

**Chapter 18—Activity-Based Costing, Customer Profitability, and Activity-Based Management**

**Solutions to Practice Quiz**

1. The trend toward replacing manual labor with technology in the production process has resulted in all of the following except:
- a. An increased focus on using equipment to assist laborers in performing tasks, as opposed to laborers scheduling and setting up equipment to perform most of the tasks.
  - b. A shift toward more support personnel and fewer production workers.
  - c. A significant increase in manufacturing overhead costs as a percentage of total production costs.
  - d. A shift away from direct labor being the primary driver of manufacturing overhead costs.

Answer: *a*

Rationale: There is actually a “decreased” focus on using equipment to assist laborers in performing tasks, and a greater use of employee time devoted to scheduling and setting up equipment to perform the primary production tasks.

2. The two-stage activity-based costing model for a product manufacturing situation:
- a. Assigns all direct costs directly to products
  - b. Assigns indirect resource costs to activity pools using resource cost drivers
  - c. Assigns activity cost pools to products using activity cost drivers
  - d. All of the above

Answer: *d*

Rationale: All of the statements are true. In an ABC model, direct costs by-pass the ABC pools and are assigned directly to product cost pools. ABC cost pools are used for assigning costs to products that cannot be assigned directly to the products.

3. Assume that Simko, Inc. has three activity pools which have the following costs: Machine Setups, \$40,000; Material Moves, \$35,000; and Machine Operations, \$18,000. The activity cost drivers (and driver quantity) for the three pools are, respectively, number of setups (200), number of material moves (350), and number of machine hours (360). Product ZA7 used the following quantity of activity drivers to produce 100 units of final product: 20 setups, 30 material moves, and 65 machine hours.

The total ABC cost and unit ABC cost assigned to Product ZA7 is:

- \$93,000 total ABC cost & \$930 unit ABC cost
- \$93,000 total ABC cost & \$93 unit ABC cost
- \$10,250 total ABC cost & \$102.50 unit ABC cost
- \$3,500 total ABC cost & \$350 unit ABC cost

Answer: c

Rationale: The costs per quantity of activity cost driver for the three pools are \$200 per setup ( $\$40,000 \div 200$ ), \$100 per material move ( $\$35,000 \div 350$ ), and \$50 per machine hour ( $\$18,000 \div 360$ ). The ABC costs assigned to Product ZA7 are:

Setup costs	20 setups x \$200	\$4,000
Material moves	30 moves x \$100	3,000
Machine Operations	65 hours x \$50	<u>3,250</u>

Total ABC costs assigned to Product ZA7: \$10,250

ABC costs per unit of Product ZA7:  $\$10,250 \div 100 \text{ units} = \$102.50 \text{ per unit}$ .

4. Magglio Company produces two products, Bop and Mop in a small manufacturing plant which had total manufacturing overhead of \$52,000 in June and used 800 direct labor hours. The factory has two departments, Preparation, which incurred \$32,000 of manufacturing overhead, and Processing which incurred \$20,000 of manufacturing overhead. Preparation used 500 hours of direct labor and Processing used 200 machine hours. During June, 400 direct labor hours were used in making 100 units of Bop, and 400 were used in making 100 units of Mop.

If Magglio uses a plant wide rate based on direct labor hours to assign manufacturing costs to products, the total manufacturing overhead assigned to each unit of Mop and Bop in June were:

- \$26,000 for Bop and \$26,000 for Mop
- \$260 for Bop and \$260 for Mop
- \$35,000 for Bop and \$25,000 for Mop
- \$130 for Bop and \$130 for Mop

Answer: *b*

Rationale:

Total manufacturing overhead	\$52,000
Direct labor hours	<u>÷ 800</u>
Manufacturing cost per direct labor hour	<u>\$ 65</u>

Assigned to Bop and Mop 400 x \$65	\$26,000
Units produced of Bop and Mop	<u>÷ 100</u>
Cost per unit assigned to Bop and Mop	<u>\$ 260</u>

5. Refer to the previous question. Assume that instead of using a plant wide overhead rate, Magglio used departmental rates based on direct labor hours for the Preparation Department and machine hours for the Processing Department. The departmental overhead rates for the Preparation and Processing Departments were:
- a. \$65 per direct labor hour for both Preparation and Processing
  - b. \$64 per direct labor hour Preparation, and \$100 per machine hour for Processing
  - c. \$100 per direct labor hour for Preparation, and \$64 per machine hour for Processing
  - d. \$74.29 per direct labor hour for Preparation, and \$74.29 per machine hour for Processing

Answer: *b*

Rationale: Preparation overhead rate calculation:

Departmental overhead costs	\$32,000
Departmental direct labor hours	<u>÷ 500</u>
Departmental overhead rate	<u>\$ 64.00</u> per labor hour

Processing overhead rate calculation:

Departmental overhead costs	\$20,000
Departmental machine hours	<u>÷ 200</u>
Departmental overhead rate	<u>\$ 100</u> per machine hour

6. Refer to the previous questions regarding Magglio Company. Assume that Bop used 225 direct labor hours and Mop used 275 direct labor hours in the Preparation Department. Also, assume that Bop used 120 machine hours and Mop used 80 machine hours in the Processing Department.

The overhead costs assigned to each unit of Bop and Mop were:

- a. \$301.80 for Bop and \$326.20 for Mop
- b. \$ 64.00 to Bop and \$100.00 to Mop
- c. \$256.00 to Mop and \$256.00 to Bop
- d. \$264.00 to Bop and \$256.00 to Mop

Answer: *d*

Rationale: Bop overhead costs:

Preparation (225 x \$64)	\$14,400.00
Processing (120 x \$100)	<u>12,000.00</u>
	26,400.00
Units of Bop produced	÷ 100
Cost per unit assigned to Bop	<u>\$ 264.00</u>

Mop overhead costs:

Preparation (275 x \$64.00)	\$17,600.00
Processing (80 x \$100)	<u>8,000.00</u>
	25,600.00
Units of Mop produced	÷ 100
Cost per unit assigned to Mop	<u>\$ 256.00</u>

7. Refer to the previous questions regarding Magglio Company. Assume that Magglio used an ABC product costing system and that its total manufacturing overhead costs of \$52,000 were assigned to the following ABC cost pools:

Material inspections & preparation (\$20,000)	\$20 per pound of raw materials
Material moves (\$9,000)	\$45 per move
Machine setups (\$8,000)	\$400 per setup
Machine operations (\$15,000)	\$84.00 per machine hour

Bop and Mop used the following quantities of the four activity drivers:

	<u>Bop</u>	<u>Mop</u>
Pounds of raw materials	400	400
Material moves	50	30
Setups	10	8
Machine hours	120	80

The overheads costs assigned to each unit of Bop and Mop were:

- a. \$243.30 for Bop and \$192.70 for Mop
- b. \$ 64.00 to Bop and \$100.00 to Mop
- c. \$256.00 to Bop and \$264.00 to Mop
- d. \$264.00 to Bop and \$256.00 to Mop

Answer: a

Rationale:

Activity costs:

	<u>Bop</u>	<u>Mop</u>
Material inspections & Prep. 400 lbs. x \$20 per pound	\$8,000	\$8,000
Material moves		
50 moves x \$45 per move	2,250	
30 moves x \$45 per move		1,350
Setups		
10 setups x \$400 per setup	4,000	
8 setups x \$400 per setup		3,200
Machine hours		
120 hours x \$84.00 per hour	10,080	
80 hours x \$84.00 per hour		<u>6,720</u>
	<u>24,330</u>	<u>19,270</u>
Units produced	<u>÷ 100</u>	<u>÷ 100</u>
ABC cost per unit	<u>\$243.30</u>	<u>\$192.70</u>

8. Which of the following is generally not true regarding ABC costing systems versus traditional cost systems?
- Traditional systems tend to over cost high-volume, low-complexity products
  - Traditional systems tend to under cost low-volume, high-complexity products
  - The ABC cost of a product or service is the sum of the costs of the activities used to make the product
  - A highly complex production environment will normally require an ABC system with 200 or more activity cost pools.

Answer: d

Rationale: Even in a complex production environment, it is usually best to limit the number of activity cost pools to no more than 10 to 20 cost pools. Adding 200 or more cost pools will normally not increase the accuracy of the system significantly, but it dramatically increases the task of data collection, and hence the cost of the system.

9. Western Products, Inc. sells products to 5 major customers in Utah designated as Customers a through e. The gross profit percentage is 48% for all customers. Sales-related activity data for the five customers for a recent month are as follows.

	<u>Gross Sales</u>	<u>Sales Visits</u>	<u>Phone Calls</u>	<u>Processing Hours</u>
Customer a	\$7,000	2	3	10
Customer b	6,000	3	4	8
Customer c	8,000	3	3	8
Customer d	10,000	8	9	24
Customer e	12,000	12	16	36

Western determined that its customer-related activity costs were \$125 per sales visit, \$50 per phone call, and \$60 per processing hour. To help evaluate the profitability of its customers, Western calculates the customer profitability as a percentage of sales after subtracting selling activity cost from gross profit for each customer. The customer profitability percentage (rounded to the nearest percent) for Western's customers is:

	<u>Customer a</u>	<u>Customer b</u>	<u>Customer c</u>	<u>Customer d</u>	<u>Customer e</u>
a.	28%	30%	35%	22%	18%
b.	32%	30%	33%	19%	11%
c.	34%	30%	35%	19%	11%
d.	48%	48%	48%	48%	48%

Answer: c

Rationale:

	<u>Customer a</u>	<u>Customer b</u>	<u>Customer c</u>	<u>Customer d</u>	<u>Customer e</u>
Sales	\$7,000	\$6,000	\$8,000	\$10,000	\$12,000
Gross Profit (@ 48%)	\$3,360	\$2,880	\$3,840	\$ 4,800	\$5,760
Activity costs					
Visits	(250)	(375)	(375)	(1,000)	(1,500)
Calls	(150)	(200)	(150)	(450)	(800)
Processing	<u>(600)</u>	<u>(480)</u>	<u>(480)</u>	<u>(1,440)</u>	<u>(2,160)</u>
Customer Prof.	<u>\$2,360</u>	<u>\$1,825</u>	<u>\$2,835</u>	<u>\$ 1,910</u>	<u>\$ 1,300</u>
Profit Percent	33.7%	30.4%	35.4%	19.1%	10.8%

10. Which of the following statements regarding activity-based management is *true*?
- a. Activity-based management is concerned primarily with calculating the cost of products accurately
  - b. Activity-based-management focuses managerial attention on what is most important among the activities performed to create value for customers.
  - c. Activity-based management is not possible unless activity-based costing is also used for product costing
  - d. All of the above are true

Answer: *b*

Rationale: Activity-based management (ABM) is concerned with better understanding and managing an organization's activities so that it can better create value for its customers. Many companies adopt an ABC system merely for the purpose of getting a more accurate measure of product cost and profitability; however, it is possible that a company would identify and measure the cost for key activities just for the purpose of better managing those activities and their related drivers without regard for measuring the overall cost of products sold to customers.