BREAK EVEN POINT ANALYSIS

There are three options:-
(1)Cost [variable & fixed cost]
(2)Volume;   (3) Profit analysis.

Measurement:

PROFIT: The difference between sales & total cost.

   P=S-T.C   but, T.C=V+F
    =S-(V+F)
    =S-V-F
Where,   P= Profit
        T.C=Total cost
        V=Variable cost
        F=Fixed cost

CONTRIBUTION: The difference between sales & variable cost.

   C=S-V   but, P=S-V-F   or, S-V=P+F
   C=P+F.

PROFIT-VOLUME RATIO: The profit / volume ratio properly known as the p /v ratio. It shows the relation between sales & contribution. And also,

$$\text{P/V ratio} = C/S * 100\%$$

BREAK-EVEN POINT: Break even point is the point at which, total sales just equal to the total cost. In this point there is no loss & no profit.
        So,   S=T.C
                =V+F
   Then,   P=S-V-F=S-S=0.
     BEP in unit =F (total)/S-V (per unit) = F/C.
     BE sales volume =F*S/(S-V) =F/p/v ratio.
DESIRED or TETGET SALES:
                        T.S= (F+P)*S /(S-V) = (F+P) / p/v ratio.
                Where, T.S =Target sales.

BREAK- EVEN CHART: In the different situations, a chart is prepared with income, expenses & profit (amount) is called break-even chart.

ANGLE OF INCIDENCE: The angle of incidence means angle between the sales line & the variable cost line. This angle is an indicator of profit earning capacity.

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Q. Explain the method of assertaining break even point.

The break-even point can be assertained from a break-even curve as follows-

BEP (units) = Total fixed cost / Unit contribution.
BEP (sales unit) =Total fixed cost / p/v ratio.
   Therefore, when ratio is calculated using unit contribution and unit selling price
   We can write,
                BEP= [Total fixed cost / Unit contribution] * Unit selling price.
   But, if we taking total sales & contribution.
    Then,
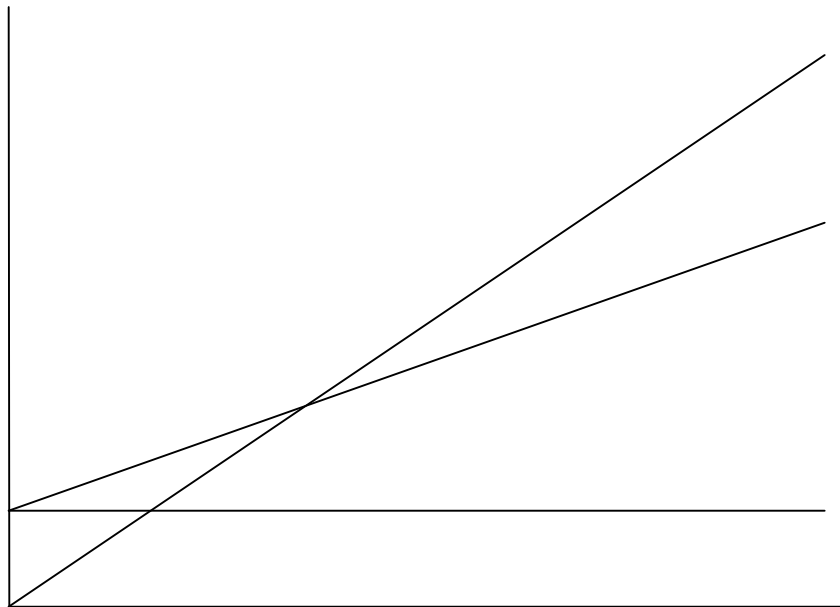   BEP = [Total fixed cost / Total contribution] * To

Q. Draw the graphical representation of Break-even chart.

Let, sales =3000 units, sale price = TK 10 per unit.
Fixed cost = TK 6000, Variable cost = TK 6 per unit.
BEP (units) = 6000/ (10-6) =1500 (units), BES =1500*10 = 15000Tk.
Total sales =3000*10 = 30000Tk. Total variable cost = 3000*6 = 18000Tk.

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MARGINAL SAFETY: Marginal safety or margin of safety is the excess sales over and above the break-even point. It is an indicator of business strength. And also,

$$M/S = P / c/s = Ps / c = P / p/v \text{ ratio.}$$

Margin of safety = Total sales – Break even sales.

Q. What is the effect on break even point if increasing the total physical sales?

<mark>With the increasing in total physical sales, there is no change in break even point.</mark>
Let, S = 600 unit @ 100 Tk .
V = 60 per unit, F = 6000 per unit
So, BEP in unit = 6000 / (100-60) = 150 unit
When total physical sale increase 10%,
S = 660 unit @ 100 Tk.
So, BEP = 6000 / (100-60) = 150 unit.
Viz, increase in total physical sales doesn't change break even point.

Q. What is the effect on break even point if increasing the P/V   ratio?

<mark>When the P/V ratio increase, the BEP decreases.</mark>
Let, S = 100 Tk per unit. F = 6000 Tk. P/V ratio = 0.4
So, BEP in unit = [F/S] / [P/V ratio] = 60 / 0.4 = 150 unit.
When, P/V ratio = 0.6, then
$$BEP \text{ in unit} = 60/0.6 = 100.$$
So, with the increase in P/V ratio, decrease in BEP.

Q. What is the effect on break even point if increasing the price of sales?

<mark>Increasing the sales of price decrease the break even point.</mark>
Let, S = 100 Tk per unit, V = 60 Tk per unit. F = 6000 Tk.
So, BEP in unit = 6000/ (100-60) = 150 unit.
When the sales increased by 20%,
then BEP in unit = 6000 / (120-60) = 100unit.
So, we can write increase the price of sales, decrease the BEP.

Q. What is the effect on break even point if increasing the variable cost?

<mark>If we increased the variable cost, the BEP also be increased.</mark> This statement proved by the following example.
Let, S = 100 Tk per unit, V = 60 Tk per unit, F = 6000 Tk.
So, BEP in unit = 6000 / (100-60) = 150 unit.
Now, variable cost increased by 20%,
then BEP in unit = 6000 / (100 – 80) = 300 unit.
Therefore it is proved that, increase the variable cost, also increase the BEP.

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PROBLEM: The following information is available for the year ended 31st December 2005. Here, sales 600 unit @ Tk 100.

Fixed cost = 10000 Tk, Profit = 14000 Tk. P/V ratio = 60%. Find-

   (1) The BE sales.
   (2) What would be the profit if sales were 800 units?
   (3) What would be the BE sales if the price was increased by 20%.

SOLUTION:

(1) Here, F = 10000Tk, S = 600*100 = 60000Tk, P = 14000Tk.
      P = S-V-F or, V = S-F-P =60000 – 10000 -14000 = 36000Tk.
   BE sales = [F*S] / [S-V] = [1000*60000] / [60000-36000] = 25000 Tk. (Ans).

(2) Here, S = 800*100 = 80000 Tk, V = [36000*800] / [600] = 48000 Tk.
      P = S-F-V = 80000-1000-48000 = 22000 Tk. (Ans).

(3) F =10000Tk, S =100+ 20 = 120 unit, V = 60 per unit.
   BE sales = [F*S] / [S-V] = [10000*120] / [120-60] = 20000Tk. (Ans).

PROBLEM: The following information is available for the year ended 31st December 2005. Here, sales 2400 unit @ Tk 100.

Fixed cost = 67200 Tk, m / s = 30%, Profit = 14000 Tk. P/V ratio = 40%. Find-

   (1) The BE sales.
   (2) Profit if sales are 3000 unit.
   (3) Sales volume to earn a profit of Tk 50000.
  (4) Marginal safety if P/V ratio is 35%.
  (5) BE sales if the price increased by 10%.

SOLUTION: P/V ratio = C/S   or, C = 0.4*100 = 40.
  V = S – C = 100 – 40 = 60 Tk per unit

(1) BE sales = [F*S] / [S – V] = [67200*100] / [100 – 60] = 16800TK. (Ans).
(2) Here, sales 3000 unit.
   P = S-F-V = [3000*100] – 67200 – [3000*60] = 52800 Tk. (Ans).
(3) Here, profit 50000 Tk.
   Desired sales = [F+P] / [P/V ratio] = [67200 + 50000] / [0.4] = 293000 Tk. (Ans).
  (4) m / s = P / [P/V ratio] = 52800 / [0.35] = 150857.1429 Tk.
  (5) BE sales = F / [S-V] (per unit) = 67200 / [110 – 60] = 1344 unit. (Ans).

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