

Engineering Economics & Management

Financial Management & Economics

4th May 16

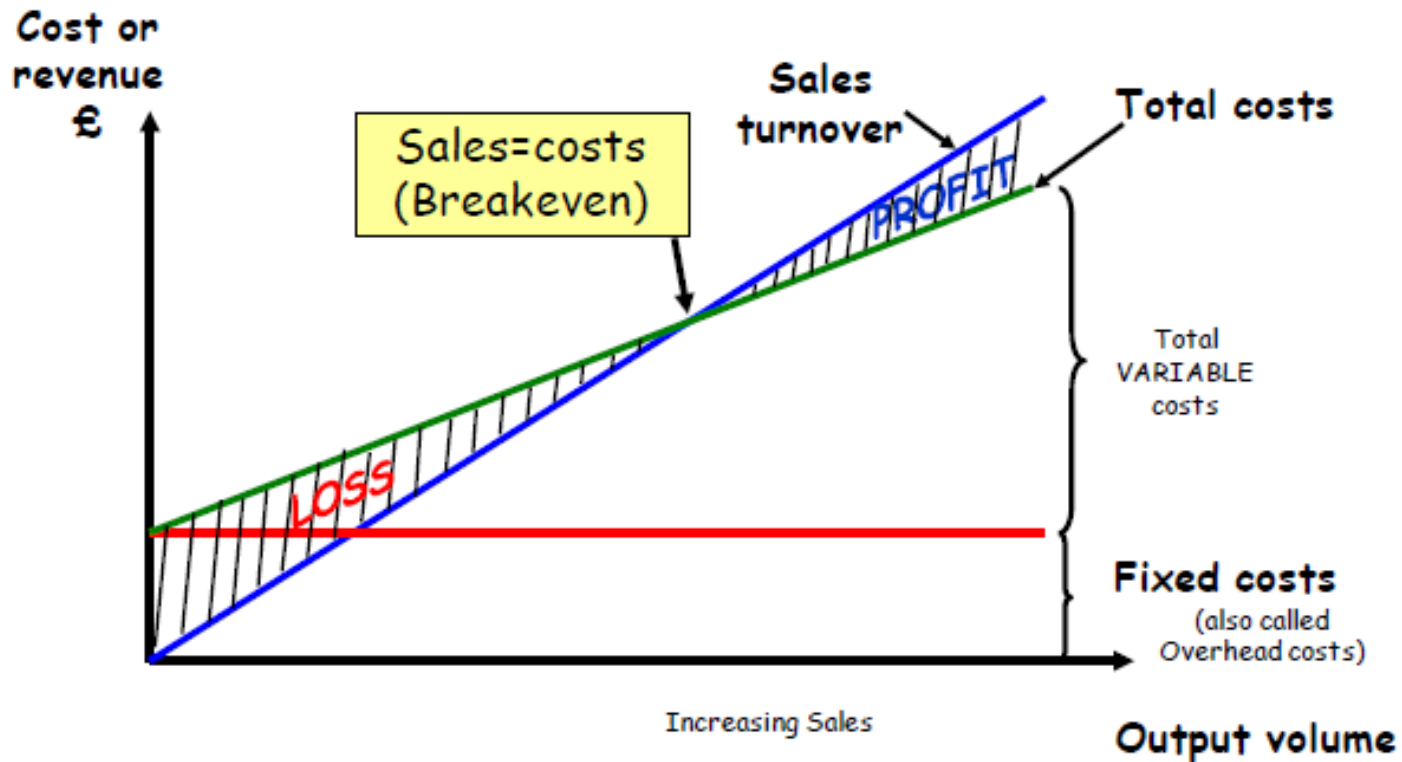
Break Even Analysis

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Enables calculation of sales volume required to cover costs.



Break Even Analysis

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Break even point is the time at which your costs are recovered and after that you start earning the profit

Break Even Point

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Sales Revenue per unit} - \text{Variable costs per unit}}$$

Break Even Analysis Example

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XYZ Ltd manufactures LCD screens for mobile phones which are sold for 400 per unit. Their annual building costs are 5000,000. Each LCD screen requires 200 of material and production costs of 120. Calculate Break even point units.

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$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Sales Revenue per unit} - \text{Variable costs per unit}}$$

$$\begin{aligned}\text{BEP} &= 5000000 / 400 - 320 \\ &= 62500 \text{ units}\end{aligned}$$

Contribution Margin

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The contribution margin is key to a firm because this figure indicates how much the unit is assisting towards the profitability of the firm

Contribution margin

CM = Sales revenue per unit – Variable costs per unit

Contribution Margin percentage

CM % = Contribution margin x 100%
Sales (Revenue)

Contribution Margin Example

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XYZ Ltd make ipods. They sell ipod for 10,000 each. The software cost is 400 per unit. The machinery cost is 800 per unit. Labour cost and Parts cost are 500 and 900 respectively.

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Contribution margin

CM = Sales revenue per unit – Variable costs per unit

CM = 10000 – (400+800+500+900)

CM = 7400

Contribution Margin Example

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CM = Sales revenue per unit – Variable costs per unit

CM = 10000 – (400+800+500+900)

CM = 7400

CM % = Contribution margin x 100%

Sales (Revenue)

= 7400/10000 x 100%

= 74%

Required Units

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XYZ Ltd design & manufactures wireless phones. Annual office and admin costs are 450,000 which are incurred regardless of sales. Phones are sold as a unit comprising a base station and 2 other phones connected wirelessly for 700. Each unit cost 350 each in terms of materials and 150 in terms of machining costs. Company want to earn a profit of 200,000. Calculate number of units to earn this profit.

$$\text{Required units} = \frac{\text{Fixed costs} + \text{Required profit}}{\text{Contribution margin per unit}}$$

Required Units

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**Required units = Fixed costs + Required profit
Contribution margin per unit**

**Required units = 450000 + 200000 = 3250 units
200**

Costing and Pricing

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Cost plus Pricing & Target Costing

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Cost plus pricing is concept of calculating the sale price of any product using the cost and margin of profit company need.

$$\text{Cost plus pricing} = \text{Full cost} + (\text{mark-up \%} \times \text{Full cost})$$

Target costing is concept of calculating the cost price of any product using the target price and margin of profit company need.

$$\text{Target costing} = \text{Target price} - (\text{margin \%} \times \text{Target price})$$

Example

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Full cost of making a 42'' digital TV is 50,000. Company wants a mark up of 10%. Firm is looking to set its price. Calculate the price.

$$\begin{aligned}\text{Cost plus pricing} &= \text{Full cost} + (\text{mark-up \%} \times \text{Full cost}) \\ &= 50000 + (10\% \times 50000) \\ &= 55000\end{aligned}$$

Example

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Market price of 42'' digital TV in market vary from 43000 to 48000. Taking 45000 as target price. What is the target cost if a firm want 15% margin.

$$\begin{aligned}\text{Target costing} &= \text{Target price} - (\text{margin \%} \times \text{Target price}) \\ &= 45000 - (15\% \times 45000) \\ &= 38250\end{aligned}$$

Thankyou

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