

# CHAPTER 6

## Cost Allocation

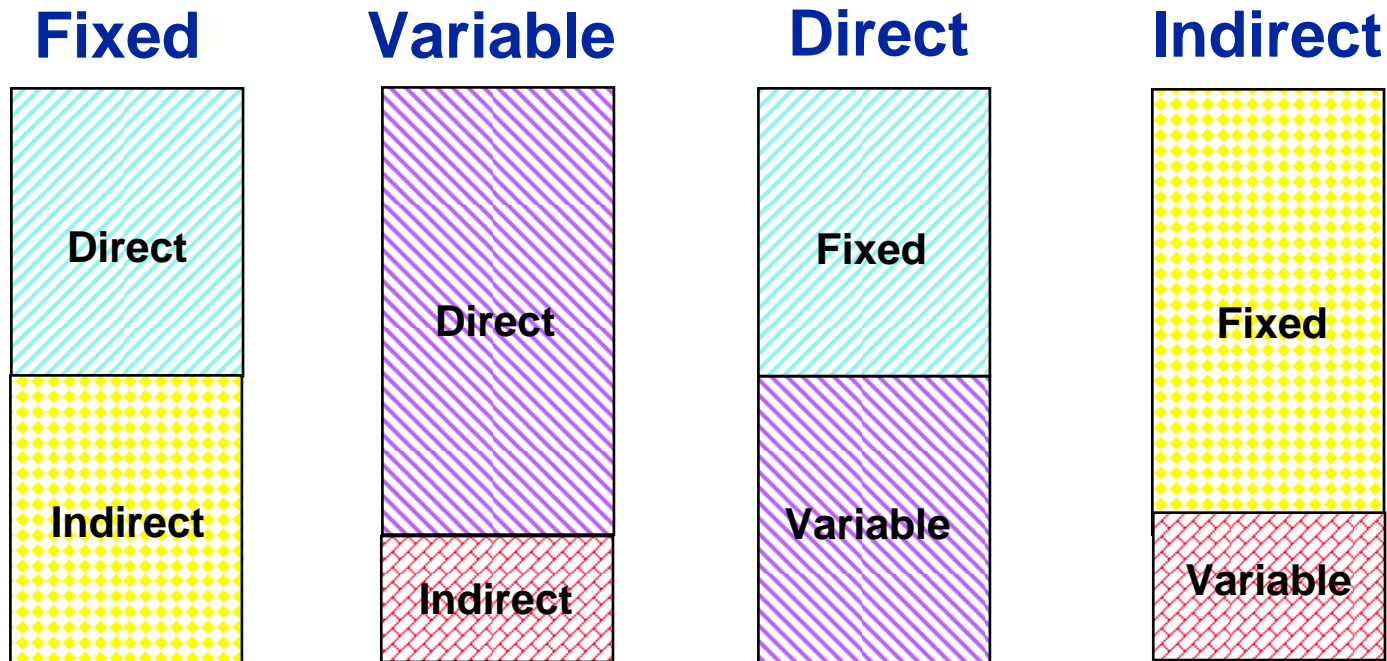
- **Direct versus indirect costs**
- **Cost allocation basics**
  - Cost pool
  - Cost driver
  - Allocation rate
- **Cost allocation methods**
  - Direct method
  - Reciprocal method
  - Step-down method
- **Traditional versus activity-based costing**

## Cost Allocation Basics

- In addition to their *relationship to volume* (Chapter 5), costs can be classified by their **relationship to the unit of activity**:
  - **Direct**, which are those costs unique and exclusive to a subunit.
  - **Indirect**, or **overhead**, which are those costs associated with shared resources used by the entire organization.
- The *purpose* of **cost allocation** is to assign indirect costs to subunits.

## Cost Allocation Basics (Cont.)

Note that the two cost allocation categories overlap one another. (The proportions shown are for illustration only.)



## Discussion Item

**What are some examples of direct and indirect (overhead) costs, say, for a hospital's clinical laboratory?**

## Cost Allocation

- The purpose of **cost allocation** is to assign all overhead costs to the departments that create the need for such costs, typically the *patient service departments*.
- To begin, we must define two terms used in cost allocation. Then, we will illustrate two methods of cost allocation.

## Cost Pool

- A **cost pool** is the *overhead amount* to be allocated.
- In general, a cost pool consists of the direct costs of one overhead department.
- However, if the costs of a single overhead department *differ substantially* in nature and are *used in different proportions*, multiple cost pools should be used. For example, Financial Services overhead might be divided as follows:
  - Billing and collections cost pool
  - Budgeting cost pool

## Cost Driver

- A **cost driver** is the *basis* on which the cost pool will be allocated.
- For example, the cost driver for facilities overhead (building space depreciation, maintenance, utilities, and so on) might be the *amount of space* used by each patient service department.

## Cost Drivers (Cont.)

- The selection of cost drivers is *critical* to the cost allocation process.
- Cost drivers should create an allocation that is *highly correlated* with the actual amount of overhead services consumed.
- Good cost drivers will have these two important attributes:
  - They should be perceived as being *fair*.
  - They should promote *organizational cost reduction*.

## Discussion Items

Overhead cost allocation is a “pain.”  
Why is it necessary?

Suppose a hospital uses *amount of space occupied (square footage)* as the cost driver for the allocation of Housekeeping Services. Does this driver have the attributes of a good driver?

## Traditional Allocation Process

### 1. Identify the cost pool

Identify the **cost pool**, which is the dollar cost of the overhead activity to be allocated.

To illustrate, assume that a hospital's *Housekeeping Department* has direct costs of **\$100,000**.

## Traditional Allocation Process (Cont.)

### 2. Determine the cost driver

The **cost driver** is the *basis* on which the overhead costs will be allocated.

Assume that the cost driver for Housekeeping services is the *amount of space occupied*. User departments in total occupy **200,000** square feet of space.

## Traditional Allocation Process (Cont.)

### 3. Calculate the allocation rate

The **allocation rate** is the numerical value used to make the allocation:

$$\text{Allocation rate} = \frac{\text{Dollars in cost pool}}{\text{Total volume of cost driver}}$$

Here, the allocation rate is \$100,000 / 200,000 = **\$0.50** per square foot of space occupied.

## Traditional Allocation Process (Cont.)

### 4. Determine the allocation amount

Each user department is then allocated some portion of Housekeeping overhead costs.

Assume the Critical Care Department occupies **10,000** square feet of space. Its allocation would be  $\$0.50 \times 10,000 =$  **\$5,000**.

## Allocation Methods

- Mechanically, cost allocation can be accomplished in a variety of ways.
- Regardless of the method, all overhead costs must ultimately be allocated to the departments that create the need for such costs, which are the *patient service departments*.
- There are several allocation methods:
  - Direct method
  - Step-down method
  - Reciprocal method

## Allocation Methods (Cont.)

- In the **direct method**, the costs of each support department are allocated ***directly to***, and ***only to***, the patient services departments.
- In the **step-down method**, ***some (but not all)*** of the intrasupport department relationships are recognized. This method is more complex than the direct method, but still manageable.

## Allocation Methods (Cont.)

- The **reciprocal method** recognizes *all* of the support department interrelationships, but it requires a system of simultaneous equations or a complex set of iterative calculations.
- ? Which method is used most commonly in practice?

## Direct Method Illustration (Situation)

- Consider the *direct cost allocation system* used at Mercy Hospital.
- To simplify the illustration, we have reduced the number of departments to four:
  - Support (overhead) departments
    - Facilities Services
    - General Administration
  - Patient service departments
    - Routine Care
    - Critical Care

## Direct Method Illustration (Situation Cont.)

- **Mercy uses the following cost drivers:**
  - The cost driver for the **Facilities Services** cost pool is the *amount of space* used by each patient service department.
  - The cost driver for the **General Administration** cost pool is the *amount of revenue* generated by each patient service department.

## Direct Method Illustration (Data)

### Projected Revenues by Patient Service Department

Routine Care	\$22,000,000
Critical Care	<u>5,000,000</u>
Total revenues	<u><u>\$27,000,000</u></u>

### *Projected Costs for All Departments:*

#### Patient Service Departments (Direct Costs)

Routine Care	\$ 8,300,000
Critical Care	<u>3,300,000</u>
Total direct costs	<u><u>\$11,600,000</u></u>

## Direct Method Illustration (Data)

*Projected Costs for All Departments (Cont.):*

*Support Departments (Direct Costs)\**

<b>Facilities Services</b>	\$ 8,600,000
<b>General Administration</b>	<u>5,250,000</u>
<b>Total overhead costs</b>	<u><u>\$13,850,000</u></u>

<b>Total costs of both patient and support services</b>	<u><u>\$25,450,000</u></u>
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<b>Projected overall profit</b>	<u><u>\$ 1,550,000</u></u>
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\*Note: The direct costs of the support departments will become the overhead costs of the patient services departments.

## Direct Method Illustration (Data)

*Selected Patient Service Department Data:*

	<u>Square Feet</u>	<u>Revenue</u>
Routine Care	261,000	\$22,000,000
Critical Care	<u>39,600</u>	<u>5,000,000</u>
Total	<u><u>300,600</u></u>	<u><u>\$27,000,000</u></u>

? Why aren't the support departments listed here?

## DM Illustration (Allocation Rates)

### Facilities Services

**\$8,600,000** in overhead costs to be allocated across **300,600** square feet:  
 $\$8,600,000 / 300,600 \approx \mathbf{\$28.61}$  per sq. ft.  
This is the **allocation rate**.

### General Administration

**\$5,250,000** in overhead costs to be allocated across **\$27,000,000** in revenue dollars:  $\$5,250,000 / \$27,000,000 \approx \mathbf{\$0.194}$  per revenue dollar.

## DM Illustration (Allocation Amounts)

*From Facilities Services:*

To Routine Care

$$\text{\$28.61} \times 261,000 = \text{\$7,467,066}$$

To Critical Care

$$\text{\$28.61} \times 39,600 = \underline{\text{\$1,132,934}}$$

\\$8,600,000

## DM Illustration (Allocation Amounts)

*From General Administration:*

To Routine Care

$$\$0.194 \times 22,000,000 = \$4,277,778$$

To Critical Care

$$\$0.194 \times 5,000,000 = \$ \underline{972,222}$$

\$5,250,000

# DM Illustration (P&L Statements)

## Routine Care

## Margin

Revenues	\$22,000,000	
Direct costs	<u>8,300,000</u>	
Profit on direct costs	<u>\$13,700,000</u>	<u>62.3%</u>
Indirect costs:		
Facilities Services	7,467,066	
General Administration	<u>4,277,778</u>	
Profit on total(full)costs	<u><u>\$ 1,955,156</u></u>	<u><u>8.8%</u></u>

## Critical Care

Revenues	\$ 5,000,000	
Direct costs	<u>3,300,000</u>	
Profit on direct costs	<u>\$ 1,700,000</u>	<u>34.0%</u>
Indirect costs:		
Facilities Services	1,132,934	
General Administration	<u>972,222</u>	
Profit on total(full)costs	<u><u>-\$ 405,156</u></u>	<u><u>-8.1%</u></u>

## Discussion Items

**Suppose you are the Critical Care department head at Mercy Hospital. Your bonus is dependent upon good financial performance. What would be your reaction to the allocation results?**

**What would be your first line of defense?**

## Step-Down Method Illustration

- Now, assume that Mercy Hospital uses the *step-down method*.
- Assume the same cost drivers:
  - Amount of space for **Facilities Services**.
  - Salary dollars for **General Administration**.
- Mercy's managers conclude that **Facilities Services** provides more support to **General Administration** than vice versa.

## Step-Down Method Illustration (Data)

*Selected Department Data:*

	<u>Square Feet</u>	<u>Salary Dollars</u>
Routine Care	261,000	\$ 8,148,000
Critical Care	39,600	2,035,000
General Administration	15,000	---
Total	<u><u>315,600</u></u>	<u><u>\$10,183,000</u></u>

? What is the difference here from the direct method?

## SD Illustration (Initial Allocation Rate)

### Facilities Services

**\$8,600,000** to be allocated across  
**315,600** square feet:  $\$8,600,000 /$   
 $315,600 \approx$  **\$27.25** per square foot.

? How does this allocation rate differ from the one used in the direct method?

## SD Illustration (Initial Allocation)

**From *Facilities Services*:**

**To *General Administration***

$$\mathbf{\$27.25 \times 15,000 = \$ 408,745}$$

**To *Routine Care***

$$\mathbf{\$27.25 \times 261,000 = \$7,112,167}$$

**To *Critical Care***

$$\mathbf{\$27.25 \times 39,600 = \underline{\underline{\$1,079,088}}}$$

**\$8,600,000**

## SD Illustration (Second Allocation Rate)

### General Administration

**\$5,250,000 + \$408,745 = \$5,658,745** to be allocated across **\$10,183,000** in salaries: **\$5,658,745 / \$10,183,000  $\approx$  \$0.56** per dollar.

? How does this allocation rate differ from the one used in the direct method?

## SD Illustration (Second Allocation)

*From General Administration:*

To Routine Care

$$\$0.56 \times 8,148,000 = \$4,527,885$$

To Critical Care

$$\$0.56 \times 2,035,000 = \underline{\underline{\$1,130,860}}$$

\$5,658,645

## SD Illustration (P&L Statements)

### Routine Care

Revenues	\$22,000,000
Direct costs	8,300,000
Indirect costs	
<b>Facilities Services</b>	7,112,167
<b>General Administration</b>	4,527,885
Projected profit	<u><u>\$ 2,059,948</u></u>

### Critical Care

Revenues	\$ 5,000,000
Direct costs	3,300,000
Indirect costs	
<b>Facilities Services</b>	1,079,088
<b>General Administration</b>	1,130,860
Projected profit	<u><u>(\$ 509,948)</u></u>

## SD Illustration (Recap)

### Routine Care Total Overhead

Direct method	\$11,744,844
Step-down method	<u>\$11,640,052</u>
Difference (-1.0%)	<u><u>-\$ 104,792</u></u>

### Critical Care Total Overhead

Direct method	\$ 2,105,156
Step-down method	<u>\$ 2,209,948</u>
Difference (+5.0%)	<u><u>+\$ 104,972</u></u>

## Discussion Item

**If you were the CEO of Mercy, what would you conclude from the consistency of the results between the direct and step-down methods?**

## Activity-Based Costing (ABC)

- Unlike traditional cost allocation, which is a *top-down system*, **activity-based costing (ABC)** begins with the *individual activities* that comprise the services provided.
- Although it holds great promise for costing (and hence pricing) individual services, it requires more information and is more complex than traditional costing.

## ABC Illustration

- **Assume a physician practice only does executive physicals, which (ignoring lab tests) consist of three separate activities:**
  - **Patient check in**
  - **Physical examination (minor or major)**
  - **Report and consultation**
- **The following slide contains the ABC analysis for the practice.**

## ABC (Cont.)

### Allocation Rate Calculation:

	Annual Costs	Driver	Activity Data			Allocation Rate
			Minor	Major	Total	
Check in	\$ 25,000	Exams	1,500	500	2,000	\$12.50
Physical exam	300,000	Minutes	60	120	150,000	2.00
Report/Consult	75,000	Minutes	30	60	75,000	1.00
	<u>\$400,000</u>					

### Service Cost Calculation (Per Exam):

	Rate	Minor Exam		Major Exam	
		Consumption	Cost	Consumption	Cost
Check in	\$12.50	1	\$ 12.50	1	\$ 12.50
Physical exam	2.00	60	120.00	120	240.00
Report/Consult	1.00	30	<u>30.00</u>	60	<u>60.00</u>
Cost per exam			<u>\$162.50</u>		<u>\$312.50</u>

## Conclusion

- This concludes our discussion of *Chapter 6* (Cost Allocation).
- Although not all concepts were discussed in class, you are responsible for all of the material in the text.
- ? Do you have any questions?