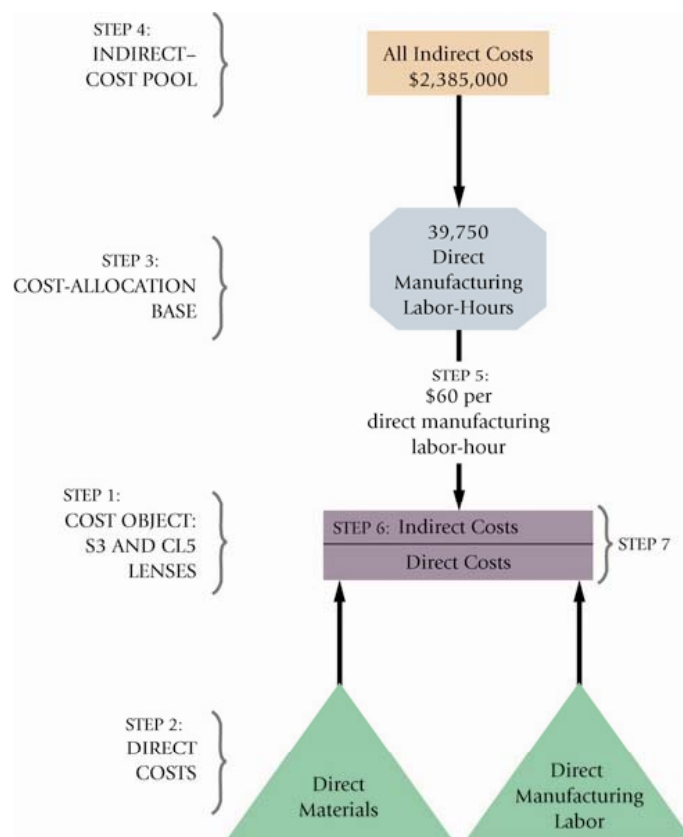


Chapter 5: Activity-Based Costing (ABC) & Activity-Based Management (ABM)

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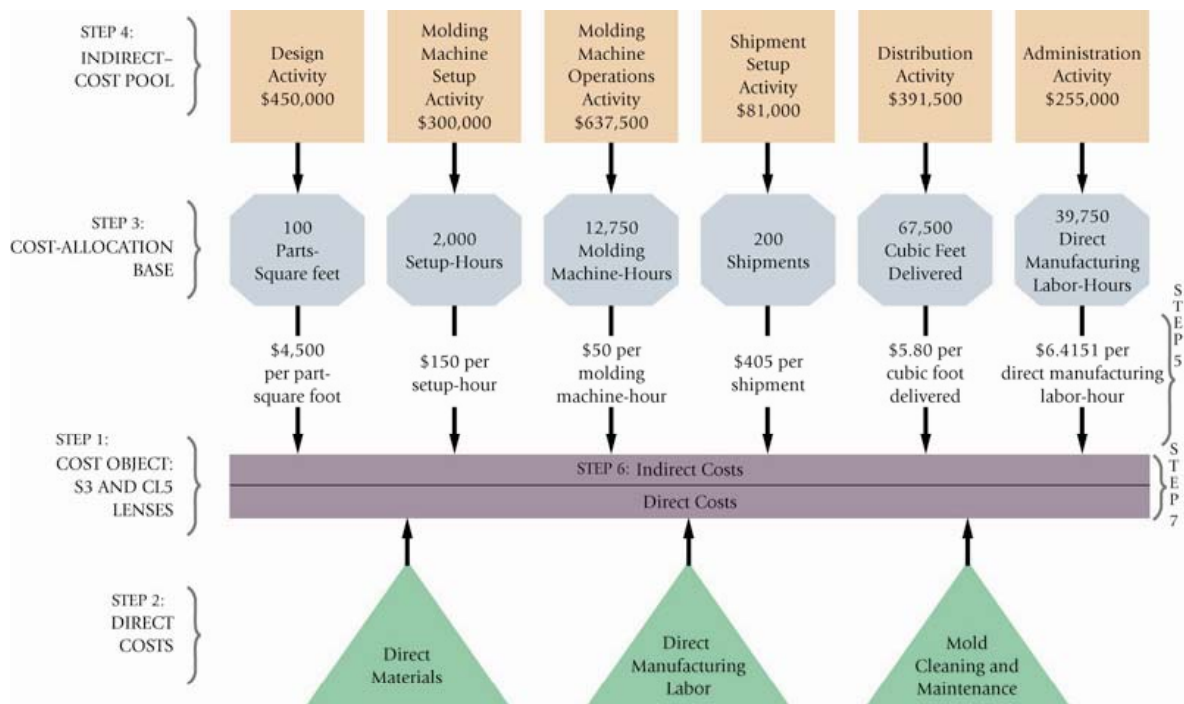
5-1

A SIMPLE COSTING SYSTEM



5-2

AN ACTIVITY-BASED COSTING SYSTEM



5-3

ABC's 7 Steps

- Step 1:** Identify the products that are the *chosen cost objects*.
- Step 2:** Identify the *direct costs* of the products.
- Step 3:** Select the *activities and cost-allocation bases* to use for allocating indirect costs to the products.
- Step 4:** Identify the *indirect costs* associated with each cost-allocation base (activity).
- Step 5:** Compute the *rate per unit* of each cost-allocation base (activity) used to allocate indirect costs to the products.
- Step 6:** Compute the indirect *costs allocated* to the products.
- Step 7:** Compute the *total costs of the products* by adding all direct and indirect costs assigned to the products.

5-4

COST HIERARCHIES

In an ABC system, costs are categorized on the basis of the different types of cost drivers utilized. ABC systems commonly use a cost hierarchy having four levels. These cost drivers differ in their relationship between the indirect cost and the product or service.

Output unit-level costs are the costs of activities performed on each individual unit of a product or service.

- These costs increase as the number of units produced increases.

Batch-level costs are the costs of activities related to a group of units of products or services rather than the individual unit.

- **Set-up costs** are an example of batch level costs, as this cost is incurred once for each batch, regardless of the size of the batch.

5-5

COST HIERARCHIES

Product-sustaining costs (service-sustaining costs) are the costs of activities undertaken to support individual products or services regardless of the number of units or batches produced.

- **Design costs** are an example of this type of cost.

Facility-sustaining costs are the costs of activities that cannot be traced to individual products or services but support the organization as a whole.

- Examples of this type of cost include **general administration, rent, and building security**.
- These costs usually lack a cause-and-effect relationship between the cost and the allocation base.

5-6

- Activity-based costing improves costing systems in three ways:

1. *It increases the number of cost pools used to accumulate overhead costs.* Rather than accumulate all overhead costs in a single, company-wide pool (or in departments), costs are accumulated by activity.
2. *It changes the bases used to assign overhead cost to products.* Rather than assigning costs on the basis of a measure of volume (such as direct labor-hours or machine-hours), costs are assigned on the basis of the activities that generate the costs.
3. *It changes the nature of many overhead costs.* Costs that were formerly indirect (depreciation, power, inspection) are traced to specific activities.

5-7

ACTIVITY-BASED COSTING EXAMPLE

Sarver Company manufactures 4,000 units of Product A and 20,000 units of Product B each year. The company currently has a traditional cost system in which direct labor-hours is used to assign overhead cost to products. The predetermined overhead rate is:

$$\frac{\text{Manufacturing overhead cost}}{\text{Direct labor-hours}} = \text{_____} =$$

Product A requires 2.5 DLH and Product B requires 2.0 DLH. According to the current cost system, the unit product costs are:

	<u>Product A</u>	<u>Product B</u>
Direct materials	\$36.00	\$30.00
Direct labor	17.50	14.00
Manufacturing overhead		
.....		
.....		
Unit product cost.....	<u> </u>	<u> </u>

5-8

Suppose, however, that overhead costs are actually caused by the five activities listed below rather than by direct labor hours.

<u>Activity Center</u>	<u>Estimated Overhead Cost</u>
Machine setups	
Quality inspections	
Production orders	
Machine-hours worked	
Material receipts	
Total	

5-9

Also suppose the following activity data have been estimated:

<u>Activity Center</u>	<u>Expected Activity</u>		
	<u>Total</u>	<u>Product A</u>	<u>Product B</u>
Machine setups			
Quality inspections			
Production orders			
Machine-hours worked			
Material receipts			

These data can be used to develop overhead rates for each of the five activities:

<u>Activity Center</u>	<u>Estimated Overhead Costs</u>	<u>Expected Activity</u>	<u>Overhead Rate</u>
Machine setups			
Quality inspections			
Production orders			
Machine-hours worked			
Material receipts			

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<u>Product A</u>			
<u>Activity Center</u>	<u>Overhead Rate</u>	<u>Activity</u>	<u>Amount</u>
Machine setups.....			
Quality inspections.....			
Production orders.....			
Machine-hours worked.....			
Material receipts			
Total overhead (a).....			
Number of units (b).....			
Overhead per unit (a) ÷ (b)...			

<u>Product B</u>			
<u>Activity Center</u>	<u>Overhead Rate</u>	<u>Activity</u>	<u>Amount</u>
Machine setups.....			
Quality inspections.....			
Production orders.....			
Machine-hours worked.....			
Material receipts			
Total overhead (a).....			
Number of units (b).....			
Overhead per unit (a) ÷ (b)...			

5-11

ACTIVITY-BASED COSTING EXAMPLE (cont'd)

Product costs computed using the two different methods can now be contrasted:

Product costs using activity-based costing:

	<u>Product A</u>	<u>Product B</u>
Direct materials.....		
Direct labor.....		
Manufacturing overhead		
Unit product cost		

Product costs using the old costing system:

	<u>Product A</u>	<u>Product B</u>
Direct materials.....		
Direct labor.....		
Manufacturing overhead		
Unit product cost		

5-12

- **Adopting activity-based costing usually results in shifting overhead costs from high volume to low volume products.**
- **The per unit costs of the low volume products increase and the per unit costs of the high volume products decrease.**
- **The effects are not symmetrical—there is a bigger dollar effect on the per unit costs of the low volume products.**

5-13

Learning Objective 1: Explain how broad averaging undercosts and overcosts products or services . . . this problem arises when reported costs of products do not equal their actual costs

Production-cost cross-subsidization results from

- a. allocating indirect costs to multiple products.
- b. assigning traced costs to each product.
- c. assigning costs to different products using varied costing systems within the same organization.
- d. assigning broadly averaged costs across multiple products without recognizing amounts of resources used by which products.

5-14

**Learning Objective 2: Present three guidelines for refining a costing system . . .
classify more costs as direct costs, expand the number
of indirect-cost pools, and identify cost drivers**

In refining a cost system

- total direct costs are unchanged because they can be traced in an economically feasible way to the product and traced costs are more accurate.
- the costs are grouped in homogeneous pools of the same or similar amounts.
- the criterion of cause and effect is used to relate indirect costs to a factor that systematically links to a cost object.
- the organization looks for cost-allocation bases that will provide a uniform spreading of indirect costs to each product.

True or False

Indirect labor and distribution costs would most likely be in the same activity-cost pool.

5-15

Learning Objective 3: Distinguish between simple and ABC systems ... unlike simple systems, ABC systems calculate costs of individual activities to cost products

Learning Objective 5: Cost products or services using ABC . . . use cost rates for different activities to compute indirect costs of a product

Learning Objective 6: Explain how ABC systems are used in ABM . . . such as pricing decisions, product-mix decisions, and cost reduction

[EXERCISE]

Brilliant Accents Company manufactures and sells three styles of kitchen faucets: Brass, Chrome, and White. Production takes 25, 25, and 10 machine hours to manufacture 1,000-unit batches of brass, chrome and white faucets, respectively. The following additional data apply:

	<u>BRASS</u> 30,000	<u>CHROME</u> 50,000	<u>WHITE</u> 40,000
Projected sales in units			
<u>PER UNIT data:</u>			
Selling price	\$40	\$20	\$30
Direct materials	\$ 8	\$ 4	\$ 8
Direct labor	\$15	\$ 3	\$ 9
Overhead cost based on direct labor hours (traditional system)	\$12	\$ 3	\$ 9
<u>Hours per 1000-unit batch:</u>			
Direct labor hours	40	10	30
Machine hours	25	25	10
Setup hours	1.0	0.5	1.0
Inspection hours	30	20	20

5-16

[EXERCISE] Total overhead costs and activity levels for the year are estimated as follows:

<u>Activity</u>	<u>Overhead costs</u>	<u>Activity levels</u>
Direct labor hours		2,900 hours
Machine hours		2,400 hours
Setups	\$465,500	95 setup hours
Inspections	\$405,000	2,700 inspection hours
	<u>\$870,500</u>	

Required:

- Using the traditional system, determine the operating profit per unit for the brass style of faucet.
- Determine the activity-cost-driver rate for setup costs and inspection costs.
- Using the ABC system, for the brass style of faucet
 - compute the estimated overhead costs per unit.
 - compute the estimated operating profit per unit.
- Explain the difference between the profits obtained from the traditional system and the ABC system. Which system provides a better estimate of profitability? Why?

5-17

Learning Objective 4: Describe a four-part cost hierarchy . . . a four-part cost hierarchy is used to categorize costs based on different types of cost drivers—for example, costs that vary with each unit of a product versus costs that vary with each batch of products

Advertising of a specific product is an example of

- unit-level costs.
- batch-level costs.
- product-sustaining costs.
- facility-sustaining costs.

The MOST likely example of an output unit-level cost is

- general administrative costs.
- paying suppliers for orders received.
- engineering costs.
- machine depreciation.

The MOST likely example of a batch-level cost is

- utility costs.
- machine repairs.
- product-designing costs.
- setup costs.

5-18

**Learning Objective 7: Compare ABC systems and department costing systems
... ABC systems are a refinement of department costing
systems into more-focused and homogenous cost pools**

Which of the following statements is more representative of activity-based costing in comparison to a department-costing system?

- a. The use of multiple cost-allocation bases
- b. The use of indirect-cost rates for significant resource use
- c. The use of activities having a cause-and-effect relationship
- d. The use of multiple cost pools

**Learning Objective 8: Evaluate the costs and benefits of implementing ABC
systems . . . measurement difficulties versus more
accurate costs that aid in decision making**

A significant limitation of activity-based costing is the

- a. attention given to indirect cost allocation.
- b. many necessary calculations.
- c. operations staff's attitude toward the accounting staff.
- d. use it makes of technology.