

## 5.5 Break-even analysis

# Evaluation of break-even analysis

As with all quantitative and qualitative business management tools, break-even analysis has a variety of uses, but also limitations.

## Uses of break-even analysis

There are many uses for a break-even analysis. First and foremost, break-even analysis is a part of any good business plan as it enables a new business to understand what output it needs to achieve in order to earn profit. Not all businesses can earn a profit, and it is better to analyse whether this is the case for your business sooner rather than later.

When seeking funding, whether it is debt financing with a bank or equity financing with an investor, external stakeholders will want to see a break-even analysis so they can determine the level of risk involved. Businesses will be able to get financing from external stakeholders if there is a reasonable chance to earn profit.



**Figure 1.** A bank will want to see a break-even analysis before providing a business loan.

Credit: SDI Productions, Getty Images

Finally, a break-even analysis enables a business to change the cost and price/revenue assumptions of a business, as you did in [Section 5.5.3 \(/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/impact-of-changes-in-price-or-costs-on-breakeven-id-39498\)](#). Examining a number of scenarios can help a business to judge risk and also to make changes to the business to increase the chances of reaching break-even at a lower level of output. For example, if a business is not satisfied with the projected break-even level, then it could raise or lower prices to increase revenues or lower costs of production, in order to lower the break-even level. It could also change the incentives for sales teams to earn higher revenues. Or it could change the capacity of the business to support increased sales. At this point in the course, you have learned many strategies that a business could take to increase revenues or decrease costs.

## Limitations of break-even analysis

As with all quantitative tools, however, break-even analysis has limitations. The figures used for fixed costs, variable costs and revenues are estimates. It is very likely that costs will not be as anticipated, and revenues cannot be predicted with complete accuracy. Business activity is dynamic and any change to internal or external factors will impact costs and revenues. So, businesses need to pay attention to these changes and revise their break-even analyses with changing conditions.



**Figure 2.** Supply chain problems, like this accident in a shipping canal, could increase costs of production and raise the break-even quantity.

Credit: SONGHPOL THESAKIT, Getty Images

Another limitation of break-even analysis is that it assumes that costs of production are constant (linear) across different levels of output. However, you learned in [Subtopic 1.5 \(/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/the-big-picture-id-36532\)](#) that as output increases, businesses are likely to experience

economies of scale, leading to lower average costs of production. The break-even method outlined here does not account for this. If costs of production decline as output increases, then the break-even point could be achieved at a lower output.

Also, break-even analysis assumes that all customers pay the same price for the product, again producing a linear result. However, in reality this is unlikely to be the case. Many businesses can use dynamic pricing to charge different prices to different customers for the same product. For example, people who buy train tickets may pay different prices based on their age, or how close to the travel time they booked the ticket. When businesses use dynamic pricing, they are often able to raise their overall revenues, which would reduce the break-even quantity.

Finally, a company with many products would need to conduct a separate break-even analysis for each product, which can be cumbersome for large businesses with a diverse product portfolio.

### Making connections

One assumption of break-even analysis is that customers all pay the same price for the product. However, it is often the case that businesses can charge different prices to different customers according to their willingness and ability to pay. In business management, this is called dynamic pricing. HL students learn more about dynamic pricing in [Section 4.5.4 \(/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/further-pricing-methods-id-39008\)](#).  
  
IBDP Economics students also learn about this pricing technique. In that course, dynamic pricing is called price discrimination.

**Table 1.** Summary of uses and limitations of break-even analysis.

Uses of break-even analysis	Limitations of break-even analysis
<b>Business plan.</b> For a business to assess whether its idea will earn a profit.	<b>Changing assumptions.</b> Costs and revenues will change, so businesses need to regularly update assumptions for break-even analysis.

<p><b>Financing.</b> Banks and investors will ask for a break-even analysis so they can judge the risk of a loan or investment.</p>	<p><b>Costs and revenues are not linear.</b> Break-even analysis assumes costs and revenues are linear, but in reality they are not.</p>
<p><b>Strategy changes.</b> A business can examine several different cost and revenue scenarios in order to consider strategy changes that might increase revenues or decrease costs.</p>	<p><b>Time-consuming for large product portfolios.</b> Separate break-even analyses must be done for each product.</p>

## Theory of Knowledge

Break-even analysis is deceptively simple. With just a few variables, a business can make predictions about profit levels at any given output. But there is a world of complexity behind each of the variables. Imagine how many factors there are, both internal and external, that affect business revenues and costs of production. And these factors can change at any time, even daily, hourly or by the minute.

When external stakeholders examine a break-even analysis, they should not be blinded by the maths and think that the analysis is scientific. A given break-even analysis is only one of an infinite set of possible outcomes for the business. Some of those possible outcomes are more informed than others, but none of them are certain.

- To what extent can the maths behind break-even analysis be considered reliable in a dynamic business environment?

## Activity

**Learner profile:** Thinkers

**Approaches to learning:** Thinking skills (transfer)

Imagine that you are planning on starting a clothes laundry business in your neighbourhood. Using that context:

1. Imagine how break-even analysis would be useful to you as a business owner.
2. What other kinds of research would you need to carry out in order to determine whether this business is viable (in other words, whether it has the possibility of earning a reasonable profit?)

Discuss with a partner or as a class.