

For any further information regarding this article please contact Michael Norrish on 0408 914 051

WHAT IS A BREAK-EVEN?

In every business there is a point at which the operation makes neither a profit nor loss. Obviously the aim is to always remain above this line and in order to be able to do that you must know where it is.

Put simply the “*break-even point occurs at that sales volume which just returns sufficient surplus to meet all costs (both fixed and variable) incurred*”.

It is different for each business (and type of business) and will change within the business as it grows. The break-even point can be specified in numerical terms, i.e. a specific number of sale items, or in dollar terms namely a certain value of sales.

There are two ways this information can be put to good use in business both in the day-to-day operations and in the planning for the future.

Firstly the break-even figure (either number or value) can be broken down into monthly (or any other appropriate period) figures. The actual results for the same period can then be compared. In this manner it is possible to gain an indication of the business viability on a regular and frequent basis without the need for the passage of significant time or the preparation of specific accounting reports.

The second benefit of the break-even point is to provide a guide as to the amount of “leeway” there is in the business. Clearly if the break-even point occurs at close to the projected sales figures there is little margin for error. This is a dangerous situation to be in as forecasts are, at best, an indication of likely future results and are thus susceptible to variations. If a small variation in the forecast result will render the venture un-economical there is little point in proceeding unless a safer option can be discovered.

The break-even point formulae are: -

1. (see example below)

$$\frac{\text{Fixed Expenses}}{\text{Contribution Margin per item}} = \text{Break-Even point in number of units sold}$$

OR

2. (see example below)

$$\frac{\text{Fixed Expenses}}{\text{Total contribution \% of total sales}} = \text{Break-Even point in \$ sales value}$$

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It is important to identify correctly the contribution margin and fixed expenses before making these calculations.

The contribution margin is the sales price less the variable expenses, by number of items for the first formula and in total dollar sales for the second.

Fixed expenses must include all non-variable expenses including the return to owner in the form of drawings, taxes and loan repayments. Business capital costs for the year (excluding initial capital input) must also be included, for example the principal portion of loan repayments.

e.g.

| | |
|--------------------------|---|
| Selling price of product | \$120.00 |
| Variable Expenses | \$45.00 |
| Contribution | \$75.00 = 62.5% (\$75.00 divided by \$120.00 multiplied by 100) |

Assumed Fixed Expenses \$72,600.00

Break Even Point

1 $\frac{\$72,600.00}{\$75.00} = 968$ in number of units

2 $\frac{\$72,600.00}{62.50\%} = \$116,160.00$ in dollar value sales
(62.50% = 0.625)

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BREAK-EVEN CALCULATIONS

Definition

In pure accounting terms the break-even point occurs when the business makes no profit or loss but the level of sales achieved will cover all fixed and variable expenses.

For the purposes of calculating your break-even point you must be sure to include all your own needs as part of the fixed expenses i.e. drawings, tax liability loans or other required funds (holiday, purchase of assets).

In addition you must include any capital expenditure for the business, which has not been covered by the initial capital contributions or included in the profit and loss account.

There are **three** steps required to calculate your break-even point.

(a) Calculate the “Variable Expense Factor”

$$\frac{\text{Variable Expenses (“VE”)}}{\text{Divided by Total Sales (“TS”)}} \times 100 = \text{xx\%}$$

(b) Calculate the “Contribution Margin”

$$\frac{\text{Total Sales (“TS”) minus Variable Expenses (“VE”)}}{\text{Divided by Total Sales (“TS”)}} = .xxxx = \text{ (“CM”)}$$

(c) Calculate “Break-Even Sales”

$$\frac{\text{Fixed Expenses (“FE”)}}{\text{Divided by Contribution Margin (“CM”)}} = \$ \text{ xxxxx}$$

Verification Calculation

It is also possible to verify that you have done the calculation correctly and the Check Answer methodology is as follows: -

| | |
|---|----|
| Break Even Sales \$ [from (c) above] | \$ |
| less Variable Expenses [using % from (a) above] and applying it to BE Sales from (c) above] | \$ |
| Sub Total | \$ |
| less Fixed Expenses | \$ |
| Total (should be nil!!) | \$ |

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CALCULATING YOUR BREAK-EVEN

Estimate your Probable Costings

You will need to take into account both the fixed and variable expenses involved in operating your business:

- **Fixed Expenses:** Those expenses which remain constant irrespective of fluctuations in sales. They include expenses such as rent, lease of plant and equipment, interest on loans, rates, insurance premiums utilities (power & water) and so on.
- **Variable Expenses:** Those expenses, which increase or decrease in direct proportion to changes in business activity. These expenses include (e.g.) raw materials, packaging, production costs, sales commissions, production labour (wages). It does not include management wages/salary.

Calculate the Break-Even Point

Break-Even Sales are calculated using the following formula: -

Break-Even Sales = Fixed Expenses divided by Contribution Margin

The Contribution Margin is the amount required to cover Fixed Expenses. It is calculated by: -

Contribution Margin = $\frac{\text{Total Sales} \textit{ minus } \textit{Variable Expenses}}{\textit{divided by Total Sales}}$

Example

A small business with the anticipated figures for its first year of operation of: -

- Sales \$100,000
- Fixed Expenses \$ 37,000
- Variable Expenses \$ 47,000
- Total Expenses \$ 84,000

Variable Expense Factor = \$47,000 divided by \$100,000 multiplied by 100 = 47.00%

This means that 47 cents out of every sales dollar are used to cover variable expenses.

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The contribution margin would be:

$$\frac{\$100,000 \text{ (Total Sales)} \text{ minus } \$47,000 \text{ (Variable Expenses)}}{\text{divided by } 100,000 \text{ (Total sales)}} = 0.53 \text{ or } 53 \text{ cents in each dollar}$$

The break-even sales would be:
$$\frac{\$37,000 \text{ (Fixed Expenses)}}{\text{divided by } 0.53 \text{ (Contribution Margin)}} = \$69,811$$

At this sales level, all expenses would be covered, but no profit made, that is:

| | |
|------------------------------|----------------------|
| Sales at Break-Even point | \$69,811 |
| Less Variable Expenses (47%) | <u>\$32,811 (**)</u> |
| Contribution Margin | \$37,000 |
| Less Fixed Expenses | <u>\$37,000</u> |
| PROFIT | NIL |

NB – (**) This calculation is \$69,811 [Break-Even Sales] multiplied by 47% [Variable Expense Factor] = \$32,811

Therefore, we can conclude that the anticipated total sales of \$100,000 will by far exceed the break-even point of \$69,811.

For a **Service Industry** business (where there are no variable expenses), the break-even point is the total cost of all fixed expenses (including expected salary).

