Chapter 14

ACTIVITY ACCOUNTING: ACTIVITY-BASED COSTING AND ACTIVITY-BASED MANAGEMENT

MULTIPLE CHOICE

A **1.** **A base used to allocate the cost of a resource to the different activities using that resource is a(n):**
- **A. resource driver**
- **B. activity driver**
- **C. final cost object**
- **D. driver**
- **E. none of the above**

B **2.** **A base used to allocate the cost of products, customers, or other final cost objects is a(n):**
- **A. resource driver**
- **B. activity driver**
- **C. final cost object**
- **D. driver**
- **E. none of the above**

B **3.** **Examples of activities at the batch level of costs include:**
- **A. cutting, painting, and packaging**
- **B. scheduling, setting up, and moving**
- **C. designing, changing, and advertising**
- **D. heating, lighting, and security**
- **E. none of the above**

C **4.** **Examples of activities at the product level of costs include:**
- **A. cutting, painting, and packaging**
- **B. scheduling, setting up, and moving**
- **C. designing, changing, and advertising**
- **D. heating, lighting, and security**
- **E. none of the above**

D **5.** **Examples of activities at the plant level of costs include:**
- **A. cutting, painting, and packaging**
- **B. scheduling, setting up, and moving**
- **C. designing, changing, and advertising**
- **D. heating, lighting, and security**
- **E. none of the above**

A 6. Examples of activities at the unit level of costs include:
- **A. cutting, painting, and packaging**
- **B. scheduling, setting up, and moving**
- **C. designing, changing, and advertising**
- **D. heating, lighting, and security**
- **E. none of the above**

A 7. Examples of unit-level costs are:
- **A. portions of electricity and indirect materials**
- **B. salaries of schedulers and setup personnel**
- **C. salaries of designers and programmers**
- **D. depreciation and insurance on buildings**
- **E. none of the above**

C 8. Examples of product-level costs are:
- **A. portions of electricity and indirect materials**
- **B. salaries of schedulers and setup personnel**
- **C. salaries of designers and programmers**
- **D. depreciation and insurance on buildings**
- **E. none of the above**

D 9. Examples of plant-level costs are:
- **A. portions of electricity and indirect materials**
- **B. salaries of schedulers and setup personnel**
- **C. salaries of designers and programmers**
- **D. depreciation and insurance on buildings**
- **E. none of the above**

B 10. Examples of batch-level costs are:
- **A. portions of electricity and indirect materials**
- **B. salaries of schedulers and setup personnel**
- **C. salaries of designers and programmers**
- **D. depreciation and insurance on buildings**
- **E. none of the above**

A 11. Examples of unit-level activity drivers include:
- **A. units of output and direct labor hours**
- **B. number of batches and material moves**
- **C. number of products and design changes**
- **D. square footage occupied**
- **E. all of the above**

B 12. Examples of batch-level activity drivers include:
- **A. units of output and direct labor hours**
- **B. number of batches and material moves**
- **C. number of products and design changes**
- **D. square footage occupied**
- **E. all of the above**

C 13. Examples of product-level activity drivers include:
- **A. units of output and direct labor hours**
- **B. number of batches and material moves**
- **C. number of products and design changes**
- **D. square footage occupied**
- **E. all of the above**

D 14. Examples of plant-level activity drivers include:
- **A. units of output and direct labor hours**
- **B. number of batches and material moves**
- **C. number of products and design changes**
- **D. square footage occupied**
- **E. all of the above**

A 15. Unit-level costs are costs that:
- **A. inevitably increase whenever a unit is produced**
- **B. are caused by the number of batches produced and sold**
- **C. are incurred to support the number of different products produced**
- **D. are incurred to sustain capacity at a production site**
- **E. none of the above**

D 16. Plant-level costs are costs that:
- **A. inevitably increase whenever a unit is produced**
- **B. are caused by the number of batches produced and sold**
- **C. are incurred to support the number of different products produced**
- **D. are incurred to sustain capacity at a production site**
- **E. none of the above**

E 17. Unit-level drivers are:
- **A. inversely proportional to the volume of output**
- **B. measures of activities that vary with the number of batches produced and sold**
- **C. measures of activity that vary with the number of different products produced and sold**
- **D. for assigning plant-level costs**
- **E. none of the above**

A 18. Traditional costing systems are characterized by their use of which of the following measures as bases for allocating overhead to output:
- **A. unit-level drivers**
- **B. batch-level drivers**
- **C. product-level drivers**
- **D. plant-level drivers**
- **E. none of the above**

E 19. ABC systems are characterized by their use of which of the following measures as bases for allocating overhead to output:
- **A. unit-level drivers**
- **B. batch-level drivers**
- **C. product-level drivers**
- **D. plant-level drivers**
- **E. all of the above**

A **20.** **All of the following are distinctions that usually exist between traditional and ABC costing systems, *except* that:**

A. the number of overhead cost pools tends to be lower in ABC systems
B. the number of allocation bases tend to be higher in ABC systems
C. costs within an ABC cost pool tend to be more homogeneous than the costs within a traditional system's cost pool
D. all ABC systems are two-stage costing systems, while traditional systems may be one- or two-stage
E. all of the above are distinctions

D **21.** **All of the following are distinctions that usually exist between traditional and ABC costing systems, *except* that:**

A. the number of overhead cost pools tends to be higher in ABC systems
B. the number of allocation bases tend to be higher in ABC systems
C. costs within an ABC cost pool tend to be more homogeneous than the costs within a traditional system's cost pool
D. all ABC systems are one-stage costing systems, while traditional systems may be one- or two-stage
E. all of the above are distinctions

B **22.** **Compared to an ABC system, a traditional costing system reports:**

A. a lower unit cost for high-volume products and a higher unit cost for low-volume products
B. a higher unit cost for high-volume products and a lower unit cost for low-volume products
C. the same unit costs for high- and low-volume products as does an ABC system
D. either higher or lower unit cost for high-volume products than an ABC system depending upon the level of fixed costs
E. none of the above

C **23.** **Activity-based management (ABM) is:**

A. a costing system in which multiple overhead cost pools are allocated using bases that include one or more nonvolume related factors
B. a base used to allocate the cost of a resource to the different activities using it
C. the use of information obtained from ABC to make improvements in the firm
D. a base used to allocate the cost of an activity to products and customers
E. none of the above

A **24.** **All of the following are ways that activities can be managed to achieve improvements in a process, *except:***

A. activity induction
B. activity elimination
C. activity selection
D. activity sharing
E. all of the above are ways in which activities may be managed

C **25.** **All of the following are examples of non-value-added activities *except:***

A. ordering
B. receiving
C. assembling
D. inspections
E. setting up

PROBLEMS

PROBLEM

1.
Levels of Activity Drivers

Required: **Each of the following is a potential activity driver. Identify the most likely level of each activity driver by writing U for a unit-level driver, B for a batch-level driver, and P for a product-level driver.**

1.Number of setups
2.Number of work orders
3.Machine hours
4.Pounds of product
5.Number of part numbers
6.Design hours
7.Number of design changes
8.Marketing promotions
9.Direct materials dollars
10.Loads of materials moved

SOLUTION

1. B	**2. B**	**3. U**	**4. U**	**5. P**
6. P	**7. P**	**8. P**	**9. U**	**10. B**

PROBLEM

2.
Distortion of Batch-Level Costs. Maupin Company's existing cost system accumulates all overhead in a single cost pool and allocates it based on direct labor hours. Last year, overhead costs totaled $1,500,000, and Product A used 3,000 of the 30,000 total direct labor hours. An ABC study revealed that of the total overhead cost for last year, $100,000 represented batch-level costs; these batch-level costs are driven by work orders; and a total of 500 work orders were issued, of which 25 were for Product A.

Required: **With respect to batch-level costs only, calculate the existing cost system's direction and amount of cost distortion for Product A.**

SOLUTION

The existing system allocated 3,000/30,000 = 10% of all overhead to Product A last year; but A accounted for only 25/500 = 5% of batch-level activity. So, with respect to batch-level costs only, the existing system overstated A's cost last year by a total of:

(10% - 5%) x $100,000 = $5,000 overstatement

PROBLEM

3.
Value-Added and Non-Value-Added Activities. Sequential Company's sole product, a unique end table made from lumber, is produced and sold in the following sequence of steps:

(a) wood received and inspected at receiving dock
(b) wood moved to stores inventory
(c) wood moved to Cutting Department
(d) wood cut to size
(e) moved to Planing Department
(f) placed in queue to await planing
(g) wood smoothed and shaped
(h) moved to Inspection Department
(i) inspected
(j) moved to in-process storage area
(k) moved to Assembly Department
(l) various parts of the table are assembled
(m) placed on hand truck to await material handler
(n) moved to Staining Department
(o) tables stained
(p) moved to Inspection Department
(q) inspected
(r) moved to Shipping Department
(s) tables shipped

Required: **Which of the steps add value to the product?**

SOLUTION

Activities (d), (g), (l), and (o) are the only ones which add value.

PROBLEM

4.
Allocation Rates and Driver Rates. The Barre Division of Scranton Company manufactures many high-volume products and many low-volume products. Selected information follows for Barre's most recent year of operations:

Indirect costs:	
Machine related:	
Machine operation	**$ 75,000**
Machine setup	**50,000**
Total machine overhead	**$ 125,000**
Materials related:	
Materials handling	**$ 45,000**
Other materials-related	**60,000**
Total materials overhead	**$ 105,000**
Other overhead	**$ 190,000**
Total overhead	**$ 420,000**
Machine hours	**10,000**
Pounds of materials	**50,000**
Setup hours	**1,000**
Purchase orders	**1,200**
Direct labor hours	**25,000**

Barre's existing cost system allocates all machine-related overhead based on machine hours and all the remaining overhead based on direct labor hours. However, a recent study determined that machine setup costs and material handling costs are primarily related to setup hours, and other materials-related costs are primarily related to the number of purchase orders issued. Barre does not keep significant materials inventories on hand.

Required:

(1) Calculate the two overhead rates in Barre's existing cost system for the most recent year.
(2) Calculate the overhead (driver) rates that an ABC system would use for the most recent year, making only the changes suggested by the results of the recent study.

SOLUTION

$$\frac{\$125{,}000 \text{ of machine-related overhead}}{10{,}000 \text{ machine hours}} = \$12.50 \text{ per machine hour}$$

$$\frac{\$295{,}000 \text{ of remaining overhead costs}}{25{,}000 \text{ DLH}} = \$11.80 \text{ per direct labor hour}$$

(1)

$$\frac{\$75{,}000 \text{ of machine operation overhead}}{10{,}000 \text{ machine hours}} = \$7.50 \text{ per machine hour}$$

$$\frac{\$50{,}000 \text{ of machine-setup overhead} + \$45{,}000 \text{ of materials handling overhead}}{1{,}000 \text{ setup hours}} = \$95 \text{ per setup hour}$$

$$\frac{\$60{,}000 \text{ of other materials-related cost}}{1{,}200 \text{ purchase orders}} = \$50 \text{ per purchase order}$$

$$\frac{\$190{,}000 \text{ of other overhead}}{25{,}000 \text{ DLH}} = \$7.60 \text{ per direct labor hour}$$

(2)

PROBLEM

5.

Comparison of ABC and Traditional Costing; Two Products. Blaine Company produces two products, Nifty and So-So, and uses a costing system in which all overhead is accumulated in a single cost pool and allocated based on machine hours. Blaine's management has decided to implement ABC because a cost study has revealed significant amounts of overhead cost related to setup activity and design activity. The number of setups and the number of design hours will be the activity drivers for the two new cost pools, and machine hours will continue as the base for allocating the remaining overhead. Selected information follows for Blaine Company's most recent year of operations:

	Nifty	So-So	Total
Units produced	**500**	**15,500**	**16,000**
Direct material cost:			
Per unit	**$ 200**	**$ 20**	
Total	**$ 100,000**	**$ 310,000**	**$ 410,000**
Machine hours	**3,000**	**47,000**	**50,000**
Direct labor cost	**$ 50,000**	**$ 350,000**	**$ 400,000**
Setups	**120**	**80**	**200**
Design hours	**6,000**	**4,000**	**10,000**
Overhead:			
Setup-related			**$ 250,000**
Design-related			**350,000**
Other			**900,000**
Total overhead			**$ 1,500,000**

Required:

(1) Calculate the total and per-unit costs reported for the two products by the existing costing system.
(2) Calculate the total and per-unit costs reported for the two products by the ABC system.

SOLUTION

(1)

Blaine Company
Product Costs from Existing Cost System

Overhead Rate:
$1,500,000 of overhead divided by 50,000 machine hours = $30 per machine hour

	Nifty	So-So	Total
Direct material	$100,000	$ 310,000	$ 410,000
Direct labor	50,000	350,000	400,000
Overhead:			
$30 x 3,000	90,000		
$30 x 47,000			1,410,000
1,500,000			
Total cost	$240,000	$ 2,070,000	$ 2,310,000
Units produced	500	15,500	
Cost per unit	$ 480.00	$ 133.55	

(2)

Blaine Company
Product Costs from Activity-Based Costing System

Overhead Rate:
$250,000 setup-related costs divided by 200 setups = 1,250 per setup
$350,000 design-related costs divided by 10,000 design hours = $35 per design hour
$900,000 of other overhead divided by 50,000 machine hours = $18 per machine hour

	Nifty	So-So	Total
Direct material	$ 100,000	$ 310,000	$ 410,000
Direct labor	50,000	350,000	400,000
Overhead:			
$1,250 x 120 setups	150,000		
$1,250 x 80 setups		100,000	250,000
$35 x 6,000 design hours	210,000		
$35 x 4,000 design hours		140,000	350,000
$18 x 3,000 machine hours	54,000		
$18 x 47,000 machine hours		846,000	900,000
Total cost	$ 564,000	$ 1,746,000	$ 2,310,000
Units produced	500	15,500	
Cost per unit	$ 1,128.00	$ 112.65	