



# Break-Even Analysis

## What is Break-Even?

Break-even analysis is another essential decision making tool. A break-even analysis tells you how many units of a product (or service) must be sold, or how much revenue must be generated, in order to break even. *Only after you cross the breakeven point will your business start to make a profit.*

The break-even point is defined as Total Sales minus Variable Costs minus Fixed Costs equals Zero; the point where a company's total sales equal total costs.

Breaking even depends on a variety of factors:

- **Fixed Costs:** those that remain the same regardless of how much of your product or service you sell such as rent, mortgage, utilities, insurance, and so on.
- **Variable Costs:** those that vary in relation to the amount you sell or produce such as servicing supplies, raw materials, sales commissions, labour that is dependent on the amount manufactured, and so on.
- **Per unit selling price:** the price you determine you must sell a product or unit of service at.

A Break-even Analysis examines the interaction of fixed costs, variable costs, price, and unit volume to help you determine what combination of elements are necessary to break even. The analysis is also useful for showing a prospective financing source that you are aware of how much money you need to get your company going, or to keep it going. It can also be used to chart positive cash flow for a planned new product or service.

## Breakeven Calculation:

### DEFINITIONS:

- **Variable costs:** those that change based on the amount produced/sold. These include items such as raw materials, packaging, certain labor costs, transportation and freight. In many instances all costs associated with the production of a product or service are lumped together under the heading 'cost of goods' or 'cost of sales' or 'cost of goods sold' (COGS). For example, suppose that it costs \$4.00 to make one unit of a particular product or to create one unit of a particular service offering. If you produce 200 units of that product or service, it will cost you \$800 in 'cost of goods'; if you produce 500, it will cost you \$2,000 worth of 'cost of goods'. The costs vary with the amount of product produced and are therefore termed variable.
- **Fixed costs:** those that do not change regardless of how many units are produced/sold. These include items such as rent, utilities, loan payments, insurance and other overhead costs such as advertising, market research costs, etc.
- **Unit price:** per unit selling price. Your unit selling price must cover all costs of goods (or services) sold in order for you to break even.

To calculate break-even then, first determine the price at which all variable costs to produce the product or service are covered. Next, determine what your total fixed costs are. (Use total annual fixed

costs for calculating your annual break-even, or total monthly fixed costs for calculating a monthly break-even.)

The formulas for calculating break-even in both units and dollars are shown below:

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$$\text{Break-even units} = \frac{\text{Total Fixed Costs}}{\text{Unit Price} - \text{Unit Variable Costs}}$$

This figure is the number of units that you have to sell in order to break even. If you are selling more than this, then you should be making a profit and if you sell less than this, you will not even be covering your fixed expenses.

$$\text{Break-even dollar sales} = \frac{\text{Total Fixed Costs}}{(\text{Unit Price} - \text{Unit Variable Costs}) \div \text{Unit Price}}$$

This figure is the level of sales that you must reach in order to break even. Again, if you are reaching more than this, then you should be making a profit and if you are not, you will not be selling enough to cover your fixed expenses.

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A Break-even analysis lets you examine the impacts of price and unit volume adjustments. For example, let's assume it costs you \$8,000 each month to run the business. As well, you had determined that the per-unit variable costs of your product would be \$10 within a volume range of 1,000 to 2,500 units. The break-even dollar sales each month is then \$8,000 divided by (\$20 - \$10) divided by \$20, or \$16,000. Break-even units would be \$8,000 divided by (\$20-\$10) or 800 units.

Let's assume you estimated that at a per-unit selling price of \$20 you could sell 1,200 units per month. Results of this combination would be that at that volume and price, this business would generate monthly sales of \$24,000 and operating profit of \$4,000. (\$24,000 in sales minus \$12,000 of variable costs minus \$8,000 of fixed costs.) If, however, you were to lower your price to \$17 and could then sell 2,300 units per month, the business would generate monthly sales of \$39,100 and operating profit of \$8,100.

By using this analysis, it is possible to determine the impacts of sales volumes early on so that you can make adjustments. For example if you had a monthly breakeven of \$16,000 dollars or 800 units and you were open 22 days each month on average, you know that you need to make an average sales of 36 units each day to break even. Track your sales daily, compare the total often to your break-even calculation, and you will know where you stand in relation to covering your monthly costs.

**If you are not reaching break-even, make adjustments!**

Three ways you can still break even when revenue activity falls:

- Reduce fixed costs
- Reduce the variable cost per unit
- Increase revenue per unit