Chapter 5—Activity-Based Management and Activity-Based Costing

LEARNING OBJECTIVES

LO 1	On what items does activity-based management focus?
LO 2	Why do non-value-added activities cause costs to increase unnecessarily?
LO 3	Why must cost drivers be designated in an activity-based costing system?
LO 4	How does activity-based costing differ from a traditional cost accounting system?
LO 5	What new types of information does an activity-based costing/management system offer management?
LO 6	When is activity-based costing appropriate in an organization?

QUESTION GRID

True/False

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x			x					
3		x		x					
4	x			x					
5		x		x					
6		x			x				
7		x			x				
8		x			x				
9		x			x				
10	x					x			
11	x					x			
12		x				x			
13		x				x			
14		x				x			
15		x				x			
16		x				x			
17		x				x			
18	x						x		
19	x						x		
20		x					x		
21		x					x		
22		x						x	
23		x							x
24		x							x

Completion

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x			x					
3	x			x					
4	x			x					
5	x			x					
6	x				x				

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
7		x			x				
8	x				x				
9	x					x			
10	x					x			
11	x					x			
12	x					x			
13		x					x		
14		x					x		
15	x							x	

Multiple Choice

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1	x			x					
2	x					x			
3	x							x	
4	x				x				
5	x				x				
6	x				x				
7		x		x					
8		x		x					
9	x			x					
10	x				x				
11	x				x				
12	x				x				
13	x				x				
14	x				x				
15	x					x			
16	x					x			
17	x					x			
18		x				x			
19	x					x			
20	x					x			
21	x					x			
22	x					x			
23		x					x		
24	x						x		
25		x						x	
26	x							x	
27	x								x
28	x							x	
29	x								x
30		x						x	
31	x							x	
32	x							x	
33	x							x	
34	x						x		
35	x						x		
36	x						x		

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
37		x					x		
38	x							x	
39	x							x	
40		x						x	
41	x			x					
42	x								x
43	x								x
44		x							x
45	x			x					
46	x				x				
47	x					x			
48	x			x					
49		x		x					
50			x	x					
51		x			x				
52		x				x			
53		x				x			
54						x			
55	x						x		
56			x				x		
57	x						x		
58	x							x	
59	x							x	
60			x					x	
61		x						x	
62	x							x	
63	x						x		
64	x							x	
65		x						x	
66	x							x	
67		x							x
68		x							x
69			x					x	
70		x				x			
71		x				x			
72		x				x			
73		x				x			
74		x				x			
75		x				x			
76		x				x			
77		x				x			
78		x				x			
79		x				x			
80	x						x		
81	x						x		
82	x						x		
83	x						x		
84	x						x		
85	x						x		

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
86	x						x		
87			x				x		
88			x				x		

Short-Answer

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1		x		x					
2		x		x					
3		x				x			
4		x							X
5		x				x			
6		x							X

Problems

	Difficulty Level			Learning Objectives					
	Easy	Moderate	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
1		x			x				
2		x					x		

TRUE/FALSE

1. Business value-added activities add value to a product.

   ANS: F DIF: Easy OBJ: 5-1

2. Management should strive to reduce or eliminate non-value added activities from a production process.

   ANS: T DIF: Easy OBJ: 5-1

3. Business value-added activities increase the value of a product without increasing production time.

   ANS: F DIF: Moderate OBJ: 5-1

4. The first step in performing activity analysis is to prepare a process map.

   ANS: T DIF: Easy OBJ: 5-1

5. Preparation of a value chart is the first step in activity analysis

   ANS: F DIF: Moderate OBJ: 5-1

6. Lead time in a production process includes both value and non-value added time.

   ANS: T DIF: Moderate OBJ: 5-2

7. A company should strive to reduce all non-value added activities to a minimum.

   ANS: T DIF: Moderate OBJ: 5-2

8. When non-value added time is greater, manufacturing cycle efficiency is higher.

   ANS: F DIF: Moderate OBJ: 5-2

9. When non-value added time is greater, manufacturing cycle efficiency is lower.

   ANS: T DIF: Moderate OBJ: 5-2

10. Direct materials are normally considered as unit-level costs.

    ANS: T DIF: Easy OBJ: 5-3

11. Direct materials are normally considered as batch-level costs.

    ANS: F DIF: Easy OBJ: 5-3

12. Unit level costs occur once for each unit produced.

    ANS: T DIF: Moderate OBJ: 5-3

13. Batch level costs occur once for each unit produced.

ANS: F DIF: Moderate OBJ: 5-3

14. Machine setup is normally considered a batch-level cost

ANS: T DIF: Moderate OBJ: 5-3

15. Machine setup is normally considered a unit-level cost

ANS: F DIF: Moderate OBJ: 5-3

16. Building depreciation is generally considered an organizational or facility cost.

ANS: T DIF: Moderate OBJ: 5-3

17. Building depreciation is generally considered an product or process level cost.

ANS: F DIF: Moderate OBJ: 5-3

18. Activity-based costing is appropriate for a company that manufactures a wide variety of products

ANS: T DIF: Easy OBJ: 5-4

19. Activity-based costing is appropriate for a company that manufactures a single product.

ANS: F DIF: Easy OBJ: 5-4

20. Activity-based costing is appropriate for a company that has low overhead costs that are proportional to the unit volumes of products.

ANS: F DIF: Moderate OBJ: 5-4

21. Activity-based costing is appropriate for a company that has high overhead costs that are not proportional to unit volumes of individual products.

ANS: T DIF: Moderate OBJ: 5-4

22. There is a direct relationship between the complexity of a production process and overhead costs.

ANS: T DIF: Moderate OBJ: 5-5

23. Activity-based costing conforms to GAAP with regard to which costs should be expensed.

ANS: F DIF: Moderate OBJ: 5-6

24. An activity-based costing system should be evaluated with regard to the benefits it can provide an organization versus the costs of implementing it.

ANS: T DIF: Moderate OBJ: 5-6\

COMPLETION

1. An activity that a customer is willing to pay for and increases the worth of a product is referred to as a _____ activity.

   ANS: value-added

   DIF: Easy OBJ: 5-1

2. An activity that does not increase the value of a product for a customer is referred to as a _____ activity.

   ANS: non-value added

   DIF: Easy OBJ: 5-1

3. An activity that is essential for business operations but does not add value to a product is referred to as a _____ activity.

   ANS: business value-added

   DIF: Easy OBJ: 5-1

4. A chart that indicates each step in a production process is referred to as a _____.

   ANS: process map

   DIF: Easy OBJ: 5-1

5. A series of activities that when performed together satisfy a specific objective is referred to as a _____.

   ANS: process

   DIF: Easy OBJ: 5-1

6. The actual time taken to perform all necessary manufacturing functions in a process is referred to as _____.

   ANS: processing or service time

   DIF: Easy OBJ: 5-2

7. The sum of value-added processing time plus non-value added time equals _____.

   ANS: cycle (lead) time

   DIF: Moderate OBJ: 5-2

8. The proportion of value added processing time to total cycle time equals _____.

   ANS: manufacturing cycle efficiency (MCE).

   DIF: Easy OBJ: 5-2

9. Costs that are associated with the production of a single unit of a product are referred to as _____.

   ANS: unit-level costs

   DIF: Easy OBJ: 5-3

10. Costs that are associated with the production of a group of similar products at the same time are referred to as _____.

    ANS: batch-level costs

    DIF: Easy OBJ: 5-3

11. Costs that support a product type or process are referred to as _____.

    ANS: product/process level costs

    DIF: Easy OBJ: 5-3

12. Costs that support an overall production or service process are referred to as _____.

    ANS: organizational or facility costs

    DIF: Easy OBJ: 5-3

13. A segment of a production or service process for which management wants a separate report is referred to as a(n) _____.

    ANS: activity center

    DIF: Moderate OBJ: 5-4

14. A(n) _____ measures the resources consumed by a manufacturing process.

    ANS: activity driver

    DIF: Moderate OBJ: 5-4

15. _____ refers to the number of different processes through which a product flows.

ANS: Process complexity

DIF: Easy OBJ: 5-5

MULTIPLE CHOICE

1. An objective of activity-based management is to
   a. eliminate the majority of centralized activities in an organization.
   b. reduce or eliminate non-value-added activities incurred to make a product or provide a service.
   c. institute responsibility accounting systems in decentralized organizations.
   d. all of the above

   ANS: B DIF: Easy OBJ: 5-1

2. Which of the following is/are part of activity-based management?

	Activity analysis	Cost driver analysis
a.	yes	yes
b.	no	yes
c.	no	no
d.	yes	no

   ANS: A DIF: Easy OBJ: 5-3

3. Which of the following falls under the Activity-Based Management umbrella?

	Continuous improvement	Business process reengineering	Activity-based costing
a.	no	no	yes
b.	yes	no	no
c.	yes	yes	yes
d.	no	yes	no

   ANS: C DIF: Easy OBJ: 5-5

4. The sum of the non-value-added time and the value-added time equals
   a. inspection time.
   b. production time.
   c. the product life cycle.
   d. cycle time.

   ANS: D DIF: Easy OBJ: 5-2

5. Which of the following add customer value?
   a. setup time
   b. storage time
   c. idle time
   d. processing time

   ANS: D DIF: Easy OBJ: 5-2

6. Lead time minus production time is equal to
   a. idle time.
   b. storage time.
   c. non-value-added time.
   d. value-added time.

   ANS: C DIF: Easy OBJ: 5-2

7. When a firm redesigns a product to reduce the number of component parts, the firm is
   a. increasing consumer value.
   b. increasing the value added to the product.
   c. decreasing product variety.
   d. decreasing non-value-added costs.

   ANS: D DIF: Moderate OBJ: 5-1

8. Non-value-added activities that are necessary to businesses, but **not** costs that customers are willing to pay for are known as
   a. business-value-added activities.
   b. long-term variable activities.
   c. short-term variable activities.
   d. superior business activities.

   ANS: A DIF: Moderate OBJ: 5-1

9. Which of the following would **not** be considered a value-added activity in the preparation of a tax return?
   a. printing a copy of the return for the client
   b. printing a copy of the return for the IRS
   c. installing tax software
   d. checking for accuracy

   ANS: C DIF: Easy OBJ: 5-1

10. Which of the following is considered a value-added activity?

	Idle time	Inspection time	Transfer time
a.	yes	yes	no
b.	no	no	no
c.	yes	no	yes
d.	no	yes	yes

   ANS: B DIF: Easy OBJ: 5-2

11. A process map
    a. should indicate only value-added activities.
    b. is also known as a detailed flowchart.
    c. should indicate only those steps/processes that are obvious in the production of goods/services.
    d. is also known as a value chart.

    ANS: B DIF: Easy OBJ: 5-2

12. A value chart should include which of the following?

	Service time	Inspection time	Transfer time
a.	yes	no	yes
b.	no	no	yes
c.	yes	yes	no
d.	yes	yes	yes

    ANS: D DIF: Easy OBJ: 5-2

13. The actual time it takes to perform a specific task is called
    a. inspection time.
    b. service time.
    c. transfer time.
    d. quality time.

    ANS: B DIF: Easy OBJ: 5-2

14. Manufacturing cycle efficiency is a measure of
    a. bottlenecks.
    b. effectiveness.
    c. efficiency.
    d. quality.

    ANS: C DIF: Easy OBJ: 5-2

15. Which of the following is typically regarded as a cost driver in traditional accounting practices?
    a. number of purchase orders processed
    b. number of customers served
    c. number of transactions processed
    d. number of direct labor hours worked

    ANS: D DIF: Easy OBJ: 5-3

16. When a company is labor-intensive, the cost driver that is probably **least** significant would be
    a. direct labor hours.
    b. direct labor dollars.
    c. machine hours.
    d. cost of materials used.

    ANS: C DIF: Easy OBJ: 5-3

17. An activity driver is used for which of the following reasons?

	To measure demands	To measure resources consumed
a.	yes	yes
b.	yes	no
c.	no	yes
d.	no	no

ANS: A DIF: Easy OBJ: 5-3

18. The term cost driver refers to
    a. any activity that can be used to predict cost changes.
    b. the attempt to control expenditures at a reasonable level.
    c. the person who gathers and transfers cost data to the management accountant.
    d. any activity that causes costs to be incurred.

ANS: D DIF: Moderate OBJ: 5-3

19. Cost allocation bases in activity-based costing should be
    a. cost drivers.
    b. value-added activities.
    c. activity centers.
    d. processes.

ANS: A DIF: Easy OBJ: 5-3

20. Costs that are common to many different activities within an organization are known as _____ costs.
    a. product- or process-level
    b. organizational-level
    c. batch-level
    d. unit-level

ANS: B DIF: Easy OBJ: 5-3

21. In activity-based costing, cost reduction efforts are directed at specific
    a. cost categories.
    b. cost pools.
    c. processes.
    d. cost drivers.

ANS: D DIF: Easy OBJ: 5-3

22. Setup time is

	A batch cost	A value-added cost	A production cost
a.	no	no	yes
b.	yes	yes	no
c.	yes	no	yes
d.	no	yes	yes

ANS: C DIF: Easy OBJ: 5-3

23. Which of the following have an impact on long-term variable costs?

	Product variety	Product complexity	Process complexity
a.	no	no	no
b.	no	yes	yes
c.	yes	no	yes
d.	yes	yes	yes

ANS: D DIF: Moderate OBJ: 5-4

24. In allocating variable costs to products,
    a. a volume-based cost driver should be used.
    b. direct labor hours should always be used as the allocation base.
    c. a company should use the same allocation base that it uses for fixed costs.
    d. a company should never use more than one cost driver.

ANS: A DIF: Easy OBJ: 5-4

25. Which of the following is **not** a drawback of mass customization?
    a. The choices are too numerous.
    b. The potential for errors is great.
    c. Only a small percentage of available choices is normally selected.
    d. All of the above are drawbacks.

ANS: D DIF: Moderate OBJ: 5-5

26. Simultaneous engineering helps companies accomplish which of the following?

	Reduces product complexity	Reduces process complexity
a.	no	no
b.	yes	yes
c.	yes	no
d.	no	yes

ANS: B DIF: Easy OBJ: 5-5

27. For traditional costing purposes, R&D costs are
    a. capitalized and allocated over the product life cycle.
    b. expensed as incurred.
    c. capitalized and amortized over three years.
    d. charged to the future accounting periods that receive the benefit of the R&D expenditures.

ANS: B DIF: Easy OBJ: 5-6

28. Traditionally, managers have focused cost reduction efforts on
    a. activities.
    b. processes.
    c. departments.
    d. costs.

ANS: D DIF: Easy OBJ: 5-5

29. Today, traditional accounting methods are
    a. still appropriate for financial reporting.
    b. still appropriate for providing useful cost information to internal managers.
    c. still appropriate for both internal and external financial reporting.
    d. outdated for all purposes.

    ANS: A DIF: Easy OBJ: 5-6

30. Product costing systems in use over the last 40 years
    a. concentrated on using multiple cost pools and cost drivers.
    b. were often technologically incapable of handling activity-based costing information.
    c. have generally been responsive to changes in the manufacturing environment.
    d. have been appropriate for managerial decision purposes as long as they met the requirements of generally accepted accounting principles.

    ANS: B DIF: Moderate OBJ: 5-5

31. Traditional overhead allocations result in which of the following situations?
    a. Overhead costs are assigned as period costs to manufacturing operations.
    b. High-volume products are assigned too much overhead, and low-volume products are assigned too little overhead.
    c. Low-volume products are assigned too much, and high-volume products are assigned too little overhead.
    d. The resulting allocations cannot be used for financial reports.

    ANS: B DIF: Easy OBJ: 5-5

32. Traditionally, overhead has been assigned based on direct labor hours or machine hours. What effect does this have on the cost of a high-volume item?
    a. over-costs the product
    b. under-costs the product
    c. has no effect the product cost
    d. cost per unit is unaffected by product volume

    ANS: A DIF: Easy OBJ: 5-5

33. Relative to traditional product costing, activity-based costing differs in the way costs are
    a. processed.
    b. allocated.
    c. benchmarked.
    d. incurred.

    ANS: B DIF: Easy OBJ: 5-5

34. Under activity-based costing, benchmarks for product cost should contain an allowance for
    a. idle time.
    b. idle time and scrap materials.
    c. spoilage.
    d. None of the responses are correct.

    ANS: D DIF: Moderate OBJ: 5-4

35. In activity-based costing, final cost allocations assign costs to
    a. departments.
    b. processes.
    c. products.
    d. activities.

    ANS: C DIF: Easy OBJ: 5-4

36. In activity-based costing, preliminary cost allocations assign costs to
    a. departments.
    b. processes.
    c. products.
    d. activities.

    ANS: D DIF: Easy OBJ: 5-4

37. In allocating fixed costs to products in activity-based costing,
    a. direct labor hours should always be used as the allocation base.
    b. a company should use the same allocation base that it uses for variable costs.
    c. a cost driver that is not volume-related should be used.
    d. machine hours should always be used.

    ANS: C DIF: Moderate OBJ: 5-4

38. Of the following, which is the best reason for using activity-based costing?
    a. to keep better track of overhead costs
    b. to more accurately assign overhead costs to cost pools so that these costs are better controlled
    c. to better assign overhead costs to products
    d. to assign indirect service overhead costs to direct overhead cost pools

    ANS: C DIF: Easy OBJ: 5-5

39. ABC should be used in which of the following situations?
    a. single-product firms with multiple steps
    b. multiple-product firms with only a single process
    c. multiple-product firms with multiple processing steps
    d. in all manufacturing firms

    ANS: C DIF: Easy OBJ: 5-5

40. Activity-based costing and activity-based management are effective in helping managers do all of the following **except**
    a. trace technology costs to products.
    b. promote excellence standards.
    c. identify only value-added activities.
    d. analyze performance problems.

    ANS: C DIF: Moderate OBJ: 5-5

41. Global competition has forced American industry to
    a. seek increased governmental regulation.
    b. improve product quality and customer service.
    c. narrow product lines.
    d. decrease its social responsibility.

ANS: B DIF: Easy OBJ: 5-1

42. The costs of non-quality work do **not** include
    a. the cost of handling complaints.
    b. the cost of scrap.
    c. warranty costs.
    d. original design costs.

    ANS: D DIF: Easy OBJ: 5-6

43. In the "new era" of manufacturing, good performance indicators are
    a. production-based.
    b. sales-based.
    c. cost-based.
    d. consumer-based.

    ANS: D DIF: Easy OBJ: 5-6

44. Traditional standard costs are inappropriate measures for performance evaluation in the "new era" of manufacturing because they
    a. build in allowances for non-value-adding activities.
    b. are based on historical information.
    c. don't reflect current costs.
    d. are ideal goals.

    ANS: A DIF: Moderate OBJ: 5-6

45. The amount of time between the development and the production of a product is
    a. the product life cycle.
    b. lead time.
    c. production time.
    d. value-added time.

    ANS: B DIF: Easy OBJ: 5-1

46. For one product that a firm produces, the manufacturing cycle efficiency is 20 percent. If the total production time is 12 hours, what is the total manufacturing time?
    a. 15.0 hours
    b. 60.0 hours
    c. 12.0 hours
    d. 2.4 hours

    ANS: B DIF: Easy OBJ: 5-2

47. Activity analysis allows managers to
    a. classify activities so that processes can be eliminated.
    b. devise ways to minimize or eliminate non-value-added activities.
    c. evaluate process performance to gain competitive advantages.
    d. all of the above.

    ANS: B DIF: Easy OBJ: 5-3

48. Which of the following statements about business-value-added activities (BVAs) is true?
    a. BVAs reflect the same processes in all organizations.
    b. A process map will not reflect BVAs because such activities are not essential to process performance.
    c. BVAs are actually value-added activities of an organization that relate to administrative processes.
    d. It is impossible to eliminate all BVAs in an organization.

    ANS: D DIF: Easy OBJ: 5-1

49. A value chart indicates
    a. all steps in a process and the time it takes for them to be completed.
    b. the value-added steps in a process and the time it takes for them to be completed.
    c. the time and cost of all value-added steps in a process.
    d. the time and costs of all value-added and non-value-added steps in a process.

    ANS: A DIF: Moderate OBJ: 5-1

50. In the pharmaceutical or food industries, quality control inspections would most likely be viewed as
    a. non-value-added activities.
    b. business-value-added activities.
    c. value-added-activities.
    d. process-efficiency activities.

    ANS: C DIF: Difficult OBJ: 5-1

51. A just-in-time manufacturing process should have **substantially** less of which of the following than a traditional manufacturing process?

	Idle time	Transfer time	Value-added time	Cycle time
a.	yes	yes	yes	yes
b.	yes	no	no	yes
c.	yes	yes	no	yes
d.	no	yes	yes	no

    ANS: C DIF: Difficult OBJ: 5-6

52. Manufacturing cycle efficiency should be increased by employing which of the following techniques?

	JIT Inventory	Flexible Manufacturing Systems	Batch Manufacturing
a.	yes	yes	yes
b.	yes	yes	no
c.	no	no	no
d.	yes	no	yes

    ANS: B DIF: Moderate OBJ: 5-2

53. A key concept underlying cost driver analysis is that
    a. all cost drivers identified should be used for cost accumulation.
    b. the cost of measuring a driver does not exceed the benefits of using it.
    c. only costs occurring at the unit-level should be assigned to products or services.
    d. organizational/facility costs are non-value-added and should never be assigned to products or services.

    ANS: B DIF: Moderate OBJ: 5-3

54. When cost driver analysis is used, organizational profit or loss can be determined by subtracting
    a. organizational costs from total margin provided by products.
    b. organizational costs from total product revenue.
    c. total product costs from total product revenue.
    d. total unit, batch, product/process, and organizational level costs incurred for a period from total product revenue.

    ANS: A DIF: Moderate OBJ: 5-3

55. An activity center is an organizational unit
    a. that makes a single product or performs a single service.
    b. in which only value-added activities are performed.
    c. that incurs only unit, batch, or product/process level costs.
    d. for which management wants separate activity information.

    ANS: D DIF: Easy OBJ: 5-4

56. The following items are used in tracing costs in an ABC system. In which order are they used?

    (1) cost object
    (2) cost driver
    (3) activity driver
    (4) cost pool

    a. 1, 2, 3, 4
    b. 2, 3, 4, 1
    c. 2, 4, 3, 1
    d. 4, 3, 1, 2

    ANS: C DIF: Difficult OBJ: 5-4

57. The "Rule of One" underlies the premise that all costs are
    a. variable.
    b. fixed.
    c. unit-based.
    d. short-term.

    ANS: A DIF: Easy OBJ: 5-4

58. Crawford Company makes ten different styles of inexpensive feather masks. Which of the following is this company most likely to have?
    a. Product complexity
    b. Process complexity
    c. Product variety
    d. Process customization

    ANS: C DIF: Easy OBJ: 5-5

59. Mass customization can be achieved through the use of
    a. activity-based costing.
    b. just-in-time inventory.
    c. flexible manufacturing systems.
    d. all of the above.

    ANS: C DIF: Easy OBJ: 5-5

60. Mass customization is closely associated with

	Product variety	Product complexity	Process errors	Pareto principle
a.	yes	no	no	yes
b.	yes	yes	yes	no
c.	no	yes	no	no
d.	yes	no	yes	yes

    ANS: D DIF: Difficult OBJ: 5-5

61. The Pareto principle is important to consider when an organization is
    a. assessing whether to employ activity-based costing versus attribute-based costing.
    b. evaluating the number of activities that are value-added versus those that are non-value-added.
    c. deciding whether to offer a product in one color versus in ten colors.
    d. determining whether simultaneous engineering activities will be impacted by the "Rule of One."

    ANS: C DIF: Moderate OBJ: 5-5

62. Simultaneous engineering can be used to
    a. reduce both product and process complexity.
    b. integrate activity-based costing with value chain analysis.
    c. reduce the time-to-market of new products through elimination of batch-level activities.
    d. reduce manufacturing cycle efficiency by reducing process waste.

    ANS: A DIF: Easy OBJ: 5-5

63. If only one or two overhead cost pools are used,
    a. it will be easy to determine which products or services are creating the most costs.
    b. overhead created by a specific product will be assigned to all products.
    c. the reduction in cost accumulation and allocation time will raise company profits.
    d. allocations should be made using only unit-based cost drivers.

    ANS: B DIF: Easy OBJ: 5-4

64. A cost accumulation system should most likely be reevaluated when a company has
    a. automated one or more production processes.
    b. introduced new products to its customers.
    c. had its industry deregulated.
    d. all of the above.

    ANS: D DIF: Easy OBJ: 5-5

65. Engaging in which of the following will result in radical changes being made to an organization's processes?
    a. Continuous improvement
    b. Benchmarking
    c. Reengineering
    d. Mass customization

    ANS: C DIF: Moderate OBJ: 5-5

66. Use of activity-based costing and activity-based management requires
    a. the creation of an environment for change in an organization.
    b. elimination of all non-value-added activities in an organization.
    c. that company processes be automated and the use of direct labor be minimal.
    d. each process be fully mapped and all activities be identified as value-added or non-value-added.

    ANS: A DIF: Easy OBJ: 5-5

67. Which of the following is **most** likely to make the implementation of ABC/ABM slow and difficult?
    a. The inability of all employees to understand the computations involved in ABC.
    b. A lack of involvement by or support from upper management.
    c. The need for dual costing systems.
    d. An inability to eliminate all business-value-added activities.

    ANS: B DIF: Moderate OBJ: 5-6

68. Activity-based costing and generally accepted accounting principles differ in that ABC
    a. does not define product costs in the same manner as GAAP.
    b. cannot be used to compute an income statement, but GAAP can.
    c. is concerned only with costs generated from automated processes, but GAAP is concerned with costs generated from both manual and automated processes.
    d. information is useful only to managers, while GAAP information is useful to all organizational stakeholders.

    ANS: A DIF: Moderate OBJ: 5-6

69. If activity-based costing is implemented in an organization without any other changes being implemented, total overhead costs will
    a. be reduced because of the elimination of non-value-added activities.
    b. be reduced because organizational costs will not be assigned to products or services.
    c. be increased because of the need for additional people to gather information on cost drivers and cost pools.
    d. remain constant and simply be spread over products differently.

    ANS: D DIF: Difficult OBJ: 5-5

Smithson Company

Smithson Company produces two products (A and B). Direct material and labor costs for Product A total $35 (which reflects 4 direct labor hours); direct material and labor costs for Product B total $22 (which reflects 1.5 direct labor hours). Three overhead functions are needed for each product. Product A uses 2 hours of Function 1 at $10 per hour, 1 hour of Function 2 at $7 per hour, and 6 hours of Function 3 at $18 per hour. Product B uses 1, 8, and 1 hours of Functions 1, 2, and 3, respectively. Smithson produces 800 units of A and 8,000 units of B each period.

70. Refer to Smithson Company If total overhead is assigned to A and B on the basis of units produced, Product A will have an overhead cost per unit of
    a. $ 88.64.
    b. $123.64.
    c. $135.00.
    d. None of the responses are correct.

ANS: A

Total Overhead

Product A	Function	Hourly Rate	Hours	Total
	1	$ 10	2	$ 20
	2	$ 7	1	$ 7
	3	$ 18	6	$ 108
		Totals	9	$ 135

Product B	Function	Hourly Rate	Hours	Total
	1	$ 10	1	$ 10
	2	$ 7	8	$ 56
	3	$ 18	1	$ 18
		Totals	10	$ 84

OH/Unit	Units Produced	Total		
$ 135	800	$ 108,000		
$ 84	8000	$ 672,000		
		$ 780,000		
Total OH	Proportion	Allocated OH	Units Produced	OH per Unit
$ 780,000	0.090909091	$ 70,909.09	800	$ 88.64
	(800/8800)			

DIF: Moderate OBJ: 5-3

71. Refer to Smithson Company If total overhead is assigned to A and B on the basis of units produced, Product B will have an overhead cost per unit of
    a. $84.00.
    b. $88.64.
    c. $110.64.
    d. None of the responses are correct.

    ANS: B

See #70 for Total Overhead Computations				
Total OH	Proportion	Allocated OH	Units Produced	OH per Unit
$ 780,000	0.909090909	$ 709,090.91	8000	$ 88.64
	(8000/8800)			

    DIF: Moderate OBJ: 5-3

72. Refer to Smithson Company If total overhead is assigned to A and B on the basis of direct labor hours, Product A will have an overhead cost per unit of
    a. $51.32.
    b. $205.28.
    c. $461.88.
    d. None of the responses are correct.

    ANS: B

Product	DL Hrs/Unit	Units Produced	Total DL Hours	
A	4	800	3200	
B	1.5	8000	12000	
			15200	
Total OH	Proportion	Allocated OH	Units Produced	OH per Unit
$ 780,000	0.210526316	$ 164,210.53	800	**$ 205.28**
	(3,200/15,200)			

    DIF: Moderate OBJ: 5-3

73. Refer to Smithson Company If total overhead is assigned to A and B on the basis of direct labor hours, Product B will have an overhead cost per unit of
    a. $51.32.
    b. $76.98.
    c. $510.32.
    d. None of the responses are correct.

    ANS: B

See #72 for Direct Labor Computations				
Total OH	Proportion	Allocated OH	Units Produced	OH per Unit
$ 780,000	0.789473684	$ 615,789.47	8000	**$ 76.98**
	(12,000/15,200)			

    DIF: Moderate OBJ: 5-3

74. Refer to Smithson Company If total overhead is assigned to A and B on the basis of overhead activity hours used, the total product cost per unit assigned to Product A will be
    a. $86.32.
    b. $95.00.
    c. $115.50.
    d. None of the responses are correct.

    ANS: C

Total OH	Proportion	Allocated OH	Units Produced	OH per Unit	DM and DL/Unit	Total
$ 780,000	0.082568807	$ 64,403.67	800	$ 80.50	$ 35.00	**$ 115.50**
	(7,200/87,200)					

    DIF: Moderate OBJ: 5-3

75. Refer to Smithson Company If total overhead is assigned to A and B on the basis of overhead activity hours used, the total product cost per unit assigned to Product B will be
    a. $115.50.
    b. $73.32.
    c. $34.60.
    d. None of the responses are correct.

    ANS: D

Total OH	Proportion	Allocated OH	Units Produced	OH per Unit	DM and DL/Unit	Total
$ 780,000	0.917431193	$ 715,596.33	8000	$ 89.44	$ 22.00	**$ 111.44**
	(80,000/87,200)					

    DIF: Moderate OBJ: 5-3

Phelps Company

Phelps Company produces 50,000 units of Product Q and 6,000 units of Product Z during a period. In that period, four set-ups were required for color changes. All units of Product Q are black, which is the color in the process at the beginning of the period. A set-up was made for 1,000 blue units of Product Z; a set-up was made for 4,500 red units of Product Z; a set-up was made for 500 green units of Product Z. A set-up was then made to return the process to its standard black coloration and the units of Product Q were run. Each set-up costs $500.

76. Refer to Phelps Company. If set-up cost is assigned on a volume basis for the department, what is the approximate per-unit set-up cost for Product Z?
    a. $.010.
    b. $.036.
    c. $.040.
    d. None of the responses are correct.

    ANS: B

Total setup cost: $500 x 4 = $2,000 $2,000/56,000 = **$0.0357**

    DIF: Moderate OBJ: 5-3

77. Refer to Phelps Company. If set-up cost is assigned on a volume basis for the department, what is the approximate per-unit set-up cost for the red units of Product Z?
    a. $.036.
    b. $.111.
    c. $.250.
    d. None of the responses are correct.

    ANS: A

Total setup cost: $500 x 4 = $2,000 $2,000/56,000 = **$0.0357**

    DIF: Moderate OBJ: 5-3

78. Refer to Phelps Company. Assume that Phelps Company has decided to allocate overhead costs using levels of cost drivers. What would be the approximate per-unit set-up cost for the blue units of Product Z?
    a. $.04.
    b. $.25.
    c. $.50.
    d. None of the responses are correct.

    ANS: C

Setup cost for blue units = $500.00 Number of blue units produced = 1,000 $500/1,000 = $.50

    DIF: Moderate OBJ: 5-3

79. Refer to Phelps Company. Assume that Phelps Company has decided to allocate overhead costs using levels of cost drivers. What would be the approximate per-unit set-up cost for the green units of Product Z?
a. $1.00.
b. $0.25.
c. $0.04.
d. None of the responses are correct.

ANS: A

Setup cost = $500.00
Units produced = 500

$500.00/500 = $1.00/unit

DIF: Moderate OBJ: 5-3

Lafayette Savings and Loan

Lafayette Savings and Loan had the following activities, traceable costs, and physical flow of driver units:

Activities	Traceable Costs	Physical flow of Driver Units
Open new accounts	$50,000	1,000 accounts
Process deposits	36,000	400,000 deposits
Process withdrawals	15,000	200,000 withdrawals
Process loan applications	27,000	900 applications

The above activities are used by the Jennings branch and the Crowley branch:

	Jennings	Crowley
New accounts	200	400
Deposits	40,000	20,000
Withdrawals	15,000	18,000
Loan applications	100	160

80. Refer to Lafayette Savings and Loan. What is the cost per driver unit for new account activity?
a. $0.09
b. $0.075
c. $30.00
d. $50.00

ANS: D

$50,000 / 1,000 = $50.00 per account

DIF: Easy OBJ: 5-4

81. Refer to Lafayette Savings and Loan. What is the cost per driver unit for the deposit activity?

a. $0.09
b. $0.075
c. $30.00
d. $50.00

ANS: A
$36,000/400,000 = $0.09

DIF: Easy OBJ: 5-4

82. Refer to Lafayette Savings and Loan. What is the cost per driver unit for the withdrawal activity?

a. $0.09
b. $0.075
c. $30.00
d. $50.00

ANS: B
$15,000/200,000 = $0.075

DIF: Easy OBJ: 5-4

83. Refer to Lafayette Savings and Loan. What is the cost per driver unit for the loan application activity?

a. $0.09
b. $0.075
c. $30.00
d. $50.00

ANS: C
$27,000/900 = $30.00

DIF: Easy OBJ: 5-4

84. Refer to Lafayette Savings and Loan. How much of the loan application cost will be assigned to the Jennings branch?

a. $3,000
b. $4,800
c. $ 7,800
d. $27,000

ANS: A
$30.00 x 100 = $3,000

DIF: Easy OBJ: 5-4

85. Refer to Lafayette Savings and Loan. How much of the deposit cost will be assigned to the Crowley branch?

a. $1,800
b. $3,600
c. $ 5,400
d. $36,000

ANS: A
$0.09 * 20,000 = $1,800

DIF: Easy OBJ: 5-4

86. Refer to Lafayette Savings and Loan. How much of the new account cost will be assigned to the Crowley branch?

a. $10,000
b. $20,000
c. $30,000
d. $50,000

ANS: B

400 * $50 = $20,000

DIF: Easy OBJ: 5-4

Hazel Company uses activity-based costing. The company produces two products: coats and hats. The annual production and sales volume of coats is 8,000 units and of hats is 6,000 units. There are three activity cost pools with the following expected activities and estimated total costs:

Activity Cost Pool	Estimated Cost	Expected Activity Coats	Expected Activity Hats	Total
Activity 1	$20,000	100	400	500
Activity 2	$37,000	800	200	1,000
Activity 3	$91,200	800	3,000	3,800

87. Refer to Hazel Company. Using ABC, the cost per unit of coats is approximately:

a. $2.40
b. $3.90
c. $ 6.60
d. $10.59

ANS: C

Activity	Cost Allocation	Cost per Unit
1	$20,000 * 100/500 = $ 4,000 / 8,000	$0.50
2	$37,000 * 800/1,000 = $29,600 / 8,000	3.70
3	$91,200 * 800/3,800 = $19,200 / 8,000	2.40
	Total Cost per Unit	**6.60**

DIF: Difficult OBJ: 5-4

88. Refer to Hazel Company. Using ABC, the cost per unit of hats is approximately:

a. $2.40
b. $3.90
c. $12.00
d. $15.90

ANS: D

Activity	Cost Allocation	Cost per Unit
1	$20,000 * 400/500 = $ 16,000 / 6,000	$2.67
2	$37,000 * 200/1,000 = $ 7,400/ 6,000	1.23
3	$91,200 * 3,000/3,800 = $72,000 / 6,000	12.00
	Total Cost per Unit	**15.90**

DIF: Difficult OBJ: 5-4

SHORT ANSWER

1. How has the increase in product variety affected the costs of American business?

   ANS:
   The increase in product variety has increased the overhead costs of American firms. These costs include significant setup costs to switch from the production of one product to another, costs of additional technology, inventory carrying costs, purchasing costs, and scheduling costs.

   DIF: Moderate OBJ: 5-1

2. What are the three classes of activities defined by activity-based management. What is customer response to each of these activities? What is management's reaction to each of these activities?

   ANS:
   Value added activities--increase the worth of a product or service to a customer and are activities for which the customer is willing to pay. Management is willing to keep performing these activities.
   Non-value added activities--increase the time spent on a product or service but does not increase its worth. Such activities are unnecessary from the customer's point of view; therefore management will strive to reduce or eliminate such activities.
   Business value-added activities--are essential to business operations; however, the customer is not willing to pay for them. Management must decide which of these activities are truly essential and reduce those which are not in order to achieve a higher profit margin.

   DIF: Moderate OBJ: 5-1

3. In activity-based costing, how are cost drivers selected?

   ANS:
   Cost drivers are selected based on their underlying relationship to organizational costs. Ideally, a causal relationship exists between the cost driver and a cost pool. Once identified, cost drivers are used to allocate organizational costs to activities and products and are the focus of cost control efforts.

   DIF: Moderate OBJ: 5-3

4. Discuss the characteristics of a company for which ABC would be appropriate.

   ANS:
   Companies having the following characteristics find ABC useful: (1) hard-to-make products that show large profits and easy-to-make products that show losses; (2) profit margins that are difficult to explain; (3) considerable automation that makes it difficult to assign overhead to products that use machine hours or direct labor as bases; (4) substantial overhead costs that are not in proportion to the number of products; and (5) a wide variety of services or products.

   DIF: Moderate OBJ: 5-6

5. Discuss the four different levels of costs identified by activity based costing (ABC). How should these types of costs be treated in the determination of product cost?

   ANS:
   The four different levels are unit-level costs, batch-level costs, product- or process-level costs, and organizational or facility costs. Unit-level costs include direct material, direct labor, and some traceable machine costs. These are incurred once for each item produced and are considered part of total product cost. Batch-level costs include machine setup, material handling, and purchasing or ordering costs. These are incurred once for each batch of items produced and are allocated over the total number of units in the batch. These are also considered part of total product cost. Product- or process-level costs include engineering changes, design, and development costs. These are allocated to the total number of units produced in the product line and are considered part of total product cost. Organizational or facility costs include building depreciation, administrative salaries, and organizational advertising. These costs are not product-related and should be deducted from net product revenue.

   DIF: Moderate OBJ: 5-3

6. ABC has been criticized for a variety of reasons. Discuss these criticisms.

   ANS:
   One criticism is that ABC does not promote total quality management and continuous improvement. Another criticism of ABC is that ABC does not adhere to generally accepted accounting principles. An ABC system might allocate nonproduct costs (research and development) to products, while not allocating some traditional product costs (factory depreciation on machines) to products. A third criticism of ABC relates to the cost of implementation. An ABC system takes considerable time to implement, and therefore, it is very costly.

   DIF: Moderate OBJ: 5-6

PROBLEM

1. Heirloom Company. manufactures hand-made pine storage boxes for a variety of clients. As production manager, you have developed the following value chart:

Operation	Average Number of Days
Receiving materials	1
Storing materials	2
Handling materials	3
Cutting/measuring materials	6
Assembling materials	4
Building boxes	7
Attaching hinges	2
Inspection	1

   a. Determine the value-added activities and their total time.
   b. Determine the non-value-added activities and their total time.
   c. Calculate the manufacturing cycle efficiency.

ANS:

a.

Value-added activities	Time
Cutting/measuring materials	6
Assembling materials	4
Building boxes	7
Attaching hinges	2
Total production time (days)	19

b.

Non-value-added activities	Time
Receiving	1
Storing	2
Handling	3
Inspection	1
Total nonproduction time (days)	7

c. Total lead time = 19 + 7 = 26 days
MCE = 19/26 = 73.1%

DIF: Easy OBJ: 5-2

2. McMahon Company would like to institute an activity-based costing system to price products. The company's Purchasing Department incurs costs of $550,000 per year and has six employees. Purchasing has determined the three major activities that occur during the year.

Activity	Allocation Measure	# of People	Total Cost
Issuing purchase orders	# of purchase orders	1	$150,000
Reviewing receiving reports	# of receiving reports	2	$175,000
Making phone calls	# of phone calls	3	$225,000

During the year, 50,000 phone calls were made in the department; 15,000 purchase orders were issued; and 10,000 shipments were received. Product A required 200 phone calls, 150 receiving reports, and 50 purchase orders. Product B required 350 phone calls, 400 receiving reports, and 100 purchase orders.

a. Determine the amount of purchasing department cost that should be assigned to each of these products.
b. Determine purchasing department cost per unit if 1,500 units of Product A and 3,000 units of Product B were manufactured during the year.

ANS:

a. $150,000/15,000 = $10 per purchase order
$175,000/10,000 = $17.50 per receiving report
$225,000/50,000 = $4.50 per phone call

	Product A	Product B
50 purchase orders × $10	$ 500	
100 purchase orders × $10		$1,000
150 receiving reports × $17.50	2,625	
400 receiving reports × $17.50		7,000
200 phone calls × $4.50	900	
350 phone calls × $4.50		1,575
Total cost	$4,025	$9,575

b. Product A= $4,025/1,500 = $2.68 per unit
Product B= $9,575/3,000 = $3.19 per unit

DIF: Moderate OBJ: 5-4