Marginal Costing

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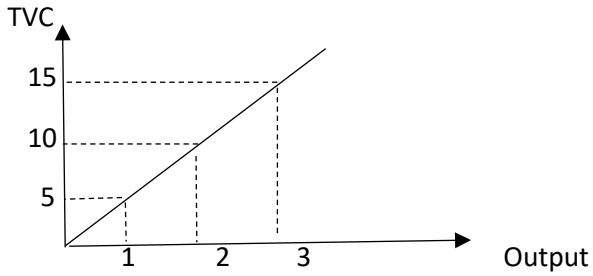
Marginal Costing: Marginal Costing is a costing technique wherein the marginal cost, i.e. variable cost is charged to units of cost, while the fixed cost for the period is completely written off against the contribution.

According to the Institute of Cost and Management Accountants, London, "Marginal Costing is the ascertainment, by differentiating between fixed costs and variable costs, of marginal cost and of the effect of profit of changes in the volume or type of output."

1. In marginal costing technique total cost is divided into variable and fixed component.
2. Variable cost is increase or decrease in proportion to increase or decrease in output.

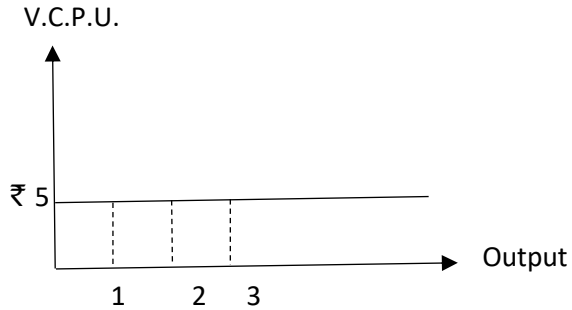
Production	Expense
1 unit	₹ 5
2 units	₹ 10
3 units	₹ 15



3. Variable cost per unit of output remains constant.

$$\text{Variable cost per unit} = \frac{\text{TVC}}{\text{Q}}$$

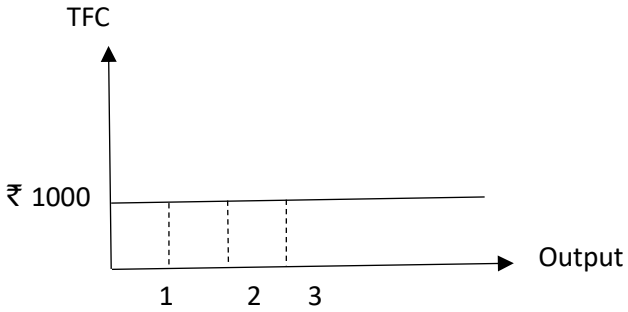
Production	Variable Cost	V.C.P.U.
1 unit	₹ 5	₹ 5/1 = ₹ 5
2 units	₹ 10	₹ 10/2 = ₹ 5
3 units	₹ 15	₹ 15/3 = ₹ 5



4. Fixed cost remains constant in aggregate amount and do not vary with change (increase or decrease) in production upto a particular level of output.

Example:

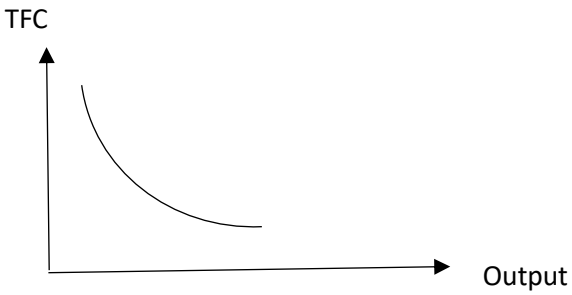
Production	Expense
1 unit	₹ 1000
2 units	₹ 1000
5 units	₹ 1000
10 units	₹ 1000



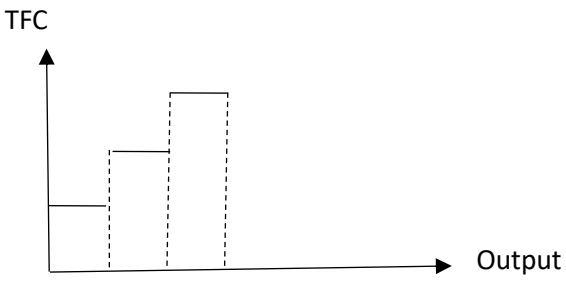
5. Fixed cost per unit decrease with the increase in production and increases with the decrease in production.

$$\text{Fixed cost per unit} = \frac{\text{TFC}}{\text{Q}}$$

Production	Fixed Cost	F.C.P.U.
1 unit	₹ 1000	₹ 1000/1 =₹ 1000
2 units	₹ 1000	₹ 1000/2 =₹ 500
5 units	₹ 1000	₹ 1000/5 =₹ 200
10 units	₹ 1000	₹ 1000/10 =₹ 100



6. Beyond a particular level fixed cost will change also.

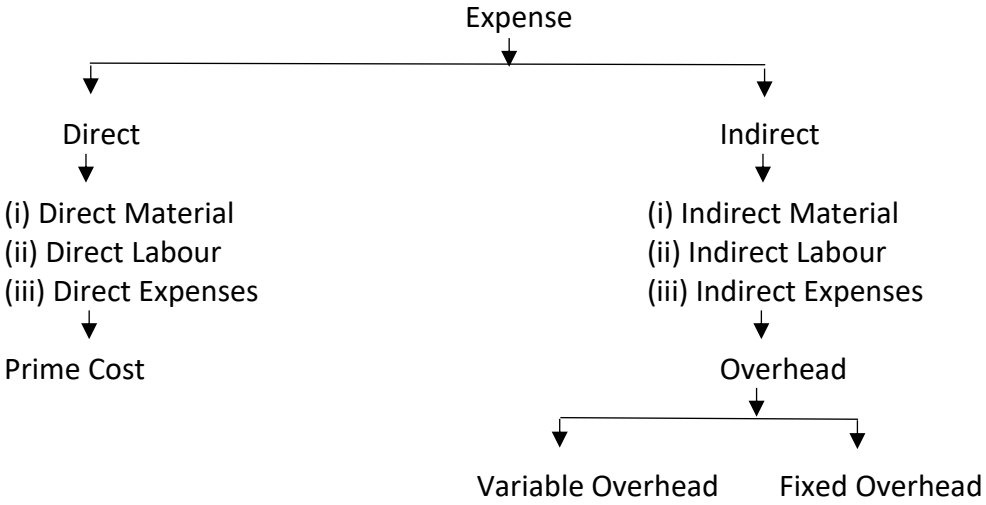


7. Marginal costing excludes fixed cost. It helps in decision-making only on the basis of variable cost.

8. Marginal cost is change in total cost due to change in production by one unit.

	1 Unit	2 Units	3 Units	50 Units	51 Units
VC @ ₹ 5	₹ 5	₹ 10	₹ 15	₹ 250	₹ 255
FC	₹ 100	₹ 100	₹ 100	₹ 100	₹ 100
Total Cost	₹ 105	₹ 110	₹ 115	₹ 350	₹ 355

9. Variable cost includes prime cost and variable overhead.



Marginal cost = Prime cost + All variable Overhead

Marginal cost = Total cost – All fixed overhead

Example:

	50 Units	51 Units
VC @ ₹ 5	₹ 250	₹ 255
FC	₹ 100	₹ 100
Total Cost	₹ 350	₹ 355

Change in total cost = ₹ 5

Therefore, marginal cost = ₹ 5

Example:

	50 Units	60 Units
VC @ ₹ 5	₹ 250	₹ 300
FC	₹ 100	₹ 100
Total Cost	₹ 350	₹ 400

Change in total cost = ₹ 50

Therefore, marginal cost = $\frac{\Delta TC}{\Delta Q} = \frac{50}{10} =$ ₹ 5

We can say that change in total cost is due to change in variable cost only at different level of production.

Variable cost per unit = $\frac{Change\ in\ total\ cost}{Change\ in\ quantity} = \frac{\Delta TC}{\Delta Q}$

10. Computation of Profit:

Sale	×××
-VC	×××
Contribution	×××
-FC	×××
Profit	×××

- Sale less variable cost is called contribution towards the recovery of fixed cost.

  Contribution = Sale – Variable Cost

  Sale = Variable Cost + Contribution

- Variable cost is charged to production cost.
- Fixed cost is charged to profit and loss account for the period hence also called as period cost.

  Profit = Contribution – Fixed Cost

  Contribution = Fixed Cost + Profit

	0 Unit	1 Unit	2 Units	10 Units	50 Units	70 Units	100 Units
Sale @₹1000	0	₹1,000	₹2,000	₹10,000	₹50,000	₹70,000	₹1,00,000
-VC @₹800	0	₹800	₹1,600	₹8,000	₹40,000	₹56,000	₹80,000
Contribution	0	₹200	₹400	₹2,000	₹10,000	₹14,000	₹20,000
-FC	₹10,000	₹10,000	₹10,000	₹10,000	₹10,000	₹10,000	₹10,000
Profit/(Loss)	(₹10,000)	(₹9,800)	(₹9,600)	(₹8,000)	0	₹4,000	₹10,000

Break-even point is that level of sale at which there is no profit or loss.

At break-even sales contribution is exactly equal to fixed cost.

Break Even Sales (In Units) = $\frac{\text{Total Fixed Cost}}{\text{Contribution per unit}} = \frac{10{,}000}{200} = 50\ \text{Units}$

11. Variable Cost Ratio:

$$\text{Variable Cost Ratio} = \frac{\text{Variable Cost}}{\text{Sales}} \times 100$$

	1 Unit	6 Units
Sale @₹1000	₹1,000	₹6,000
-VC @₹800	₹800	₹4,800
Contribution	₹200	₹1,200

(a) $\text{Variable Cost Ratio} = \frac{\text{Total Variable Cost}}{\text{Total Sales}} \times 100 = \frac{4{,}800}{6{,}000} \times 100 = 80\%$

(b) $\text{Variable Cost Ratio} = \frac{\text{Variable Cost Per Unit}}{\text{Sale Price Per Unit}} \times 100 = \frac{800}{1{,}000} \times 100 = 80\%$

(c) $\text{Variable Cost Ratio} = \frac{\text{Change in Total Variable Cost}}{\text{Change in Total Sales}} \times 100 = \frac{4{,}000}{5{,}000} \times 100 = 80\%$

(d) $\text{Variable Cost Ratio} = \frac{\text{Change in Total Cost}}{\text{Change in Total Sales}} \times 100$

12. Contribution Ratio/Profit-Volume Ratio (PV Ratio):

$$\text{Contribution Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

	1 Unit	6 Units
Sale @₹1000	₹1,000	₹6,000
-VC @₹800	₹800	₹4,800
Contribution	₹200	₹1,200

(a) $\text{Contribution Ratio} = \frac{\text{Total Contribution}}{\text{Total Sales}} \times 100 = \frac{1{,}200}{6{,}000} \times 100 = 20\%$

(b) $\text{Contribution Ratio} = \frac{\text{Contribution Per Unit}}{\text{Sale Price Per Unit}} \times 100 = \frac{200}{1{,}000} \times 100 = 20\%$

(c) $\text{Contribution Ratio} = \frac{\text{Change in Total Contribution}}{\text{Change in Total Sales}} \times 100 = \frac{1{,}000}{5{,}000} \times 100 = 20\%$

(d) $\text{Contribution Ratio} = \frac{\text{Change in Profit}}{\text{Change in Total Sales}} \times 100$

13. Break-Even Sales (BES):

$$\text{Break-Even Sales (In Units)} = \frac{\text{Total Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{Break-Even Sales (In Rupees)} = \text{Break} - \text{Even Sales (In Units)} \times \text{Sale Price Per Unit}$$

$$= \frac{\text{Total Fixed Cost}}{\text{Contribution per unit}} \times \text{Sale Price Per Unit}$$

$$= \frac{\text{Total Fixed Cost}}{\frac{\text{Contribution per unit}}{\text{Sale Price Per Unit}}}$$

$$= \frac{\text{Total Fixed Cost}}{\frac{\text{Contribution per unit}}{\text{Sale Price Per Unit}} \times 100} \times 100$$

$$= \frac{\text{Total Fixed Cost}}{\text{PV Ratio}} \times 100$$

$$\therefore \text{ Break-Even Sales (In Rupees)} = \frac{\text{Total Fixed Cost}}{\text{PV Ratio}} \times 100$$

14. Margin of Safety (MOS):

Sales above the break-even sales is called as margin of safety. Total contribution generated upto break-even sales is just recovery of fixed cost. Contribution generated from sales above break-even sales is profit.

Margin of Safety = Total Sales - Break-Even Sales

$$\text{Margin of Safety (In Units)} = \frac{\text{Profit}}{\text{Contribution per unit}}$$

$$\text{Margin of Safety (In Rupees)} = \frac{\text{Profit}}{\text{PV Ratio}} \times 100$$

15. Sales required for desired profit:

To achieve desired profit contribution should be equals to fixed cost plus profit.

$$\text{Desired Sales (In Units)} = \frac{\text{Fixed Cost+Profit}}{\text{Contribution per unit}}$$

$$\text{Desired Sales (In Rupees)} = \frac{\text{Fixed Cost+Profit}}{\text{PV Ratio}} \times 100$$

Advantages of Marginal Costing:

The advantages of marginal costing are as follows:

- Easy to operate and simple to understand.
- Marginal costing is useful in profit planning; it is helpful to determine profitability at different level of production and sale.
- It is useful in decision making about fixation of selling price, export decision and make or buy decision.
- Break even analysis and P/V ratio are useful techniques of marginal costing.
- Evaluation of different departments is possible through marginal costing.
- By avoiding arbitrary allocation of fixed cost, it provides control over variable cost.
- Fixed overhead recovery rate is easy.
- Under marginal costing, valuation of inventory done at marginal cost. Therefore, it is not possible to carry forward illogical fixed overheads from one accounting period to the next period.
- Since fixed cost is not controllable in short period, it helps to concentrate in control over variable cost.

Limitations of Marginal Costing:

The marginal costing technique has its own limitations.

- Segregation of all costs into fixed and variable costs is very difficult.
- In marginal costing, greater importance is attached to the sales function thereby relegating the production function largely to a secondary position.
- The elimination of fixed costs from the valuation of inventories is illogical since costs are also incurred in the manufacture of goods.
- Pricing decision cannot be based on contribution alone. Sometimes, the contribution will be unrealistic.
- Although the problem of over or under absorption of fixed overheads can be overcome to a certain extent, the same problems still persists with regard to variable overheads.
- The application of the technique is limited in the case of industries in which, according to the nature of business, large stocks have to be carried by way of work-in-progress (e.g. contracting firms).