

Short-Term Decision Making

HOW DO YOU make decision? Do you have your own method of sorting through options? Whether you make a list of pros and cons or mentally perform a process of elimination, you do something to organize your thoughts and finally make your decision. Businesses make decisions every day, some of which require weeks and months of planning and others that must be decided upon quickly so as not to miss an opportunity. When making short-term operational decisions, cost-volume-profit (C-V-P) analysis is a useful tool.



Objective:



Perform cost-volume-profit (C-V-P) analysis and use it to analyze special order and make-or-buy decisions.

Key Terms:



breakeven point

contribution margin per unit (CM)

contribution margin ratio

cost-volume-profit (C-V-P) analysis

fixed costs (FC)

make-or-buy decisions

order of operations

profit

sales mix

short-term decisions

variable costs (VC)

Short-Term Decision Making

Short-term decisions are those that occur within one year and must be resolved in a timely manner. Any short-term decisions are weighed as to the affect on taxes. According to the Investopedia website, an accountant would consider “an asset expected to be converted into cash in the next year, or a liability coming due in the next year” as examples of common short-

term decisions. Another name for this short-term process is “current assets and liabilities.” In business, short-term decisions arise and assumptions and models are made to efficiently make these types of decisions. The decision-making process has five (5) steps that one follows: this can be a conscious or an unconscious process by the account manager. The steps are:

1. Define the goal.
2. Identify alternative courses of action.
3. Gather and analyze information.
4. Choose the best alternative.
5. Implement the alternative.

COST-VOLUME-PROFIT (C-V-P) ANALYSIS

Cost-volume-profit (C-V-P) analysis is the study of how costs and revenues change in response to changes in the volume of goods or services provided to a customer. It is one model of short-term decision-making. Companies use C-V-P analysis as a tool to assess whether it is possible to sell a sufficient amount of a given product to cover the costs of manufacturing or distributing that product. In accounting operations, short-term decisions assume capacity is fixed.

Assumptions under C-V-P include:

Selling price, variable costs, and fixed costs remain constant regardless of the volume sold.

The number of units produced or purchased equals the number of units sold.

When more than one product is sold, the **sales mix** (ratio of products sold) remains constant.

Breakeven Point Calculations

Breakeven point is the volume of product produced and sold where Total Revenue equals Total Costs and in which no profit or loss exists. The breakeven point of a product can be determined using C-V-P analysis.

Total Revenue and Total Cost equations (formulas):

Total Revenue = Selling Price (SP) per Unit × Number of Units Sold

Total Cost = (Variable Cost (VC) per Unit × Number of Units Sold) + Fixed Costs (FC)

[NOTE: Use the mathematics principle of order of operations in the Total Cost equation.]

Order of operations is the sequence in which calculations in an equation are performed. The standard order of operations is: 1) Perform the operations within the grouping symbols first (within the parentheses first). 2) Next, perform all multiplications and divisions. 3) Finally, perform all additions and subtractions.

Cost and Profit Definitions

Variable costs (VC) are prices that vary with the level of output. Examples include direct materials and direct labor. **Fixed costs (FC)** are prices that remain constant despite the level of output. Examples include insurance, rent, and management salaries. As Total Revenue and Total Cost is dependent upon the number of units sold, the difference between the selling price per unit and the variable cost per unit is the **contribution margin per unit** (or contribution margin or CM) is the portion of each sales dollar that contributes to covering the fixed costs. This information is useful to determine the minimum possible price at which to sell a product.

Profit is the surplus that remains after total costs (TC) are subtracted from total revenue (TR). $[TR - TC = \text{Profit}]$

Breakeven Point per Unit is calculated as: $(\text{Fixed Cost} + \text{Target Profit}) \div \text{Contribution Margin per Unit}$. $[(FC + TP) \div CM = \text{Breakeven Point}]$ True breakeven point is when Profit equals zero.

EXAMPLE: Your business sells sunglasses for \$11.00 per pair. The variable costs (VC) to produce the sunglasses are \$5.00. This means that there is \$6.00 (Selling Price (SP) less VC) available to cover Fixed Costs (FC). Six dollars is the contribution margin per unit (CM). If your business has \$120,000.00 in fixed costs, how many units must be sold to breakeven? Divide the fixed costs of \$120,000.00 by the \$6.00 of CM per unit to find the breakeven point. \$120,000.00 divided by \$6.00 is 20,000 units. So, on pair 20,001, your business begins to be profitable.

When a dollar amount is used for TP the result is the number of units that must be sold to achieve a Target Profit (TP).

TP EXAMPLE: The majority of businesses operate with the expectation of doing more than breaking even. If you want to know how many units must be sold to achieve a certain profit level, include a dollar amount for TP instead of zero. Let's say you want to know how many sunglasses units must be sold to achieve a target profit of \$25,000.00 when fixed costs are \$120,000.00. The updated calculation would be \$120,000.00 fixed costs plus the TP of \$25,000.00 = \$145,000.00; and that amount would be divided by the CM of \$6.00. To achieve a TP of \$25,000.00,

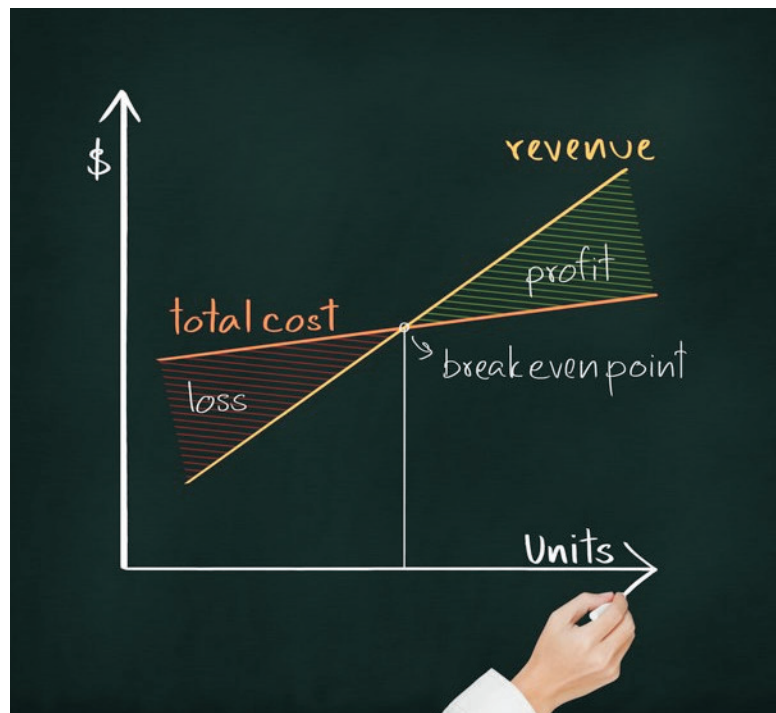


FIGURE 1. Breakeven point is the volume of product produced and sold where Total Revenue equals Total Costs and in which no profit or loss exists. This graph shows the point at which profit is zero. Once revenues exceed costs, a company begins to be profitable.

24,166.67 units must be sold. As you cannot sell 0.67 of a unit, 24,167 units must be sold to breakeven; 24,166 units would be too few to generate a profit.

Breakeven Point in Dollars is calculated by substituting the contribution margin ratio for the contribution margin per unit figure in the formula.

Breakeven Point in Dollars EXAMPLE: The breakeven point in dollars can also be calculated by substituting a contribution margin ratio in place of contribution margin per unit in the formula. The **contribution margin ratio** is the contribution margin per unit divided by the selling price per unit and is calculated as: $CM \text{ per Unit} \div SP \text{ per Unit}$. [$CM \text{ per Unit} \div SP \text{ per Unit} = CM \text{ Ratio}$] For example, using the sunglasses numbers, the contribution margin ratio would be calculated as $\$6.00 \div \11.00 , or 0.545; and the breakeven point in dollars for the sunglasses would be calculated as $\$120,000.00 \text{ FC} \div 0.545$, or $\$220,183.49$. This means that to breakeven, you must sell $\$220,183.49$ worth of sunglasses (at $\$11.00$ a pair).

To incorporate a tax rate, the formula changes to: $(FC + (TP \div 1 - \text{tax rate})) \div CM$.

TAX RATE EXAMPLE: Most companies are subject to taxes. To incorporate a tax rate, the formula changes to: $(FC + (TP \div 1 - \text{tax rate})) \div CM$. If your company has a 15% tax rate tacked onto a $\$25,000.00$ profit, you must sell more units to achieve the target profit: $\$25,000.00 \div (1 - 0.15) = \$29,411.76$. The updated calculation would be the $\$120,000.00$ of FC plus the TP with a 15% tax rate of $\$29,411.76$, which equals $\$149,411.76$. That amount is divided by the CM: $\$149,411.76 \div \$6.00 = 24,901.96$ Units, rounded to 24,902 units.

SPECIAL ORDER DECISIONS

Special orders are contracts (or requisitions) a company did not anticipate when the budget was developed. Customers typically initiate a special order. For example: A customer requests a large order at a reduced price or requests a bid on a large order. The business must decide whether or not to accept the special order. Special orders are a type of short-term decision businesses must make frequently. They make the accountant and business weigh whether the lower price or lower contribution margin outweighs any additional profit the order would create.

The original selling price becomes irrelevant because the business is not getting the original selling price. Other factors may come into play, but a general rule of thumb is if the profit is positive, accept the order. Reject the offer if the profit is negative.



FIGURE 2. One of the risks of accepting a special order—at a reduced price—is word getting out to your other customers. A special order is meant to be a one-time contract; it is not meant as a re-pricing of a company's product.



DIGGING DEEPER...

UNCOVERING ADDITIONAL FACTS: Opportunity Cost

An opportunity cost is the contribution margin lost by choosing an alternative decision. Research how opportunity cost is considered in short-term decision-making and how it relates to cost-volume-profit analysis. Begin your research by watching the video “Opportunity Cost: Definition & Real World Examples” at <http://study.com/academy/lesson/opportunity-cost-definition-real-world-examples.html>. Then, answer the two opportunity cost scenarios in the Quiz.

MAKE-OR-BUY DECISIONS

Make-or-buy decisions are the act of choosing between producing an item in-house (make) or purchasing it from another supplier (buy; outsource). The company’s choice is often one that involves first determining which option is least expensive. In this type of decision, revenues become irrelevant. The most important factors in a make-or-buy decision are:

Cost (This factor must be investigated long-term.)

Availability of production capacity

Other factors include:

Quality of the outsourced product

Customer reaction to the outsourced product

“Make” decision analysis includes the following considerations:

Labor costs

Factory overhead costs (incremental)

Inventory-carrying costs (incremental)

Incremental purchasing, capital, and managerial costs

Cost of goods delivery

Follow-on costs (e.g., from quality and related problems)

“Buy” decision analysis includes the following considerations:

Transportation costs

Receiving and inspection costs

Purchasing costs (incremental)

Purchase price of part or fitting

Follow-on costs (e.g., related to quality or service)

Summary:



When selling a product, you must have a sales target in mind. And, at a minimum, your company must breakeven to stay in business. Cost-volume-profit (C-V-P) analysis is one model used for calculating a breakeven point and determining the number of units to be sold to achieve a target profit with a tax imposition.

Additionally, C-V-P is useful for analyzing a special order or a make-or-buy decision. The key with a special order is to use the offered selling price in the formula. The key with make-or-buy is to focus only on costs and ignore the selling price.

Checking Your Knowledge:



1. In your own words, what is the contribution margin per unit?
2. Explain the difference between a fixed cost and a variable cost.
3. What is the formula to calculate the breakeven point?
4. What is a special order decision?
5. What is the process of making a make-or-buy decision?

Expanding Your Knowledge:



Choose a problem from your instructor and change one C-V-P component at a time to see the effects of changes in selling price, variable costs, and fixed costs. For example, increase the selling price by 10% or decrease fixed costs by 20%. Does the breakeven point increase, decrease, or stay the same?

Cost-volume-profit is also a tool in sensitivity analysis. Research what is meant by sensitivity analysis and how it relates to C-V-P.

Web Links:



Contribution Margin

<http://www.accountingtools.com/contribution-margin>

Cost-Volume-Profit Analysis Explained

<https://www.wyzant.com/resources/lessons/accounting/cost-volume-profit>

Special Order Pricing Example

<http://accountingexplained.com/managerial/relevant-costing/special-order-pricing>