

LO2 Understand what makes a product or service financially viable

This learning outcome will enable you to understand the different types of costs that are incurred when producing a product or service. You will be able to practise numerical questions to gain an appreciation of how data is used by business organisations to make informed decisions.

Teaching content

In this learning outcome you will cover:

- 2.1 Cost of producing the product or service
- 2.2 Revenue generated by sales of the product or service
- 2.3 Use of break-even as an aid to decision making
- 2.4 Profit level

2.1 Cost of producing the product or service

Costs are expenses that businesses incur when producing and selling their different products and services. There are a number of ways of categorising these costs.

Fixed costs

Fixed costs are costs that remain unchanged when the output of a business organisation changes. For example, the rental costs of a clothing factory will not change regardless of whether the factory makes 10 items of clothing or 100 items of clothing. Even when the factory is closed, the rental costs remain unchanged.

Examples of fixed costs include:

- rent of business premises
- loan repayments made to financial institutions
- advertising of products and services
- insurance, e.g. of the buildings and the building contents
- salaries and wages paid to employees
- utilities such as electricity and water.

A graph of fixed costs will show a straight line (see Figure 1.6).

Although fixed costs do not vary with output, they will not always remain constant. For example, employees' salaries and electricity costs may go up, but the costs will be fixed with respect to the level of output.

Fixed costs will usually increase when a business organisation is working at full capacity. For example, if a clothes manufacturer requires extra factory space to produce its goods, its rental costs

Getting started

Working in small groups, consider a local bakery. Make a list of all of the costs the bakery will need to pay when producing and selling its bread, cakes and pastries.

Key terms

Fixed costs Costs that remain unchanged when the output of a business changes

Variable costs Costs that vary directly with (and are dependent on) the level of output

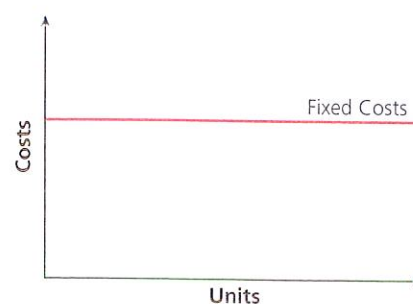


Figure 1.6 Fixed costs

will suddenly increase. These increases are known as stepped costs and can be seen on a graph of fixed costs (see Figure 1.7).

Variable costs

Variable costs vary directly with the level of output. This means that the costs are totally dependent on the level of output.

Examples of variable costs include:

- stock – also known as inventory, this is the goods or items that a business organisation keeps in its shop or warehouse for sale. For example, a sandwich shop may have bags of crisps and bottles of drink available to sell to its customers.
- raw materials – these are the basic resources that a product is made from. For example, a sandwich shop would have bread, butter, meat and salad as its raw materials.
- components – these are parts that make up a whole item. For example, in making a bread roll, flour would be a component.
- packaging costs – these are the costs in packaging the finished products. For example, the costs of putting the finished sandwiches into boxes for sale.

Consider the example of the clothes factory again: if production of clothing doubles, then the variable costs double; if production of clothing halves, the variable costs halve; if output is zero, then no variable costs are incurred. The formula for working out variable costs is shown below.

$$\text{Total variable costs} = \text{Variable cost per unit} \times \text{Output level}$$

Activity

Consider your local supermarket.

- 1 Make a list of the costs the supermarket will incur during one year.
- 2 Categorise these costs as either fixed or variable costs.

Note: Some costs, such as salaries and utilities, can be classified as either fixed costs or variable costs. However, for the Cambridge National in Enterprise and Marketing qualification, both of these are counted as fixed costs, while wages are classified as a variable cost.

Total costs

Total costs are calculated by adding together all of the business's costs for a particular level of output.

For example, when the clothing factory produces 100 items of clothing, the total cost would be the factory's fixed costs plus its variable costs for these 100 items of clothing. If no items of clothing are sold, then the total costs would just consist of fixed costs.

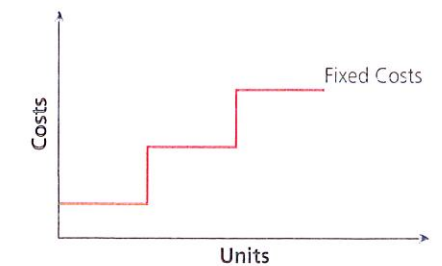


Figure 1.7 Stepped costs

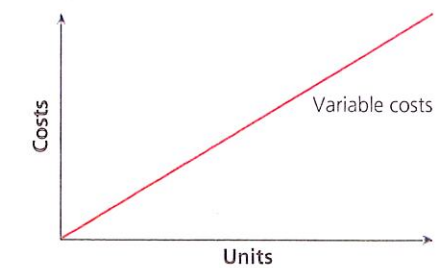


Figure 1.8 Variable costs

Key term

Total costs Calculated by adding together all the business's costs for a particular level of output

The formula for working out total costs is:

$$\text{Total costs} = \text{Fixed costs} + \text{Variable costs}$$

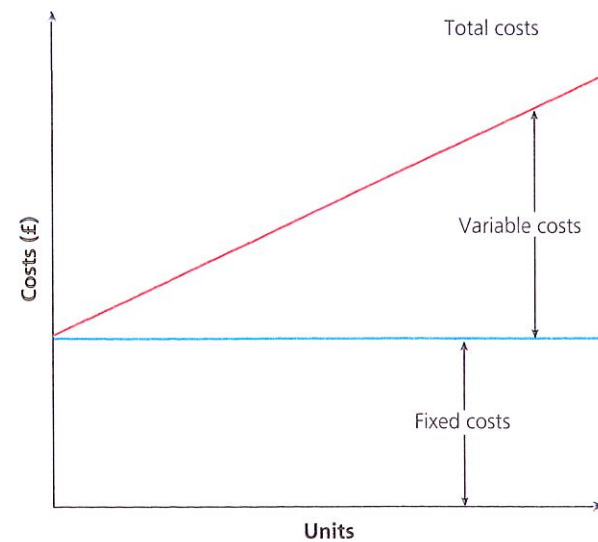


Figure 1.9 Total costs

Activity

Sunny Beach Supplies sells bucket and spades to holiday makers in Scarborough. The owner, Jim, has provided the following information:

For an output level of 100 buckets and spades, the fixed costs are £3 000 and the variable costs are £500.

- 1 Calculate total costs for an output of 100 buckets and spades.
- 2 Calculate the variable cost for one bucket and spade.
- 3 Calculate total costs if output increased to 150 buckets and spades.

2.2 Revenue generated by sales of the product or service

How to calculate total revenue

Revenue is defined as the money that a business earns from selling goods or providing services.

The **total revenue** a business earns is found by multiplying the selling price of the goods by the number of good sold:

$$\text{Total revenue} = \text{Selling price per unit} \times \text{Number of sales}$$

For example, if the clothing manufacturer sells 100 jumpers at £10.00 each, the total revenue will be $100 \times £10 = £1,000$.

Key terms

Revenue The money a business earns from selling goods or providing services

Total revenue The total amount of money earned at a particular output level. It is calculated as selling price per unit \times output level (number of sales)

Activity

Copy the table and fill in the gaps to complete the sales and revenue data for an office retailer.

Product	Selling price per unit (£)	Number of sales	Total revenue (£)
Table	150.00	1 000	?
Chair	75.00	5 000	?
Filing cabinet	250.00	200	?
Bookshelf	?	300	3 000
Storage unit	500.00	?	5 000
Laptop	550.00	350	?
Stationery set	5.00	3 500	?

2.3 Use of break-even as an aid to decision making

Many business organisations want to maximise the **profits** they make. There are a few exceptions where this does not apply, for example a local sports club may be non-profit-making and only exists to provide services to its members.

A profit is a financial gain. It is calculated as the difference between the total revenue and total costs.

Owners need to remember that there is always the possibility their business will not make a profit. For example, new businesses, small businesses and those struggling in a difficult economic environment may find it hard to generate any profits at all. In these cases, a business organisation may simply aim to **break-even**.

Definition of break-even

Break-even is the level of output at which total costs equal total revenue. At this point a business makes no profit and no loss.

A business is able to calculate the number of sales it needs to make in order to break-even each year. Whenever a business calculates its break-even point, there are a number of assumptions that have to be made:

- all output that has been made is sold
- there is no inventory (stock) left unsold
- only one type of product is made by the business organisation
- all costs are categorised as either fixed costs or variable costs.

There are two possible ways of calculating the break-even point:

- break-even formula
- break-even graph.

Key terms

Profit A financial gain. Profit is calculated as the difference between total revenue and total costs

Break-even The point at which a business makes no profit and no loss. It is the point at which total costs equal total revenue

Stretch activity

- 1 Use the internet to research a business that has appeared in the news because it has failed to make any profit.
- 2 Working in small groups, discuss the business's strategies for increasing its profit.

Break-even formula

The formula for break-even is:

$$\text{Break-even point (in units)} = \frac{\text{Fixed costs}}{\text{Selling price per unit} - \text{Variable cost per unit}}$$

Contribution is the amount left over after variable costs have been subtracted from sales revenue. Contribution per unit is calculated as selling price per unit minus variable cost per unit. This means that the break-even formula can also be written as:

$$\text{Break-even point (in units)} = \frac{\text{Fixed costs}}{\text{Contribution per unit}}$$

Contribution is different to profit, as fixed costs are not subtracted from the selling price.

Key term
Contribution The amount left over after variable costs have been subtracted from sales revenue. Contribution per unit is calculated as selling price per unit minus variable cost per unit

Activity

Complete the table to calculate contribution per unit and break-even point in units.

The first row has been completed as an example.

	Total fixed costs	Selling price per unit	Variable costs per unit	Contribution per unit	Break-even point in units
	£	£	£	£	Units
1	60000	20	10	20 - 10 = 10	60000 ÷ 10 = 6000 units
2	240000	100	60		
3	600000	25	15		
4	500000	36	11		
5	3000000	250	150		
6	500000	500	300		
7	500000	300	200		
8	300000	250	150		
9	300000	150	50		
10	900000	450	200		

Break-even graphs

It is also possible to calculate the break-even point and present it in a graph (see Figure 1.10).

When drawing a break-even graph, three lines need to be plotted and drawn:

- Fixed costs
- Total costs
- Total revenue

The break-even point is the point at which the total revenue and total costs lines cross.

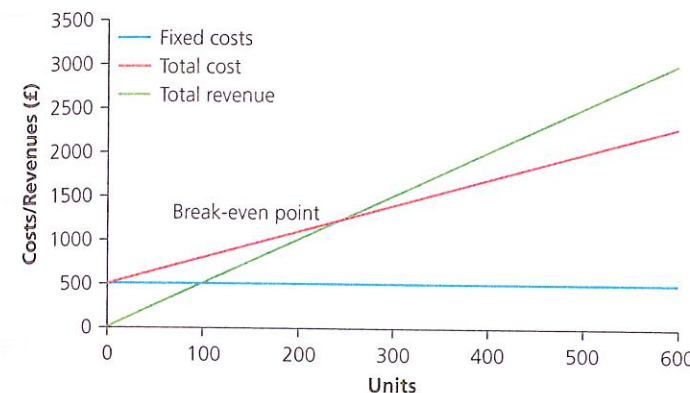


Figure 1.10 Break-even point

The fixed cost line on the graph above is a straight horizontal line because costs remain unchanged as the output level of a firm changes. It does not matter what level of output the firm produces (even zero output makes no difference); any cost which is a fixed cost will remain the same.

Total costs are calculated by adding fixed costs to variable costs. Therefore, the total cost line will start at the same point as the fixed cost line. It will then follow the same shape as a variable cost line.

Varying directly, in the case of variable costs, means that the total variable cost will be totally dependent on the level of output. If output doubles, then the variable cost would double. If halved, the variable costs would halve. If output was zero, then no variable costs would be incurred. An example can be seen in the diagram below:

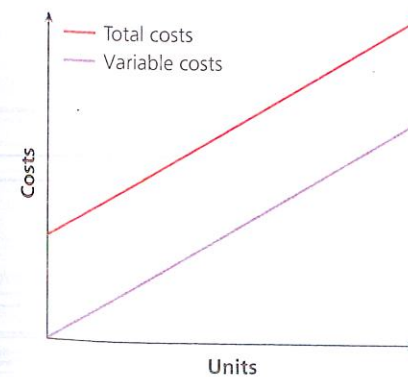


Figure 1.11 Impact of variable costs on total costs

The total revenue line represents the revenue earned from selling output. It is based on both the level of output and the selling price of this output.

The break-even number of sales that a business organisation needs to gain is found by looking at the point at which the total revenue line crosses the total cost line.

Case study

Snuffie Dog Apparel sells luxury dog collars and leads. The owner, Phil, has prepared the following table of costs based on varying levels of output. You are required to help Phil work out the missing figures. The first line has been completed as an example.

Output of collars and leads	Variable cost per collar and lead	Total variable costs	Total fixed costs	Total costs
Units	£	£	£	£
20 000	5	100 000 (20 000 x 5)	250 000	350 000 (100 000 + 250 000)
30 000	5		250 000	
50 000	5		250 000	
75 000	3		250 000	
90 000		270 000	250 000	
100 000	2.50			
150 000			250 000	

How break-even information is used

Break-even information is used by a business to determine how many units it needs to sell in order to cover its costs and not make a loss.

Accountants may use break-even information to see how different sales levels will affect an organisation's profits. By determining how much should be sold, targets can be set for the sales team.

When launching a new business or trying to secure finance, a business owner may calculate break-even information in order to persuade a bank to lend money. Break-even information can form part of a business plan.

Stretch activity

Wooden Toys Ltd produces high-quality rocking horses to sell in the UK. Each rocking horse sells for £250.00 and the company plans to produce and sell 2 000 rocking horses each year.

Using the data in the table, prepare a break-even graph to calculate the number of rocking horses Wooden Toys Ltd need to sell in order to break-even.

Cost per rocking horse	£
Raw materials	90.00
Components	10.00
Direct labour	60.00
Fixed costs	30.00

2.4 Profit level

Most businesses exist to make a profit. Profit is the business owners' reward for investing in the business organisation.

Calculating profit per unit

Businesses often want to know how much profit a particular product or service is making. The calculation for this is:

Selling price (revenue) per unit - Total cost per unit = Profit or loss per unit

(Remember: Total costs per unit = Fixed costs per unit + Variable costs per unit.)

Calculating profit for a given level of output

The calculation to find out profit for a given level of output is:

Sales revenue - Total costs = Profit or loss

Cash flow

Cash flow is the movement of money in and out of a business. Cash comes into a business organisation in the form of receipts, known as cash inflows. These receipts could be from taking out a loan or mortgage or from selling goods to customers.

Cash goes out of a business in the form of payments, known as cash outflows. These payments could include wages, salaries, utilities and raw materials.

Net cash flow is calculated as cash inflow minus cash outflow:

Net cash flow = Cash inflow - Cash outflow

Cash flow is different to profit as cash flow only relates to money coming in and out of a business organisation, whereas the calculation of total profit includes other items.

Test your knowledge

- 1 Explain the difference between fixed and variable costs.
- 2 Identify three fixed and three variable costs.
- 3 Define the term 'break-even point'.
- 4 Explain the difference between contribution and profit.
- 5 Discuss why a business may produce a break-even graph.
- 6 Calculate the total costs if sales revenue is £300 000 and profit is £50 000.

Key term

Cash flow The movement of money in and out of a business

Read about it

www.peterjones.com - provides information about Peter Jones as an entrepreneur and includes short video clips.

www.bbc.co.uk/news/business - up to date news articles relating to business and the current economic climate.

www.gov.uk/browse/tax - information from the UK Government, including key taxation details.

<http://europa.eu> - up to date information about the European Union.