

Lesson-14

Marginal Costing

Learning Objectives

- To understand the meanings of marginal cost and marginal costing
- To distinguish between marginal costing and absorption costing
- To ascertain income under both marginal costing and absorption costing

Introduction

The costs that vary with a decision should only be included in decision analysis. For many decisions that involve relatively small variations from existing practice and/or are for relatively limited periods of time, fixed costs are not relevant to the decision. This is because either fixed costs tend to be impossible to alter in the short term or managers are reluctant to alter them in the short term.

Suppose a business occupies premises to carry out its activities. There is a downturn in demand for the service which the business provides and it would be possible to carry on the business from smaller, cheaper premises. Does this mean that the business will sell its old premises and move on to new ones overnight? Clearly, it cannot happen. This is partly because it is not usually possible to find a buyer for the premises at a very short notice and it may be difficult to move premises quickly where there is, let us say, delicate equipment to be moved.

Apart from external constraints on the speed of move, the management may feel that the downturn might not be permanent. Thus, it would be reluctant to take such a dramatic step. It would mean to deny itself an opportunity of benefit from a possible revival of trade. The business premises may provide an example of an area of one of the more inflexible types of cost but most of the fixed costs tend to be broadly similar in this context. So, what we really see is that more than the fixed cost, what really influences decision making in the short-run is the variable cost which is actually synonymous with the marginal cost.

In this lesson, we will study marginal costing as a technique quite distinct from absorption costing.

Theory of Marginal Costing

The theory of marginal costing as set out in “A report on Marginal Costing” published by CIMA, London is as follows:

In relation to a given volume of output, additional output can normally be obtained at less than proportionate cost because within limits, the aggregate of certain items of cost will tend to remain fixed and only the aggregate of the remainder will tend to rise proportionately with an increase in output. Conversely, a decrease in the volume of output will normally be accompanied by less than proportionate fall in the aggregate cost.

The theory of marginal costing may, therefore, be understood in the following two steps:

1. If the volume of output increases, the cost per unit in the normal circumstances reduces. Conversely, if an output reduces, the cost per unit increases. If a factory produces 1000 units at a total cost of Rs.3,000 and if by increasing the output by one unit the cost goes upto Rs.3,002, the marginal cost of additional output will be Rs.2.
2. If an increase in output is more than one, the total increase in cost divided by the total increase in output will give the average marginal cost per unit. If, for example, the output is increased to 1020 units from 1000 units and the total cost to produce these units is Rs. 1,045, the average marginal cost per unit is Rs.2.25. It can be described as follows:

$$\frac{\text{Additional cost}}{\text{Additional units}} = \frac{\text{Rs. 45}}{20} = \text{Rs.2.25}$$

The ascertainment of marginal cost is based on the classification and segregation of cost into fixed and variable cost. In order to understand the marginal costing technique, it is essential to understand the meaning of marginal cost.

Marginal cost means the cost of the marginal or last unit produced. It is also defined as the cost of one more or one less unit produced besides existing level of production. In this connection, a unit may mean a single commodity, a dozen, a gross or any other measure of goods.

For example, if a manufacturing firm produces X unit at a cost of Rs. 300 and X+1 units at a cost of Rs. 320, the cost of an additional unit will be Rs. 20 which is marginal cost. Similarly if the production of X-1 units comes down to Rs. 280, the cost of marginal unit will be Rs. 20 (300–280).

The marginal cost varies directly with the volume of production and marginal cost per unit remains the same. It consists of prime cost, i.e. cost of direct materials, direct labor and all variable overheads. It does not contain any element of fixed cost which is kept separate under marginal cost technique.

Marginal costing may be defined as the technique of presenting cost data wherein variable costs and fixed costs are shown separately for managerial decision-making. It should be clearly understood that marginal costing is not a method of costing like process costing or job costing. Rather it is simply a method or technique of the analysis of cost information for the guidance of management which tries to find out an effect on profit due to changes in the volume of output.

In this connection, a management accountant is a navigator and a Chief Executive Officer (CEO) is the captain of a ship. A management accountant provides necessary relevant information through various periodical reports to management. With the help of these reports, management becomes able to feel the financial and operational pulses of the organization.

There are different phrases being used for this technique of costing. In UK, marginal costing is a popular phrase whereas in US, it is known as direct costing and is used in place of marginal costing. Variable costing is another name of marginal costing.

Marginal costing technique has given birth to a very useful concept of contribution. It represents the difference between sales and marginal cost.

Contribution may be defined as the profit before the recovery of fixed costs. Thus, contribution goes toward the recovery of fixed cost and profit, and is equal to fixed cost plus profit ($C = F + P$). In case a firm neither makes profit nor suffers loss, contribution will be just equal to fixed cost ($C = F$).

The concept of contribution is very useful in marginal costing. It has a fixed relation with sales. The proportion of contribution to sales is known as P/V ratio which remains the same under given conditions of production and sales.

Features of Marginal Costing

The main features of marginal costing are as follows:

1. Cost Classification

The marginal costing technique makes a sharp distinction between variable costs and fixed costs. It is the variable cost on the basis of which production and sales policies are designed by a firm following the marginal costing technique.

2. Inventory Valuation

Under marginal costing, inventory for profit measurement is valued at marginal cost. It is in sharp contrast to the total unit cost under absorption costing method.

3. Marginal Contribution

Marginal costing technique makes use of marginal contribution for marking various decisions. Marginal contribution is the difference between sales and marginal cost. It forms the basis for judging the profitability of different products or departments.

Advantages and Disadvantages of Marginal Costing Technique

Advantages

1. Marginal costing is simple to understand.
2. By not charging fixed overhead to cost of production, the effect of varying charges per unit is avoided.
3. It prevents the illogical carry forward in stock valuation of some proportion of current year's fixed overhead.
4. The effects of alternative sales or production policies can be more readily available and assessed, and decisions taken would yield the maximum return to business.
5. It eliminates large balances left in overhead control accounts which indicate the difficulty of ascertaining an accurate overhead recovery rate.
6. Practical cost control is greatly facilitated. By avoiding arbitrary allocation of fixed overhead, efforts can be concentrated on maintaining a uniform and consistent marginal cost. It is useful to various levels of management.
7. It helps in short-term profit planning by breakeven and profitability analysis, both in terms of quantity and graphs. Comparative profitability and performance between two or more products and divisions can easily be assessed and brought to the notice of management for decision making.

Disadvantages

1. The separation of costs into fixed and variable is difficult and sometimes gives misleading results.
2. Normal costing systems also apply overhead under normal operating volume and this shows that no advantage is gained by marginal costing.
3. Under marginal costing, stocks and work in progress are understated. The exclusion of fixed costs from inventories affect profit, and true and fair view of financial affairs of an organization may not be clearly transparent.
4. Volume variance in standard costing also discloses the effect of fluctuating output on fixed overhead. Marginal cost data becomes unrealistic in case of highly fluctuating levels of production, e.g., in case of seasonal factories.
5. Application of fixed overhead depends on estimates and not on the actuals and as such there may be under or over absorption of the same.
6. Control affected by means of budgetary control is also accepted by many. In order to know the net profit, we should not be satisfied with contribution and hence, fixed overhead is also a valuable item. A system which ignores fixed costs is less effective since a major portion of fixed cost is not taken care of under marginal costing.
7. In practice, sales price, fixed cost and variable cost per unit may vary. Thus, the assumptions underlying the theory of marginal costing sometimes becomes unrealistic. For long term profit planning, absorption costing is the only answer.

Presentation of Cost Data under Marginal Costing and Absorption Costing

Marginal costing is not a method of costing but a technique of presentation of sales and cost data with a view to guide management in decision-making.

The traditional technique popularly known as total cost or absorption costing technique does not make any difference between variable and fixed cost in the calculation of profits. But marginal cost statement very clearly indicates this difference in arriving at the net operational results of a firm.

Following presentation of a hypothetical case shows the difference between the presentation of information according to absorption and marginal costing techniques:

Absorption Cost Statement		
	(Production = 100 units)	(Cost/Selling Price Per Unit)
Direct materials	2,500	25
Direct wages	1,800	18
Direct chargeable expenses	400	4
	<hr/>	<hr/>
Prime cost	4,700	47
Add: Factory overheads	1,100	11
	<hr/>	<hr/>
Factory cost	5,800	58
Add: Administrative overheads	<u>1,000</u>	<u>10</u>
	<hr/>	<hr/>
Cost of production	6,800	68
Add: Selling and distribution overheads	1,160	11.60
	<hr/>	<hr/>
Cost of sales	7,960	79.60
Profit	2,840	28.40
	<hr/>	<hr/>
Selling price	<u>10,800</u>	<u>108.00</u>

Therefore, selling price per unit is $10,800/100 = \text{Rs. } 108$

For the same example, marginal cost statement will be as follows:

Marginal Cost Statement		
(Production = 100 Units)		
Particulars	Variable Cost	Fixed Cost
Sales (A)	10,800	
Direct materials	2,500	-----

Direct wages	1,800	-----
Direct chargeable expenses	400	-----
	<hr/>	<hr/>
Prime cost	4,700	-----
Factory overheads (70% variables)	<u>770</u>	<u>330</u>
Factory cost	5,470	330
Administration (80% variable)	<u>928</u>	<u>232</u>
Cost of production	6,398	562
 Selling and distribution On cost (80% variable)	 800	 200
	<hr/>	<hr/>
Total variable cost (B)	7,198	762
	<hr/>	<hr/>
Contribution (A-B)	3,602	
	<hr/>	
Less fixed cost	762	
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Profit	2,840	
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It could be observed that since marginal cost varies directly with production, the marginal cost per unit of output remains the same for all levels of output. It means the variation in the levels of output does not affect the variable cost per unit of output.

A similar simple example is as follows:

Absorption Cost Statement (Production = 100 units)

Direct materials	2,500
Direct wages	1,800
Direct chargeable expenses	400
	<hr/>
Prime cost	4,700
Add: Factory overheads	1,100
	<hr/>
Factory cost	5,800
Add: Administrative, selling and distribution overheads	1,160
	<hr/>
Total cost	6,960
Profit	1,740
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Selling price	8,700
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Marginal Cost Statement
(Production = 100 units, Sales = 8,700)

Particulars	Variable Cost	Fixed Cost
Direct materials	2,500	-----
Direct wages	1,800	-----
Direct chargeable expenses	400	-----
	<hr/>	<hr/>
Prime cost	4,700	-----
Factory overheads (7% variables)	770	330
Factory cost	5,470	330
Administration, selling and distribution on cost (80% variable)	928	232
	<hr/>	<hr/>
Total cost	6,398	562
	<hr/>	<hr/>
Contribution (S - V)	2,302	
Less fixed cost	562	
	<hr/>	
Profit	1,740	
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The total marginal cost of a volume of output can be calculated simply by multiplying the volume of output with marginal cost per unit. The fixed cost per unit decreases along with the increase in volume of production within the existing scale of production.

This can be understood with the help of the following cost data:

Particulars	Volume of Production		
	100 Units Rs.	125 Units Rs.	150 Units Rs.
Materials	2,500	3,125	3,750
Labor	1,800	2,250	2,700
Direct charges	400	500	600
Variable factory overheads	770	962.50	1,155
Variable administration, selling and distribution expenses	928	1,160	1,392
	<hr/>	<hr/>	<hr/>
Total variable cost	6,398	7,997.50	9,597
	<hr/>	<hr/>	<hr/>

Variable cost per unit	63.98	63.98	63.98
Fixed cost	562	562	562
Fixed cost per unit	5.62	4.50	3.75
Total cost (V+F)	6,960	8559.50	10,159
Cost per unit	69.60	68.48	67.73

The cost data contained in the above table clearly shows that the variable cost per unit remains constant, i.e. Rs. 63.98, whether the firm produces 100 units, 125 units or 150 units. But the fixed cost per unit decreases with every increase in the production. For an initial production of 100 units, the fixed cost per unit is Rs. 5.62 but it goes down to Rs. 4.50 and Rs. 3.75 for a production of 125 and 150 units respectively.

As worked out in the above table, the total cost per unit also decreases with an increase in production. This is simply because of the existence of fixed cost which gets spread over more number of units on an increase in the volume of output.

Marginal Costing versus Absorption Costing

After knowing the two techniques of marginal costing and absorption costing, we have seen that the net profits are not the same because of the following reasons:

1. Over and Under Absorbed Overheads

In absorption costing, fixed overheads can never be absorbed exactly because of difficulty in forecasting costs and volume of output. If these balances of under or over recovery are not written off to costing profit and loss account, the actual amount incurred is not shown in it. In marginal costing, however, the actual fixed overhead incurred is wholly charged against contribution and hence, there will be some difference in net profits.

2. Difference in Stock Valuation

In marginal costing, work in progress and finished stocks are valued at marginal cost, but in absorption costing, they are valued at total production cost. Hence, profit will differ as different amounts of fixed overheads are considered in two accounts.

The profit difference due to difference in stock valuation is summarized as follows:

- When there is no opening and closing stocks, there will be no difference in profit.
- When opening and closing stocks are same, there will be no difference in profit, provided the fixed cost element in opening and closing stocks are of the same amount.
- When closing stock is more than opening stock, the profit under absorption costing will be higher as comparatively a greater portion of fixed cost is included in closing stock and carried over to next period.

- d. When closing stock is less than opening stock, the profit under absorption costing will be less as comparatively a higher amount of fixed cost contained in opening stock is debited during the current period.

Limitations of Absorption Costing

The following are the criticisms against absorption costing:

1. You might have observed that in absorption costing, a portion of fixed cost is carried over to the subsequent accounting period as part of closing stock. This is an unsound practice because costs pertaining to a period should not be allowed to be vitiated by the inclusion of costs pertaining to the previous period and vice versa.
2. Further, absorption costing is dependent on the levels of output which may vary from period to period, and consequently cost per unit changes due to the existence of fixed overhead. Unless fixed overhead rate is based on normal capacity, such changed costs are not helpful for the purposes of comparison and control.

The cost to produce an extra unit is variable production cost. It is realistic to the value of closing stock items as this is a directly attributable cost. The size of total contribution varies directly with sales volume at a constant rate per unit. For the decision-making purpose of management, better information about expected profit is obtained from the use of variable costs and contribution approach in the accounting system.

Problem

From the following data, compute the profit under (a) marginal costing and (b) absorption costing. Also, reconcile the difference in profit.

	Rs.
Selling price (per unit)	10
Variable cost	5
Fixed cost	2

Normal volume of production is 26,000 units per quarter.

The opening and closing stocks consisting of both finished goods and equivalent units of work in progress are as follows:

	Qr. I	Qr. II	Qr. III	Qr. IV	Total
Opening stock (units)	—	—	6,000	2,000	—
Production	26,000	30,000	24,000	30,000	1,10,000
Sales	26,000	24,000	28,000	32,000	1,10,000
Closing stock	—	6,000	2,000	—	—

Solution

(a) Statement of Profit under Absorption Costing

	Qr. I Rs.	Qr. II Rs.	Qr. III Rs.	Qr. IV Rs.	Total Rs.
Sales (@Rs. 10)	2,60,000	2,40,000	2,80,000	3,20,000	11,00,000
Marginal cost--					
a. Opening stock @ Rs.7			42,000	14,000	
b. Production @ Rs.7	1,82,000	2,10,000	1,68,000	2,10,000	
Total	1,82,000	2,10,000	2,10,000	2,24,000	8,26,000
Less: Closing stock @ Rs.7	—	42,000	14,000	—	—
Cost of goods sold	1,82,000	1,68,000	1,96,000	2,24,000	7,70,000
Profit (before adjustment of under or over absorbed fixed cost)	78,000	72,000	84,000	96,000	3,30,000
Add: Over absorbed fixed cost (production above normal capacity x Rs. 2)	—	8000	—	8000	16,000
Less: Under absorbed fixed cost [(26000 – 24000) x 2]	—	—	4000	—	4000
Profit	78,000	80,000	80,000	1,04,000	3,42,000

(b) Statement of Profit under Marginal Costing

	Qr. I Rs.	Qr. II Rs.	Qr. III Rs.	Qr. IV Rs.	Total Rs.
Sales (@ 10Rs.)	2,60,000	2,40,000	2,80,000	3,20,000	11,00,000
Marginal cost--					
a. Opening stock @ Rs.5	--	--	30,000	10,000	--
b. Production @ Rs.5	1,30,000	1,50,000	1,20,000	1,50,000	5,50,000
Total	1,30,000	1,50,000	1,50,000	1,60,000	5,50,000
Less: Closing stock @ Rs.5	—	30,000	10,000	—	—
Cost of goods sold	1,30,000	1,20,000	1,40,000	1,60,000	5,50,000
Contribution	1,30,000	1,20,000	1,40,000	1,60,000	5,50,000
Less: Fixed cost	52,000	52,000	52,000	52,000	2,08,000
Profit	78,000	68,000	88,000	1,08,000	3,42,000

(c) Reconciliation of Profit

	Qr. I	Qr. II	Qr. III	Qr. IV	Total
	Rs.	Rs.	Rs.	Rs.	Rs.
Profit as per absorption costing	78,000	80,000	80,000	1,04,000	3,42,000
Less: Higher fixed cost in closing stock (6000 x 2)	—	12,000	—	—	12,000
Add: Higher fixed cost in opening					
Qr. III (6000 – 2000) x 2	—	—	8000	4000	12,000
Qr. IV 2000 x 2					
Profit as per marginal costing	78,000	68,000	88,000	1,08,000	3,42,000

Summary

Marginal cost is the cost management technique for the analysis of cost and revenue information and for the guidance of management. The presentation of information through marginal costing statement is easily understood by all managers, even those who do not have preliminary knowledge and implications of the subjects of cost and management accounting.

Absorption costing and marginal costing are two different techniques of cost accounting. Absorption costing is widely used for cost control purpose whereas marginal costing is used for managerial decision-making and control.

Questions

1. Is marginal costing and absorption costing same?
2. What is presentation of cost data? Answer with suitable example.

Activity

Visit an organization to experience the application and implication of marginal costing techniques in real life situation. You are also advised to familiarize yourself with case studies of different industries producing different products.