

# MARGINAL COSTING

mv(1)

• decision making technique :-

a) total cost ascertainment. (b) classification of TC into FC & VC.

(c) use of such info for analysis.

• also called as variable costing or out of pocket costing.

Format of marginal costing :-

Sales xx  
(-) VC (xx)

Profit b4 FC / CONTRIBUTION xx

(-) FC (specific) (x)  
Net profit / contribution x

(-) common FC (x)  
Net profit xx

• assume:- FC - related to period - Costing P & L  
VC - related to product.

## Marginal Cost Equation

$$\text{Sales} - \text{VC} = \text{Contribution} = \text{FC} + \text{Profit}$$

## (b) Break even point (BEP)

- no profit no loss.
- Total sales = total cost.
- Total contribution = total fixed cost.
- no. of units sold  $\times$  contri. P.V = total FC

$$(a) \text{ BEP (units)} = \frac{\text{Total FC}}{\text{contri. P.V}}$$

$$(b) \text{ BEP (Rupees)} = \frac{\text{Total FC}}{\text{PV ratio}}$$

$$\text{BE (sales)} \times \text{S.P.P.V} = \text{Total FC} \times \left\{ \frac{\text{S.P.P.V}}{\text{C.P.V}} \right\} \frac{1}{\text{PV}}$$

$$(c) \text{ BEP (units)} \times \text{S.P.P.V} = \text{BE (Rupees)}$$

| level of sales       | Remark            |             |
|----------------------|-------------------|-------------|
| (a) $\downarrow$ BEP | loss              | contri < FC |
| (b) = BEP            | no profit no loss | contri = FC |
| (c) $\uparrow$ BEP   | profit            | contri > FC |

• Real BEP is always on own FC and not allocated FC.

fixed cost are never segregated on product always on total except of specific FC.

## Basic decision making indicators:-

### a) Profit-Volume Ratio:-

• contribution expressed as % of sales.

$$(i) \frac{\text{contri. P.V}}{\text{selling P.V}} \times 100$$

$$(ii) \frac{\text{Total contribution}}{\text{Total sales}} \times 100$$

$$(iii) \frac{\text{change in total contribution}}{\text{change in total sales}} \times 100$$

$$(iv) \frac{\text{change in total profit}}{\text{change in total sales}} \times 100$$

(v)  $100 - \text{VC ratio} = \text{PV ratio}$   
basic indicator of profitability.

$\uparrow \text{PV} \rightarrow \uparrow \text{profitability} \rightarrow \uparrow \text{SP or } \downarrow \text{VC}$

## (c) Margin of safety (MOS)

• sales over & above BEP

a)  $MOS (Rs) = \text{actual sales} - BES (Rs)$

b)  $MOS (\text{units}) = \text{no. of units sold} - BES (\text{units})$

(c)  $MOS \text{ sales} = \frac{\text{profit/contri.}}{PV \text{ ratio}}$

d)  $MOS (\text{units}) = \frac{\text{contri/profit} \cdot p.v}{p.v \text{ ratio } p.v}$

e)  $MOS = 100\% - BEP\%$   $PV \text{ ratio } p.v$   
 $\text{contri} = \text{Profit}$  as FC is nil.

- strength indicator of business.
- profit = contribution earned on MOS.
- $\uparrow MOS$  - fall in sales is fine.
- $\downarrow MOS$  - fall in sales is dangerous.

## Improvement in MOS:

- $\uparrow$  sales volume i.e. no. of units.
- $\uparrow$  SP but product is inelastic to absorb the  $\uparrow$ .
- $\downarrow$  FC
- $\downarrow$  VC

## Overall BEP ratio:

also called composite BEP, overall BEP & BEP of co.

Overall  $BEP (Rs) = \frac{\text{Total contri}}{\text{Total sales}} \text{ of co of } \times 100.$   
 all products  
 OR

$\Sigma CPV \text{ of 1 product} \times \text{prop of sales to total sales}$

Overall  $PV (\text{units}) = \Sigma (\text{contribution of 1 product} \times \text{prop of sales to total units}) \times 100.$

OR

$\frac{\text{Total contri of all prod}}{\text{Total units sold of all prod}} \times 100.$

## Overall BEP

$(Rs) = \frac{T.F.C}{\text{over } PV \text{ ratio}}$

$(\text{units}) = \frac{T.F.C}{\text{total contri } p.v}$

## Indifference Point

- cost break even point
- that level of sales at which total cost = total profit.

| A            | B         | C         |
|--------------|-----------|-----------|
| 100<br>(60)  | 100<br>60 | 100<br>40 |
| 150<br>(110) | 100<br>60 | 150<br>40 |
| 40 = 40      | 40 = 40   | 60 = 110  |
| X            | ✓         | X         |

- the maker will be indifferent as to the option to be chosen.

$IDP (Rs) = \frac{\Delta - FC}{\Delta \text{ in } PV}$

OR

$\frac{\Delta FC}{\Delta \text{ in } VC}$

$IDP (\text{units}) = \frac{\Delta \text{ in } FC}{\Delta \text{ cont } p.v}$

OR

$= \frac{\Delta FC}{\Delta VC p.v}$

## Interpretation of IDP

| level of sales                                                                        | Remarks                                                        |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 1) = IDP sales                                                                        | indifferent "any operation"                                    |
| 2) Actual sales > IDP sales                                                           | select op <sup>n</sup> with highest PV ratio / Profit or ↓ VC. |
| as all our costs will be recovered and not worried about FC.                          |                                                                |
| 3) Actual sales < IDP sales                                                           | select op <sup>n</sup> with lower FC.                          |
| as sales are ↓ ∴ profit ↓ and FC ↑.                                                   |                                                                |
| if more than 2 op <sup>n</sup> are there then take highest & lowest op <sup>n</sup> . |                                                                |

## SHOT DOWN POINT

- It indicates that level of operations/sales which it is not justifiable to pursue production.

FC are classified as:-

- Avoidable / discretionary <sup>AFC</sup> FC
- Unavoidable / committed FC.

- A firm should close down if its contribution to recover the avoidable FC.

$$\text{SDP (units)} = \frac{A \cdot F \cdot C}{\text{Conti. p.o.}}$$

$$\text{SDP (Rs)} = \frac{AFC}{\text{PV ratio}}$$

## Interpretation of SHOT DOWN POINT.

| SALES            | CHOICE    | REASON                                            |
|------------------|-----------|---------------------------------------------------|
| 1) = SDP         | Continue  | contribution just enough to recover AFC           |
| 2) less than SDP | Shut down | contri cannot recover AFC.                        |
| 3) more than SDP | Continue  | contri will recover AFC & even some parts of VFC. |

## COST VOLUME PROFIT ANALYSIS

- CVP analysis.
- analysis of 3 variables - cost, volume, profit which explores the relationship existing among:-
  - cost
  - revenue
  - activity levels
  - resulting profit.
- aims at measuring variation of profit & cost with volume.

### Semi Variable Cost

$$SVC = TC + FC$$

$$VC (SVC) = \frac{\Delta \text{ in total SVC}}{\Delta \text{ of no. of units}}$$

$$\therefore FC \text{ in SVC} = \text{bal fig}$$

$$\therefore TSVC - TVC = FC$$

# ABSORPTION COSTING (AC)

Salu  
 (-) COGS on COP  
 (V+F)  


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 GP GP  
 (-) Admin cost  
 (V+F)  
 (-) S&D  
 (V+F)  


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 NP  
 b4 adjustments  
 (-) under absorption  
 (+) over absorption  
 NP

- ① always do the reconciliation of Prod<sup>n</sup> & salu:-  
 i.e Op<sup>n</sup> stk  
 (+) Prod<sup>n</sup>  
 (-) Cl. stk  
 sales  
 \* FC always on full capacity
- ② Never include selling & dist costs in COP as it also includes CLOSING STOCK.
- ③ S&D → always on units sold.
- ④ always segregate COP & S.D.
- ⑤ the diff in profit of CAC & MC will be due to over absorp / under absorp.
- ⑥ no under / over absorp if we ourselves determine the recovery rate for FC.

| M.C | Function based<br>(Prod <sup>n</sup> , admin, S&D function)<br>product cost.<br>each product includes FC.<br>product profit affected<br>profit → N.P.<br>highlights GP & NP in conventional manner.                                                                                                                                                                                                                                                                                                                                                                                                                                | A.C<br>both VC & FC.<br><div>           op<sup>n</sup> T.C.<br/>           (+) VC op<sup>n</sup> VC<br/>           (+) FC prod<sup>n</sup> FC<br/>           (-) Cl<sup>n</sup> stk (T.C)<br/> <hr/>           COGS xx         </div> <div>           AP &gt; MP.<br/>           Prod<sup>n</sup> &gt; Salu (↑ stock)<br/>           op<sup>n</sup> &gt; Cl<sup>n</sup> </div> |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M.C | N.C<br>① cost classification:<br>Nature based (VC & FC)<br>② Treatment of FC:<br>periodic cost<br>doesn't affect profit (FC is deducted from total).<br>profit → contribution<br>③ Presentation<br>highlights Total contribution<br>④ stock valuation<br>only VC is considered.<br>⑤ Variance depicting<br>⑥ COGS<br><div>           op<sup>n</sup> stk VC<br/>           (+) VC COP xx<br/>           (-) Cl. stk (VC)<br/> <hr/>           varcos xx         </div> ⑦ Profit comparison<br><div>           MP &gt; AP<br/>           Sales &gt; Prod<sup>n</sup> (↓ stock)<br/>           op<sup>n</sup> &gt; Cl.         </div> | A.C<br><div>           ASHOCK X Δ cost P.H         </div>                                                                                                                                                                                                                                                                                                                      |

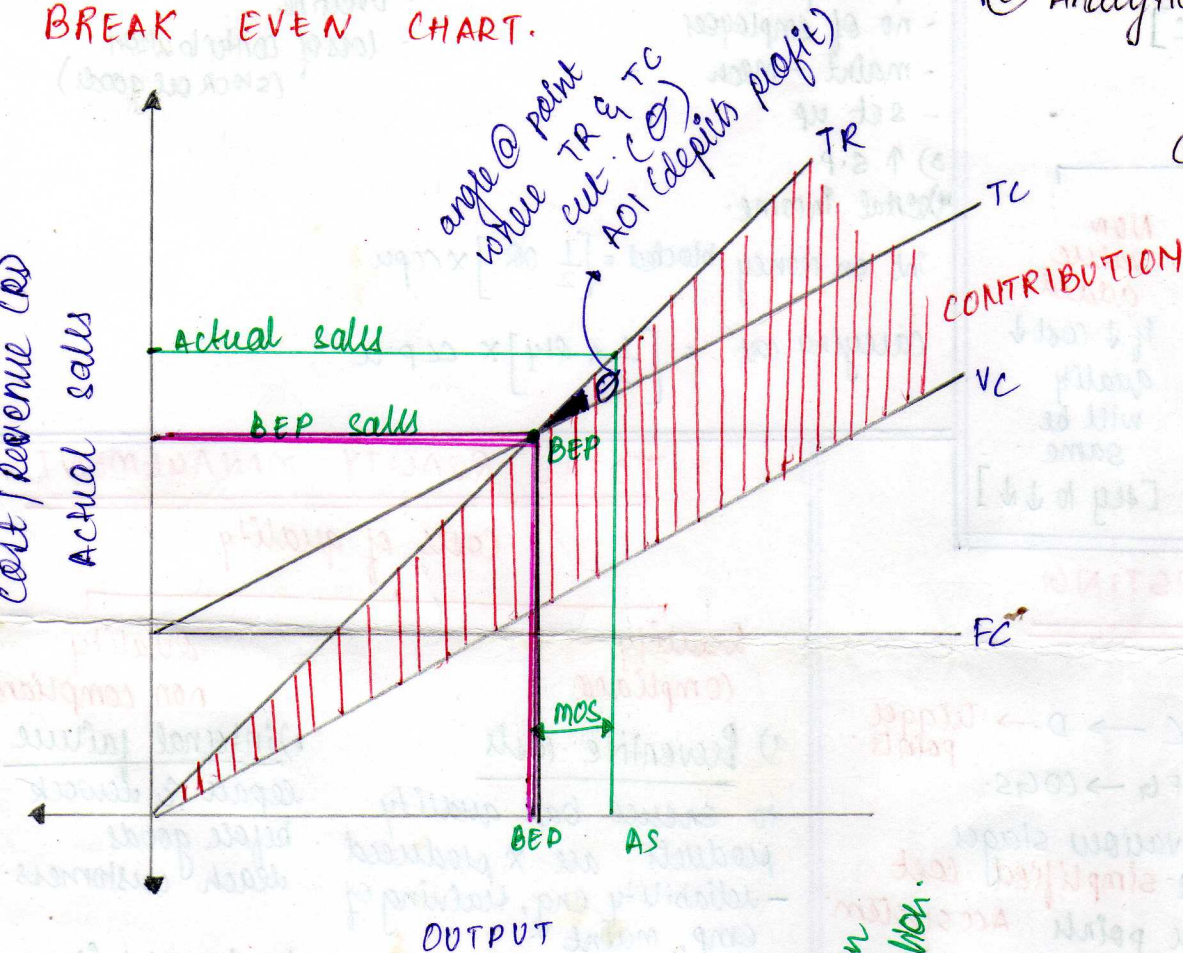
## ACCEPTANCE OF SPECIAL ORDER. conditions.

- ① idle capacity.
- ② one time special order.
- ③ not affect the SP of regular customers.
- ④ recover all VC & specific FC
- ⑤ profit oriented.

## Types of BEC MC (3)

- ① contribution BEC
- ② Product wise BEC
- ③ Cash BEC
- ④ Profit volume chart
- ⑤ Control BEC
- ⑥ Analytical BEC

## BREAK EVEN CHART.



$$\text{Cash BEC} = \frac{\text{FC paid in cash}}{\text{contri p.u.}}$$

## general conclusions of BEC

### Remark

|                                        |                                                                           |
|----------------------------------------|---------------------------------------------------------------------------|
| ① $\uparrow$ BEP<br>$\uparrow$ AOI     | FC $\downarrow$ MOS $\uparrow$ stab $\uparrow$<br>profit $\uparrow$ .     |
| ② $\downarrow$ BEP<br>$\downarrow$ AOI | FC $\downarrow$ MOS $\uparrow$ stab $\uparrow$<br>profit $\downarrow$ .   |
| ③ $\uparrow$ BEP<br>$\downarrow$ AOI   | FC $\uparrow$ MOS $\downarrow$ stab $\downarrow$<br>profit $\downarrow$ . |
| ④ $\uparrow$ BEP<br>$\uparrow$ AOI     | FC $\uparrow$ MOS $\downarrow$ stab $\downarrow$<br>profit $\uparrow$ .   |

FC & BEP  $\rightarrow$  direct relation  
BEP & MOS  $\rightarrow$  indirect relation.

## TARGET COSTING

Market led pricing / competitive pricing

Target S.P.  $\times \times$

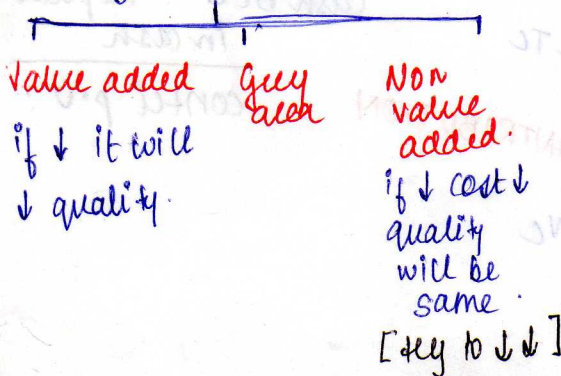
(-) desired profit  $(\times \times)$

Target cost (TC)  $\times \times$

Compare TC & actual cost.

TC < AC [cost reduction]  
so that TC = AC]

Types of costs:



## BACK FLUSH COSTING

normal process

A  $\rightarrow$  B  $\rightarrow$  C  $\rightarrow$  D  $\rightarrow$  Trigger points.  
RM  $\rightarrow$  WIP  $\rightarrow$  FG  $\rightarrow$  COGS.

journal entries @ various stages can be eliminated. **simplified cost Acc system.**

Case Trigger points

I A  $\rightarrow$  C  $\rightarrow$  D

II A  $\rightarrow$  D

III C  $\rightarrow$  D.

## JUST IN TIME

No cost benefit analysis of JIT costs & benefits.

Statement showing C&B of JIT

Benefits

Amt

Costs

Amt.

1) Savings in

- interest (inventory  $\times$  roi)

- storage / insurance

- stock handling

2) Reduction in

- quality testing

- no of employees

- maint - mach

- set up

3)  $\uparrow$  S.P.

Net Income.

int on money blocked =  $\left[ \frac{1}{2} \text{ OR} \right] \times \text{CCPU}$

carrying cost =  $\left[ \frac{1}{2} \times \text{qty} \right] \times \text{CCPU}$

1)  $\uparrow$  costs

- material (premium 4 quality)

- order cost

- stock out

- tooling cost

- overtime

- loss of contribution (stock out goods)

## TOTAL QUALITY MANAGEMENT

Costs of quality

Quality compliance

1) Preventive costs

to ensure bad quality products are  $\times$  produced.  
- reliability eng, training of emp, maint.

2) Appraisal costs

continuous checking & inspecting prog & quality audits.

will incur a, b

Quality non compliance

1) internal failure

repair & rework before goods reach customers.

2) external failure

costs after goods reach the customers

- warranty, transp to cust sites.  
- free replacement

hidden cost (1 & 2)

- damaged reputation  
- customer dissatisfaction