of raw materials. How much of wage was paid



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depends on how many labourers the producer hired. Labour as a factor of production can be changed. In the example, we said that the producer used 4 labourers during the first two months and only 2 labourers for the next two months. This is because in the beginning the amount of work was more and more labourers were required. Accordingly more amount of money, i.e Rs. 18000, was paid. But when the amount of work was less during the next two months, only 2 labourers were hired and accordingly the wage bill also decreased to Rs.9000. Hence, payment towards wages can be changed. So it is called variable cost.

We can define variable cost as the expenditure on variable factors/inputs, such as labour, which can be changed.

(c) Explicit Cost

Both the rent and wages paid by the farmer and the expenditure on raw materials incurred by him are also called explicit cost. Explicit cost is defined as the money expenditure incurred by the producer on both fixed and variable factors of production and raw materials etc. These are direct payments and are properly calculated and recorded separately. Bills, money receipts or vouchers etc exist with respect to such expenditure by the producer.

(d) Implicit Cost

Besides purchasing factors of production and raw materials, the producer also uses his own factors and materials for producing goods and services. For this he does not pay any money to himself. But he bears this expenditure indirectly. Suppose, a farmer uses his own tractor to cultivate land. Had he hired a tractor from somebody else, he would have paid rent for this. In that case it would have been called explicit cost of the farmer. Let us say the rent for using the services of a tractor is Rs. 3000 for a particular period of time. So the farmer can earn Rs.3000 if he gives his tractor on rent. Otherwise, if he uses it for himself, then he will consume a value of Rs. 3000 for the purpose of production. In this case, it will be called implicit cost of the farmer. **So implicit cost is the cost of self supplied factors.** The value of such cost has to be calculated on the basis of market value.

8.3 TOTAL AND AVERAGE COST

Total cost is the sum of total fixed cost and total variable cost which are given explicitly. Average total cost or simply the average cost is the ratio of total cost to the total output. We can also write,

$$\text{Total Cost (TC)} = \text{Total Fixed Cost} + \text{Total Variable Cost}$$

$$\text{Average Cost (AC)} = \text{Total Cost/Total Output.}$$

Average Cost is the cost per unit of output.



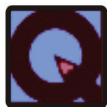
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Marginal Cost (MC)

If the producer wants to increase output, then he has to engage extra units of labour. Extra units of labour will lead to extra expenditure on wage paid to the labour. As a result the total cost of production will increase. In short, increase in total output will lead to increase in total cost of production. In this context **marginal cost is defined as increase in the total cost due to increase in one extra unit of output.**

Example: Suppose a tailor makes 10 pieces of shirts by incurring a total cost of Rs. 1110. Then he increased shirt production to 11 pieces for which he incurred Rs. 1199 as total cost. What is the marginal cost?

Ans: Here increase in output is $11 - 10 = 1$ unit. Because of increase in output by one unit, cost



INTEXT QUESTION 8.2

1. If 48 units of output are produced and the total fixed cost is Rs 180 along with a total variable cost of Rs 300 what would be the average cost of production?
2. Define explicit cost?
3. Let output increases to 49 units in Q.1 due to which total variable cost increases to Rs 307. What is the marginal cost?

8.4 COMPARING MARGINAL COST AND AVERAGE COST

In the above example while there is one value of marginal cost as calculated above, we can compute two different values of average cost.

First value of average cost relates to 10 pieces of shirts. With a total cost of Rs. 1110

So $AC = 1110/10 = \text{Rs. } 111$

Second value of average cost relates to output of 11 shirt pieces with total cost of Rs. 1199

Here $AC = 1199/11 = \text{Rs. } 109$.

From this we can say that average cost is calculated for every given level of output. On the other hand, marginal cost is calculated when a given level of output is increased by one unit. That is, marginal cost is calculated between two successive levels of output.



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We can express the above example in the form of a table as follows:

Units of output (shirts)	Total cost (Rs.)	Average cost (Rs.)	Marginal cost (Rs.)
10	1110	111	-
11	1199	109	89

8.5 REVENUE

Revenue is another very important concept in economics. In fact the study of cost is not complete, if we do not talk about revenue. What is revenue?

Definition of Revenue

Revenue is defined as the amount a person receives by selling a certain quantity of the commodity.

You know that a commodity can be purchased in the market by paying a certain price. So revenue can be calculated by multiplying price and quantity of the commodity. Hence we can write

$$\text{Revenue} = \text{Price of the Commodity} \times \text{Quantity of the Commodity}$$

During a given period of time, the seller sells certain quantity of the commodity.

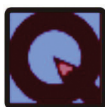
So the total amount of money received by the seller during that time period is called total revenue. We denote it as TR where TR stands for total revenue. Let us denote price as 'P' and quantity as 'Q' then we can write

$$\text{Total Revenue} = \text{Price} \times \text{Quantity or } TR = P \times Q$$

Example: Continue with the example of the farmer in our section on “Cost”. Think that the farmer produced 30 quintals of rice. Let us say that the price of rice is Rs. 1600 per quintal in the market. If the farmer sells all this rice then he will earn $1600 \times 30 = \text{Rs. } 48,000$. So his total revenue will be Rs. 48,000.

From this example, we can also say that revenue is the money receipts of the producer or seller from the sale of his output.

Another term used for “total revenue” is total sales proceeds. Because revenue is received by selling a commodity. It is also called total sales proceeds from that Commodity.



INTEXT QUESTIONS 8.3

1. A seller sells 1 quintal of wheat. The Price of wheat is Rs. 15 per Kg. what is his total revenue?



You must remember that each and every commodity has its own price. A retailer sells different commodities to the buyers. Take the example of a provision store or a stationary shop. A seller sells various items in a provision store; such as rice, wheat, wheat flour, different varieties of dal, biscuits, edible oil etc. You will even find varieties of rice such as basmati, parmal, cella etc; there are different types of edible oils, such as refined vegetable oil, sunflower oil, mustard oil, soyabean oil, etc; and so on. A retail shopkeeper sells so many different kinds of goods as well as different types of the same good. So what will be his total revenue, say, after a time period of one week?

The answer is very simple. First make a list of the prices of the goods he sold during the week. Second, make a list of respective quantities of the goods. Third, find the total revenue of the shopkeeper for the given week. We can illustrate this in the following way.

Illustration

Consider that the shopkeeper has sold 100 kg of basmati rice, 70 litres of sun flower oil, 100 packets of biscuits and 150 kg of wheat flour in the given week. The prices are Rs. 35 per kg of Basmati rice, Rs. 90 per liter of sunflower oil, Rs. 10 per packet of biscuit and Rs. 22 per kg of wheat flour.

We can calculate the total revenue of the shopkeeper in the following manner.

- (i) Total revenue from rice = $35 \times 100 = \text{Rs. } 3500$
- (ii) Total revenue from oil = $90 \times 70 = \text{Rs. } 6300$
- (iii) Total revenue from flour = $22 \times 150 = \text{Rs. } 3300$
- (iv) Total revenue from biscuit = $10 \times 100 = 1000$

Total Revenue from all goods = Rs. 14,100

So the shopkeeper's total revenue from all goods during the given week is Rs. 14,100.

8.6 AVERAGE AND MARGINAL REVENUE

Average Revenue (AR)

Average Revenue is denoted as AR. It is calculated from the total revenue. The formula for average revenue is given as

$$\text{Average Revenue} = \text{Total Revenue}/\text{Quantity sold}$$

$$\text{Symbollically, AR} = \text{TR}/\text{Q}$$

Take the case of a single commodity, we know that $\text{TR} = \text{P} \times \text{Q}$

$$\text{So} \quad \text{AR} = \text{P} \times \text{Q}/\text{Q} = \text{P}$$

Average Revenue and Price of the commodity are one and the same.



Notes

Marginal Revenue (MR)

Marginal Revenue (MR) is defined as increase in total revenue due to **one** unit increase in the sale of the quantity of output.

Refer to the above example. Let the vendor increased the sale to 21 kg. In that case the total revenue or TR becomes $50 \times 21 = \text{Rs.}1050$. Earlier when the sale of output was 20 kg, $\text{TR} = \text{Rs.} 1000$. Hence $\text{MR} = 1050 - 1000 = \text{Rs.} 50$.

We can show it in the table below:

Sale of output (kg)	Price or AR (Rs per kg)	TR (Rs.)	MR (Rs.)
20	50	1000	-
21	50	1050	50

Comparing AR and MR

It should be noted that average revenue is calculated for each and every given level of sale of the output while marginal revenue is calculated for two successive levels of sale of the output. (This is same as average cost and marginal cost told earlier.)

One important observation: In the example, we can see that if the seller is able to sell successive quantities of output at the given or same price, then AR and MR are equal. This further implies that if the price of the commodity in the market will change for different quantities, then AR and MR will be different from each other.

Example: Price of 1 kg of guava is Rs. 50. The Vendor sold 20 kg of guava in two days. What is his average revenue?

Ans: Total Revenue is $50 \times 20 = \text{Rs} 1000$, when Quantity is 20 kg

So $\text{AR} = 1000/20 = \text{Rs.} 50$

(See that price per kg is Rs. 50. So $\text{AR} = \text{Rs.} 50$)

Example: To continue from the above example – If the vendor could sell 21 kg of guava at the same price then what is the marginal revenue?

Ans: Now $\text{TR} = 50 \times 21 = \text{Rs} 1050$. Earlier $\text{TR} = \text{Rs.} 1000$.

So $\text{MR} = 1050 - 1000 = \text{Rs.} 50$

Example: A shopkeeper sells 10 kg of rice at Rs 30 per kg and 11 kg of rice at Rs 29 per kg. What is the marginal revenue?

Ans: In the first case $\text{TR} = 10 \times 30 = \text{Rs.} 300$

In the second case $\text{TR} = 11 \times 29 = \text{Rs} 319$

So $\text{MR} = 319 - 300 = \text{Rs} 19$



INTEXT QUESTION 8.4

1. What is the difference between average revenue and price of the good?
2. How are total and average revenue related?

8.7 USE OF REVENUE AND COST

Both revenue and cost are important concepts in economics. While cost is the expenditure incurred to produce a good or service during the production process, revenue is the money received by the producer by selling that good or service. So cost symbolizes sacrifice made by the producer and revenue symbolizes gains for the producer. By getting the required revenue from sale of the commodity the producer is able to recover the cost he has incurred earlier. In that case we say that the producer earned his due share which is called profit. **We can define that profit is the surplus of revenue over the total cost of production.**

$$\text{Profit} = \text{Total Revenue} - \text{Total Cost.}$$



INTEXT QUESTION 8.5

1. If output is 50 units, price per unit is Rs.10, fixed cost is Rs.110 and variable cost is Rs.150, what is the amount of profit?



WHAT YOU HAVE LEARNT

- Cost is the expenditure incurred to produce a good or service during the production process.
- Fixed cost is defined as the expenditure on the fixed factors of production.
- Variable cost is the expenditure on variable factors.
- Explicit cost is defined as the money expenditure incurred by the producer for production.
- Implicit cost is the cost of self supplied factors.
- Average Cost is the cost per unit of output.
- Revenue is the amount a person receives by selling certain quantity of the commodity at a given price.



Notes



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- Average Revenue = Total Revenue/Quantity.
- Marginal Revenue is the change in total revenue due to change in the sale of quantity of output by one unit.
- Profit = Total Revenue – Total Cost.



TERMINAL EXERCISE

1. Give the difference between fixed and variable cost?
2. Give the difference between explicit and implicit cost?
3. How can you calculate total and average cost?
4. How can you calculate total and average revenue?
5. Give the difference between revenue and cost? Why the producer must calculate them?



ANSWERS TO INTEXT QUESTIONS

Intext Questions 8.1

1. Land – Rent
Labour – wages
Services of tractor – Rent
and payment for raw materials
2. Producer bears the cost

Intext Questions 8.2

1. $TC = TFC + TVC$
 $= 180 + 300$
 $= \text{Rs } 480$

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

$$= \frac{480}{48} = \text{Rs } 10 \text{ per unit}$$

2. Explicit cost is defined as the money expenditure incurred by the producer on production of a good.



$$\begin{aligned}
 3. \quad TC &= 180 + 307 \\
 &= \text{Rs. } 487 \\
 MC &= 487 - 480 \\
 &= \text{Rs. } 7
 \end{aligned}$$

Intext Questions 8.3

$$1. \quad \text{Total revenue} = 100 \text{ kg} \times \text{Rs } 15 = \text{Rs } 1500$$

Intext Questions 8.4

1. Average revenue is revenue per unit

price of the good is the amount received by the seller for each unit of the commodity

However, $AR = \text{Price}$

$$2. \quad TR = Q \times P$$

$$\begin{aligned}
 AR &= \frac{TR}{Q} \\
 &= \frac{Q \times P}{Q} \\
 &= P
 \end{aligned}$$

So, average revenue = Price

Intext Questions 8.5

$$1. \quad \text{Profit} = \text{Rs } 240$$

MODULE-4

DISTRIBUTION OF GOODS AND SERVICES

9. Demand
10. Supply
11. Determination of Price and Quantity
12. Market
13. Role of Government in Determination of Price and Quantity

