

QUICK REVIEW

■ CHAPTER 1

EXHIBIT 1-4 ■ Structural, Organizational, and Activity Cost Drivers

Structural Cost Drivers

Fundamental choices about the size and scope of operations and technologies employed in delivering products or services to customers. For example, General Motors' decision to locate its Saturn automobile plant in Tennessee, is an example of a structural cost driver.

Organizational Cost Drivers

Choices concerning the organization of activities and the involvement of persons inside and outside the organization in decision making. Authorizing employees to make decisions is an example of an organizational cost driver.

Activity Cost Drivers

Specific units of work (activities) performed to serve customer needs that consume costly resources. Assembling a product is an example of an activity cost driver.

■ CHAPTER 2

$$\text{Variable costs per unit} = \frac{\text{Difference in total costs}}{\text{Difference in activity}}$$

$$\text{Fixed costs} = \text{Total costs} - \text{Variable costs}$$

EXHIBIT 2-9 ■ Hierarchy of Activity Costs

| Activity Level | Reason for Activity | Examples of Activity Cost |
|-------------------|--|---|
| 1. Unit level | Performed for each unit of product produced or sold | <ul style="list-style-type: none"> • Cost of raw materials • Cost of inserting a component • Utilities cost of operating equipment • Some costs of packaging • Sales commissions |
| 2. Batch level | Performed for each batch of product produced or sold | <ul style="list-style-type: none"> • Cost of processing sales order • Cost of issuing and tracking work order • Cost of equipment setup • Cost of moving batch between workstations • Cost of inspection (assuming same number of units inspected in each batch) |
| 3. Product level | Performed to support each different product that can be produced | <ul style="list-style-type: none"> • Cost of product development • Cost of product marketing such as advertising • Cost of specialized equipment • Cost of maintaining specialized equipment |
| 4. Facility level | Performed to maintain general manufacturing capabilities | <ul style="list-style-type: none"> • Cost of maintaining general facilities such as buildings and grounds • Cost of nonspecialized equipment • Cost of maintaining nonspecialized equipment • Cost of real property taxes • Cost of general advertising • Cost of general administration such as the plant manager's salary |

Total cost equation for a single-product organization:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

where

Y = total costs for a period

a = facility-level costs that do not vary with units, batches, or products

X_1 = unit-level cost drivers, where the subscript $_1$ refers to the unit level

b_1 = variable cost per unit

X_2 = batch-level cost drivers, where the subscript $_2$ refers to the batch level

b_2 = variable cost per batch

X_3 = product-level cost drivers, where the subscript $_3$ refers to the product level

b_3 = product costs that do not vary with the number of units or batches

CHAPTER 3

$$\text{Break-even unit sales volume} = \frac{\text{Fixed costs}}{\text{Selling price per unit} - \text{Variable costs per unit}}$$

$$\text{Break-even unit sales volume} = \frac{\text{Fixed costs}}{\text{Unit contribution margin}}$$

$$\text{Target unit sales volume} = \frac{\text{Fixed costs} + \text{Desired profit}}{\text{Unit contribution margin}}$$

$$\text{Dollar break-even point} = \frac{\text{Fixed costs}}{\text{Contribution margin ratio}}$$

$$\text{Target dollar sales volume} = \frac{\text{Fixed costs} + \text{Desired profit}}{\text{Contribution margin ratio}}$$

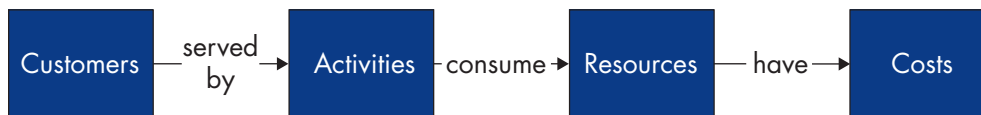
CHAPTER 4

EXHIBIT 4-6 ■ Summary Classification of Relevant and Irrelevant Costs

| RELEVANT COSTS | | IRRELEVANT COSTS | |
|---|--|---|--|
| Future costs that differ among competing alternatives | | Costs that do not differ among competing alternatives | |
| Opportunity Costs | Outlay Costs | Sunk Costs | |
| Net cash flow from the best alternative | Future costs requiring future expenditures that differ | Future costs requiring future expenditures that do not differ | A historical cost resulting from a past decision |

CHAPTER 5

1. Activities performed to fill customer needs consume resources that cost money.



2. The cost of resources consumed by activities should be assigned to cost objectives on the basis of the units of activity consumed by the cost objective.

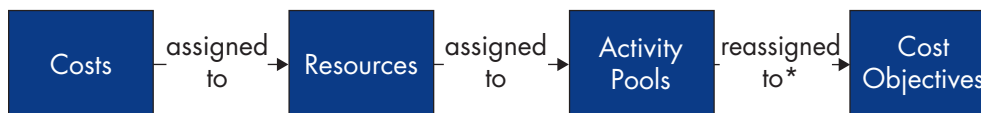
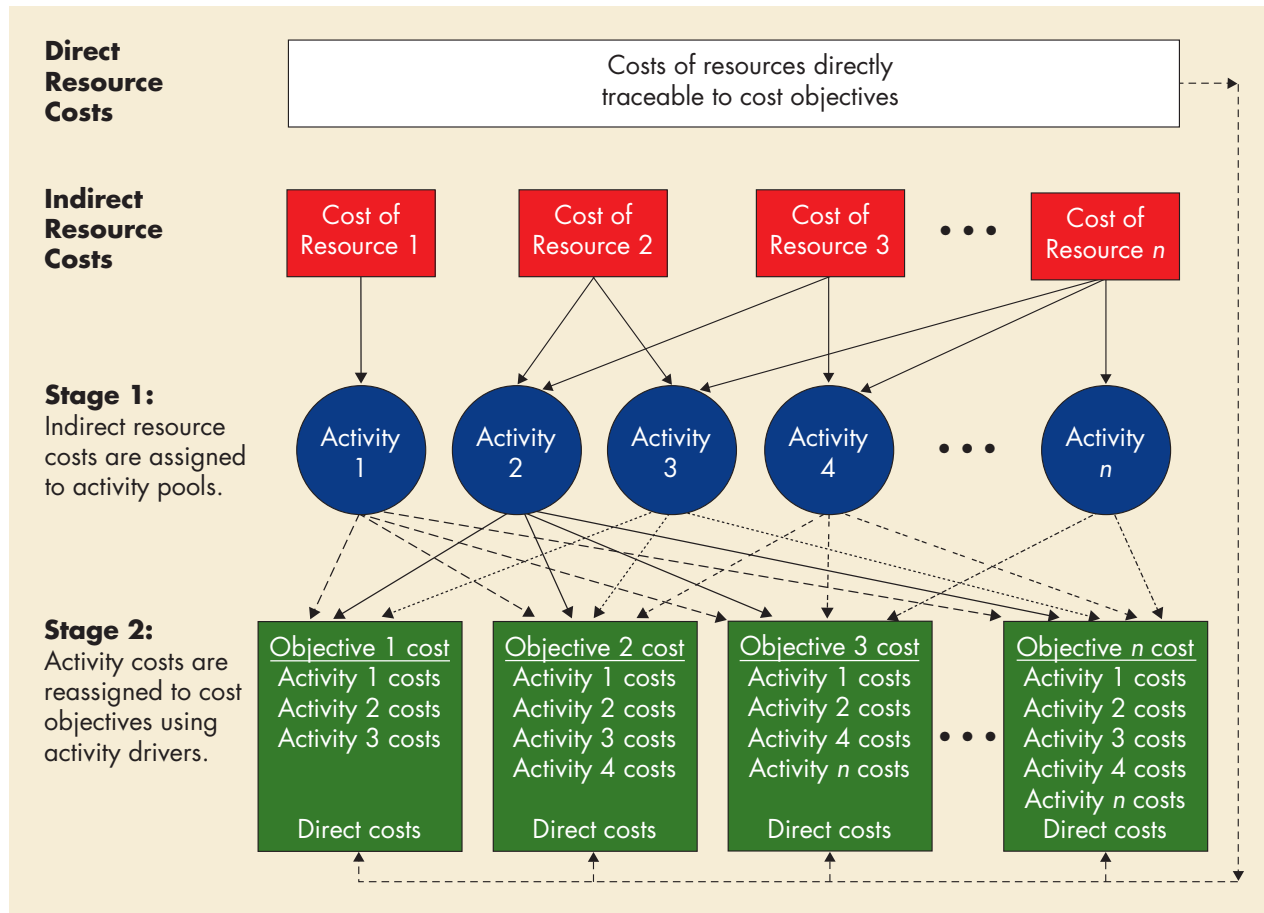
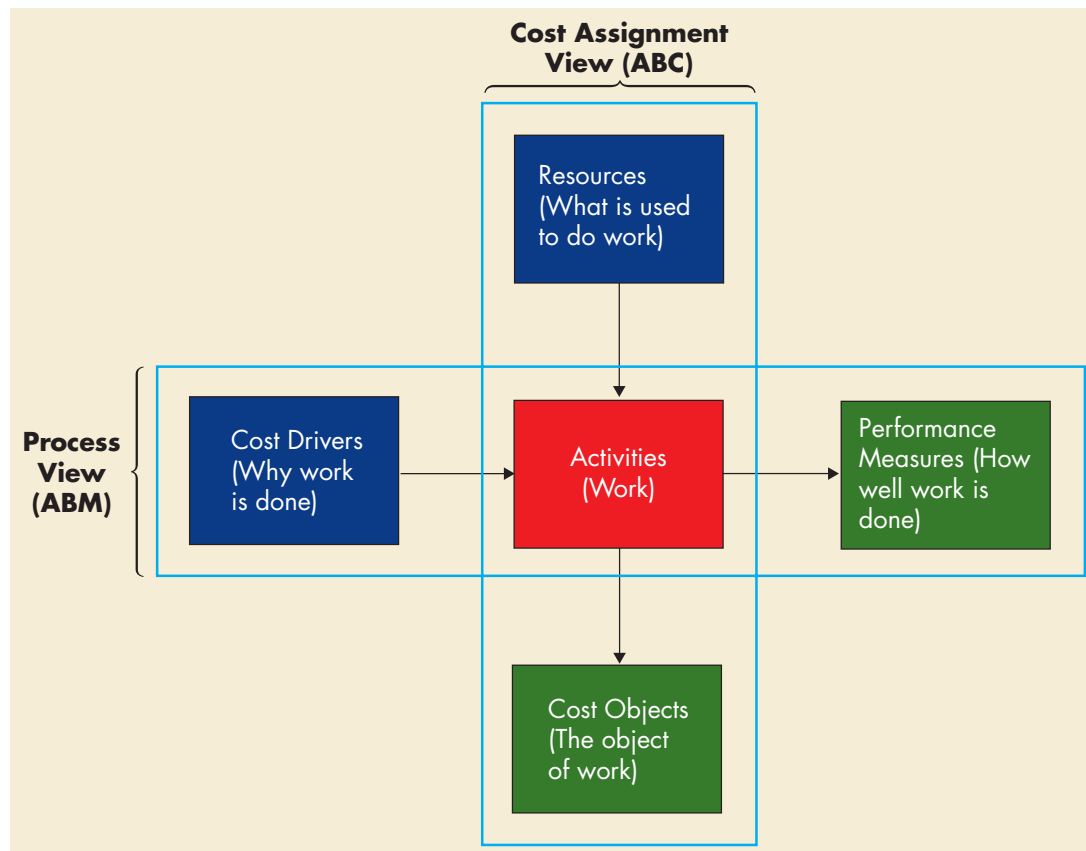


EXHIBIT 5-4 ■ Two-Stage Activity-Based Costing Model



The ABC/ABM Cross



CHAPTER 6

EXHIBIT 6-2 ■ Product Costs and Period Costs

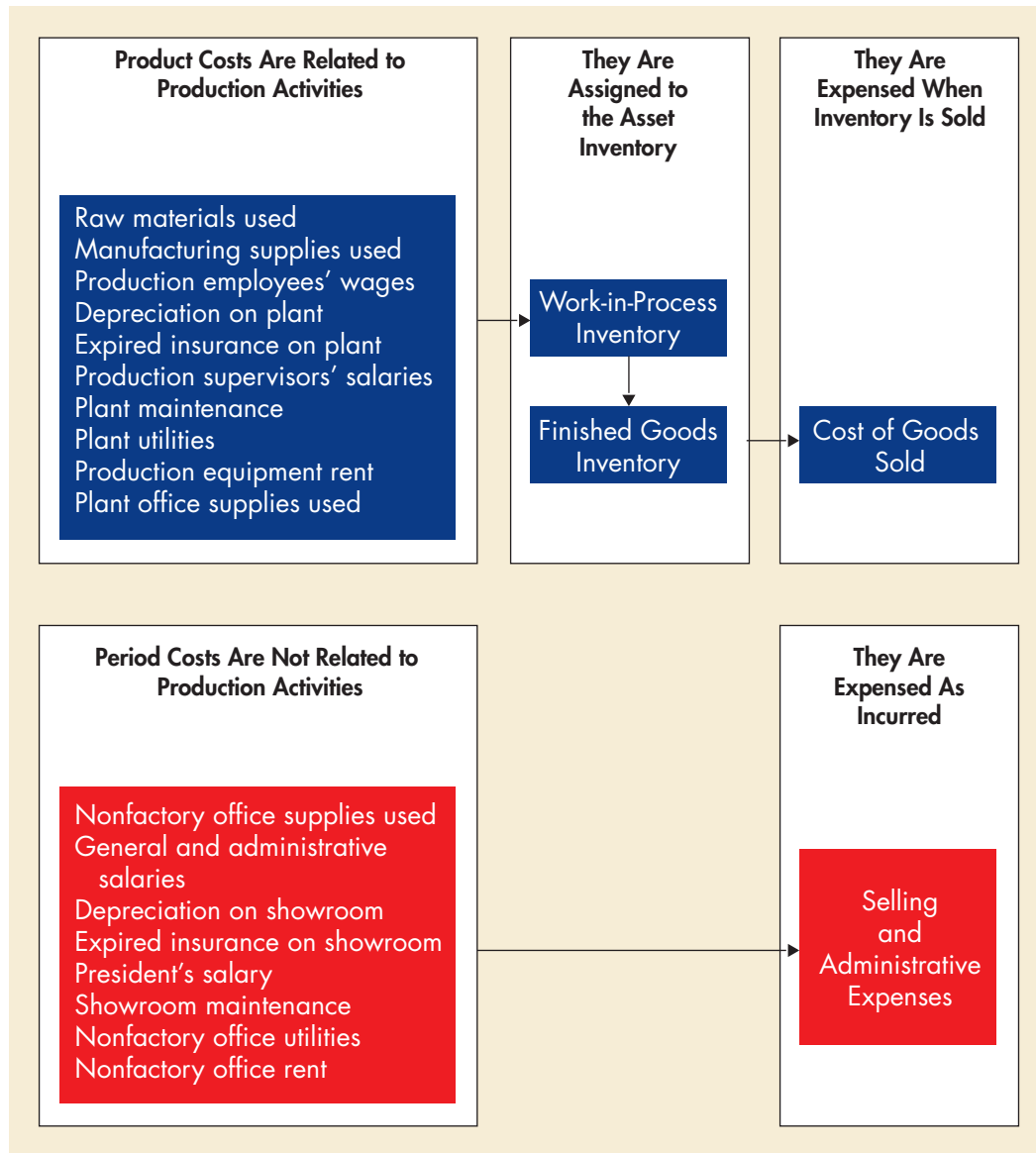
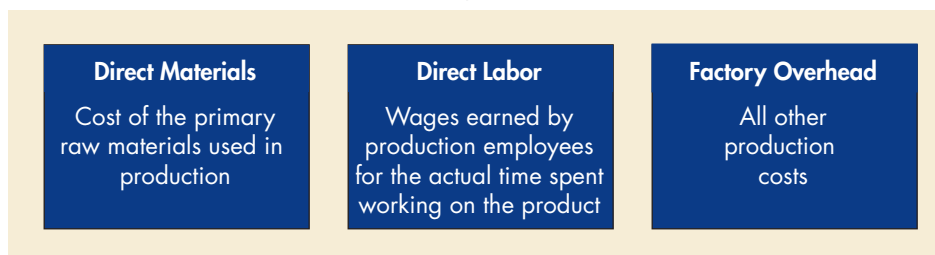


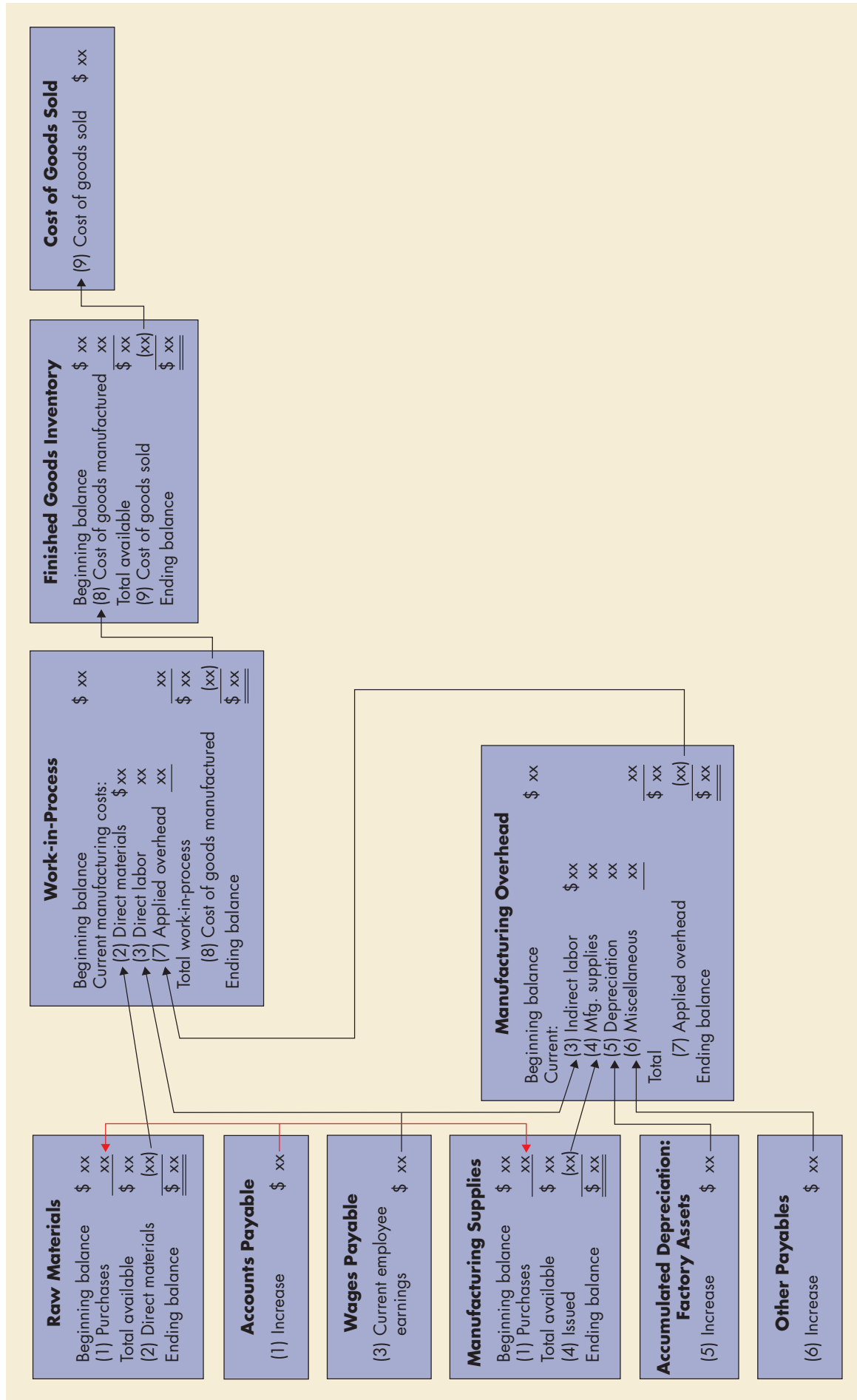
EXHIBIT 6-3 ■ Three Product Cost Components



$$\text{Predetermined manufacturing overhead rate per direct labor hour} = \frac{\text{Predicted total manufacturing overhead cost for the year}}{\text{Predicted total direct labor hours for the year}}$$

$$\text{Manufacturing overhead assigned to Work-in-Process Inventory} = \text{Actual direct labor hours} \times \text{Predetermined manufacturing overhead rate per direct labor hour}$$

EXHIBIT 6-6 ■ Basic Production Cost Flows



| | | |
|----------------------|-------------------|-------|
| Raw Materials | Beginning balance | \$ xx |
| (1) Purchases | xx | |
| Total available | \$ xx | |
| (2) Direct materials | (xx) | |
| Ending balance | \$ xx | |

| | | |
|-------------------------|--------------|-------|
| Accounts Payable | (1) Increase | \$ xx |
|-------------------------|--------------|-------|

| | | |
|----------------------|-------------------------------|-------|
| Wages Payable | (3) Current employee earnings | \$ xx |
|----------------------|-------------------------------|-------|

| | | |
|-------------------------------|-------------------|-------|
| Manufacturing Supplies | Beginning balance | \$ xx |
| (1) Purchases | xx | |
| Total available | \$ xx | |
| (4) Issued | (xx) | |
| Ending balance | \$ xx | |

| | | |
|---|--------------|-------|
| Accumulated Depreciation: Factory Assets | (5) Increase | \$ xx |
|---|--------------|-------|

| | | |
|-----------------------|--------------|-------|
| Other Payables | (6) Increase | \$ xx |
|-----------------------|--------------|-------|

| | | |
|--------------------------------|-------------------|-------|
| Work-in-Process | Beginning balance | \$ xx |
| Current manufacturing costs: | | |
| (2) Direct materials | \$ xx | |
| (3) Direct labor | xx | |
| (7) Applied overhead | xx | |
| Total work-in-process | \$ xx | |
| (8) Cost of goods manufactured | (xx) | |
| Ending balance | \$ xx | |

| | | |
|---------------------------------|-------------------|-------|
| Finished Goods Inventory | Beginning balance | \$ xx |
| (8) Cost of goods manufactured | xx | |
| Total available | \$ xx | |
| (9) Cost of goods sold | (xx) | |
| Ending balance | \$ xx | |

| | | |
|---------------------------|------------------------|-------|
| Cost of Goods Sold | (9) Cost of goods sold | \$ xx |
|---------------------------|------------------------|-------|

| | | |
|-------------------------------|-------------------|-------|
| Manufacturing Overhead | Beginning balance | \$ xx |
| Current: | | |
| (3) Indirect labor | \$ xx | |
| (4) Mfg. supplies | xx | |
| (5) Depreciation | xx | |
| (6) Miscellaneous | xx | |
| Total | \$ xx | |
| (7) Applied overhead | (xx) | |
| Ending balance | \$ xx | |

Statement of Cost of Goods Manufactured

| | |
|--|----------------|
| Sales | \$X,XXX |
| Less cost of goods sold | |
| Beginning inventory | \$XXXX |
| Plus purchases | <u>XXXX</u> |
| Goods available for sale | XXXX |
| Less ending inventory | <u>(XXXX)</u> |
| Cost of goods sold | <u>(X,XXX)</u> |
| Gross profit | X,XXX |
| Less selling and administrative expenses | <u>(X,XXX)</u> |
| Net income | <u>\$X,XXX</u> |

CHAPTER 7

EXHIBIT 7-1 ■ Flow of Costs—Direct Method

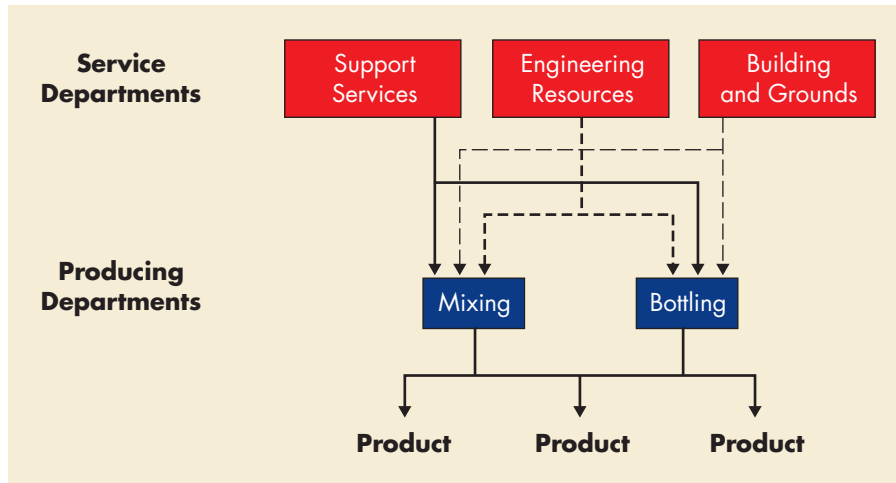


EXHIBIT 7-3 ■ Flow of Costs—Step Method

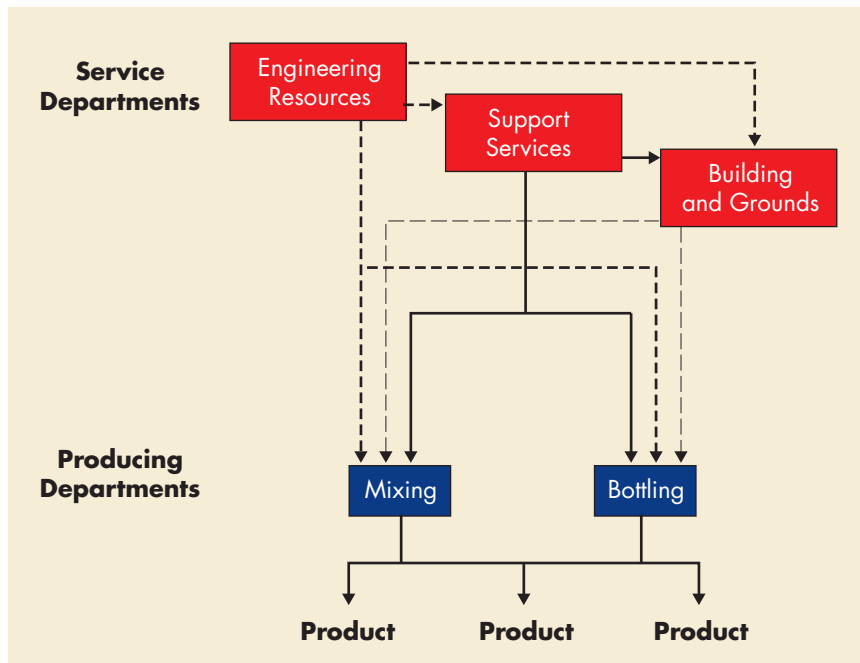


EXHIBIT 7-5 ■ Flow of Costs—Linear Algebra Method

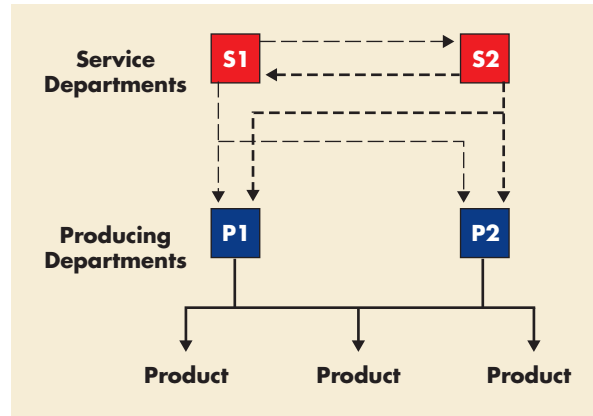
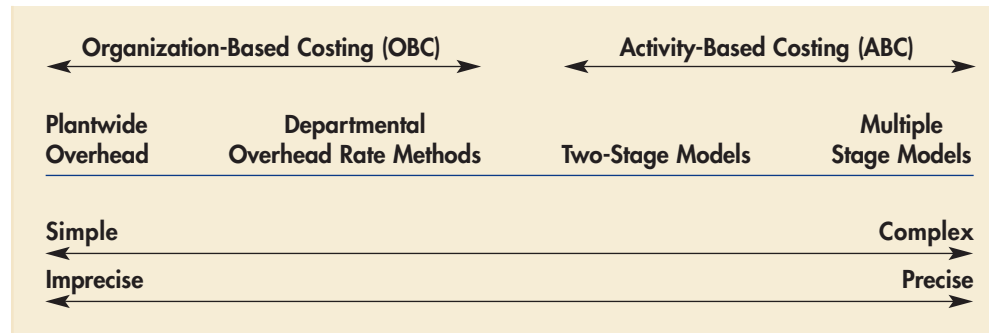


EXHIBIT 7-7 ■ Product Costing Continuum



CHAPTER 8

EXHIBIT 8-1 ■ Comparison of Absorption and Variable Costing

| Absorption Costing | Variable Costing |
|-------------------------------------|-------------------------------------|
| Product Costs | |
| Direct materials | Direct materials |
| Direct labor | Direct labor |
| Variable manufacturing overhead | Variable manufacturing overhead |
| Fixed manufacturing overhead | — |
| Period Costs | |
| Variable selling and administrative | Variable selling and administrative |
| Fixed selling and administrative | Fixed selling and administrative |
| — | Fixed manufacturing overhead |

$$\text{Variable costing net income} + \text{Increase (or minus decrease) in inventoried fixed manufacturing overhead} = \text{Absorption costing net income}$$

$$\text{Absorption costing net income} + \text{Decrease (or minus increase) in inventoried fixed manufacturing overhead} = \text{Variable costing net income}$$

$$\text{Inventory Turnover in Units} = \frac{\text{Annual demand in units}}{\text{Average inventory in units}}$$

$$\text{Inventory Turnover in Dollars} = \frac{\text{Cost of goods sold}}{\text{Average inventory (in dollars)}}$$

$$\text{Cycle time} = \text{Setup time} + \text{Processing time} + \text{Movement time} + \text{Waiting time} + \text{Inspection time}$$

CHAPTER 9

$$\text{Markup on cost base} = \frac{\text{Costs not included in the base} + \text{Desired profit}}{\text{Costs included in the base}}$$

Quality costs are costs incurred because poor quality of conformance does (or could) exist. There are two basic types of quality costs, and each basic type is classified in two subcategories:

1. Quality costs *are incurred because of the possibility of poor conformance* between actual products or services and their design standards:
 - a. **Prevention costs** are incurred to prevent nonconforming products from being produced or nonconforming services from being performed.
 - b. **Appraisal costs** are incurred to identify nonconforming products or services before they are delivered to customers.
2. Quality costs *are incurred because of poor conformance* between actual products or services and their design standards:
 - a. **Internal failure costs** occur when materials, components, products, or services are identified as defective before delivery to customers.
 - b. **External failure costs** occur when nonconforming products or services are delivered to customers.

CHAPTER 10

$$\text{Cost of equity capital} = \frac{\text{Current annual dividend per common share}}{\text{Current market price per common share}} + \text{Expected dividend growth rate}$$

$$\text{Payback period} = \frac{\text{Initial investment}}{\text{Annual operating cash inflows}}$$

$$\text{Accounting rate of return on initial investment} = \frac{\text{Average annual increase in net income}}{\text{Initial investment}}$$

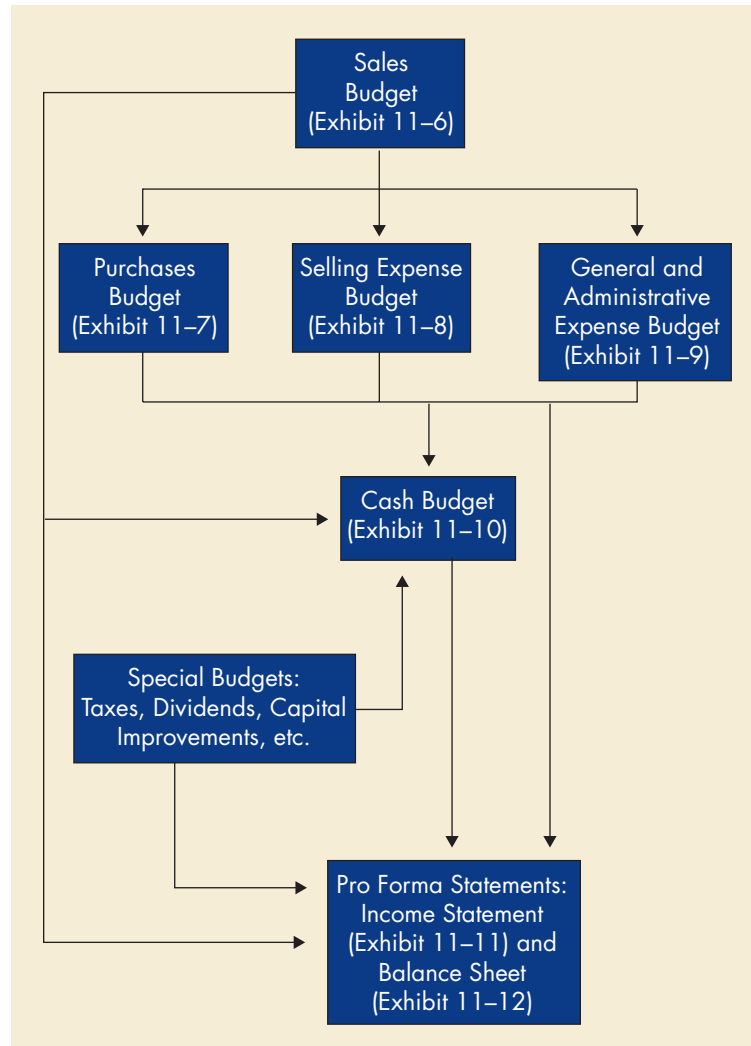
$$\text{Accounting rate of return on average investment} = \frac{\text{Average annual increase in net income}}{\text{Average investment}}$$

$$\text{Present value index} = \frac{\text{Present value of subsequent cash flows}}{\text{Initial investment}}$$

$$\text{Depreciation tax shield} = \text{Depreciation} \times \text{Tax rate}$$

CHAPTER 11

EXHIBIT 11-4 ■ Budget Assembly for a Merchandiser



CHAPTER 12

Improvement Variance = Cost Base × Continuous improvement factor = Target Cost – Actual Cost

Materials price variance = Actual quantity (Actual price – Standard price)

Materials quantity variance = Standard price (Actual quantity – Standard quantity)

Assembly rate variance = Actual hours (Actual rate – Standard rate)

Assembly efficiency variance = Standard rate (Actual hours – Standard hours)

Revenue variance = (Actual volume × Actual price) – (Budgeted volume × Budgeted price)

Sales price variance = (Actual selling price – Budgeted selling price) × Actual sales volume

Sales volume variance = (Actual sales volume – Budgeted sales volume) × Budgeted selling price

CHAPTER 13

$$\text{ROI} = \frac{\text{Sales}}{\text{Investment center asset base}} \times \frac{\text{Investment center income}}{\text{Sales}} = \frac{\text{Investment center income}}{\text{Investment center asset base}}$$

Residual income = Investment center income – (Investment center asset base × Minimum return %)

Economic value added (EVA) = Income after taxes – (Net assets employed × Cost of capital)

EXHIBIT 13-4 ■ Balanced Scorecard Illustration

| | Standard | Prior Period | Current Period |
|--|-------------|--------------|----------------|
| Key financial indicators | | | |
| Cash flow | \$25,000 | \$(4,000) | \$21,000 |
| Return on investment (ROI) | 0.18 | 0.22 | 0.19 |
| Economic value added | \$130,000 | \$133,000 | \$123,000 |
| Sales | \$4,400,000 | \$4,494,000 | \$4,342,000 |
| Key customer indicators | | | |
| Average customers per hour | 75 | 80 | 71 |
| Number of customer complaints per period | 22 | 21 | 17 |
| Number of sales returns per period | 10 | 8 | 5 |
| Key operating indicators | | | |
| Bagels sold/produced per day ratio | 0.96 | 0.93 | 0.91 |
| Daily units lost (burned, dropped, etc.) | 25 | 32 | 34 |
| Employee turnover per period | 0.10 | 0.07 | 0.00 |
| Key growth and innovation indicators | | | |
| New products introduced during period | 1 | 1 | 0 |
| Products discontinued during period | 1 | 1 | 1 |
| Number of sales promotions | 3 | 3 | 2 |
| Special offers, discounts, etc. | 4 | 5 | 3 |