

## Calculating the break-even point

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To avoid making a loss every business must at least break-even by achieving a level of sales that covers its total costs. But what level of sales is necessary to break-even?

To explore the concept of break-even, we need to define some basic terms:

- \* Fixed costs: Costs that do not vary with output or sales e.g. managers salaries, rent and rates on business premises.
- \* Variable costs: Costs that vary with the quantity produced or sold e.g. costs of materials and wages
- \* Total cost: Fixed costs plus variable costs for any possible level of output.
- \* Sales revenue: The price of the product multiplied by total sales
- \* Profit: The difference between total revenue and total cost (where revenues are higher than costs)
- \* Loss: The difference between total revenue and total cost (where costs are higher than revenues)

Selling very small quantities of a product usually results in a loss as any profit fails to cover the overheads or fixed costs of the business.

For example, suppose that the fixed costs (eg management salaries, rent, business rates) for a firm making bookshelves are £1 000 per month. Assume that the variable cost (materials and labour) for each set of shelves is £30. This means that £20 is generated by each sale (called the 'contribution') towards paying the fixed costs. It follows, therefore, that no profit can be made until 50 bookcases have been sold and the fixed costs are covered (50 X £20).

The sales level at which fixed costs are covered is the point at which the firm breaks even and is called the break-even point.

There are two simple approaches to identifying the break-even point for a business:

#### **1. Constructing break-even chart showing:**

- \* sales revenue at different levels of output
- \* fixed costs at different levels of output
- \* total costs at different levels of output

The break-even point occurs where total cost = total sales revenue.

#### **2 Calculating the contribution for each unit sold or made**

The contribution is the difference between the sales revenue and the variable cost of each unit sold or made. The number of units needed to be sold (or made) to break-even is then calculated as: Fixed cost divided by Contribution per unit

Use of the break-even model on a computer enables managers to explore 'what if...?' scenarios based on a change in:

- \* selling price
- \* fixed costs
- \* variable costs

\* sales.

Likely outcomes can then be evaluated and decisions made accordingly.

Now work out these two examples on your own:

- i. Calculate the break-even point for a newspaper vendor. He buys in newspapers at 20p each and sells them for 50p each. His fixed costs are £60 a day including the rate he pays to the local council. How many newspapers must he sell each day to break-even?
  
- ii. A large business has fixed costs of £250,000 per week. Its average sales revenue per item is £2, and its variable costs are on average 50p per item. How many items does it need to sell to break-even?