

Small Business Management Toolbox

Undertake financial planning

Sample pricing calculations

The following are examples of cost volume profit analysis.

Example 1 – Breakeven

Magz 4 U, a magazine publisher, plans to publish and sell a new business magazine at a retail price of \$7.00. Variable costs are estimated to be \$2.00 per copy, with variable selling and distribution costs amounting to \$0.60 per copy. Magz 4 U expects to incur fixed costs of \$220,000. The maximum capacity of the plant is 200,000 copies.

To calculate the number of copies that need to be sold to breakeven, we can use the formula:

$$\begin{aligned}\text{Number of units} &= \frac{\text{Fixed costs}}{\text{Selling price per unit} - \text{Variable costs per unit}} \\ &= \frac{\$220,000}{\$7.00 - \$2.60} \\ &= 50,000 \text{ copies}\end{aligned}$$

This means that 50,000 copies of the business magazine must be sold to breakeven.

The breakeven point in dollar sales can be found by multiplying breakeven in units by revenue per unit.

$$50,000 \text{ copies @ } \$7 \text{ (selling price)} = \$350,000$$

Example 2 – Sales volume

A common management and planning question might be:

‘What sales volume is necessary for Magz 4 U to earn a profit of \$45,000?’

We can use the cost volume profit model to answer this.

$$\begin{aligned}\text{Sales volume} &= \frac{\text{Desired profit level} + \text{Fixed costs}}{\text{Selling price per unit} - \text{Variable costs per unit}} \\ &= \frac{\$45,000 + \$220,000}{\$7.00 - \$2.60} \\ &= 60,227 \text{ copies}\end{aligned}$$

Magz 4 U needs to sell 60,227 copies of the magazine to make a profit of \$45,000.

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Example 3 – Margin of safety

'Magz 4 U' expects to sell 85,000 copies. By how much can actual sales drop before losses occur?

$$\begin{aligned}\text{Margin of safety} &= \text{Total number of sales} - \text{Number of sales to breakeven} \\ &= 85,000 - 50,000 \\ &= 35,000\end{aligned}$$

This means that sales can drop by 35,000 copies before losses occur.

Expressed in revenue terms

$$35,000 \text{ copies @ } \$7.00 = \$245,000$$

So sales can drop by \$245,000 before losses occur.

Example 4 – Operating income

Magz 4 U's contribution margin ratio is 40% (or 0.4). If total sales are \$100,000 and breakeven sales are \$80,000, what is the operating income?

$$\begin{aligned}\text{Operating income} &= \text{Margin of safety} \times \text{Contribution margin ratio} \\ &= (\text{Total sales} - \text{Breakeven sales}) \times \text{Contribution margin ratio} \\ &= \$20,000 \times 40\% \\ &= \$8,000\end{aligned}$$

Magz 4 U expects sales to increase by \$15,000. How much will operating income increase?

$$\begin{aligned}\text{Extra operating income} &= \text{Extra margin of safety} \times \text{Contribution margin ratio} \\ &= \$15,000 \times 40\% \\ &= \$6,000\end{aligned}$$

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Example 5 – Volume profit analysis and the sales mix

The sales mix is the relative combination of different products sold by a multi-product business. Different products have different selling prices, contribution margins and costs.

If Magz 4 U sells magazines and compact discs (CDs), how do we do our breakeven analysis?

Consider the following data.

	Magazines	CDs	Total	
Units of sale	25,000	11,000	36,000	
Sales price per unit	\$10	\$30	-	
Sales	\$250,000	\$330,000	\$580,000	100%
Variable costs	\$160,000	\$145,000	\$305,000	52.59%
Contribution margin	\$90,000	\$185,000	\$275,000	47.41%
Fixed costs			\$170,000	
Net income			\$105,000	

The overall contribution margin is \$275,000, which is 47.41% (approx 0.47) of the total sales (\$580,000).

$$\begin{aligned}\text{Income from breakeven sales} &= \frac{\text{Fixed costs}}{\text{Contribution margin ratio}} \\ &= \frac{\$170,000}{0.47} \\ &= \$361,702\end{aligned}$$

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This is divided between magazines and CDs in the ratio 25,000:11,000.

$$\text{Breakeven point for magazine sales} = \frac{25,000}{36,000} \times \$361,702$$

$$= \$251,182$$

$$\text{Breakeven point for CD sales} = \frac{11,000}{36,000} \times \$361,702$$

$$= \$110,520$$