

General Cost Classification

What does the word *cost* mean to you?

Is it the price you pay for something of value, like a cell phone? A cash outflow, like monthly rent? Something that affects profitability, like salaries? Organizations, like individuals, deal with different types of costs. At different times organizations put more or less emphasis on these costs. When times are good, companies often focus on selling as much as they can, with costs taking a backseat. But when times get tough, companies shift their emphasis from selling to cutting costs. Unfortunately, when times are really bad, companies may find that they are unable to cut costs fast enough, leading to Chapter 11 bankruptcy, as was the case with Hostess Brands.

Costs and Cost Terminology

A **cost** is a resource sacrificed or forgone to achieve a specific objective. A cost (such as the cost of labor or advertising) is usually measured as the monetary amount that must be paid to acquire goods or services. An **actual cost** is the cost incurred (a historical or past cost), as distinguished from a **budgeted cost**, which is a predicted, or forecasted, cost (a future cost). When you think of a cost, you invariably think of it in the context of putting a price on a particular thing. We call this “thing” a **cost object**, which is anything for which a cost measurement is desired.

How does a cost system determine the costs of various cost objects? Typically in two stages: accumulation followed by assignment. **Cost accumulation** is the collection of cost data in some organized way by means of an accounting system.

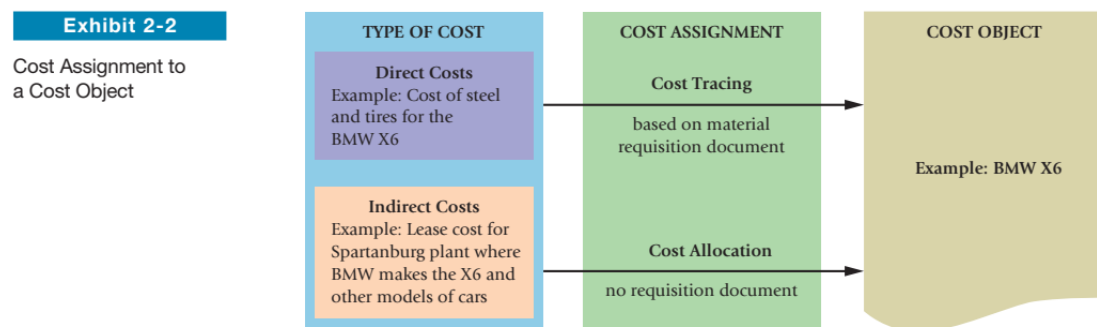
Direct Costs and Indirect Costs

We now describe how costs are classified as direct and indirect costs and the methods used to assign these costs to cost objects.



1. **Direct costs of a cost object** are related to the particular cost object and can be traced to it in an economically feasible (cost-effective) way. The term **cost tracing** is used to describe the assignment of direct costs to a particular cost object.
2. **Indirect costs of a cost object** are related to the particular cost object but cannot be traced to it in an economically feasible (cost-effective) way.

The term **cost allocation** is used to describe the assignment of indirect costs to a particular cost object. **Cost assignment** is a general term that encompasses both (1) tracing direct costs to a cost object and (2) allocating indirect costs to a cost object. Exhibit 2-2 depicts direct costs and indirect costs and both forms of cost assignment—cost tracing and cost allocation—using the BMW X6 as an example.



Cost Allocation Challenges

Managers want to assign costs accurately to cost objects because inaccurate product costs will mislead managers about the profitability of different products. This, for example, could result in the managers unknowingly working harder to promote less-profitable products instead of more-profitable products. Generally, managers are more confident about the accuracy of the direct costs of cost objects, such as the cost of steel and tires of the X6.

Be aware that a specific cost may be both a direct cost of one cost object and an indirect cost of another cost object. *That is, the direct/indirect classification depends on the choice of the cost object.*



Cost-Behavior Patterns: Variable Costs and Fixed Costs

Costing systems record the cost of resources acquired, such as materials, labor, and equipment, and track how those resources are used to produce and sell products or services. Recording the costs of resources acquired and used allows managers to see how costs behave. Consider two basic types of cost-behavior patterns found in many accounting systems. A **variable cost** changes *in total* in proportion to changes in the related level of total activity or volume of output produced. A **fixed cost** remains unchanged *in total* for a given time period, despite wide changes in the related level of total activity or volume of output produced. Costs are defined as variable or fixed for *a specific activity* and for *a given time period*. Identifying a cost as variable or fixed provides valuable information for making many management decisions and is an important input when evaluating performance.

1. **Variable costs.** If BMW buys a steering wheel at \$600 for each of its BMW X6 vehicles, then the total cost of steering wheels is \$600 times the number of vehicles produced, as the following table illustrates.

Number of X6s Produced Variable (1)	Cost per Steering Wheel (2)	Total Variable Cost of Steering Wheels (3) = (1) × (2)
1	\$600	\$ 600
1,000	600	600,000
3,000	600	1,800,000

The steering wheel cost is an example of a variable cost because *total cost* changes in proportion to changes in the number of vehicles produced. However, the cost per unit of a variable cost is constant.

2. **Fixed costs.** Suppose BMW incurs a total cost of \$2,000,000 per year for supervisors who work exclusively on the X6 line. These costs are unchanged in total over a designated range of vehicles produced during a given time span (see Exhibit 2-3, Panel B). Fixed costs become smaller and smaller on a per-unit basis as the number of vehicles assembled increases, as the following table shows.

Annual Total Fixed Supervision Costs for BMW X6 Assembly Line (1)	Number of X6s Produced (2)	Fixed Supervision Cost per X6 (3) = (1) ÷ (2)
\$2000000	10000	\$200
\$2000000	25000	80
\$2000000	50000	40

It is precisely because *total* line supervision costs are fixed at \$2,000,000 that fixed supervision cost per X6 decreases as the number of X6s produced increases; the same fixed cost is spread over a larger number of X6s. Do not be misled by the change in fixed cost per unit. Just as in the case of variable costs, when considering fixed costs, always focus on *total costs*. Costs are fixed when total costs remain unchanged despite significant changes in the level of total activity or volume.

Do not assume that individual cost items are inherently variable or fixed. Consider labor costs. Labor costs can be purely variable for units produced when workers are paid on a piece-unit basis (for each unit they make). In contrast, other companies negotiate labor union agreements with set annual salaries that contain no-layoff clauses for workers. At a company such as this, the salaries would appropriately be classified as fixed. Some costs have both fixed and variable elements and are called *mixed* or *semivariable* costs. For example, a company's telephone costs may consist of a fixed monthly cost as well as a cost per phone-minute used.

Cost Drivers

A **cost driver** is a variable, such as the level of activity or volume, that causally affects costs over a given time span. An *activity* is an event, task, or unit of work with a specified purpose—for example, designing products, setting up machines, or testing products. The level of activity or volume is a cost driver if there is a cause-and-effect relationship between a change in the level of activity or volume and a change in the level of total costs. For example, if product-design costs change with the number of parts in a product, the number of parts is a cost driver of product design costs. Similarly, miles driven is often a cost driver of distribution costs.



Relevant Range

Relevant range is the band or range of normal activity level or volume in which there is a specific relationship between the level of activity or volume and the cost in question. For example, a fixed cost is fixed only in relation to a given wide range of total activity or volume (at which the company is expected to operate) and only for a given time span (usually a particular budget period).

Total Costs and Unit Costs

The preceding section concentrated on the behavior patterns of total costs in relation to activity or volume levels. We now consider unit costs.

Unit Costs

A **unit cost**, also called an **average cost**, is calculated by dividing the total cost by the related number of units produced. In many decision contexts, calculating a unit cost is essential. Accounting systems typically report both total-cost amounts and average-cost-per-unit amounts. The units might be expressed in various ways. Examples are automobiles assembled, packages delivered, or hours worked.

Use Unit Costs Cautiously

Although unit costs are regularly used in financial reports and for making product mix and pricing decisions, *managers should think in terms of total costs rather than unit costs for many decisions*. Consider the manager of the Memphis plant of Tennessee Products. Assume the \$40,000,000 in costs in 2014 consist of \$10,000,000 of fixed costs and \$30,000,000 of variable costs (at \$60 variable cost per speaker system produced). Suppose the total fixed costs and the variable cost per speaker system in 2015 are expected to be unchanged from 2014. The budgeted costs for 2015 at different production levels, calculated on the basis of total variable costs, total fixed costs, and total costs, are:

Units Produced (1)	Variable Cost per Unit (2)	Total Variable Costs (3) = (1) × (2)	Total Fixed Costs (4)	Total Costs (5) = (3) + (4)	Unit Cost (6) = (5) ÷ (1)
100,000	\$60	\$ 6,000,000	\$10,000,000	\$16,000,000	\$160.00
200,000	\$60	\$12,000,000	\$10,000,000	\$22,000,000	\$110.00
500,000	\$60	\$30,000,000	\$10,000,000	\$40,000,000	\$ 80.00
800,000	\$60	\$48,000,000	\$10,000,000	\$58,000,000	\$ 72.50
1,000,000	\$60	\$60,000,000	\$10,000,000	\$70,000,000	\$ 70.00

Business Sectors, Types of Inventory, Inventoriable Costs, and Period Costs

We define three sectors of the economy and provide examples of companies in each sector.

1. **Manufacturing-sector companies** purchase materials and components and convert them into various finished goods.
2. **Merchandising-sector companies** purchase and then sell tangible products without changing their basic form.
3. **Service-sector companies** provide services (intangible products).

Types of Inventory

Manufacturing-sector companies purchase materials and components and convert them into finished goods. These companies typically have one or more of the following three types of inventory:

1. **Direct materials inventory.** Direct materials in stock that will be used in the manufacturing process.
2. **Work-in-process inventory.** Goods partially worked on but not yet completed.
3. **Finished goods inventory.** Goods completed but not yet sold.

Merchandising-sector companies purchase tangible products and then sell them without changing their basic form. These companies hold only one type of inventory, which is products in their original purchased form, called *merchandise inventory*. Service-sector companies provide only services or intangible products and do not hold inventories of tangible products.



Commonly Used Classifications of Manufacturing Costs

Three terms commonly used when describing manufacturing costs are *direct materials costs*, *direct manufacturing labor costs*, and *indirect manufacturing costs*. These terms build on the direct versus indirect cost distinction we described earlier in the context of manufacturing costs.

1. **Direct materials costs** are the acquisition costs of all materials that eventually become part of the cost object (work in process and then finished goods) and can be traced to the cost object in an economically feasible way.
2. **Direct manufacturing labor costs** include the compensation of all manufacturing labor that can be traced to the cost object (work in process and then finished goods) in an economically feasible way.
3. **Indirect manufacturing costs** are all manufacturing costs that are related to the cost object (work in process and then finished goods) but cannot be traced to that cost object in an economically feasible way. This cost category is also referred to as **manufacturing overhead costs** or **factory overhead costs**.

Conversion costs are all manufacturing costs other than direct material costs.

Inventoriable Costs

Inventoriable costs are all costs of a product that are considered assets in a company's balance sheet when the costs are incurred and that are expensed as cost of goods sold only when the product is sold. For manufacturing-sector companies, **all manufacturing costs are inventoriable costs**. The costs first accumulate as work-in-process inventory assets (in other words, they are "inventoried") and then as finished goods inventory assets.

Period Costs

Period costs are all costs in the income statement other than cost of goods sold. Period costs, such as **marketing, distribution, and customer service costs**, are treated as expenses of the accounting period in which they are incurred because managers expect these costs to increase revenues in only that period and not in future periods.



Exhibit 2-7

Flow of Revenue and Costs for a Manufacturing-Sector Company, Cellular Products
(in thousands)

