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|  | **Activity-Based Costing and****Activity-Based Management** |
|  |  |

**Transition Notes**

In this chapter the five-step decision process is applied to a specific problem faced by management of a company. The decision process undertaken by the company is illustrated step-by-step. The text gives three reasons for refinement of a costing system. In the previous edition, a fourth reason—“advances in information technology” was included. This change reflects that, although information technology continues to change, the technology necessary for cost system refinement has been in place for a number of years and one does not need the latest technology to adopt an ABC system. There is an expanded discussion of the choice of cost-allocation bases.

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| --- |
| **Problem Material** **Correlation Chart** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **15th** **Edition** | **14th** **Edition** |  | **15th** **Edition** | **14th** **Edition** |
|  | 16  | 16 Revised  |  | 29 | 29 Revised |
|  | 17  | 17  |  | 30 | 30 Revised |
|  | 18 | 18  |  | 31  | 31 Revised |
|  | 19 | 19 |  | 32  | 32 Revised |
|  | 20  | 20 Revised |  | 33  | 33 Revised |
|  | 21 | 21 |  | 34 | 34 Revised |
|  | 22 | 22Revised |  | 35  | 35 Revised |
|  | 23  | 23 Revised |  | 36 | 36 Revised |
|  | 24 | 24 Revised |  | 37  | 37 Revised |
|  | 25 | 25 Revised |  | 38 | 38 Revised |
|  | 26 | 26 Revised |  | 39 | 39 Revised |
|  | 27  | 27 Revised |  | 40  | 40 Revised |
|  | 28 | 28 Revised |  | 4142 New | 41 Revised |

**I. LEARNING OBJECTIVES**

1. Explain how broad averaging undercosts and overcosts products or services.
2. Present three guidelines for refining a costing system.
3. Distinguish between simple and activity-based costing systems.
4. Describe a four-part cost hierarchy.
5. Cost products or services using activity-based costing.
6. Evaluate the costs and benefits of implementing activity-based costing systems.
7. Explain how activity-based costing systems are used in activity-based management.
8. Compare activity-based costing systems and department costing systems.
9. **CHAPTER SYNOPSIS**

Chapter 5 focuses on allocation of indirect costs by using an **activity-based costing** **(ABC) system.** Companies that produce a variety of products need a costing system that allocates costs based on the varying resource demands of each product. Activity-based costing systems can help companies make better decisions about pricing and product mix, and assist in decisions about product design, by providing more accurate information about how different products and services use resources. Activity-based costing systems identify **activities** as the cost objects.

Inaccurate costing systems can provide misleading cost information and may result in **product undercosting** and **product overcosting.** Three guidelines for refining a costing system are: direct-cost tracing, indirect-cost pools, and cost-allocation bases.

A **cost hierarchy** segregates costs into different cost pools. ABC systems typically use a cost hierarchy with four levels—output unit-level costs, batch-level costs, product-sustaining costs, and facility-sustaining costs.

**III. Points of Emphasis**

1. It is important that students understand the consequences of undercosting or overcosting a product. Help them relate this to the advantages of using an activity-based costing (ABC) system. Be certain they understand what is meant by *refining* a cost system.
2. Students will not be familiar with the concept of cost hierarchies. However, understanding how costs are incurred will go a long way toward understanding cost drivers and ABC systems.
3. Just like job costing has a seven-step procedure for implementation, ABC costing has a seven-step procedure. Help the students relate the two and understand differences in the seven steps in each system.

**IV. CHAPTER OUTLINE**

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| --- | --- |
| **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 |
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* 1. The use of broad averages in allocating indirect costs can have a number of adverse consequences.
	2. Traditional product-costing methods use a *single indirect cost rate* to allocate costs to all products.
	+ When a company has a variety of products, or an increasing proportion on indirect costs, this method may not give the best results.
	1. Different products consume activities at different rates, traditional costing does not recognize these differences.
	2. *Peanut-butter costing* uses broad averages to assign (or spread) costs uniformly to cost objects.

Teaching point. Use the term *peanut-butter costing.* It is one that students will relate to and remember.

* 1. The result can be *undercosting* or *overcosting* of products.
	2. When a company has a situation in which undercosting or overcosting of products occurs due to broad averaging of costs, this is referred to as **product-cost cross-subsidization** overcosting one product will undercost one or more other products.

Teaching point. Focus on the consequences of undercosting or overcosting products. Overcosting may set the selling price too high, having an adverse effect on sales volume. Undercosting may result in too low a sales price, where in increase in volume isn’t enough to generate an adequate profit. Managers sometimes do not realize that profits are maximized if products are priced properly.

(Exhibits 5-1 and 5-2 illustrate the Plastim simple costing system.)

**Refer to Quiz Question 1 Exercise 5-19 Part 1, Problem 5-29**

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| **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 |
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2.1 **Refining a Costing System.** A refined cost system reduces the use of broadaveragesfor assigning costs of resources to cost objects. There are three principal reasons that have accelerated the demand for such refinements.

* **Increase in product diversity.** The growing demand for *customized products* has led to product diversity with the result that products and services demand differing quantities of resources.

Teaching point. Have students brainstorm the proliferation of products on the market. For example, point out the number of varieties and sizes of a product such as Coca-Cola, or the new ways that coffee is packaged for brewing (K cups or pods). A costing system needs to be able to handle such variety.

* **Increase in indirect costs.** With product and process technology, companies have experienced a decrease in direct costs (especially direct labor) with a resulting *increase in indirect costs.*
* **Competition in product markets.** Markets have become more competitive, forcing managers to obtain *more accurate cost information* to help them make strategic decisions, such as pricing and product mix.

2.2 The demand for refined cost systems precipitated by increases in product diversity, increased indirect costs, and competition is met by new technologies that facilitate implementation of these systems.

2.3 Three guidelines are presented for refining a costing system.

* **Direct-cost tracing.** Identify as many direct costs as is economically feasible.
* **Indirect-cost pools.** Expand the number of cost pools so that each pool is somewhat homogeneous. Each cost in the pool has a similar cause-and-effect relationship with a single cost driver.
* **Cost-allocation bases.** The cost driver serves as the cost allocation base for each homogeneous indirect-cost pool.

**Refer to Quiz Question 2 Question 5-3, Exercise 5-19**

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| **LEARNING** **OBJECTIVE** | 3 |
| Distinguish between simple and activity-based costing systems … unlike simple systems, ABC systems calculate costs of individual activities to cost products |
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3.1 A simple costing system has few indirect (often one) cost rates and *allocates costs broadly.*

* In today’s complex manufacturing environment, this can lead to *inaccurate product costs.*
	1. An activity-based system (ABC) identifies activities as fundamental cost objects.
* Costs are then *assigned* to the activities and *allocated* to the individual products.

(Exhibit 5-6 continues the Plastim example, comparing simple and activity-based costing systems.)

**Refer to Quiz Question 3 Exercise 5-21**

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| **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 |
|  |

4.1 **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 four-level cost hierarchy. 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.
* **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.

Teaching point. Students do not always grasp the significance of the cost hierarchy. Begin by talking generally about hierarchies (classifications) and then relate the general term to the cost hierarchy. Illustrate each and emphasize how the costs are incurred and how those costs are assigned to the product.

**Refer to Quiz Question 4 Exercises 5-16and 5-17**

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| **LEARNING** **OBJECTIVE** | 5 |
| Cost products or services using activity-based costing… use cost rates for different activities to compute indirect costs of a product |
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5.1 The chapter previously discussed the three guidelines for refining a cost system. Those guidelines, direct-cost tracing, homogeneous cost pools, and cost drivers with a cause-and-effect relationship lack specificity. In order to implement activity-based costing, a seven-step procedure should be followed.

**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.

5.2 This process is not a strict step-by-step procedure. You may get to one step and realize you need to revise something you did in a previous step, so you will frequently find yourself going back to a previous step in implementing an activity-based costing system.

(Exhibits 5-3, 5-4, and 5-5 continue the illustration of an activity-based costing system at Plastim.)

**Refer to Quiz Questions 6 and 7 Exercise 5-23**

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| **LEARNING** **OBJECTIVE** | 6 |
| Evaluate the costs and benefits of implementing activity-based costing systems… measurement difficulties versus more accurate costs that aid in decision making |
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6.1 Managers choose the level of detail to use in a costing system by comparing the costs and benefits of each system. There are five signs that may indicate an ABC system will provide maximum benefit. They are:

* Significant amounts of indirect costs are allocated using only one or two cost pools.
* All or most indirect costs are identified as output unit-level costs (few indirect costs are described as batch-level, product-sustaining, or facility-sustaining costs).
* Products make diverse demands on resources because of differences in volume, process steps, batch size, or complexity.
* Products that a company is well-suited to make and sell show small profits; whereas products that a company is less suited to produce and sell show large profits.
* Operations staffs have substantial disagreement with the reported costs of manufacturing and marketing products and services.

6.2 When implementing ABC, a company must decide about the *level of detail* to use. Should it choose many finely specified activities, cost drivers, and cost pools, or would fewer suffice? The more activities utilized, the more complex the system.

Teaching point. When ABC was introduced, the prevailing thought was that it was only for very large companies and that the greater number of activities that were identified resulted in a better system. Typical ABC software was priced at $25,000 and up to the late 80’s, companies were identifying 100 to 150 activities. This took a great deal of effort to track and the classifications were not always accurate with so many cost pools. Today, software prices have declined, and companies realize they can get better results when identifying a limited number of activities.

**Refer to Quiz Question 8 Problem 5-35**

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| **LEARNING** **OBJECTIVE** | 7 |
| Explain how activity-based costing systems are used in activity-based management… such as pricing decisions, product-mix decisions, and cost reduction |
|  |

* 1. To this point, the emphasis in this chapter has been on the use of ABC to obtain better product costing. Better product costing is desirable because it leads managers to make better decisions, evaluate performance, and to learn.
* **Activity-based management (ABM)** is a method of management decision making that uses activity-based costing information to improve customer satisfaction and profitability.
* ABM is defined broadly to include decisions about
	+ Pricing and product mix
	+ Cost reduction
	+ Process improvement
	+ Product design

**Refer to Quiz Question 9 Problem 5-37**

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| **LEARNING** **OBJECTIVE** | 8 |
| Compare activity-based costing systems and department costing systems … activity-based costing systems are a refinement of department costing systems into more focused and homogenous cost pools |
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8.1 A comparison of activity-based costing systems and department costing systems yields several observations:

* Companies may use costing systems that have features of ABC, such as multiple cost pools and allocation bases.
* If these systems do not emphasize individual activity bases, it may be a refined cost system, but cannot be called an activity-based costing system.
* Often companies will move from a single, plantwide rate to departmental rates.
* Do not assume that the creation of multiple indirect cost pools properly represents how resources are used by products. Unless the system uses the correct cost pools as the base, the system may not capture actual resource consumption.

 **Refer to Quiz Question 10 Exercise 5-19, Parts 2 through 5**

**V. OTHER RESOURCES**

To download these and other resources, visit the Instructor’s Resource Center [*www.pearsonhighered.com*](http://www.pearsonhighered.com/)*.*

The following exhibits were mentioned in this chapter of the Instructor’s Manual, and have been included in the **PowerPoint Lecture presentation** created specifically for this chapter. You may use the PowerPoint Lecture presentations “as is”, or modify them to suit your individual needs.

Exhibits 5-1 and 5-2 illustrate the Plastim simple costing system.

Exhibits 5-3, 5-4, 5-5, and 5-6 are a continuing illustration of the activity-based costing system at Plastim.

Download pdf images of textbook illustrations and exhibits from the **Image Library**

**CHAPTER 5 QUIZ**

1. Production-cost cross-subsidization results from
2. allocating indirect costs to multiple products.
3. assigning traced costs to each product.
4. assigning costs to different products using varied costing systems within the same organization.
5. assigning broadly averaged costs across multiple products without recognizing amounts of resources used by which products.
6. In refining a cost system
7. total direct costs are unchanged because they can be traced in an economically feasible way to the product and traced costs are more accurate.
8. the costs are grouped in homogeneous pools of the same or similar amounts.
9. the criterion of cause-and-effect is used to relate indirect costs to a factor that systematically links to a cost object.
10. the organization looks for cost-allocation bases that will provide a uniform spreading of indirect costs to each product.

**Question 3 is based on the following data.**

The average cost data are for In-Sync Fixtures Company’s (a retailer) only two product lines, Marblette and Italian Marble.

|  |  |  |
| --- | --- | --- |
|  | Marblette | Italian Marble |
| Purchase volume | 20,000 | 1,000 |
| Purchase cost per unit | $50 | $50 |
| Shipments received | 12 | 12 |
| Hours used per shipment \* | 5 | 3 |

**\***These data were accumulated after a careful activity analysis.

Currently, In-Sync Fixtures uses a traditional costing system with indirect costs allocated using purchased cost of goods as a basis. In-Sync Fixtures is considering refining the allocation of their receiving costs of $40,000. They realize that the Italian Marble is heavier and requires more care than the Marblette but that the Marblette comes in larger volume.

1. Which statement can be made using the results of the activity analysis performed by In-Sync Fixtures?
2. The use of this refined activity-based costing system will increase the accuracy of the resulting product costs because a more appropriate cost driver will be used as the allocation base.
3. The traditional allocation method currently being used is causing product-cost cross-subsidization with the product line Marblette being undercosted.
4. The cost allocated to the Italian Marble product line under the current traditional system is more than the activity-based costing allocated cost.
5. The use of this refined activity-based costing system will increase the accuracy of the resulting product costs because it probably will cost less to trace the costs to the product lines.
6. Advertising of a specific product is an example of
7. unit-level costs.
8. batch-level costs.
9. product-sustaining costs.
10. facility-sustaining costs.
11. The allocation of indirect costs in an activity-based costing system
12. may require other costs to be allocated to activities before the costs of the activities can be allocated to the products.
13. is simplified because more costs are identified as direct costs.
14. requires the use of heterogeneous cost pools.
15. is simplified because a limited number of activities are identified as cost objects.

**Information for questions 6 and 7 is given below.**

Jackson Enterprises manufactures two products—a basic gizmo and an advanced model gizmo. The company is using an activity-based costing system. They have identified three activities for allocation of indirect costs.

**Activity Cost Driver Cost-Allocation Rate**

Materials receiving Number of parts $2.00 per part

Production setup Number of setups $500.00 per setup

Quality inspection Inspection time $90 per hour

A production run for the basic model is 250 units, for the advanced model, 100 units.

Each unit of product consumes the following activities:

 **Number of Parts** **Number of Setups** **Inspection Time**

Basic Gizmo 10 50 10 minutes

Advanced Gizmo 15 25 20 minutes

Direct costs for the two products are as follows:

 **Direct Materials Direct Labor**

Basic Gizmo $50.00 $ 75.00

Advanced Gizmo $95.00 $125.00

1. The amount of overhead allocated to one unit of the basic model would be
2. $592.
3. $37.
4. $162.
5. $65.
6. The total cost of an advanced model would be
7. $162.
8. $65.
9. $200.
10. $265.
11. A significant limitation of activity-based costing is the
12. attention given to indirect cost allocation.
13. many necessary calculations.
14. operations staff’s attitude toward the accounting staff.
15. use it makes of technology.
16. Evaluating customer reaction of the trade-off of giving up some features of a product for a lower price would best fit which category of management decisions under activity-based management?
17. Pricing and product-mix decisions

b. Cost reduction decisions

c. Design decisions

d. Discretionary decisions

1. Which of the following statements is more representative of activity-based costing in comparison to a department costing system?
2. The use of multiple cost-allocation bases
3. The use of indirect-cost rates for significant resource use
4. The use of activities having a cause-and-effect relationship
5. The use of multiple cost pools

**CHAPTER 5 QUIZ SOLUTIONS**

# 1. d

# 2. c

# 3. a

# 4. c

# 5. a

# 6. b

# 7. d

# 8. c

# 9. c

# 10. b

**Quiz Question Calculations**

6. (2 × 10) + ($500/250) + ($90/60 × 10) = $37

7. $75 + $125 + ($2 × 15) + ($500/100) + ($90/60 × 20)