Marginal Costing Revision

Special class

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CA INTERMEDIATE

COST & MANAGEMENT ACCOUNTING

SPECIAL CLASS

BY

CA DHANANJAY BHAVE

CA Dhananjay Bhave

Teaches in CA Intermediate

A Passionate Educator who believes in Conceptual Learning! He builds Confidence in students & Makes Costing-FM their Favourites!

Income statement

Sales: (Qty * Price)	xxx
(-) Variable cost (Qty*VC Per unit)	xxx
Contribution	xxx
(-) Fixed cost	xxx
Profit or Loss or EBIT	xxx

1. Contribution = Sales-Variable cost….OR Contribution = Sales * PV Ratio

Break Even Point

BEP is the level of sales at which Profit or Loss is Zero, i.e., Total Income = Total cost.

2. Break-even point in Units = Fixed cost/Contribution per unit
3. Break-even point in value = Fixed cost/PV Ratio

PV Ratio is a connecting point between Sales and Contribution

4. PV Ratio = (Contribution / Sales) * 100
5. PV Ratio = (Change in profit/Change in sales) * 100

MOS is the sales above BEP.

6. Margin of safety = Total sales – BEP Sales
7. Margin of safety = Profit / PV Ratio

8. Cash Break Even point is similar to Normal Break Even point, but we should consider only Cash cost items. i.e., Non-cash items such as Depreciation is excluded

9. Desired sales (Rs.) = (Fixed cost + Desired profit)/PV Ratio
10. Desired sales (Qty) = (Fixed cost + Desired profit)/Contribution per unit

11. **Shutdown point** is the level of operation (Production or sales) below which it is not at all preferred to continue the business - i.e., closing the business is better than continuing it.

    Shutdown point (Rs.) = Avoidable Fixed Cost/PV Ratio

    Shutdown point (Qty) = Avoidable Fixed Cost/Contribution per unit

    Note – Avoidable Fixed cost = Total Cost – Unavoidable Fixed cost.

12. Combined BEP or Composite BEP =

    Total Fixed Cost/Weighted Average contribution or PVR

Types of Problems to be revised –

1. Two period Problem – Solve one question with loss adjustment.

2. Combined or Composite BEP Computation.

3. Application of marginal costing

   a. Data for a period given – Change in sales quantity, sales price, variable cost , fixed cost is anticipated in subsequent period.

   b. Same as (a) above, but 2-3 different plans given & comparison is to be done.

   c. Present data given, inflation given, no. of units to be sold to maintain/earn a desired profit is asked in the question.

   d. Cost Break Even

   e. Continue V/s Discontinue

   f. Key Factor/Limiting Factor (Maximum possible production)

   g. Absorption costing V/s Marginal costing – ICAI SM problem.

   h. Income Tax adjustment related question.

   i. Introduction of new product as compared to existing scenario. Pay special attention to fixed cost treatment.

Problems from Previous RTP, MTP & Question Papers

1. Following figures have been extracted from the books of M/s. RST Private Limited:

Financial Year	Sales (Rs.)	Profit/Loss (Rs.)
2016-17	4,00,000	15,000(loss)
2017-18	5,00,000	15,000 (Profit)

You are required to calculate:

(i) Profit Volume Ratio

(ii) Fixed Costs

(iii) Break Even Point

(iv) Sales required to earn a profit of Rs. 45,000.

(v) Margin of Safety in Financial Year 2017-18.

(5M QST PAPER MAY-2018)

ANSWER:-

	Sales (Rs.)	Profit (Rs.)
Year 2016	4,00,000	15,000 (loss)
Year 2017	5,00,000	15,000 (profit)
Difference	1,00,000	30,000

(i) P V Ratio = Difference in Profit / Difference in Sales*100

= 30,000 / 100,000 * 100 = 30%

(ii) Contribution in 2016 (400,000*30%) = 120,000

Add: Loss = 15,000

Fixed Cost* =135,000

*Contribution = Fixed Cost + Profit

(iii) Break Even Point = Fixed Cost / P V Ratio = 135,000 / 30% = Rs 450,000

(iv) Sales to Earn Profit of Rs 45,000 = Fixed Cost + Desired Profit /PV Ratio

= 135,000 + 45,000 / 30% = Rs 600,000

(v) MOS in 2017-18 = Actual Sales – Break Even Sales

500,000 – 450,000 = 50,000

2. MNP Ltd sold 2,75,000 units of its product at Rs. 375 per unit. Variable costs are Rs. 175 per unit (manufacturing costs of Rs.140 and selling cost Rs.35 per unit). Fixed costs are incurred uniformly throughout the year and amount to Rs 3,50,00,000 (including depreciation of Rs1,50,00,000).there are no beginning or ending inventories. Assume 40% corporate Income Tax rate. Required:

i. Compute breakeven sales level quantity and cash breakeven sales level quantity.

ii. Compute the P/V ratio.

iii. Compute the number of units that must be sold to earn an EBIT of Rs. 25,00,000.

iv. Compute the sales level achieve an after-tax income (PAT) of Rs. 25,00,000.

(RTP-MAY-2019)

ANSWER

(i) Contribution = Rs.375 - Rs.175 = Rs.200 per unit.
Break even Sales Quantity = Fixed Cost / Contribution Margin per unit

= Rs 3,50,00,000 / Rs 200

= 1,75,000 units

Cash Break even Sales Quantity = Cash Fixed Cost / Contribution Margin per unit

= Rs 200,00,000 / Rs

= 100,000 units

(ii) P V Ratio = Contribution per unit/ Selling price Per unit * 100
= Rs 200 / Rs 375 * 100

= 53.33%

(iii) No. of units that must be sold to earn an Income (EBIT) of Rs. 25,00,000
= Fixed Cost + Desired EBIT Level / Contribution margin Per unit

= 350,00,000 + 25,00,000 / 200

= 187,500 units

(iv) After Tax Income (PAT) = Rs.25,00,000 Tax rate = 40%
Desired Level of Profit Before Tax = 25,00,000/60*100 = Rs 41,66,667

Estimate Sales Level = Fixed Cost + Desired Profit / P V Ratio

= 350,00,000 + 41,66,667 / 53.33% = Rs 7,34,42,091

3. A manufacturing company is producing a product 'A' which is sold in the market at Rs 45 per unit. The company has the capacity to produce 40,000 units per year. The budget for the year 2018-19 projects a sale of 30,000 units. The costs of each unit are expected as under:

	Rs
Materials	12
Wages	9
Overheads	6

Margin of safety is Rs. 4,12,500

You are required to:

(a) Calculate fixed cost and break-even point.

(b) Calculate the volume of sales to earn profit of 20% on sales.

(c) If management is willing to invest Rs. 10,00,000 with an expected return of 20%, calculate units to be sold to earn this profit.

(d) Management expects additional sales if the selling price is reduced to Rs. 44. Calculate units to be sold to achieve the same profit as desired in above (iii).

(10 Marks) (QST PAPER NOV-2018)

ANSWER:-

Margin of Safety = Profit / P V Ratio = Rs 412,500

= (Profit) / 45-(12+9+6)/45 = Rs 412,500

= Profit / 18/45 = Rs 412,500

= Profit = 165,000 or PV Ratio = 18/45*100 = 40%

Fixed Cost

Profit = (Sales * PV Ratio) – Fixed Cost

165,000 = [(30,000*45)*18/45]- Fixed Cost

Or Fixed Cost = 5,40,000 – 1,65,000 = Rs 3,75,000

OR

Profit = Contribution – Fixed Cost=Rs. 5,40,000-Rs. 3,75,000 =Rs..1,65,000

P V Ratio = 18/45*100 = 40%

Break-even Point = Total Sales – Margin of Safety

= Rs. (30,000 × 45) – 4,12,500
= Rs. 13,50,000 – 4,12,500 = Rs. 9,37,500

Or BEP = Fixed Cost / PV Ratio = 375,000/18/45 = 375,000/40% = Rs 937,500 or 20,833.33 units

(i) Let's assume, Sales Volume = S units. So total sales value is 45 S and Contribution is 45 S – 27S = 18S. Now, Contribution = Fixed Cost + Desired Profit

18S = 375,000 + 9S (20% of 45S)

9S = 375,000

So, S = 375,000 / 9 units

Volume of Sales = 375,000 * 45 / 9 = Rs 18,75,000 or 41,666.67 units

So, Rs 18,75,000 sales are required to earn profit on 20% of Sales

(ii) Contribution = Fixed Cost + Desired Profit

18S = 3,75,000 + Return on Investment

18S = 3,75,000 + 2,00,000

S = 575,000 / 18 = 31,945 units (approx)

So, 31,945 Units to be sold to earn a return of Rs. 2,00,000.

(iii) Revised Contribution = Fixed Cost + Desired Profit

17S = 3,75.000 + 2,00,000 S

S = 575,000/17 i.e., S = 33,824 units

4. PH Gems Ltd. is manufacturing readymade suits. It has annual production capacity of 2,000 pieces. The Accountant has presented following information for the year to the management:

Particulars	Amount (Rs.)	Amount (Rs.)
Sales 1,500 pieces @ Rs. 1,800 per piece		27,00,000
Direct Material	5,94,200	
Direct Labour	4,42,600	
Overheads (40% Fixed)	11,97,000	22,33,800
Net Profit		4,66,300

Evaluate following options:

(i) If selling price is increased by Rs. 200, the sales will come down to 60% of the total annual capacity. Should the company increase its selling price?

(ii) The company can earn a profit of 20% on sales if the company provide TIEPIN with ready-made suit. The cost of each TIEPIN is Rs. 18. Calculate the sales to earn a profit of 20% on sales.

(10 Marks) (QST PAPER MAY-2018)

ANSWER:-

(i) Evaluation of Option (i)

Selling Price = Rs. 1800 + Rs. 200 = Rs. 2,000

Sales = 2000 x 60% = 1200 Pieces

	(Rs.)
Sales (1,200 pieces @ Rs. 2,000)	24,00,000
Less: Direct Material: = Rs 5694,200 /1500 * 1200	4,75,360
Direct Labour = Rs 442,600/1500 *1200	3,54,080
Variable Overhead = Rs 11,97,000*60% / 1500 * 1200	574,560
Contribution	9,96,000
Less: Fixed cost (Rs. 11,97,000x40%)	4,78,800
Profit	5,17,200

The decision is improving the net profit. Hence it is viable. Alternatively, it can be interpreted as below: If price has been increased by 11.11% (increases by 200 on 1,800) sales goes down by 20% (decreased by 300 on 1,500). Change in demand is greater than change in price. Since the variable costs are still same profit has been arose to Rs 5,17,200 in-spite of high elasticity of demand. PH gems would not be able to sustain this policy on account of change if any in variable costs.

(ii) Evaluation of Option (ii)

	(Rs.)
Sales	1800
Less: Direct Material: = Rs 5694,200 /1500	396.13
Cost of a Tie Pin =	18.00
Direct Labour = Rs 442,600/1500	295.07
Variable Overhead = Rs 11,97,000*60% / 1500	478.80
Contribution	612.00
P V Ratio = Rs 612/1800*100	34.00%

Sales required to earn profit of 20%

Sales = Rs 478,800 + 0.20of Sales / 34%

Sales = Rs 34,20,000 or 1900 units (34,20,000/1800)

To earn profit 20% on sales of readymade suit (along with TIE PIN) company has to sold 1,900 units i.e. 95% of the full capacity. This sales level of 1,900 units is justified only if variable cost is constant. Any upside in variable cost would impact profitability, to achieve the desired profitability. Production has to be increased but the scope is limited to 5% only.

5. C.T. Ltd. manufactures and sells a single product X whose selling price is Rs. 100 per unit and the variable cost is Rs. 60 per unit.

a. If the Fixed Costs for this year are Rs. 24,00,000 and the annual sales are at 60% margin of safety, CALCULATE the rate of net return on sales, assuming an income tax level of 40%.

b. For the next year, it is proposed to add another product line Y whose selling price would be Rs. 150 per unit and the variable cost Rs. 100 per unit. The total fixed costs are estimated at Rs. 28,00,000. The sales mix of X:Y would be 5 : 3. COMPUTE the break- even sales in units for both the products.

(5M MTP-NOV-2019)

ANSWER:-

i. Contribution per unit = Selling price – Variable Cost = Rs 100 – Rs 60 = Rs 40

Break Even Point = Rs 24,00,000 / Rs 40 = 60,000 units

Percentage of Margin of Safety = (Actual Sales – BEP Rs.) / Actual Sales

Or 60%, =Actual Sales – 60,000units / Actual Sales

Hence Actual Sales = 150,000 units

	(Rs.)
Sales Value (1,50,000 units × Rs.100)	1,50,00,000
Less: Variable Cost (1,50,000 units ×Rs.60)	90,00,000
Contribution	60,00,000
Less: Fixed Cost	24,00,000
Profit	36,00,000
Less: Income Tax @ 40%	14,40,000
Net Return	21,60,000

Rate of Net Return on Sales = 14.40% (21,60,000 / 150,00,000 * 100)

ii. Products

	X (Rs.)	Y (Rs.)
Selling Price per unit	100	150
Variable Cost per unit	60	100
Contribution per unit	40	50

Composite contribution will be as follows:

= Contribution Per unit = 40/8*5 + 50/8*3

= 25+18.75 = Rs 43.75

Break Even Sales = 64,000units (Rs 28,00,000/Rs 43.75)

Break even Sales Mix: X (64,000 units * 5/8) = 40,000 units

Y (64,000 units *3/8) = 24,000 units

SPACE FOR ADDITIONAL NOTES