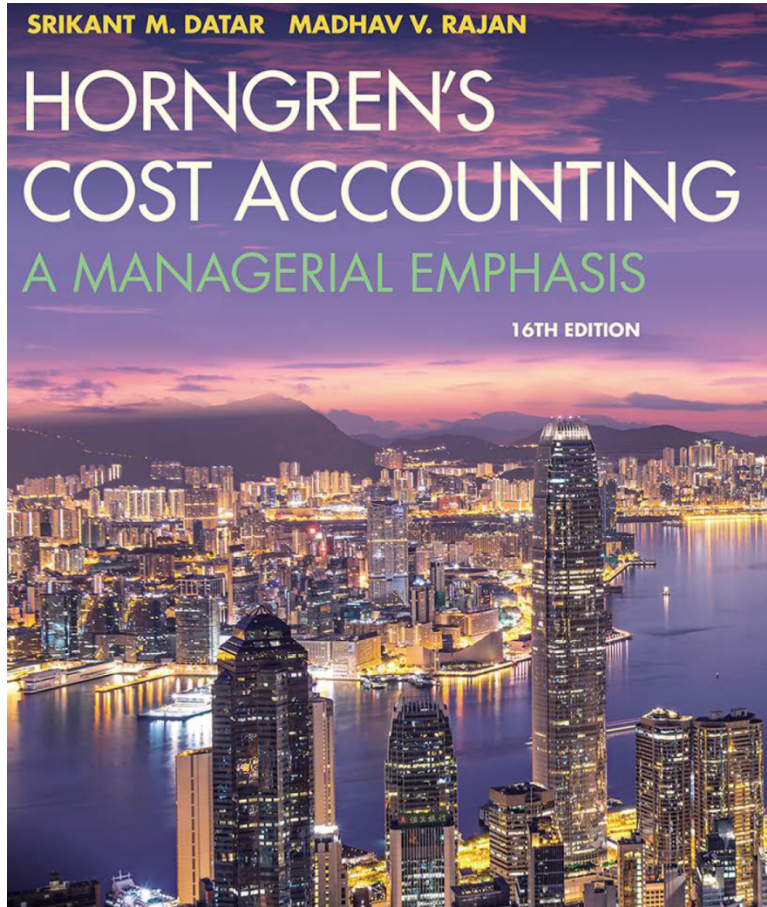


Cost Accounting

Sixteenth Edition



Chapter 2

An Introduction to Cost
Terms and Purposes

Basic Cost Terminology (1 of 2)

- **Cost** – a sacrificed or forgone resource to achieve a specific objective.
- **Actual cost** – a cost that has occurred
- **Budgeted cost** – a predicted cost
- **Cost object** – anything for which a cost measurement is desired

COST OBJECT EXAMPLES AT BMW

| Cost Object | Illustration |
|-------------|-----------------------------------------------------------------------------|
| Product | A BMW X6 sports activity vehicle |
| Service | Telephone hotline providing information and assistance to BMW dealers |
| Project | R&D project on DVD system enhancement in BMW cars |
| Customer | Herb Chambers Motors, a dealer that purchases a broad range of BMW vehicles |
| Activity | Setting up machines for production or maintaining production equipment |
| Department | Environmental, Health and Safety department |

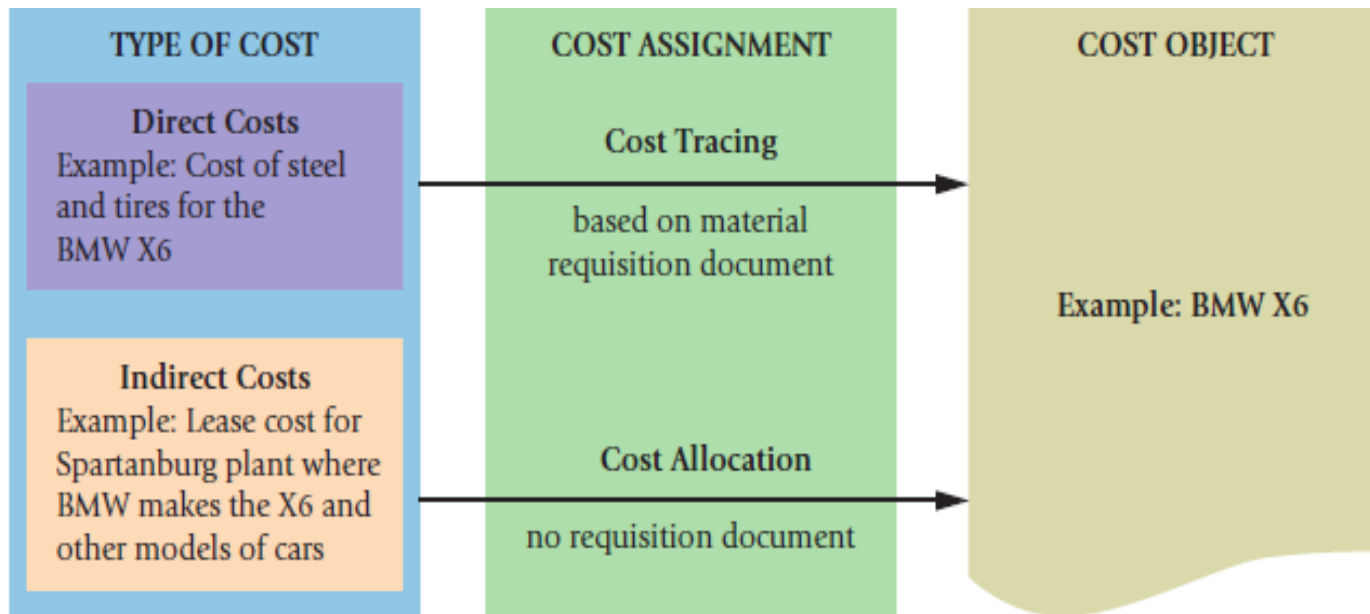
Basic Cost Terminology (2 of 2)

- **Cost Accumulation** – the collection of cost data in an organized way by means of an accounting system
- **Cost Assignment** – a general term that encompasses the gathering of accumulated costs to a cost object in two ways:
 - Tracing costs with a direct relationship to the cost object, and
 - Allocating accumulated costs with an indirect relationship to a cost object.

Direct and Indirect Costs

- Direct costs can be conveniently and economically traced (tracked) to a cost object.
- Indirect costs cannot be conveniently or economically traced (tracked) to a cost object. Instead of being traced, these costs are allocated to a cost object in a rational and systematic manner.

Cost Assignment to a Cost Object (BMW Example)



Cost Allocation Challenges

Direct Costs

Material (steel or tires for a car, as an example)

Labor (Assembly line wages)

Indirect Costs

Electricity

Rent

Property taxes

Plant administration expenses

Factors Affecting Direct/Indirect Cost Classifications.

- **The materiality of the cost in question.**
- **The available information-gathering technology.**
- **Design of operations.**

NOTE: a specific cost may be both a direct cost of one cost object and an indirect cost of another cost object.

The direct/indirect classification depends on the choice of the cost object.

Cost Behavior Patterns: Variable Costs And Fixed Costs – (1 of 2)

Variable costs change, *in total*, in proportion to changes in the related level of activity or volume of output produced.

Fixed costs remain unchanged, *in total*, for a given time period, despite changes in the related level of activity or volume of output produced.

Costs are fixed or variable for a specific activity and/or for a given time period.

Cost Behavior Patterns: Variable Costs and Fixed Costs – (2 of 2)

Variable costs are constant on a per-unit basis. If a product takes 5 pounds of material each, it stays the same per unit regardless if one, ten or a thousand units are produced.

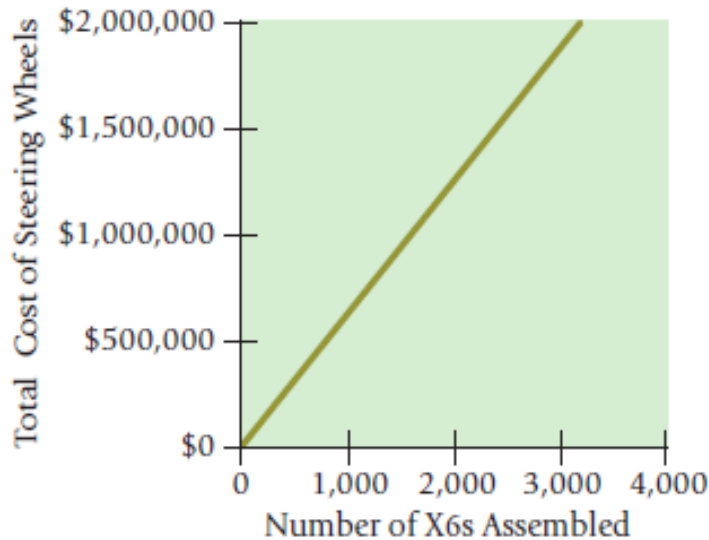
Fixed costs per unit change inversely with the level of production. As more units are produced, the same fixed cost is spread over more and more units, reducing the cost per unit.

Cost Behavior Summarized

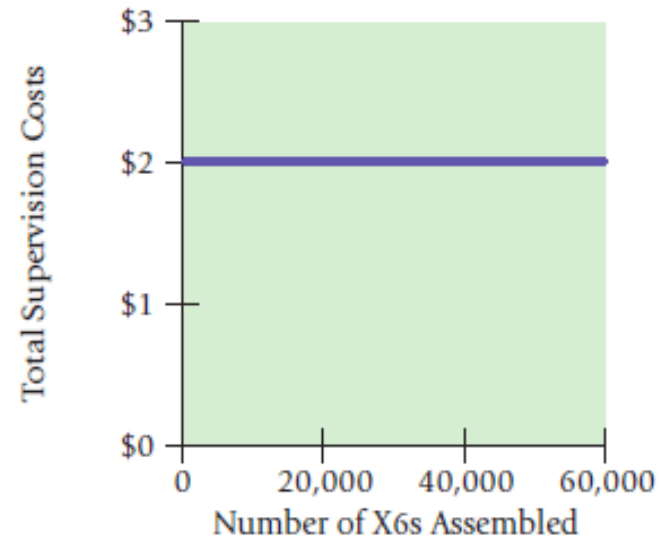
| - | TOTAL DOLLARS | COST PER UNIT |
|-----------------------|---------------------------------------------------------------|---------------------------------------------------------------------|
| VARIABLE COSTS | Change in proportion with output (more output = more cost) | Unchanged in relation to output |
| FIXED COSTS | Unchanged in relation to output (within the relevant range) | Change inversely with output (more output = lower cost per unit) |

Graphs of variable and fixed costs

PANEL A: Variable Costs of Steering Wheels at \$60 per BMW X6 Assembled



PANEL B: Supervision Costs for the BMW X6 Assembly Line (in Millions)



Other Cost Concepts

Mixed costs have both fixed and variable elements

Cost driver – a variable, such as the level of activity or volume, that causally affects costs over a given time span.

Relevant range – 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.

Fixed costs are considered fixed only within the relevant range.

Multiple Classifications of Costs

- **Costs may be classified as:**
 - **Direct/Indirect, and**
 - **Variable/Fixed**
- **These multiple classifications give rise to important cost combinations:**
 - **Direct and variable**
 - **Direct and fixed**
 - **Indirect and variable**
 - **Indirect and fixed**

Examples of the Multiple Classifications Of Costs

| | | Assignment of Costs to Cost Object | |
|-----------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Direct Costs | Indirect Costs |
| Cost-Behavior Pattern | Variable Costs | <ul style="list-style-type: none"> • Cost object: BMW X6s produced Example: Tires used in assembly of automobile | <ul style="list-style-type: none"> • Cost object: BMW X6s produced Example: Power costs at Spartanburg plant. Power usage is metered only to the plant, where multiple products are assembled. |
| | Fixed Costs | <ul style="list-style-type: none"> • Cost object: BMW X6s produced Example: Salary of supervisor on BMW X6 assembly line | <ul style="list-style-type: none"> • Cost object: BMW X6s produced Example: Annual lease costs at Spartanburg plant. Lease is for whole plant, where multiple products are produced. |

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.

Different Types of Firms

- 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) like legal advice or audits.**

Types of Inventory

Direct materials – resources in-stock and available for use

Work-in-process (or progress) – goods partially worked on but not yet completed, often abbreviated as WIP

Finished goods – goods completed but not yet sold

Note: Merchandising-sector companies hold only one type of inventory: merchandise inventory

Commonly Used Classifications of Manufacturing Costs

Also known as inventoriable costs:

Direct materials – acquisition costs of all material that will become part of the cost object.

Direct labor – compensation of all manufacturing labor that can be traced to the cost object.

Indirect manufacturing – all manufacturing costs that are related to the cost object but cannot be traced to that cost object in an economically feasible way.

Inventoriable Costs VS. Period 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 companies, all manufacturing costs are inventoriable costs.**
- **Period costs are all costs in the income statement other than cost of goods sold. They are treated as expenses of the accounting period in which they are incurred.**

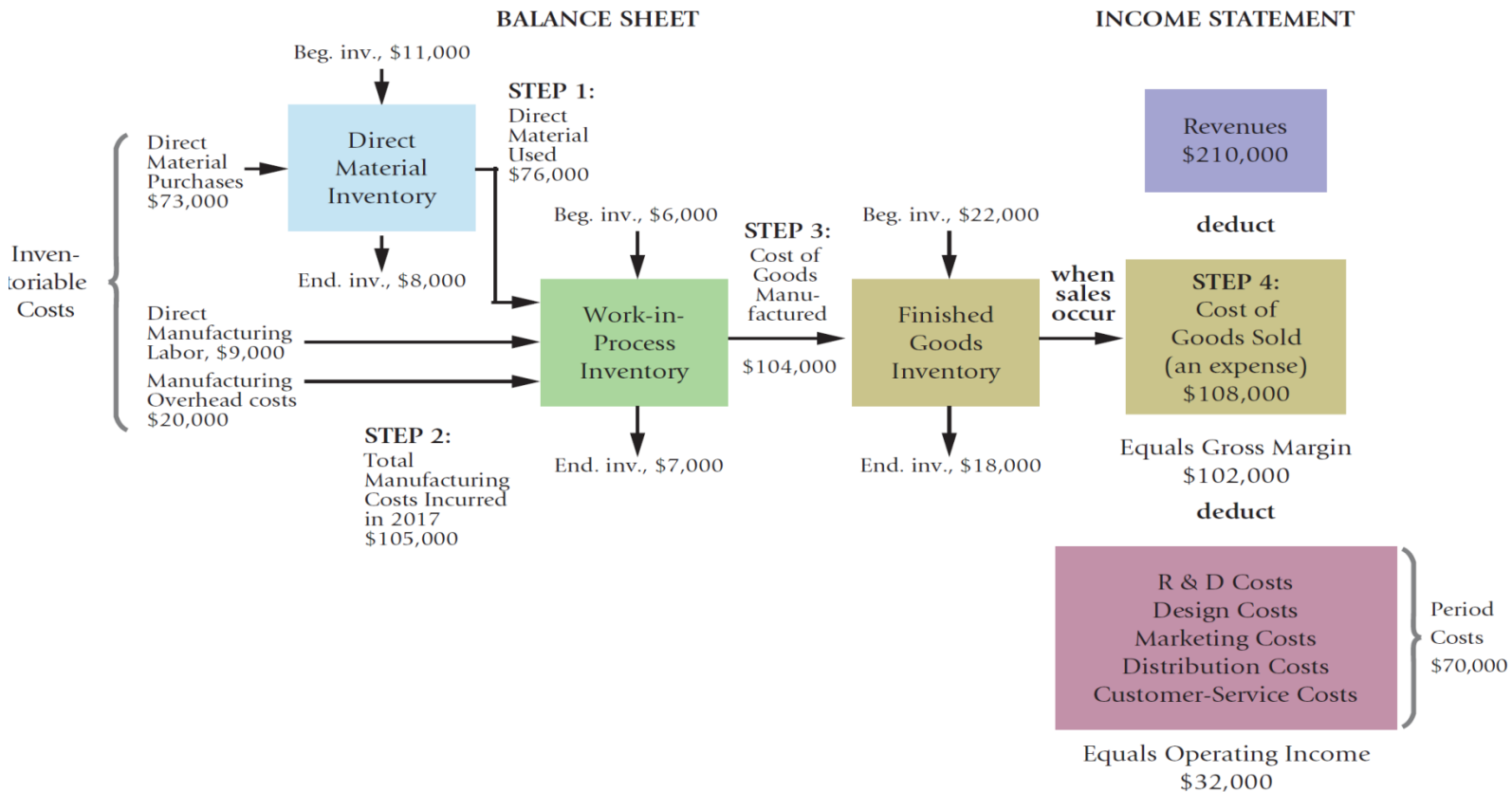
Cost Flows

The Cost of Goods Manufactured and the cost of goods sold section of the income statement are accounting representations of the actual flow of costs through a production system.

Note how inventoriable costs go through the balance sheet accounts of direct materials, work-in-process and finished goods inventory before entering the cost of good sold in the income statement.

Cost Flows Illustrated

EXHIBIT 2.7 Flow of Revenue and Costs for a Manufacturing-Sector Company, Cellular Products (in thousands)



Multiple-Step Income Statement, Part One

Exhibit 2.8 Income Statement and Schedule of Cost of Goods Manufactured of a Manufacturing-Sector Company, Cellular Products

STEP 4

| | A | B | C | D |
|----|-----------------------------------------------------|----------------|------------------|---|
| 1 | PANEL A: INCOME STATEMENT | | | |
| 2 | Cellular Products | | | |
| 3 | Income Statement | | | |
| 4 | For the Year Ended December 31, 2017 (in thousands) | | | |
| 5 | Revenues | | \$210,000 | |
| 6 | Cost of goods sold: | | | |
| 7 | Beginning finished goods inventory, January 1, 2017 | \$ 22,000 | | |
| 8 | Cost of goods manufactured (see Panel B) | <u>104,000</u> | | |
| 9 | Cost of goods available for sale | 126,000 | | |
| 10 | Ending finished goods inventory, December 31, 2017 | <u>18,000</u> | | |
| 11 | Cost of goods sold | | <u>108,000</u> | |
| 12 | Gross margin (or gross profit) | | 102,000 | |
| 13 | Operating (period) costs: | | | |
| 14 | R&D, design, mktg., dist., and cust.-service cost | 70,000 | | |
| 15 | Total operating costs | | <u>70,000</u> | |
| 16 | Operating income | | <u>\$ 32,000</u> | |

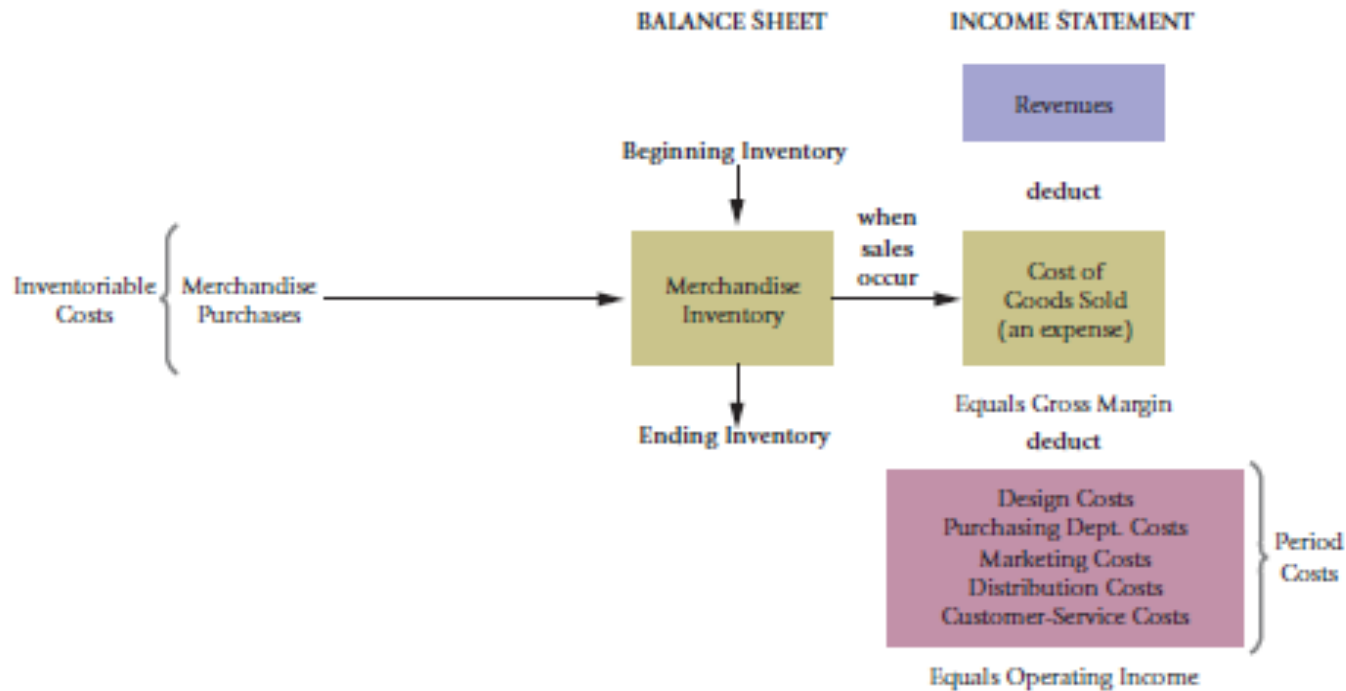
Multiple –Step Income Statement, Part Two

Exhibit 2.8 Income Statement and Schedule of Cost of Goods Manufactured of a Manufacturing-Sector Company, Cellular Products

| | | | | | |
|--------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--|
| | 18 | PANEL B: COST OF GOODS MANUFACTURED | | | |
| | 19 | Cellular Products | | | |
| | 20 | Schedule of Cost of Goods Manufactured ^a | | | |
| | 21 | For the Year Ended December 31, 2017 (in thousands) | | | |
| | 22 | Direct materials: | | | |
| STEP 1 | 23 | Beginning inventory, January 1, 2017 | \$ 11,000 | | |
| | 24 | Purchases of direct materials | 73,000 | | |
| | 25 | Cost of direct materials available for use | 84,000 | | |
| | 26 | Ending inventory, December 31, 2017 | 8,000 | | |
| | 27 | Direct materials used | | \$ 76,000 | |
| | 28 | Direct manufacturing labor | | 9,000 | |
| | 29 | Manufacturing overhead costs: | | | |
| STEP 2 | 30 | Indirect manufacturing labor | \$ 7,000 | | |
| | 31 | Supplies | 2,000 | | |
| | 32 | Heat, light, and power | 5,000 | | |
| | 33 | Depreciation—plant building | 2,000 | | |
| | 34 | Depreciation—plant equipment | 3,000 | | |
| | 35 | Miscellaneous | 1,000 | | |
| | 36 | Total manufacturing overhead costs | | 20,000 | |
| | 37 | Manufacturing costs incurred during 2017 | | 105,000 | |
| STEP 3 | 38 | Beginning work-in-process inventory, January 1, 2017 | | 6,000 | |
| | 39 | Total manufacturing costs to account for | | 111,000 | |
| | 40 | Ending work-in-process inventory, December 31, 2017 | | 7,000 | |
| | 41 | Cost of goods manufactured (to income statement) | | \$104,000 | |
| | 42 | ^a Note that this schedule can become a schedule of cost of goods manufactured and sold simply by including the beginning and ending finished goods inventory figures in the supporting schedule rather than in the body of the income statement. | | | |

Flow Of Revenues and Costs for a Merchandising Company

Exhibit 2.10 Flow of Revenues and Costs for a Merchandising Company (Retailer or Wholesaler)



Other Cost Considerations

- Prime cost is a term referring to all direct manufacturing costs (materials and labor).
- Conversion cost is a term referring to direct labor and indirect manufacturing costs.
- Overtime premium labor costs are considered part of indirect overhead costs.
- Idle time refers to the wages paid for unproductive time caused by lack of orders, machine or computer breakdown, work delays, poor scheduling, and the like.

Measuring Costs Requires Judgment

Because there are alternative ways for management to define and classify costs, judgment is required.

Managers, accountants, suppliers and others should agree on the classifications and meaning of the cost terms introduced in this chapter and throughout the book.

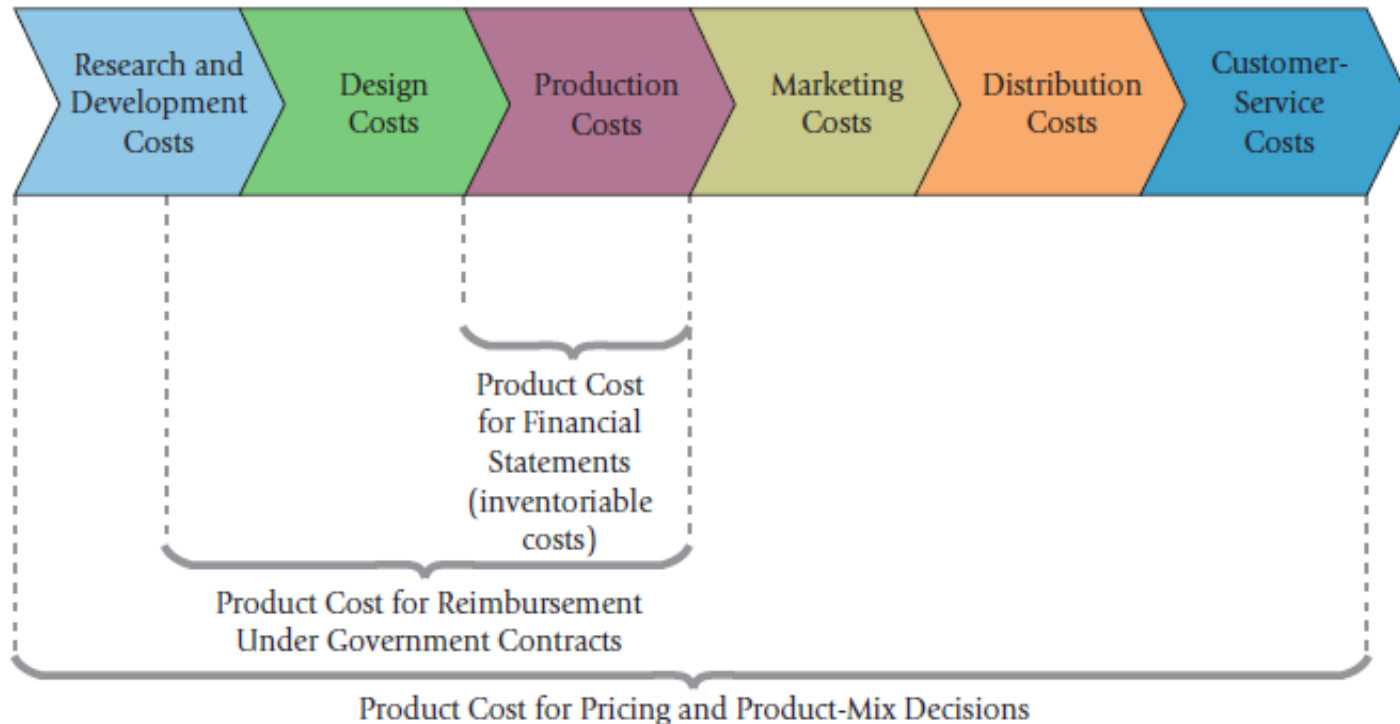
Different Product Costs for Different Purposes (1 of 2)

Pricing and product-mix decisions – decision about pricing and maximizing profits

Contracting with government agencies – very specific definitions of allowable costs for “cost plus profit” contracts

Preparing external-use financial statements – GAAP-driven product costs only

Different Product Costs for Different Purposes (2 of 2)



A Framework for Cost Accounting and Cost Management

The following three features of cost accounting and cost management can be used for a wide range of applications (for helping managers make decisions):

1. Calculating the cost of products, services, and other cost objects
2. Obtaining information for planning and control, and performance evaluation
3. Analyzing the relevant information for making decisions