Decentralization in Organizations

Benefits of Decentralization

- Top management freed to concentrate on strategy.
- Lower-level decisions often based on better information.
- Lower level managers can respond quickly to customers.
- Lower-level managers gain experience in decision-making.
- Decision-making authority leads to job satisfaction.
Decentralization in Organizations

Disadvantages of Decentralization

- Lower-level managers may make decisions without seeing the “big picture.”
- May be a lack of coordination among autonomous managers.
- Lower-level manager’s objectives may not be those of the organization.
- May be difficult to spread innovative ideas in the organization.
Cost, profit, and investment centers are all known as responsibility centers.
Cost Center

A segment whose manager has control over costs, but not over revenues or investment funds.
Profit Center

A segment whose manager has control over both costs and revenues, but no control over investment funds.
A segment whose manager has control over costs, revenues, and investments in operating assets.
Learning Objective 1

Compute return on investment (ROI) and show how changes in sales, expenses, and assets affect ROI.
Return on Investment (ROI) Formula

ROI = \frac{\text{Net operating income}}{\text{Average operating assets}}

Income before interest and taxes (EBIT)

Cash, accounts receivable, inventory, plant and equipment, and other productive assets.
Net Book Value versus Gross Cost

Most companies use the net book value of depreciable assets to calculate average operating assets.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition cost</td>
<td></td>
</tr>
<tr>
<td>Less: Accumulated depreciation</td>
<td></td>
</tr>
<tr>
<td><strong>Net book value</strong></td>
<td></td>
</tr>
</tbody>
</table>
Understanding ROI

ROI = \frac{\text{Net operating income}}{\text{Average operating assets}}

Margin = \frac{\text{Net operating income}}{\text{Sales}}

Turnover = \frac{\text{Sales}}{\text{Average operating assets}}

ROI = \text{Margin} \times \text{Turnover}
Increasing ROI - An Example

Regal Company reports the following:

- Net operating income $30,000
- Average operating assets $200,000
- Sales $500,000
- Operating expenses $470,000

What is Regal Company’s ROI?

\[
\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}} = \text{Margin} \times \text{Turnover}
\]
Increasing ROI - An Example

\[
\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}
\]

\[
\text{ROI} = \frac{\$30,000}{\$500,000} \times \frac{\$500,000}{\$200,000} = 6\% \times 2.5 = 15\%
\]
Assume that Regal's manager invests in a $30,000 piece of equipment that increases sales by $35,000, while increasing operating expenses by $15,000.

Regal Company reports the following:

- Net operating income: $50,000
- Average operating assets: $230,000
- Sales: $535,000
- Operating expenses: $485,000

Let’s calculate the new ROI.
Investing in Operating Assets to Increase Sales

ROI = \[ \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}} \]

ROI = \[ \frac{\$50,000}{\$535,000} \times \frac{\$535,000}{\$230,000} \]

ROI = 9.35% \times 2.33 = 21.8%

ROI increased from 15% to 21.8%.
Criticisms of ROI

In the absence of the balanced scorecard, management may not know how to increase ROI.

Managers often inherit many committed costs over which they have no control.

Managers evaluated on ROI may reject profitable investment opportunities.
Learning Objective 2

Compute residual income and understand its strengths and weaknesses.
Residual Income - Another Measure of Performance

Net operating income above some minimum return on operating assets
Calculating Residual Income

This computation differs from ROI.

ROI measures net operating income earned relative to the investment in average operating assets.

Residual income measures net operating income earned less the minimum required return on average operating assets.
Residual Income - An Example

• The Retail Division of Zephyr, Inc. has average operating assets of $100,000 and is required to earn a return of 20% on these assets.

• In the current period, the division earns $30,000.

Let’s calculate residual income.
### Residual Income - An Example

<table>
<thead>
<tr>
<th>Operating assets</th>
<th>$100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required rate of return</strong> × 20%</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum required return</strong></td>
<td>$20,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual income</th>
<th>$30,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum required return</strong></td>
<td>(20,000)</td>
</tr>
<tr>
<td><strong>Residual income</strong></td>
<td>$10,000</td>
</tr>
</tbody>
</table>
Motivation and Residual Income

Residual income encourages managers to make profitable investments that would be rejected by managers using ROI.
Quick Check ✅

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division’s ROI?

a. 25%
b. 5%
c. 15%
d. 20%
Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division’s ROI?

- a. 25%
- b. 5%
- c. 15%
- d. 20%

ROI = NOI/Average operating assets

= $60,000/$300,000 = 20%
Quick Check ✓

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes
b. No
Quick Check ✓

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes  

b. No

ROI = $78,000/$400,000 = 19.5%

This lowers the division’s ROI from 20.0% down to 19.5%.

b. No
The company’s required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes
b. No
The company’s required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

ROI = $18,000/$100,000 = 18%

The return on the investment exceeds the minimum required rate of return.
Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division’s residual income?

a. $240,000  
b. $ 45,000  
c. $ 15,000  
d. $ 51,000
Quick Check ✓

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division’s residual income?

- a. $240,000
- b. $ 45,000
- c. $ 15,000
- d. $ 51,000

Net operating income $60,000
Required return (15% of $300,000) (45,000)
Residual income $15,000
Quick Check ✓

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes
b. No
Quick Check ✓

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

Net operating income $78,000
Required return (15% of $400,000) (60,000)
Residual income $18,000

Yields an increase of $3,000 in the residual income.
The residual income approach has one major disadvantage. It cannot be used to compare the performance of divisions of different sizes.
Recall the following information for the Retail Division of Zephyr, Inc.

<table>
<thead>
<tr>
<th>Operating assets</th>
<th>Retail</th>
<th>Wholesale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required rate of return x Minimum required return</td>
<td>$100,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>$20,000</td>
<td>$200,000</td>
</tr>
</tbody>
</table>

Assume the following information for the Wholesale Division of Zephyr, Inc.

<table>
<thead>
<tr>
<th>Actual income</th>
<th>Retail</th>
<th>Wholesale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum required return</td>
<td>$30,000</td>
<td>$220,000</td>
</tr>
<tr>
<td>Residual income</td>
<td>$10,000</td>
<td>$20,000</td>
</tr>
</tbody>
</table>
The residual income numbers suggest that the Wholesale Division outperformed the Retail Division because its residual income is $10,000 higher. However, the Retail Division earned an ROI of 30% compared to an ROI of 22% for the Wholesale Division. The Wholesale Division’s residual income is larger than the Retail Division simply because it is a bigger division.

<table>
<thead>
<tr>
<th>Operating assets</th>
<th>Retail</th>
<th>Wholesale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required rate of return</td>
<td>$100,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Minimum required return</td>
<td>$20,000</td>
<td>$200,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual income</th>
<th>Retail</th>
<th>Wholesale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum required return</td>
<td>(20,000)</td>
<td>(200,000)</td>
</tr>
<tr>
<td>Residual income</td>
<td>$10,000</td>
<td>$20,000</td>
</tr>
</tbody>
</table>
Learning Objective 3

Compute delivery cycle time, throughput time, and manufacturing cycle efficiency (MCE).
Delivery Performance Measures

Order Received | Production Started | Goods Shipped

Wait Time | Process Time + Inspection Time + Move Time + Queue Time | Throughput Time

Delivery Cycle Time

Process time is the only value-added time.
Delivery Performance Measures

Manufacturing Cycle Efficiency = \frac{\text{Value-added time}}{\text{Manufacturing cycle time}}

Manufacturing cycle time = \text{Wait Time} + \text{Process Time} + \text{Inspection Time} + \text{Move Time} + \text{Queue Time}

Throughput Time = \text{Production Started} - \text{Order Received}

Delivery Cycle Time = \text{Goods Shipped} - \text{Order Received}
A TQM team at Narton Corp has recorded the following average times for production:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait</td>
<td>3.0 days</td>
</tr>
<tr>
<td>Move</td>
<td>0.5 days</td>
</tr>
<tr>
<td>Inspection</td>
<td>0.4 days</td>
</tr>
<tr>
<td>Queue</td>
<td>9.3 days</td>
</tr>
<tr>
<td>Process</td>
<td>0.2 days</td>
</tr>
</tbody>
</table>

What is the throughput time?

- a. 10.4 days.
- b. 0.2 days.
- c. 4.1 days.
- d. 13.4 days.
A TQM team at Narton Corp has recorded the following average times for production:

- Wait: 3.0 days
- Move: 0.5 days
- Inspection: 0.4 days
- Queue: 9.3 days
- Process: 0.2 days

What is the throughput time?

- a. 10.4 days.
- b. 0.2 days.

Throughput time = Process + Inspection + Move + Queue
= 0.2 days + 0.4 days + 0.5 days + 9.3 days
= 10.4 days
A TQM team at Narton Corp has recorded the following average times for production:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait</td>
<td>3.0 days</td>
</tr>
<tr>
<td>Move</td>
<td>0.5 days</td>
</tr>
<tr>
<td>Inspection</td>
<td>0.4 days</td>
</tr>
<tr>
<td>Queue</td>
<td>9.3 days</td>
</tr>
<tr>
<td>Process</td>
<td>0.2 days</td>
</tr>
</tbody>
</table>

What is the Manufacturing Cycle Efficiency (MCE)?

- a. 50.0%
- b. 1.9%
- c. 52.0%
- d. 5.1%
A TQM team at Narton Corp has recorded the following average times for production:

- Wait: 3.0 days
- Move: 0.5 days
- Inspection: 0.4 days
- Queue: 9.3 days
- Process: 0.2 days

What is the Manufacturing Cycle Efficiency (MCE)?

- a. 50.0%.
- b. 1.9%.
- c. 52.0%.
- d. 5.1%.

**Quick Check ✓**

MCE = Value-added time ÷ Throughput time
= Process time ÷ Throughput time
= 0.2 days ÷ 10.4 days
= 1.9%
A TQM team at Narton Corp has recorded the following average times for production:

- Wait: 3.0 days
- Move: 0.5 days
- Inspection: 0.4 days
- Queue: 9.3 days
- Process: 0.2 days

What is the delivery cycle time (DCT)?

a. 0.5 days.
b. 0.7 days.
c. 13.4 days.
d. 10.4 days.
A TQM team at Narton Corp has recorded the following average times for production:

- Wait: 3.0 days
- Move: 0.5 days
- Inspection: 0.4 days
- Queue: 9.3 days
- Process: 0.2 days

What is the delivery cycle time (DCT)?

a. 0.5 days.

b. 0.7 days.

c. 13.4 days.

d. 10.4 days.

DCT = Wait time + Throughput time

= 3.0 days + 10.4 days

= 13.4 days
Learning Objective 4

Understand how to construct and use a balanced scorecard.
The Balanced Scorecard

Management translates its strategy into performance measures that employees understand and influence.

Performance measures

- Financial
- Customer
- Internal business processes
- Learning and growth
The Balanced Scorecard: From Strategy to Performance Measures

**Financial**
- Has our financial performance improved?

**Customer**
- Do customers recognize that we are delivering more value?

**Internal Business Processes**
- Have we improved key business processes so that we can deliver more value to customers?

**Learning and Growth**
- Are we maintaining our ability to change and improve?

**Performance Measures**
- What are our financial goals?

**Vision and Strategy**
- What customers do we want to serve and how are we going to win and retain them?
- What internal business processes are critical to providing value to customers?
The Balanced Scorecard: Non-financial Measures

The balanced scorecard relies on non-financial measures in addition to financial measures for two reasons:

1. Financial measures are lag indicators that summarize the results of past actions. Non-financial measures are leading indicators of future financial performance.

2. Top managers are ordinarily responsible for financial performance measures – not lower level managers. Non-financial measures are more likely to be understood and controlled by lower level managers.
The Balanced Scorecard for Individuals

The entire organization should have an overall balanced scorecard.

Each individual should have a personal balanced scorecard.

A personal scorecard should contain measures that can be influenced by the individual being evaluated and that support the measures in the overall balanced scorecard.
The Balanced Scorecard

A balanced scorecard should have measures that are linked together on a cause-and-effect basis.

If we improve one performance measure . . .

Then

Another desired performance measure will improve.

The balanced scorecard lays out concrete actions to attain desired outcomes.
The Balanced Scorecard and Compensation

Incentive compensation should be linked to balanced scorecard performance measures.
The Balanced Scorecard — Jaguar Example

- **Financial**
  - Number of options available
  - Time to install option
  - Employee skills in installing options

- **Customer**
  - Number of cars sold
  - Customer satisfaction with options

- **Internal Business Processes**
  - Contribution per car

- **Learning and Growth**
  - Profit

The diagram illustrates the interconnections between the four perspectives of the Balanced Scorecard for Jaguar, highlighting key performance indicators and their relationships.
The Balanced Scorecard — Jaguar Example

- **Profit**
- **Contribution per car**
- **Number of cars sold**
- **Customer satisfaction with options**
- **Number of options available**
- **Time to install option**
- **Employee skills in installing options**

**Strategies**
- **Increase Options**
- **Increase Skills**

**Results**
- **Satisfaction Increases**
- **Time Decreases**
The Balanced Scorecard — Jaguar Example

- **Profit**
  - Contribution per car
    - Number of cars sold
      - Customer satisfaction with options
        - Number of options available
        - Time to install option
          - Employee skills in installing options

  - Satisfaction Increases
    - Cars sold Increase

Results
The Balanced Scorecard — Jaguar Example

- **Profit**
  - Contribution per car
  - Number of cars sold
  - Customer satisfaction with options
  - Number of options available
  - Time to install option
  - Employee skills in installing options

Results
- Contribution Increases
- Satisfaction Increases
- Time Decreases
The Balanced Scorecard — Jaguar Example

- Employee skills in installing options
- Number of options available
- Time to install option
- Customer satisfaction with options
- Number of cars sold
  - Contribution per car
  - Profit

Results
- Profits increase
- Contribution increases
- Cars sold increases

If the number of cars sold and contribution per car increase, profit should increase.
Transfer Pricing

Appendix 11A

PowerPoint Authors:
Susan Coomer Galbreath, Ph.D., CPA
Charles W. Caldwell, D.B.A., CMA
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Cynthia J. Rooney, Ph.D., CPA
A **transfer price** is the price charged when one segment of a company provides goods or services to another segment of the company.

The fundamental objective in setting transfer prices is to motivate managers to act in the **best interests of the overall company**.
There are three primary approaches to setting transfer prices:

1. Negotiated transfer prices;
2. Transfers at the cost to the selling division; and
3. Transfers at market price.
Learning Objective 5

Determine the range, if any, within which a negotiated transfer price should fall.
Negotiated Transfer Prices

A negotiated transfer price results from discussions between the selling and buying divisions.

Advantages of negotiated transfer prices:

1. They preserve the autonomy of the divisions, which is consistent with the spirit of decentralization.
2. The managers negotiating the transfer price are likely to have much better information about the potential costs and benefits of the transfer than others in the company.
Grocery Storehouse - An Example

Assume the information as shown with respect to West Coast Plantations and Grocery Mart (both companies are owned by Grocery Storehouse).

<table>
<thead>
<tr>
<th>West Coast Plantations:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Naval orange harvest capacity per month</td>
<td>10,000 crates</td>
</tr>
<tr>
<td>Variable cost per crate of naval oranges</td>
<td>$10 per crate</td>
</tr>
<tr>
<td>Fixed costs per month</td>
<td>$100,000</td>
</tr>
<tr>
<td>Selling price of navel oranges on the outside market</td>
<td>$25 per crate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grocery Mart:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase price of current naval oranges</td>
<td>$20 per crate</td>
</tr>
<tr>
<td>Monthly sales of naval oranges</td>
<td>1,000 crates</td>
</tr>
</tbody>
</table>
Grocery Storehouse - An Example

The selling division’s (West Coast Plantations) lowest acceptable transfer price is calculated as:

\[
\text{Transfer Price} \geq \text{Variable cost per unit} + \frac{\text{Total contribution margin on lost sales}}{\text{Number of units transferred}}
\]

Let’s calculate the lowest and highest acceptable transfer prices under three scenarios.

The buying division’s (Grocery Mart) highest acceptable transfer price is calculated as:

\[
\text{Transfer Price} \leq \text{Cost of buying from outside supplier}
\]

If an outside supplier does not exist, the highest acceptable transfer price is calculated as:

\[
\text{Transfer Price} \leq \text{Profit to be earned per unit sold (not including the transfer price)}
\]
If West Coast Plantations has *sufficient idle capacity* (3,000 crates) to satisfy Grocery Mart’s demands (1,000 crates), without sacrificing sales to other customers, then the lowest and highest possible transfer prices are computed as follows:

**Selling division’s lowest possible transfer price:**

\[
\text{Transfer Price} \geq \ 10 + \frac{10 - 10}{1,000} = \ 10
\]

**Buying division’s highest possible transfer price:**

\[
\text{Transfer Price} \leq \ \text{Cost of buying from outside supplier} = \ 20
\]

Therefore, the range of acceptable transfer prices is $10 – $20.
Grocery Storehouse - An Example

If West Coast Plantations has no idle capacity (0 crates) and must sacrifice other customer orders (1,000 crates) to meet Grocery Mart’s demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

**Selling division’s lowest possible transfer price:**

\[
\text{Transfer Price} \geq 10 + \frac{(25 - 10) \times 1,000}{1,000} = 25
\]

**Buying division’s highest possible transfer price:**

\[
\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = 20
\]

Therefore, there is no range of acceptable transfer prices.
Grocery Storehouse - An Example

If West Coast Plantations has some idle capacity (500 crates) and must sacrifice other customer orders (500 crates) to meet Grocery Mart’s demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

**Selling division’s lowest possible transfer price:**

\[
\text{Transfer Price} \geq \$10 + \left( \frac{\$(25 - \$10) \times 500}{1,000} \right) = \$17.50
\]

**Buying division’s highest possible transfer price:**

\[
\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$20
\]

Therefore, the range of acceptable transfer prices is $17.50 – $20.00.
Evaluation of Negotiated Transfer Prices

If a transfer within a company would result in higher overall profits for the company, there is always a range of transfer prices within which both the selling and buying divisions would have higher profits if they agree to the transfer.

If managers are pitted against each other rather than against their past performance or reasonable benchmarks, a noncooperative atmosphere is almost guaranteed.

Given the disputes that often accompany the negotiation process, most companies rely on some other means of setting transfer prices.
Transfers at the Cost to the Selling Division

Many companies set transfer prices at either the variable cost or full (absorption) cost incurred by the selling division.

Drawbacks of this approach include:

1. Using full cost as a transfer price can lead to suboptimization.
2. The selling division will never show a profit on any internal transfer.
3. Cost-based transfer prices do not provide incentives to control costs.
Transfers at Market Price

A market price (i.e., the price charged for an item on the open market) is often regarded as the best approach to the transfer pricing problem.

1. A market price approach works best when the product or service is sold in its present form to outside customers and the selling division has no idle capacity.

2. A market price approach does not work well when the selling division has idle capacity.
Divisional Autonomy and Suboptimization

The principles of decentralization suggest that companies should grant managers autonomy to set transfer prices and to decide whether to sell internally or externally, even if this may occasionally result in suboptimal decisions.

This way top management allows subordinates to control their own destiny.
Service Department Charges

Appendix 11B

PowerPoint Authors:
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Learning Objective 6

Charge operating departments for services provided by service departments.
Service Department Charges

Operating Departments

- Carry out central purposes of organization.

Service Departments

- Do not directly engage in operating activities.
Reasons for Charging Service Department Costs

Service department costs are charged to operating departments for a variety of reasons including:

- To encourage operating departments to wisely use service department resources.
- To provide operating departments with more complete cost data for making decisions.
- To help measure the profitability of operating departments.
- To create an incentive for service departments to operate efficiently.
Transfer Prices

The service department charges considered in this appendix can be viewed as a transfer price that is charged for services provided by service departments to operating departments.
Whenever possible, variable and fixed service department costs should be charged separately.
Variable service department costs should be charged to consuming departments according to whatever activity causes the incurrence of the cost.
Charging Costs by Behavior

Charge **fixed** service department costs to consuming departments in predetermined lump-sum amounts that are based on the consuming department’s peak-period or long-run average servicing needs.

- Are based on amounts of capacity each consuming department requires.
- Should not vary from period to period.
Should Actual or Budgeted Costs Be Charged?

Budgeted variable and fixed service department costs should be charged to operating departments.
Sipco has a maintenance department and two operating departments: Cutting and Assembly. Variable maintenance costs are budgeted at $0.60 per machine hour. Fixed maintenance costs are budgeted at $200,000 per year. Data relating to the current year are:

<table>
<thead>
<tr>
<th>Operating Departments</th>
<th>Percent of Peak-Period Capacity Required</th>
<th>Hours Planned</th>
<th>Hours Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting</td>
<td>60%</td>
<td>75,000</td>
<td>80,000</td>
</tr>
<tr>
<td>Assembly</td>
<td>40%</td>
<td>50,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Total hours</td>
<td>100%</td>
<td>125,000</td>
<td>120,000</td>
</tr>
</tbody>
</table>

Allocate maintenance costs to the two operating departments.
## Sipco: End of the Year

### Actual hours

<table>
<thead>
<tr>
<th>Variable cost allocation:</th>
<th>Cutting Department</th>
<th>Assembly Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.60 \times 80,000 \text{ hours}$</td>
<td>$48,000$</td>
<td>$24,000$</td>
</tr>
<tr>
<td>$0.60 \times 40,000 \text{ hours}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fixed cost allocation:

- 

### Total allocated cost:

- 

---
### Sipco: End of the Year

#### Actual hours

<table>
<thead>
<tr>
<th>Variable cost allocation:</th>
<th>Cutting Department</th>
<th>Assembly Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.60 \times 80,000 \text{ hours}</td>
<td>$48,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>$0.60 \times 40,000 \text{ hours}</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed cost allocation:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>60% \times $200,000</td>
<td>120,000</td>
<td>80,000</td>
</tr>
<tr>
<td>40% \times $200,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total allocated cost  | $168,000          | $104,000         |

Percent of peak-period capacity.
Foster City has an ambulance service that is used by the two public hospitals in the city. Variable ambulance costs are budgeted at $4.20 per mile. Fixed ambulance costs are budgeted at $120,000 per year. Data relating to the current year are:

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Percent of Peak-Period Capacity Required</th>
<th>Miles Planned</th>
<th>Miles Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercy</td>
<td>45%</td>
<td>15,000</td>
<td>16,000</td>
</tr>
<tr>
<td>Northside</td>
<td>55%</td>
<td>17,000</td>
<td>17,500</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>32,000</td>
<td>33,500</td>
</tr>
</tbody>
</table>
Quick Check ✔

How much ambulance service cost will be allocated to Mercy Hospital at the end of the year?

a. $121,200
b. $254,400
c. $139,500
d. $117,000
Quick Check ✓

How much ambulance service cost will be allocated to Mercy Hospital at the end of the year?

a. $121,200

---

<table>
<thead>
<tr>
<th>Variable cost allocation:</th>
<th>Mercy</th>
<th>Northside</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4.20 \times 16,000 miles</td>
<td>$67,200</td>
<td>$73,500</td>
</tr>
<tr>
<td>$4.20 \times 17,500 miles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fixed cost allocation

<table>
<thead>
<tr>
<th></th>
<th>Mercy</th>
<th>Northside</th>
</tr>
</thead>
<tbody>
<tr>
<td>45% \times $120,000</td>
<td>54,000</td>
<td>66,000</td>
</tr>
<tr>
<td>55% \times $120,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total allocated cost

<table>
<thead>
<tr>
<th></th>
<th>Mercy</th>
<th>Northside</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$121,200</td>
<td>$139,500</td>
</tr>
</tbody>
</table>

---
Pitfalls in Allocating Fixed Costs

Allocating fixed costs using a variable allocation base.

Result

Fixed costs allocated to one department are heavily influenced by what happens in other departments.
Pitfalls in Allocating Fixed Costs

Using sales dollars as an allocation base.

Result

Sales of one department influence the service department costs allocated to other departments.
Autos R Us has one service department and three sales departments, New Cars, Used Cars, and Car Parts. The service department costs total $80,000 for both years in the example. Contrary to good practice, Autos R Us allocates the service department costs based on sales.
In the next year, the manager of the New Cars department increases sales by $500,000. Sales in the other departments are unchanged. Let’s allocate the $80,000 service department cost for the second year given the sales increase.
Autos R Us - Second-year Allocation

<table>
<thead>
<tr>
<th>Departments</th>
<th>New</th>
<th>Used</th>
<th>Parts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales by department</td>
<td>$2,000,000</td>
<td>$900,000</td>
<td>$600,000</td>
<td>$3,500,000</td>
</tr>
<tr>
<td>Percentage of total sales</td>
<td>57%</td>
<td>26%</td>
<td>17%</td>
<td>100%</td>
</tr>
<tr>
<td>Allocation of service department costs</td>
<td>$45,714</td>
<td>$20,571</td>
<td>$13,715</td>
<td>$80,000</td>
</tr>
</tbody>
</table>

If you were the manager of the New Cars department, would you be happy with the increased service department costs allocated to your department?
End of Chapter 11B