

III. MARGINAL & INCREMENTAL COSTS

1. Definition

1.1 Incremental cost is closely related to the economist's marginal cost. Marginal cost may be defined as the addition to the total cost resulting from producing one more unit. Incremental cost may be defined as the addition to total cost resulting from a particular decision. Both are concerned with changes in total cost, say increase or decrease in total costs that result from producing and distributing additional or fewer units of a product, or from a change in the method of production or distribution such as the use of improved machinery, addition of a product or territory, or selection of an additional sales channel. They are anticipated costs and refer to future operations. The term incremental cost is more widely used in business for reasons that are clear. First of all, businesses are concerned with more than increasing or decreasing the level of output. For example, in purchasing a new labour-saving machine, what is wanted is a measurement of the prospective savings in cost (reduction in total cost) resulting from that machine. Secondly, even if the issue is one of increasing or decreasing output, businessmen normally think in terms of increases or decreases of a substantial percentage rather than by a single unit. The incremental cost concept is a more flexible tool, though in some respects a cruder one than marginal costs.

1.2 Marginal or incremental cost represents the net effect of the choice of alternatives. If we are referring to output, the incremental cost of added production is the difference between the cost of producing the larger output and the cost of producing the previous smaller output. Similarly, if we are referring to sales, the incremental cost of selling an additional item is the difference between the cost of selling with the

item included and the cost of selling without it. Incremental cost refers to the costs of alternative courses of actions in the context of the installed capacity and resources already available. Many a time, managements are confronted with the problems of producing or selling an extra item, appointing an additional salesman, or covering an additional sales territory, etc.

In such situations, in order to arrive at correct decisions, they will have to take into account the existing resources and also the fixed costs and calculate the additional cost on account of producing or selling an extra item or covering an extra sales territory. If we apply the traditional cost accounting method, it will lead to a misleading picture as it will take into account all the existing and the fixed costs and arrive at a unit cost of production, which in all probability will be more than the incremental cost. The marginal cost concept rectifies this defect and gives only the additional cost on account of producing or selling an additional item. We shall illustrate \ this point by taking a simple example.

2. Application

2.1 The types of business problems to which the incremental cost concept is applicable are without number. A few illustrations will suffice to indicate the wide applicability of the concept.

- (i) A firm with idle facilities might investigate the possibility that a special order at below the usual price could cover the incremental costs and make a contribution to overhead and profit. In evaluating such a proposal, the management should make certain that the additional revenue from such a sale is itself entirely incremental, and does not damage the regular sales of the company. Again, such business should not be taken if there are more profitable ways of using the facilities.

Example:

	With existing production (10,000 units)		Additional Production (1,000 units)
Fixed cost	Rs. 30,000		
Variable cost	Rs. 60,000	Rs.	6,000
Total cost	<u>Rs.90,000</u>	Rs.	<u>6,000</u>
Cost per unit	Rs.9		Rs.6

The additional production is not charged fixed costs as the same is expected to be absorbed by the initial or existing production. Increment cost of additional production of 1,000 units is the variable cost of Rs. 6,000

only, i.e. Rs. 6 per unit. The factory cannot, therefore, sell at a price lower than Rs. 6 per unit. In other words, it is worthwhile for the unit to go in for additional production only if the latter can fetch a price above Rs. 6 per unit.

- (ii) A firm considering a reduction in price should compare the incremental cost of the additional output it will sell with the additional revenue, taking into account that some revenue will be lost through the reduction in price itself.
- (iii) A passenger airline with the idle space on many of its planes might consider whether some cargo shipped in that idle space would bring in added revenue which would more than cover the incremental costs involved. In such a case, the incremental costs should be low, because the planes will fly anyway and there will be few added costs in including the cargo.
- (iv) A company facing the decision to make or buy, that is, to manufacture a part itself or buy from outside should compare the incremental cost of manufacture (rather than the full cost) with the outside price. Other considerations would enter into such a decision of course, such as supplier dependability, and company know how, but the relevant cost concept is the incremental one.
- (v) An Example:

A unit manufacturing table fans is buying the fan guards from outside at Rs. 30 per set. Is it economical to make this item in the unit itself, and if so what will be the cost?

Fan guards

Direct material	Rs. 10
Direct labour	Rs. 8
Other variable expenses	Rs. 7
Increment cost	Rs. 25

Fixed overhead is Rs. 1,000, but this is not charged to the fan guards as these expenses are expected to have been already recovered. The incremental cost of making fan guards is therefore Rs. 25 per piece which is Rs. 5 lower than the market price. It would be advisable for the unit, therefore, to take up the manufacture of this item also.

- (vi) Similarly, when you have to make decisions regarding the extra use of transport, crane or material handling equipment, space or scrap utilisa-

tion, byproduct development, optimum utilisation of plant capacity (by selling below the conventional cost price in slack season)- decisions on all these can be taken only on the basis of incremental costs.

- (vii) A utility attempting to sell off-peak services (it being a serious problem in most utilities that consumption of such services is not steady, leaving considerable idle capacity) should investigate whether special rates or other attractions to off-peak use will bring in revenues which will more than cover incremental costs .
- (viii) *Process Installation:* One other decision which managements are called upon to make oftentimes is whether to install a new process required for making a product, or get the product processed outside. Here again the decision whether to have the process or not will have to be based on the increment cost principle. Let us illustrate this by an example: A light engineering workshop manufactures all its components, and processes them within the plant except for heat-treatment which is got done outside. A little thinking on the part of the management reveals that space is available in the factory for setting up this process also, the foreman and a few workers know the heat-treatment techniques well, and could do this work without causing dislocation of their regular jobs. The installation of the process, however, would necessitate some additional equipment. Management has to decide whether to install the heat-treatment process within the plant, or continue to have it done outside.
- (ix) In this case, the incremental costs are the costs of equipment, power, raw materials and chemicals associated with the heat-treatment. This has to be compared against the cost of the heat-treatment outside, transportation cost, handling cost, cost of placing an order, and the cost of lost time in case deliveries are irregular. It may well be that the incremental cost of the process may be less than getting the work done outside. If the management had worked out the average unit cost of heat-treatment within the factory, it would have shown a higher cost which would have led to an incorrect management decision.
- (x) *How to charge new or additional production:* Very often plants are set up, equipments and machineries are purchased, production capacities are built up, the costs of which are recovered over a period of years. The burden of the fixed cost ceases to exist at the end of this period and an enterprise is left with a number of assets in good working condition. If a new production programme has to be undertaken at the end of this period, how much will it cost the management? And given a sales price, how much profit will the firm make? Since the burden of the fixed cost has already been take care of in the initial plant output over a period of

Years, the cost of undertaking new production would be basically variable cost *plus* any other element of costs for developing such production programmer.

Example:

	Initial production Rs.	New producti Rs.
Sales	1,00,000	10,00
Variable cost	60,000	6,000
Marginal income	<u>40,000</u>	<u>4,000</u>
Fixed costs	30,000	Nil
Profit	<u>10,000</u>	<u>4,000</u>

This statement shows that the new production is charged with the variable cost only, with the initial production absorbing all fixed costs. The increment cost of new production is, therefore, Rs. 6,000. The new production could be sold at any price above Rs. 6,000. This example shows that so long the incremental income exceeds the incremental costs, it would be worthwhile to go in for such production, even though on the average cost analysis this may appear to be a loss.

- (xi) *Can we sell below the cost price and still make a profit?* This proposition appears to be somewhat unwise, but the increment cost analysis will show that it is not. Many industrial units at times find themselves having excess capacity of both men and machines, and would be glad to accept orders at 'lower prices' or be prepared to sell products at a price lower than the conventional unit cost price in order to keep the plant running to full capacity. (There are in fact decisions in favor of optimum plant utilisation). Such situations may arise, for instance, when units are working below plant capacity due to shortage of raw materials or during slack seasons. Let us illustrate our point by an example:

A corner space of a factory is not in current use. It is contemplated make use of the corner space, and produce a new item. The average rent of the unused corner space is Rs. 6,000 per year during which period 10,000 units of the new item can be made. Other fixed costs (already existing) for the quantity works out to be Rs. 6,000 *plus* Rs. 3,000 for extra equipment, supervision, etc. The variable cost by way of extra labour, material, power, etc., works out to Rs. 2.50 per unit. Thus the total cost of 10,000 units would be Rs. 40,000, i.e. Rs. 4

per unit. The incremental cost in this case would amount to only Rs. 3,000 as cost of extra equipment *plus* Rs. 25,000 as variable cost making a total of Rs. 28,000 for manufacturing 10,000 units, i.e. Rs. 2.80 per unit. Thus, even though the average cost as per conventional pattern is Rs. 4 per unit, the firm would still make a profit if the goods are sold at Rs. 3 per unit (i.e. below the conventional cost price which is Rs. 4 per unit) so long as the price exceeds the incremental cost of Rs. 2.80 per unit.

Various Cost Concepts Important In Business Decisions

Concept	Its Antithesis	Purpose of the distinction
Implicit costs	Explicit costs	To assure full recognition of opportunity costs whether or not explicitly recognised in the accounts.
Variable costs	Fixed costs	To separate those costs that vary with output from those that do not.
Incremental costs	Sunk costs	To separate those costs affected by the decision from those which run on as before.
Direct costs	Overhead costs	To separate those costs which can be directly attributed to particular products from those which pertain to broader administrative units.

