

Chapter 6: Activity-Based Management and Cost Management Tools

MULTIPLE CHOICE QUESTIONS

1. Which of the following statements is (are) true about non-value-added activities?
 - I. Non-value-added activities are often unnecessary and dispensable.
 - II. Non-value-added activities may be necessary but are being performed in an inefficient and improvable manner.
 - III. Non-value-added activities can be eliminated without deterioration of product quality, performance, or perceived value.
 - A. I only
 - B. II only.
 - C. III only.
 - D. I and II.
 - E. I, II, and III.

Answer: E LO: 3 Type: RC

2. During a recent accounting period, Marty's shipping department processed 26 orders. Each order typically takes four hours to complete; however, the average time increased to five hours because of various departmental inefficiencies. If shipping labor is paid \$14 per hour, the company's non-value-added cost would be:
 - A. \$0.
 - B. \$56.
 - C. \$364.
 - D. \$1,456.
 - E. \$1,820.

Answer: C LO: 3 Type: A

3. Stanley Corporation takes eight hours to complete the setup process for a certain electrical component, with the setup cost averaging \$150 per hour. If the company's competitor can accomplish the same process in six hours, Stanley's non-value-added cost would be:
 - A. \$0.
 - B. \$150.
 - C. \$300.
 - D. \$900.
 - E. \$1,200.

Answer: C LO: 3 Type: A

4. Factory Oak produces various wooden bookcases, tables, storage units, and chairs. Which of the following would be included in a listing of the company's non-value-added activities?
- A. Assembly of tables.
 - B. Staining of storage units.
 - C. Transfer of chairs from the assembly line to the staining facility.
 - D. Storage of completed bookcases in inventory.
 - E. Both "C" and "D."

Answer: E LO: 3 Type: N

5. Airstream builds recreational motor homes. All of the following activities add value to the finished product except:
- A. installation of carpet.
 - B. assembly of the frame to the chassis.
 - C. storage of the vehicle in the sales area.
 - D. addition of exterior lights.
 - E. final painting and polishing.

Answer: C LO: 3 Type: N

6. In an attempt to cut non-value-added costs, companies may:
- A. reduce the scope of selected activities.
 - B. eliminate selected activities.
 - C. combine selected activities.
 - D. do "A" and "B" above.
 - E. do "A," "B," and "C" above.

Answer: E LO: 3 Type: RC

7. Customer profitability analysis is tied closely to:
- A. just-in-time systems.
 - B. activity-based costing.
 - C. job costing.
 - D. process costing.
 - E. operation costing.

Answer: B LO: 4 Type: RC

8. Generally speaking, companies prefer doing business with customers who:
- A. order small quantities rather than large quantities.
 - B. often change their orders.
 - C. require special packaging or handling.
 - D. request normal delivery times.
 - E. need specialized engineering design changes.

Answer: D LO: 4 Type: RC

9. Which of the following can have a negative impact on a sale's profitability?
- Number of required sales contacts (phone calls, visits, etc.).
 - Special shipping instructions.
 - Accounts receivable collection time.
 - Purchase-order changes.
 - All of the above.

Answer: E LO: 4 Type: N

10. Horton Corporation's customers differ greatly with respect to number of required sales contacts (e.g., phone calls and sales visits), account payment patterns, and design/engineering change orders. Which of the following choices likely denotes an ideal customer from Horton's perspective?

	<u>Required Sales Contacts</u>	<u>Account Payment Patterns</u>	<u>Design/Engineering Change Orders</u>
A.	Many	Slow	Many
B.	Many	Rapid	Many
C.	Few	Slow	Many
D.	Few	Rapid	Few
E.	Many	Rapid	Few

Answer: D LO: 4 Type: N

11. Which of the following is an appropriate way to analyze customer profitability?
- The cost of servicing a customer computed as a percentage of the customer's gross margin.
 - The cost of servicing a customer computed as a percentage of the customer's gross margin, compared against company or industry norms.
 - The cost of servicing a customer computed as a percentage of the customer's gross margin, examined over several years.
 - Choices "A" and "B."
 - Choices "A," "B," and "C."

Answer: E LO: 4 Type: RC

12. The costing technique that produces a stipulated profit when a product is sold at its estimated market-driven price is termed:
- kaizen costing.
 - product costing.
 - target costing.
 - full costing.
 - strategic costing.

Answer: C LO: 5 Type: RC

13. The four tasks that follow take place in the concept known as target costing:

- 1—Value engineering.
- 2—Establish a target selling price.
- 3—Establish a target cost.
- 4—Establish a target profit.

Which of the following choices correctly depicts the sequence of these tasks?

- A. 1, 3, 4, 2.
- B. 3, 1, 4, 2.
- C. 2, 4, 3, 1.
- D. 2, 3, 1, 4.
- E. Some other sequence not listed above.

Answer: C LO: 5 Type: RC

14. Of the five tasks that follow, which one is typically performed second when using the concept known as target costing?

- A. Compute a target cost.
- B. Determine a target selling price.
- C. Calculate a target profit.
- D. Select a cost driver.
- E. Undertake value engineering.

Answer: C LO: 5 Type: RC

15. Robertson, Inc., uses target costing and sells a product for \$36 per unit. The company seeks a profit margin equal to 25% of sales. If the current manufacturing cost is \$29 per unit, the firm will need to implement a cost reduction of:

- A. \$0.
- B. \$2.
- C. \$9.
- D. \$20.
- E. \$27.

Answer: B LO: 5 Type: A

16. Collins Corporation uses target costing and sells a product for \$50 per unit. The company seeks a profit margin equal to 40% of sales. If target-costing calculations revealed a need for a \$5 cost reduction, the firm's current manufacturing cost must be:

- A. \$20.
- B. \$25.
- C. \$30.
- D. \$35.
- E. some other amount.

Answer: D LO: 5 Type: A

17. The process of continual cost reduction during the manufacturing phase of an existing product is termed:
- A. kaizen costing.
 - B. product costing.
 - C. target costing.
 - D. market costing.
 - E. strategic costing.

Answer: A LO: 6 Type: RC

18. Kaizen costing refers to:
- A. radical cost reductions during the design phase of a product.
 - B. radical cost reductions during the manufacturing phase of a product.
 - C. small, continual cost reductions during the design phase of a product.
 - D. small, continual cost reductions during the manufacturing phase of a product.
 - E. the use of operational costing in out-of-control manufacturing situations.

Answer: D LO: 6 Type: RC

19. Which of the following would least likely be a feature or goal that is associated with a kaizen-costing program?
- A. Elimination of waste.
 - B. Use of overhead application rates.
 - C. Implementation of employee suggestions.
 - D. Improvements in production time.
 - E. Reduction of non-value-added activities and costs.

Answer: B LO: 6 Type: RC

20. The comparison of a company's practices and performance levels against those of other organizations is most commonly known as:
- A. benchmarking.
 - B. continuous improvement.
 - C. re-engineering.
 - D. comparative analysis.
 - E. kaizen business analysis (KBA).

Answer: A LO: 7 Type: RC

21. Which of the following techniques does not logically belong with the others?
- A. Product costing.
 - B. Value engineering.
 - C. Kaizen costing.
 - D. Continuous improvement.
 - E. Benchmarking.

Answer: A LO: 5, 6, 7 Type: N

22. Which of the following statements about re-engineering is (are) true?

- I. Re-engineering is the complete redesign of a process in an attempt to find creative new ways to accomplish an objective.
 - II. Re-engineering involves more of a "giant leap" than the concept of kaizen.
 - III. Re-engineering may entail high risks.
- A. I only.
 - B. I and II.
 - C. I and III.
 - D. II and III.
 - E. I, II, and III.

Answer: E LO: 7 Type: RC

23. The contemporary management tool that focuses on restrictions that limit a company's ability to maximize long-run profit is commonly known as:

- A. simulation.
- B. linear regression.
- C. constraint manipulation.
- D. the theory of constraints.
- E. game theory.

Answer: D LO: 7 Type: RC

24. A company that adopts a just-in-time production system would attempt to reduce and/or eliminate:

- A. raw-material inventory.
- B. raw-material inventory and work-in-process inventory.
- C. raw-material inventory, work-in-process inventory, and finished-goods inventory.
- D. work-in-process inventory.
- E. finished-goods inventory.

Answer: C LO: 8 Type: RC

25. Which of the following inventories would a company try to reduce and/or eliminate under a just-in-time system?

	Raw-Material <u>Inventory</u>	Work-in-Process <u>Inventory</u>	Finished-Goods <u>Inventory</u>
A.	No	No	Yes
B.	No	Yes	No
C.	Yes	No	No
D.	Yes	No	Yes
E.	Yes	Yes	Yes

Answer: E LO: 8 Type: RC

26. Marion Corporation, which produces unique office furniture, recently installed a just-in-time production system. The various steps in the company's manufacturing process are coordinated by using a philosophy known as:
- A. supply pull.
 - B. demand pull.
 - C. supply push.
 - D. demand push.
 - E. none of the above.

Answer: B LO: 8 Type: N

27. Which of the following statements regarding the pull method is (are) true?
- I. Goods are produced in each manufacturing stage only as they are needed at the next stage.
 - II. The pull method greatly reduces work-in-process inventory.
 - III. The pull method reduces waiting time and the associated non-value-added cost.
- A. II only.
 - B. I and II.
 - C. I and III.
 - D. II and III.
 - E. I, II, and III.

Answer: E LO: 8 Type: RC

28. In the pull method of coordinating a production process:
- A. departments early in the production process continually make components in order to ensure that later departments do not run out.
 - B. nothing is manufactured at a work center until a need is signaled from a subsequent process.
 - C. work-in-process inventories are increased throughout the plant.
 - D. production employees never have idle time, resulting in increased efficiency.
 - E. defective products are "pulled" off the line and sent to a special department for rework.

Answer: B LO: 8 Type: RC

29. A Kanban:
- A. is used in conjunction with activity-based costing.
 - B. facilitates quick and inexpensive setups of machines.
 - C. helps train workers to do a variety of assignments.
 - D. initiates production in a particular work center.
 - E. measures the correlation between a cost driver and a cost pool.

Answer: D LO: 8 Type: RC

30. Which of the following is not a key feature of a JIT system?
- A. Purchases of materials in relatively large amounts (i.e., lot sizes).
 - B. A smooth, uniform production rate.
 - C. Total quality control.
 - D. Multiskilled workers and flexible production facilities.
 - E. A pull approach to coordinating steps in the production process.

Answer: A LO: 8 Type: RC

31. Which of the following statements regarding a JIT system is (are) true?
- I. Materials are purchased and goods are produced only as required.
 - II. Employees are highly skilled at single tasks in an effort to maintain quality control.
 - III. A JIT system is characterized by many small purchases of raw materials.
- A. I only.
 - B. I and II.
 - C. I and III.
 - D. II and III.
 - E. I, II, and III.

Answer: C LO: 8 Type: RC

32. Which of the following statements regarding quality is (are) true for a company that has implemented a JIT system?
- I. JIT requires quality production facilities, methods, and employees.
 - II. JIT requires the acquisition of quality raw materials.
 - III. JIT requires that long-term contracts be negotiated with quality suppliers.
- A. II only.
 - B. I and II.
 - C. I and III.
 - D. II and III.
 - E. I, II, and III.

Answer: E LO: 8 Type: RC

33. A firm that uses a JIT purchasing philosophy probably:
- A. has many suppliers.
 - B. has extensive inspection of purchased items at the receiving point.
 - C. has relatively few suppliers.
 - D. has deliveries of purchased items made in small lot sizes immediately before the goods are needed in production.
 - E. has relatively few suppliers and has deliveries of purchased items made in small lot sizes immediately before the goods are needed in production.

Answer: E LO: 8 Type: RC

34. Which of the following statements is (are) true about JIT purchasing as compared with conventional purchasing systems?

- I. Quality control by the supplier is more crucial.
 - II. Adherence to delivery schedules by vendors is more crucial.
 - III. Long-term supplier contracts are common.
- A. I only
 - B. II only.
 - C. III only.
 - D. I and II.
 - E. I, II, and III.

Answer: E LO: 8 Type: N

35. Which of the following statements about a just-in-time (JIT) purchasing system is false?

- A. Since there is minimal backup, companies must acquire quality raw materials.
- B. Raw materials are stockpiled to avoid production disruptions.
- C. In comparison with experiences under traditional systems, manufacturers normally deal with a reduced number of suppliers.
- D. Supplier reliability tends to be more important under a JIT system than under a traditional purchasing system.
- E. The average purchase size is smaller with a JIT system than under a traditional purchasing system.

Answer: B LO: 8 Type: RC

36. Hudson, Inc., is considering a change from a traditional purchasing system to a just-in-time purchasing system. What has probably happened to Hudson's cost per purchase order and inventory unit storage cost to prompt the company to consider such a change?

- A. Purchase-order cost is increasing and unit storage cost is increasing.
- B. Purchase-order cost is increasing and unit storage cost is decreasing.
- C. Purchase-order cost is decreasing and unit storage cost is increasing.
- D. Purchase-order cost is decreasing and unit storage cost is decreasing.
- E. Both of these costs are relatively stable in amount.

Answer: C LO: 8 Type: N

37. When a company adopts a just-in-time inventory system, it would expect:

- A. higher inventories and less frequent purchases.
- B. higher inventories and more frequent purchases.
- C. lower inventories and less frequent purchases.
- D. lower inventories and more frequent purchases.
- E. lower inventories and more units purchased on a given order.

Answer: D LO: 8 Type: N

38. When a company adopts a just-in-time inventory system, it would expect:
- higher inventories and fewer units purchased on a given order.
 - higher inventories and more units purchased on a given order.
 - lower inventories and fewer units purchased on a given order.
 - lower inventories and more units purchased on a given order.
 - lower inventories and less frequent purchases.

Answer: C LO: 8 Type: RC

39. Roger Corporation recently abandoned its traditional production and inventory system in favor of a just-in-time system. The company typically dealt with 50 suppliers and placed 450 orders throughout the year. All other things being equal, which of the following choices denotes a likely scenario under the just-in-time system?

	<u>Number of Suppliers</u>	<u>Number of Orders</u>
A.	35	200
B.	35	750
C.	50	450
D.	60	200
E.	60	750

Answer: B LO: 8 Type: N

40. Harold Corporation recently abandoned its traditional production and inventory system in favor of a just-in-time system. The company typically ordered 700 units of raw material at a time and purchased units that scored a 7 on a 10-point quality scale, with 10 being very close to perfection. All other things being equal, which of the following choices denotes a likely scenario under the just-in-time system?

	<u>Order Size</u>	<u>Quality Purchased</u>
A.	300	7
B.	300	9
C.	700	9
D.	950	7
E.	950	9

Answer: B LO: 8 Type: N

41. When a company switches from a traditional system to a just-in-time production and inventory system, what often happens to the quality of raw material purchased and the number of vendors that supply the firm?

	<u>Quality of Purchases</u>	<u>Number of Suppliers</u>
A.	Increase	Increase
B.	Increase	Decrease
C.	Decrease	Increase
D.	Decrease	Decrease
E.	Increase	Remain the same

Answer: B LO: 8 Type: RC

42. Which of the following would not typically be used or encountered by a firm that is in the service industry?
- A. Customer profitability analysis.
 - B. Activity-based management.
 - C. Non-value-added activities.
 - D. Value-added activities.
 - E. None of the above, as all would typically be used or encountered by a service provider.

Answer: E LO: 9 Type: RC

EXERCISES

Value-Added and Non-Value-Added Activities

43. Consider the nine activities that follow.
- 1. Microsoft: Developing computer coding for a new spreadsheet package
 - 2. General Mills: Painting the office of a maintenance supervisor at a plant that produces cereal
 - 3. Mayo Clinic: Examining a new patient
 - 4. American Airlines: The 90 minutes that a Boeing 757 sits idle on the ground between flights
 - 5. Office Depot: Moving cases of paper from one location to another in the same warehouse
 - 6. Rolex: Attaching a watch band to the watch's face
 - 7. United States Postal Service: Reprocessing mail that had been sorted incorrectly on a malfunctioning sorting machine.
 - 8. Fidelity Investments: Correcting errors made by company personnel in customer accounts
 - 9. Marriott: Upgrading the quality of bedding used at hotels in very competitive marketplaces

Required:

Categorize each of the activities as either value-added or non-value-added for the companies noted.

LO: 3 Type: N

Answer:

- | | |
|--------------------|--------------------|
| 1. Value-added | 6. Value-added |
| 2. Non-value added | 7. Non-value-added |
| 3. Value-added | 8. Non-value-added |
| 4. Non-value-added | 9. Value-added |
| 5. Non-value-added | |

Non-Value-Added Activities; Customer Profitability

44. Switzer, Inc., which sells books to college bookstores and individuals, uses activity-based costing and activity-based management. The following information is available for the company's three cost pools:

<u>Activity</u>	<u>Cost Driver</u>	<u>Cost-Driver Quantity</u>	<u>Percent of Cost-Driver Activity for Bookstore Transactions</u>	<u>Percent of Cost-Driver Activity for Transactions to Individuals</u>
Incoming receipts	Number of purchase orders	3,000	20%	80%
Warehousing	Number of inventory moves	8,000	60	40
Outgoing shipments	Number of shipments	18,000	30	70

Bookstore sales totaled \$8,400,000, and sales to individuals amounted to \$2,400,000. Costs for the three activities were: Incoming receipts, \$450,000; warehousing, \$520,000; and outgoing shipments, \$630,000. A review of the company's activities found various inefficiencies with respect to the warehousing of textbooks (acquired for eventual sale to bookstores) and outgoing shipments to individuals. These inefficiencies resulted in an extra 500 moves and 400 shipments, respectively.

Required:

- What is a non-value-added activity?
- How much did non-value-added activities cost Switzer this past year?
- Which of the two markets—sales to bookstores or sales to individuals—resulted in lower overall costs for incoming receipts, warehousing, and outgoing shipments? Evaluate these costs in both absolute dollars and as a percentage of sales. In addition, present a possible explanation for your results. Note: Exclude costs that arose from inefficient operations.

LO: 3, 4 Type: A, N

Answer:

A. Non-value-added activities can be defined as activities that are either (1) unnecessary and dispensable or (2) necessary but inefficient and improvable. Put simply, such activities can be eliminated without harming overall quality, performance, or perceived value.

B. Cost of non-value-added activities:

Incoming receipts: $\$450,000 \div 3,000$ purchase orders = \$150 per purchase order
 Warehousing: $\$520,000 \div 8,000$ inventory moves = \$65 per move
 Outgoing shipments: $\$630,000 \div 18,000$ shipments = \$35 per shipment

Warehousing: 500 moves x \$65	\$32,500
Outgoing shipments: 400 shipments x \$35	<u>14,000</u>
Total	<u>\$46,500</u>

C. Sales to bookstores produced lower overall costs in both absolute dollars and as a percentage of sales. A possible explanation lies in the fact that sales to individuals resulted in the sale of one or two copies per shipment and order. In contrast, bookstore sales likely produced greater revenues and efficiencies because of the large number of texts sold per transaction.

Activity	Cost-Driver	%		Driver-Quantity:	
	Quantity	Bookstores	Individuals	Bookstores	Individuals
Incoming receipts	3,000	20%	80%	600	2,400
Warehousing	8,000	60%	40%	4,300*	3,200
Outgoing shipments	18,000	30%	70%	5,400	12,200**

* (8,000 moves x 60%) - 500

** (18,000 shipments x 70%) - 400

	<u>Bookstores</u>	<u>Individuals</u>
Incoming receipts:		
600 purchase orders x \$150	\$ 90,000	
2,400 purchase orders x \$150		\$360,000
Warehousing:		
4,300 moves x \$65	279,500	
3,200 moves x \$65		208,000
Outgoing shipments:		
5,400 shipments x \$35	<u>189,000</u>	
12,200 shipments x \$35		<u>427,000</u>
Total cost	<u>\$558,500</u>	<u>\$995,000</u>
Cost as a percentage of sales:		
$\$558,500 \div \$8,400,000$	6.65%	
$\$995,000 \div \$2,400,000$		41.46%

Customer Profitability Analysis

45. Clark Corporation manufactures cooling system components. The company has gathered the following information about two of its customers: Engle Equipment and Midwest Refrigeration.

	Engle <u>Equipment</u>	Midwest <u>Refrigeration</u>
Sales revenue	\$215,000	\$154,000
Cost of goods sold	95,000	68,000
General selling costs	30,000	21,500
General administrative costs	21,000	15,050

Cost-driver data used by the firm and traceable to Engle and Midwest are:

<u>Customer Activity</u>	<u>Cost Driver</u>	Rate per Unit of Cost Driver
Sales activity	Sales visits	\$900
Order taking	Sales orders	250
Special handling	Units handled	30
Special shipping	Shipments	600

<u>Customer Activity</u>	Engle <u>Equipment</u>	Midwest <u>Refrigeration</u>
Sales activity	8 visits	5 visits
Order taking	17 orders	22 orders
Special handling	600 units	550 units
Special shipping	19 shipments	30 shipments

Required:

- Perform a customer profitability analysis for Clark. Compute the gross margin and operating income on transactions related to Engle Equipment and Midwest Refrigeration.
- Compute gross margin as a percentage of sales revenue. Then compute (1) general selling and administrative costs as a percentage of gross margin and (2) total customer-related costs (i.e., costs that arise from sales visits, order taking, and special handling and shipping) as a percentage of gross margin.
- On the basis of your calculations, which of the two customers is "more costly" to deal with? Briefly explain.

LO: 4 Type: A, N

Answer:

- A. In dollar terms, Engle's gross margin and operating income are greater than those of Midwest Refrigeration.

	Engle <u>Equipment</u>	Midwest <u>Refrigeration</u>
Sales revenue	\$215,000	\$154,000
Cost of goods sold	<u>95,000</u>	<u>68,000</u>
Gross margin	<u>\$120,000</u>	<u>\$ 86,000</u>
Selling and administrative costs:		
General selling costs	\$ 30,000	\$ 21,500
General administrative costs	21,000	15,050
Customer-related costs:		
Sales visits (8, 5 x \$900)	7,200	4,500
Order taking (17, 22 x \$250)	4,250	5,500
Special handling (600, 550 x \$30)	18,000	16,500
Special shipping (19, 30 x \$600)	<u>11,400</u>	<u>18,000</u>
Total	<u>\$ 91,850</u>	<u>\$ 81,050</u>
Operating income	<u>\$ 28,150</u>	<u>\$ 4,950</u>

- B. Gross margin as a % of sales revenue:
 Engle: $\$120,000 \div \$215,000 = 55.81\%$
 Midwest: $\$86,000 \div \$154,000 = 55.84\%$

General selling and administrative costs as a % of gross margin:

 Engle: $(\$30,000 + \$21,000) \div \$120,000 = 42.5\%$
 Midwest: $(\$21,500 + \$15,050) \div \$86,000 = 42.5\%$

Customer-related costs as a % of gross margin:

 Engle: $(\$7,200 + \$4,250 + \$18,000 + \$11,400) \div \$120,000 = 34.0\%$
 Midwest: $(\$4,500 + \$5,500 + \$16,500 + \$18,000) \div \$86,000 = 51.7\%$

- C. Both customers produce approximately the same rate of gross margin on sales and are charged with the same percentage of general selling and administrative costs. The difference lies in the area of customer-related costs. Midwest's costs make the firm a more expensive client to deal with than Engle. Given the dollar volume of sales revenue that is generated, Midwest's special handling and shipping needs (especially the latter) are an expensive proposition for Clark Corporation.

Customer Profitability Data: Computation and Analysis

46. Homestead Corporation sells a line of power tools to home improvement chains, generating a cost of goods sold equal to 70% of net sales. The selected data that follow relate to the period just ended for the company's three largest customers: Weekend Project, Tool Mart, and Fix-It City.

	<u>Weekend Project</u>	<u>Tool Mart</u>	<u>Fix-It City</u>
Gross sales volume:			
Dollars	\$2,000,000	\$4,900,000	\$4,600,000
Number of orders	50	175	125
Type of order:			
Regular	40	135	110
Rush	10	40	15
Sales returns:			
Dollars	\$100,000	\$400,000	\$240,000
Number of returns	3	20	8
Total customer-related costs	\$245,100	\$918,000	\$457,800

Homestead's management recently attended a seminar and learned that customers with excessive requests and demands can have a significant, negative impact on corporate profitability.

Required:

- A. For each of the three chains, compute:
1. Total customer-related costs as a percentage of gross margin.
 2. The average order size (ignoring sales returns).
 3. The ratio of regular orders to rush orders.
 4. The number of sales returns as a percentage of the number of total orders.
- B. Prepare a brief summary of your findings. Should Homestead work with any of the chains in an effort to improve results? Explain.

LO: 4 Type: A, N

Answer:

- A. 1. Customer-related costs as a percentage of gross margin:
Weekend Project: $\$245,100 \div [(\$2,000,000 - \$100,000) \times 30\%] = 43\%$
Tool Mart: $\$918,000 \div [(\$4,900,000 - \$400,000) \times 30\%] = 68\%$
Fix-It City: $\$457,800 \div [(\$4,600,000 - \$240,000) \times 30\%] = 35\%$
2. Average order size:
Weekend Project: $\$2,000,000 \div 50 \text{ orders} = \$40,000$
Tool Mart: $\$4,900,000 \div 175 \text{ orders} = \$28,000$
Fix-It City: $\$4,600,000 \div 125 \text{ orders} = \$36,800$
3. Ratio of regular orders to rush orders:
Weekend Project: 40:10 = 4:1
Tool Mart: 135:40 = 3.375:1
Fix-It City: 110:15 = 7.33:1
4. Number of sales returns as a percentage of total orders:
Weekend Project: $3 \div 50 = 6\%$
Tool Mart: $20 \div 175 = 11.4\%$
Fix-It City: $8 \div 125 = 6.4\%$
- B. Customer-related costs are driven by events (and costs) directly traceable to clients. In this case, Tool Mart's costs as a percentage of gross margin are much higher (68%) than those of Weekend Project and Fix-It City. This result is not surprising given that the firm creates a large number of small orders (\$28,000 vs. \$36,800 and \$40,000) for Homestead to process. In addition, relative to the other two firms, Tool Mart relies more heavily on rush orders, which likely creates additional cost. Finally, a number of Tool Mart's orders (11.4%) eventually result in sales returns, again creating additional processing expense for Homestead. In summary, Tool Mart seems to be an outlier in relation to Weekend Project and Fix-It City, and management should approach Tool Mart to see if the firm can change its ways of doing business.

Customer Analysis

47. Beaverton Manufacturing is a relatively new customer of Haxton Enterprises. In the short period that the two companies have done business with each other, Haxton has found Beaverton to be, in management's words, "an expensive proposition." Numerous sales visits are typically required to "close a deal," with selling prices and discounts offered being among the most attractive in the industry. Complicating matters, Beaverton is slow to settle its account, orders in small quantities, and often has numerous specialized shipping and handling needs.

A recent customer profitability analysis has painted a very negative picture of Beaverton Manufacturing, and Haxton's managers are questioning whether an on-going relationship with the firm is warranted.

Required:

- A. Briefly explain why the customer profitability analysis painted a negative picture of Beaverton Manufacturing.
- B. What actions are available to Haxton Enterprises to improve Beaverton profitability?

LO: 4 Type: N

Answer:

- A. Profit is a function of two basic factors—revenues and expenses—and Haxton is being squeezed on both elements. Prices are low, discounts are high, and order sizes are small. Furthermore, the costs of working with Beaverton are high, courtesy of numerous sales calls being required to produce a sale, a slow-paying customer, and specialized handling and shipping needs.
- B. Haxton should attempt to work with Beaverton in a cost-cutting drive, explaining that favorable terms can only be extended for a short period of time. Acceleration of amounts due, increases in order size, and reductions in sales visits and specialized handling and shipping needs are possible topics for discussion/improvement. If Haxton is unsuccessful in its efforts, price hikes and/or elimination of discounts may be in order.

Target Costing

48. In the not-too-distant future, Victor Enterprises will introduce a new printer for desktop computers. This printer is expected to compete successfully with other models that are anticipated to sell for \$250. Victor's printer has several unique features, and management believes that a slightly higher selling price (10%) is justified. The company's normal profit margin is 30% of selling price.

Required:

- A. What is the printer's target price, target profit, and target cost?
- B. Suppose that Victor's engineers and cost accountants conclude that the present design of the printer will result in a unit cost of \$210. Explain the concept of "value engineering" and be sure to note how it can assist Victor Enterprises in achieving its goals.

LO: 5 Type: A, N

Answer:

- A. Target price: $\$250 + (\$250 \times 10\%) = \$275$
Target profit: $\$275 \times 30\% = \82.50
Target cost: $\$275 - \$82.50 = \$192.50$

- B. Victor's present cost is too high to achieve the desired profit margin, meaning that some form of cost reduction is needed. Value engineering is a cost-reduction and process-improvement technique that may allow the company to produce the printer at its targeted cost of \$192.50. Engineers will examine the unit in terms of parts and process complexity, putting forth recommendations of where changes can be made.

Target Costing

49. Hudson Valley sells barbeque grills in an increasingly competitive environment. For a number of years, management has followed a successful policy of marking up goods by 20% of cost, the company's desired gross margin.

One of the firm's products, grill no. 56, has direct-material charges of \$80, direct-labor cost of \$50, and manufacturing overhead of \$70. This grill is designed to compete against others in the marketplace that wholesale for an average of \$220. In the last year or so, management has observed a decline in unit sales volume despite a very favorable write-up in both *Grillmaster* magazine and *Consumer Watchdog*.

Required:

- A. Explain a probable cause of the decline in unit sales volume.
B. What would be the likely selling price if the firm uses target costing?
C. What must happen to the current manufacturing cost if Hudson Valley were to achieve its 20% gross margin, now computed on the basis of sales? By how much?

LO: 5 Type: A, N

Answer:

- A. The problem does not seem to be quality-related because of the grill's favorable reviews. Rather, Hudson Valley is in a very competitive marketplace and appears to be over-pricing the grill somewhat for the intended market segment. That is, the costs of grill no. 56 total \$200 ($\$80 + \$50 + \70). With a 20% markup added, the selling price becomes \$240 [$\$200 + (\$200 \times 20\%)$] when the average selling price is \$220.
- B. \$220
- C. If the selling price is \$220 and the company has a 20% gross margin on sales of \$44 ($\$220 \times 20\%$), the grill's costs must total \$176 ($\$220 - \44). Thus, current costs must drop by \$24 ($\$200 - \176).

Just-in-Time Purchasing System

50. The wholesale division of Navigator Enterprises is considering the installation of a just-in-time purchasing system. The company's accountant has provided the following figures if the system is adopted:
- Sales lost because of out-of-stock situations will total 5,500 units, with each unit producing an average profit for the firm of \$23.
 - The overall inventory will drop by \$700,000. Navigator can invest these funds elsewhere and produce a return of 13%.
 - A leased warehouse (monthly rent of \$3,000) will no longer be needed.
 - Two warehouse employees (total annual salary cost of \$43,000) will be transferred elsewhere in the firm.
 - Annual property taxes and insurance are expected to fall by \$18,900.
 - In order to keep valued customers, Navigator will occasionally have to use air freight when an out-of-stock situation arises, resulting in added cost for the company of \$2,300.

Required:

- A. Determine whether it is financially advantageous over a 12-month period for Navigator to adopt the just-in-time system.
- B. How would Navigator describe the "ideal supplier" if the company adopts the just-in-time system.

LO: 8 Type: A, N

Answer:

A. Lost profits (5,500 units x \$23)	\$(126,500)
Return on funds (\$700,000 x 13%)	91,000
Lease savings (\$3,000 x 12)	36,000
Savings in taxes and insurance	18,900
Air freight costs	<u>(2,300)</u>
Total	<u>\$ 17,100</u>

The just-in-time system is financially advantageous to the firm, saving \$17,100. Note: The cost of the warehouse employees is ignored because regardless of whether the system is adopted, Navigator will incur the cost.

- B. The "ideal supplier" is one that delivers top quality goods precisely when needed. Thus, reliability is a key with respect to quality and delivery, as is close proximity to the wholesale division. Most JIT suppliers are willing to sign long-term contracts and accept "batched" payments for deliveries.

Just-in-Time Purchasing System

51. Management of Laredo Enterprises recently decided to adopt a just-in-time inventory policy to curb steadily rising costs and free-up cash for purposes of investment. The company anticipates that inventory will decrease by \$4,450,000, with the released funds to be invested at a 10% return for the firm. Additional data follow.
1. Reduced inventories should produce savings in insurance and property taxes of \$46,000.
 2. Reduced raw-material inventory levels and accompanying stockouts will cost Laredo \$85,000.
 3. Laredo will lease 80% of an existing warehouse to another firm for \$2.50 per square foot. The warehouse has 40,000 square feet.
 4. Four employees who currently earn \$35,000 each will be directly affected by the just-in-time adoption decision. Three employees will be transferred to other positions with Laredo; one will be terminated.
 5. A shift in suppliers is expected to result in the purchase and use of more expensive raw materials. However, these materials should give rise to fewer warranty and repair problems after Laredo's finished product is sold, resulting in a net savings for the firm of \$38,000.
 6. Because of the need to handle an increased number of small shipments from suppliers, Laredo will remodel production and receiving-dock facilities at a cost of \$750,000. The construction costs will be depreciated over a 10-year life.

Required:

- A. Compute the annual financial impact of Laredo's decision to adopt a just-in-time inventory system.
- B. In comparison with those of a traditional purchasing system, why would the number and size of incoming supplier shipments change under a just-in-time system?

LO: 8 Type: A, N

Answer:

A. Return on released funds ($\$4,450,000 \times 10\%$)	\$445,000
Savings in insurance and property taxes	46,000
Added stockout costs	(85,000)
Lease revenue (40,000 square feet \times 80% \times \$2.50)	80,000
Salary savings*	35,000
Net savings in materials, warranty, and repair costs	38,000
Depreciation on remodeled facilities ($\$750,000 \div 10$ years)	<u>(75,000)</u>
Savings from JIT system	<u>\$484,000</u>

*Note: The cost of the three transferred employees is excluded because Laredo will continue to have these individuals on the payroll.

- B. Under a traditional purchasing system, goods are purchased (frequently in large lots) and then placed in inventory until used. In contrast, with JIT, costly inventories are avoided by having the materials arrive "just in time" to be issued to production. Materials are therefore purchased only when needed, which often translates into numerous small acquisitions throughout the period.

Analysis of Just-in-Time Purchasing System

52. Putnam Enterprises currently purchases a total of 50,000 sensors annually from Utah Electronics at \$80 per unit. The firm places 25 purchase orders during the year at an average cost of \$10 per order. Putnam's management is contemplating a switch to a just-in-time purchasing system that would require an increase in orders to 200.

Required:

- Compute the average order size under both the current system and the proposed just-in-time system. Also, calculate the change in annual purchase-order processing cost.
- Explain why the number of orders will increase under a just-in-time system.
- What benefits might Putnam experience to help offset the increase in purchase-order processing cost?
- What might Utah do to the \$80 price, given the company's need to process an additional 175 orders?

LO: 8 Type: A, N

Answer:

- Current system: 50,000 sensors ÷ 25 orders = 2,000 units
Just-in-time system: 50,000 sensors ÷ 200 orders = 250 units

Just-in-time system: 200 orders x \$10	\$2,000
Current system: 25 orders x \$10	<u>250</u>
Increase in purchase-order processing cost	<u>\$1,750</u>

- Under a traditional system, orders are large so that adequate inventories can be maintained. By increasing the number of orders, companies anticipate that units will arrive on an as-needed basis, thus reducing the need to carry sizable on-hand stocks.
- A reduction in inventories will typically decrease associated costs such as warehousing, insurance, obsolescence, and property taxes. In addition, monies currently invested in inventories will be released for other profitable uses by management. Putnam may also negotiate that a higher quality sensor be acquired, which would both reduce the need for inspections and increase the overall quality of the firm's finished product.
- Utah's cost will likely increase, given that overall volume is constant at 50,000 sensors. As a result, the firm might be forced to raise the sensor's selling price.

Just-in-Time Purchasing, Non-Value-Added Activities

53. Fargo Enterprises, which manufactures lawn mowers, recently installed a just-in-time purchasing system and an activity-based management program.

Required:

- A. Determine whether the following items would be apt to increase or decrease as a result of the just-in-time system:
1. Inventory storage costs.
 2. Number of suppliers used.
 3. Number of raw material shipments handled.
 4. Dollars available for alternative investment opportunities.
 5. Quality of raw materials purchased.
- B. Identify the following items as value-added activities, non-value-added activities, or both.
1. Attaching the engine to the mower's body.
 2. Installing a new air-conditioning system in the executive offices.
 3. Replacing a defective wheel with a new wheel.
 4. Designing and printing an owner's instruction manual for a new model.
 5. Moving completed mowers to the finished-goods warehouse.
 6. Attaching the handle to the mower's body. The process took longer than normal because of a worker slowdown caused by disgruntled employees.

LO: 3, 8 Type: N

Answer:

- | | |
|----------------|--------------------|
| A. 1. Decrease | B. 1. Value-added |
| 2. Decrease | 2. Non-value-added |
| 3. Increase | 3. Non-value-added |
| 4. Increase | 4. Value-added |
| 5. Increase | 5. Non-value-added |
| | 6. Both |

DISCUSSION QUESTIONS

Non-Value-Added Costs

54. Non-value-added costs occur in nonmanufacturing organizations as well as in manufacturing firms.

Required:

- A. Explain what is meant by a non-value-added cost.
- B. Identify two potential non-value-added costs for each of the following service providers: airlines, banks, and hotels.

LO: 3, 9 Type: RC, N

Answer:

A. Non-value-added costs are the costs of activities that can be eliminated with no deterioration of product quality, performance, or perceived value. These activities should be eliminated to save time and money. General examples include the costs of inspection, moving, waiting, and storing.

B. *Airlines:*

- The cost of preparing excess food because of forecasting errors in passenger loads.
- The cost of tracing, returning, repairing, or replacing lost or mishandled luggage.
- Additional compensation paid to flight crews attributable to cancellations or delays from problems that should have been prevented by routine maintenance.

Banks:

- The cost of correcting bank errors in customer accounts.
- The cost of performing manual banking procedures necessitated by computer system downtime.
- Losses caused by employee embezzlement and petty thefts.
- Defaulted loans made to borrowers who should have been classified as poor risks by existing credit-granting procedures.

Hotels:

- Broken dishes and glassware, loss of or damage to linens and towels.
- The cost of replacing lost room keys.
- The cost of overstaffing the front desk during nonpeak hours.
- Excess food costs, including preparation.

Non-Value-Added Activities

55. What are non-value-added activities? What should companies do with these activities and, in general terms, how should this be done?

LO: 3 Type: RC

Answer:

Non-value-added activities are operations that are either (1) unnecessary and dispensable or (2) necessary, but inefficient and improvable. These activities give rise to non-value-added costs, which cut into company profitability. Non-value-added activities should be reduced and/or eliminated through various process improvement techniques. Activities may also be shared in some cases, with selected functions being combined and performed in a more efficient manner.

Kaizen Versus Re-engineering

56. Briefly distinguish between kaizen and re-engineering.

LO: 6, 7 Type: RC

Answer:

Kaizen refers to the process of cost reduction during the manufacturing phase of an existing product. This process takes place gradually, or through small continual improvements rather than through radical change. Re-engineering, on the other hand, is a bit more drastic, often involving the complete redesign of a process in hopes of finding a creative new way to accomplish an objective. Generally speaking, re-engineering often prescribes radical, quick, and significant change.

Just-in-Time Production

57. A just-in-time production system uses a "pull method" to coordinate steps in the manufacturing process. Explain what is meant by the term "pull method."

LO: 8 Type: RC

Answer:

Under the pull method, goods are produced in each manufacturing stage only as they are needed at the next stage. When materials and parts are required for final assembly, for example, a message is sent to the preceding work center to send items that will satisfy the work to be performed over the next few hours. This approach drastically cuts work-in-process inventory along with waiting time (a non-value-added cost). The "pull approach" is repeated all the way through the manufacturing process, back toward the beginning.