

Chapter 2: Cost Terms and Purposes

Horngren 13e

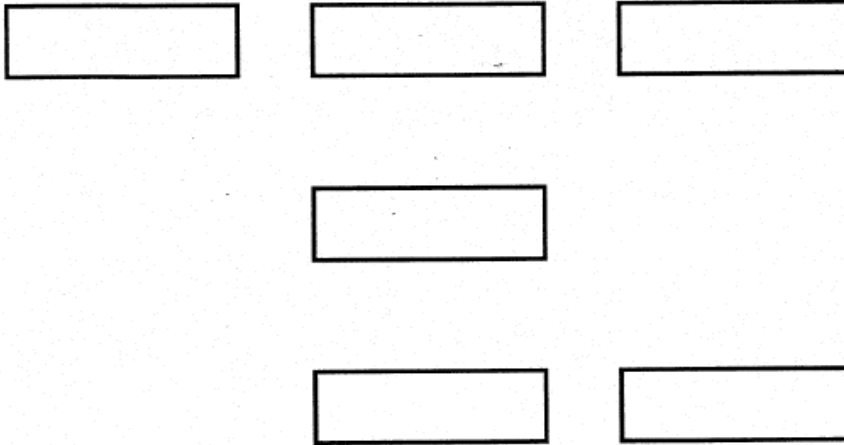
2-1

AN OVERVIEW OF COST TERMS

| Purpose of classification | Cost classifications |
|---|---|
| Preparing an income statement and balance sheet | <ul style="list-style-type: none">• Product costs<ul style="list-style-type: none">• Direct materials• Direct labor• Manufacturing overhead• Period costs (nonmanufacturing costs)<ul style="list-style-type: none">• Selling costs• Administrative costs |
| Predicting changes in cost due to changes in activity | <ul style="list-style-type: none">• Variable costs• Fixed costs |
| Assigning costs | <ul style="list-style-type: none">• Direct costs• Indirect costs |
| Making decisions | <ul style="list-style-type: none">• Differential costs• Sunk costs• costs |

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COST FLOWS IN A MANUFACTURING FIRM



PRODUCT vs. PERIOD COSTS

Factory

Sales & Administration

LEARNING OBJECTIVE

1. Define and illustrate a cost object

| Cost Object | Illustration |
|-------------|---|
| Product | A BMW X5 sports activity vehicle |
| Service | Telephone hotline providing information and assistance to BMW dealers |
| Project | R&D project on enhancing the DVD system in BMW cars |
| Customer | Herb Chambers Motors, the BMW 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 |

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LEARNING OBJECTIVE

1. Define and illustrate a cost object

[EXERCISE]

Lucas Manufacturing has three cost objects that it uses to accumulate costs for its manufacturing plants. They are:

Cost object #1: The physical buildings and equipment

Cost object #2: The use of buildings and equipment

Cost object #3: The availability and use of manufacturing labor

The following manufacturing overhead cost categories are found in the accounting records:

- a. Depreciation on buildings and equipment
- b. Lubricants for machines
- c. Property insurance
- d. Supervisors' salaries
- e. Fringe benefits
- f. Property taxes
- g. Utilities

Required: Assign each of the above costs to the most appropriate cost object.

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LEARNING OBJECTIVE

1. Define and illustrate a cost object

[SOLUTION]

Cost object #1: The physical buildings and equipment

- a. Depreciation on buildings and equipment
- c. Property insurance
- f. Property taxes

Cost object #2: The use of buildings and equipment

- b. Lubricants for machines
- g. Utilities

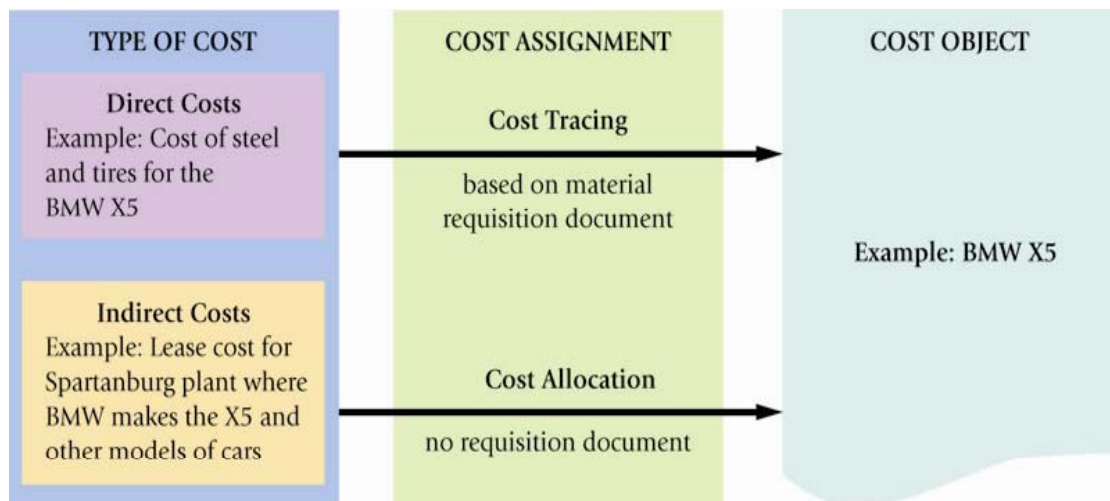
Cost object #3: The availability and use of manufacturing labor

- d. Supervisors' salaries
- e. Fringe benefits

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LEARNING OBJECTIVE

2. Distinguish between direct costs and indirect costs



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LEARNING OBJECTIVE

2. Distinguish between direct costs and indirect costs

[EXERCISE]

Archambeau Products Company manufactures office furniture. Recently, the company decided to develop a formal cost accounting system and classify all costs into three categories. Categorize each of the following items as being appropriate for (1) cost tracing to the finished furniture, (2) cost allocation of an indirect manufacturing cost to the finished furniture, or (3) as a nonmanufacturing item.

| <u>Item</u> | <u>Cost Tracing</u> | <u>Cost Allocation</u> | <u>Nonmanu- facturing</u> |
|-------------------------------|-------------------------|----------------------------|-------------------------------|
| Carpenter wages | _____ | _____ | _____ |
| Depreciation- office building | _____ | _____ | _____ |
| Glue for assembly | _____ | _____ | _____ |
| Lathe department supervisor | _____ | _____ | _____ |
| Lathe depreciation | _____ | _____ | _____ |
| Lathe maintenance | _____ | _____ | _____ |
| Lathe operator wages | _____ | _____ | _____ |
| Lumber | _____ | _____ | _____ |
| Samples for trade shows | _____ | _____ | _____ |
| Metal brackets for drawers | _____ | _____ | _____ |
| Factory washroom supplies | _____ | _____ | _____ |

LEARNING OBJECTIVE

2. Distinguish between direct costs and indirect costs

[SOLUTION]

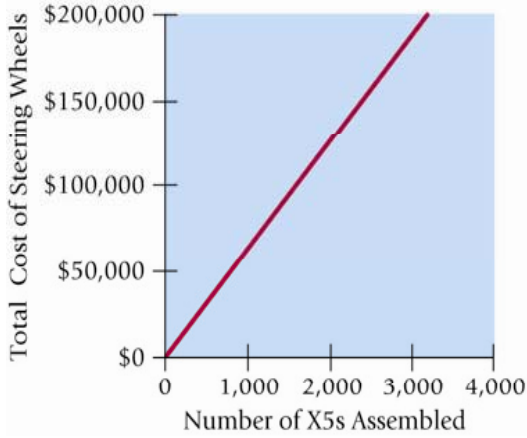
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| <u>Item</u> | <u>Cost Tracing</u> | <u>Cost Allocation</u> | <u>Nonmanu- facturing</u> |
|--------------------------------|-------------------------|----------------------------|-------------------------------|
| Carpenter wages | X | | |
| Depreciation - office building | | | X |
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| Samples for trade shows | | | X |
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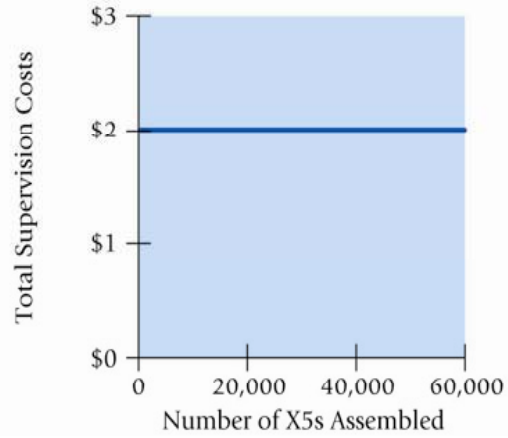
LEARNING OBJECTIVE

3. Explain variable costs and fixed costs

PANEL A: Variable Cost of Steering Wheels at \$60 per BMW X5 Assembled



PANEL B: Supervision Costs for the BMW X5 assembly line (in millions)



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3. Explain variable costs and fixed 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 X5s produced Example: Tires used in assembly of automobile | <ul style="list-style-type: none"> • Cost object: BMW X5s 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 X5s produced Example: Salary of supervisor on BMW X5 assembly line | <ul style="list-style-type: none"> • Cost object: BMW X5s produced Example: Annual lease costs at Spartanburg plant. Lease is for whole plant, where multiple products are produced. |

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LEARNING OBJECTIVE

3. Explain variable costs and fixed costs

[EXERCISE]

Butler Hospital wants to estimate the cost for each patient stay. It is a general health care facility offering only basic services and not specialized services such as organ transplants.

- Required: a. Classify each of the following costs as either direct or indirect with respect to each patient.
 b. Classify each of the following costs as either fixed or variable with respect to hospital costs per day.

| | <u>Direct</u> | <u>Indirect</u> | <u>Fixed</u> | <u>Variable</u> |
|-----------------------|---------------|-----------------|--------------|-----------------|
| Electronic monitoring | _____ | _____ | _____ | _____ |
| Meals for patients | _____ | _____ | _____ | _____ |
| Nurses' salaries | _____ | _____ | _____ | _____ |
| Parking maintenance | _____ | _____ | _____ | _____ |
| Security | _____ | _____ | _____ | _____ |

LEARNING OBJECTIVE

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[SOLUTION]

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| Electronic monitoring | X | | | X |
| Meals for patients | X | | | X |
| Nurses salaries | | X | X | |
| Parking maintenance | | X | X | |
| Security | | X | X | |

QUIZ QUESTION

What is the total fixed cost of the shipping department of EZ-Mail Clothing Co. if it has the following information for 2002?

| | |
|-------------------------|--|
| Salaries | \$800,000 75% of employees on guaranteed contracts |
| Packaging | \$400,000 depending on size of item(s) shipped |
| Postage | \$500,000 depending on weight of item(s) shipped |
| Rent of warehouse space | \$250,000 annual lease |

- a. \$850,000
- b. \$900,000
- c. \$1,050,000
- d. \$1,950,000

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- a. \$850,000
- b. \$900,000
- c. \$1,050,000
- d. \$1,950,000

[SOLUTION]

$$\text{Fixed costs} = (800,000) \times 75\% + 250,000 = \$850,000$$

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LEARNING OBJECTIVES

4. Interpret unit costs cautiously

...for many decisions, managers should use total costs, not unit costs.

[EXERCISE]

Combs, Inc. reports the following information for September sales:

| | |
|------------------|-----------------|
| Sales | \$15,000 |
| Variable costs | - 3,000 |
| Fixed costs | - <u>4,000</u> |
| Operating income | <u>\$ 8,000</u> |

Required:

If sales double in October, what is the projected operating income?

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LEARNING OBJECTIVES

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[SOLUTION]

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|------------------|-----------------|
| Sales | \$15,000 |
| Variable costs | - 3,000 |
| Fixed costs | - <u>4,000</u> |
| Operating income | <u>\$ 8,000</u> |

Required:

If sales double in October, what is the projected operating income?

Answer: $(15,000 \times 2) - (\$3,000 \times 2) - \$4,000 = \$20,000$

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LEARNING OBJECTIVES

4. Interpret unit costs cautiously

...for many decisions, managers should use total costs, not unit costs.

[EXERCISE]

Axle and Wheel Manufacturing currently produces 1,000 axles per month. The following per unit data apply for sales to regular customers:

| | |
|---------------------------------|--------------|
| Direct materials | \$200 |
| Direct manufacturing labor | 30 |
| Variable manufacturing overhead | 60 |
| Fixed manufacturing overhead | <u>40</u> |
| Total manufacturing costs | <u>\$330</u> |

The plant has capacity for 2,000 axles.

Required:

- What is the total cost of producing 1,000 axles?
- What is the total cost of producing 1,500 axles?
- What is the per unit cost when producing 1,500 axles?

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LEARNING OBJECTIVES

[SOLUTION]

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Required:

- What is the total cost of producing 1,000 axles?
- What is the total cost of producing 1,500 axles?
- What is the per unit cost when producing 1,500 axles?

Answer:

- $[(\$200 + \$30 + \$60) \times 1,000 \text{ units}] + (\$40 \times 1,000 \text{ units}) = \$330,000$
- $[(\$200 + \$30 + \$60) \times 1,500 \text{ units}] + \$40,000 = \$475,000$
- $\$475,000 / 1,500 = \316.67 per unit

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LEARNING OBJECTIVES

5. Distinguish among manufacturing companies, merchandising companies, and service-sector companies

...different types of companies face different accounting issues.

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LEARNING OBJECTIVES

6. Describe the three categories of inventories commonly found in manufacturing companies

- Direct Materials
- Work in Process
- Finished Goods

7. Differentiate inventoriable costs

... assets when incurred, then cost of goods sold from period costs

... expenses of the period when incurred.

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[EXERCISE]

Helmer Sporting Goods Company manufactured 100,000 units in 20x3 and reported the following costs:

| | | | |
|------------------------------|-----------|----------------------------|------------|
| Sandpaper | \$ 32,000 | Leasing costs - Equipment | \$ 384,000 |
| Materials handling | 320,000 | Depreciation - Equipment | 224,000 |
| Coolants & Lubricants | 22,400 | Property taxes - Equipment | 32,000 |
| Indirect manufacturing labor | 275,200 | Fire insurance - Equipment | 16,000 |
| Direct manufacturing labor | 2,176,000 | Direct material purchases | 3,136,000 |
| Direct materials, 1/1/x3 | 384,000 | Direct materials, 12/31/x3 | 275,200 |
| Finished goods, 1/1/x3 | 672,000 | Sales revenue | 12,800,000 |
| Finished goods, 12/31/x3 | 1,280,000 | Sales commissions | 640,000 |
| Work-in-process, 1/1/x3 | 96,000 | Sales salaries | 576,000 |
| Work-in-process, 12/31/x3 | 64,000 | Advertising costs | 480,000 |
| | | Administration costs | 800,000 |

Required:

- What is the amount of direct materials used during 20x3?
- What manufacturing costs were added to WIP during 20x3?
- What is cost of goods manufactured for 20x3?
- What is cost of goods sold for 20x3?

[SOLUTION]

Required:

- a. What is the amount of direct materials used during 20x3?
- b. What manufacturing costs were added to WIP during 20x3?
- c. What is cost of goods manufactured for 20x3?
- d. What is cost of goods sold for 20x3?

Answer:

a. $\$384,000 + \$3,136,000 - \$275,200 = \$3,244,800$

b. $\$3,244,800 + \$2,176,000 + \$32,000 + \$320,000 + \$22,400 + \$275,200 + \$384,000 + \$224,000 + \$32,000 + \$16,000 = \$6,726,400$

c. $\$6,726,400 + \$96,000 - \$64,000 = \$6,758,400$

d. $\$6,758,400 + \$672,000 - \$1,280,000 = \$6,150,400$

QUIZ QUESTION

Morton Graphics successfully bid on a job printing standard notebook covers during the year using last year's price of \$0.27 per cover. This amount was calculated from prior year costs, noting that no changes in any costs had occurred from the past year to the current year. At the end of the year, the company manager was shocked to discover that the company had suffered a loss. "How could this be?" she exclaimed. "We had no increases in cost and our price was the same as last year. Last year we had a healthy income." What could explain the company's loss in income this current year?

- a. Their costs were all variable costs and the amount produced and sold increased.
- b. Their costs were mostly fixed costs and the amount produced this year was less than last year.
- c. They used a different cost object this year than the previous year.
- d. Their costs last year were actual costs but they used budgeted costs to make their bids.

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QUIZ QUESTIONS

Inventoriable costs are

- a. only purchased goods for resale.
- b. a category of costs used only for manufacturing companies.
- c. recorded as expenses when incurred and later reclassified as assets.
- d. recorded as assets when incurred.

Period costs are

- a. all costs in the income statement other than cost of goods sold.
- b. defined as manufacturing costs incurred this period on the schedule of cost of goods manufactured.
- c. always recorded as assets when first incurred.
- d. those costs that benefit future periods.

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