

Chapter 2 – Value Chains

Multiple Choice

1. In order to increase value, an organization must do all of the following EXCEPT:
- increase perceived benefits while holding price or cost constant.
 - increase perceived benefits while reducing price or cost.
 - keep the proportion of price or cost to perceived benefits constant.
 - decrease price or cost while holding perceived benefits constant.

ANS: C

2. _____ is defined as the perception of the benefits associated with a good, service, or bundle of goods and services in relation to what buyers are willing to pay for them.

a.	Proportionality
b.	Competitiveness
c.	Value
d.	Equity

ANS: C

3. A competitively dominant customer experience is often called a _____.

a.	perceived benefit
b.	preemptive strike
c.	moment of truth
d.	value proposition

ANS: D

4. Which of the following statements in the perspective of a value chain is TRUE?
- Pre- and postproduction services complete the ownership cycle for a good or service.
 - Offshoring is the process of having suppliers provide goods and services that were previously provided internally.
 - Value chain integration includes improving external processes for the client, and not the internal processes.
 - A value chain is a narrower concept than a supply chain that focuses more on the physical movement of goods, not services.

ANS: A

5. In the value chain model for a hospital, patients, drugs, and staff would be considered as _____.

- suppliers
- inputs
- transformation processes
- outputs

ANS: B

6. For a restaurant, order taking, bill payment, and home delivery would be considered as _____.

a.	services
b.	inputs
c.	processes
d.	outputs

ANS: C

7. Which of the following is NOT a value chain process?

a.	Core processes
b.	Support processes
c.	General management processes
d.	Open-ended processes

ANS: D

8. In the value chain model for a hospital, pharmaceutical companies and organ donors would be considered as _____.

a.	suppliers
b.	inputs
c.	processes
d.	outputs

ANS: A

9. In the context of the perspectives of a value chain, product and service guarantees, contract negotiations and consulting services would be considered as _____.

a.	preproduction services
b.	production processes
c.	postproduction services
d.	after-sales services

ANS : A

10. In the context of the perspectives of a value chain, training and transportation delivery services for customers would be considered as _____.

a.	preproduction services
b.	production processes
c.	postproduction services
d.	packaging services

ANS: C

11. The operational structure of a value chain deals with the _____.

a.	management hierarchies
b.	customer services and returns
c.	configuration of resources
d.	order tracking reports

ANS: C

12. The control of Walmart's value chain is _____, while the control of General Electric's is _____.

a.	postproduction focused; preproduction focused
b.	horizontal; vertical
c.	centralized; decentralized
d.	backward integrated; forward integrated

ANS: C

13. A company has two alternatives for meeting a customer requirement for 9,000 units of a specialty molding. If done in-house, fixed cost would be \$350,000, with variable cost at \$30 per unit. If outsourced, the cost is \$80 per unit. Determine the break-even point and determine if they should make the item in-house or outsource it.

a.	break-even point = 7,000 units; outsource it
b.	break-even point = 7,000 units; make it in-house
c.	break-even point = 11,667 units; outsource it
d.	break-even point = 11,667 units; make it in-house

ANS: B

14. A company has two alternatives for meeting a customer requirement for 6,000 units of a specialty molding. If done in-house, fixed cost would be \$350,000, with variable cost at \$30 per unit. If outsourced, the cost is \$80 per unit. Determine the break-even point and determine if they should make the item in-house or outsource it.

a.	break-even point = 7,000 units; outsource it
b.	break-even point = 7,000 units; make it in-house
c.	break-even point = 11,667 units; outsource it
d.	break-even point = 11,667 units; make it in-house

ANS: A

Problems #15 to #17

A manufacturing company needs to know whether to make in-house or buy a roller gear assembly for its production of a new fax machine. The company expects to produce 9,000 units per year. The following estimates have been made:

	<u>Make</u>	<u>Buy</u>
Fixed cost per year	\$8,000	\$0

Variable cost per part	\$5.45	\$6.93
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15. The annual cost to make the roller gear assembly in-house is _____.
 a. less than or equal to \$30,000
 b. more than \$30,000 but less than or equal to \$40,000
 c. more than \$40,000 but less than or equal to \$50,000
 d. more than \$50,000 but less than or equal to \$60,000

ANS: D

16. The annual cost to buy the roller gear assembly is _____.
 a. more than \$30,000 but less than or equal to \$40,000
 b. more than \$40,000 but less than or equal to \$50,000
 c. more than \$50,000 but less than or equal to \$60,000
 d. more than \$60,000

ANS: D

17. The volume they are indifferent regarding the decision to make or buy is _____ units.
 a. less than or equal to 2,000
 b. more than 2,000 but less than or equal to 4,000
 c. more than 4,000 but less than or equal to 6,000
 d. more than 6,000 but less than or equal to 8,000

ANS: C

Problems #18 to #20

A U.S. motorcycle manufacturer has the option of either making the gas tank in their newly designed motorcycle, or subcontracting it to a manufacturer from Singapore. The manufacturer expects to produce 1,000 units per year. Costs for the two options are:

<u>Source</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
Make in-house	\$15,000	\$21.50
Buy from Singapore	\$0	\$29.00

18. The annual cost to make the gas tank in-house is _____.
 a. less than or equal to \$30,000
 b. more than \$30,000 but less than or equal to \$40,000
 c. more than \$40,000 but less than or equal to \$50,000
 d. more than \$50,000 but less than or equal to \$60,000

ANS: B

19. The annual cost to outsource the manufacturing to Singapore is _____.
 a. less than or equal to \$30,000
 b. more than \$30,000 but less than or equal to \$40,000

- c. more than \$40,000 but less than or equal to \$50,000
- d. more than \$50,000 but less than or equal to \$60,000

ANS: A

20. The volume they are indifferent regarding the decision to make or buy is _____ units.
- a. less than or equal to 2,000
 - b. more than 2,000 but less than or equal to 4,000
 - c. more than 4,000 but less than or equal to 6,000
 - d. more than 6,000 but less than or equal to 8,000
 - e. more than 8,000.

ANS: A

21. A large hotel and casino in Las Vegas is currently under construction. There will be an Italian restaurant in the hotel that will serve pizza. Management is trying to decide whether to make the pizza themselves or buy it frozen and simply heat it to customer order. One major source of commercial-grade frozen pizza is Chun-Yee Corporation. If they make the pizza themselves a substantial amount of preparation equipment will be required, along with skilled personnel. Financial data is as shown below (variable costs are estimated based on an average pizza purchase):

Source	Fixed Cost/year	Variable Cost
Make in-house	\$7,870	\$3.20
Chun-Yee	\$2,460	\$4.50

- At what volume is the company indifferent to either Chun-Yee or make in-house?
- a. Less than or equal to 2,000
 - b. More than 2,000 but less than or equal to 4,000
 - c. More than 4,000 but less than or equal to 6,000
 - d. More than 6,000 but less than or equal to 8,000

ANS: C

22. _____ is the process of managing information, physical goods, and services to ensure their availability at the right place, at the right time, at the right cost, at the right quantity, and with the highest attention to quality.
- a. Offshoring
 - b. Value proposition
 - c. Operational structure
 - d. Value chain integration

ANS: D

23. _____ refers to acquiring capabilities in the value (supply) chain toward distributions or even customers.
- a. Backward integration

- b. Outsourcing
- c. Offshoring
- d. Forward integration

ANS: D

24. _____ refers to the process of acquiring and consolidating elements of a value chain to achieve more control.

a.	Vertical integration
b.	Horizontal integration
c.	Outsourcing
d.	Offshoring

ANS: A

25. The first, second, and third waves of outsourcing experienced by the United States involve _____ respectively.

- a. goods-producing jobs, simple service work, and skilled knowledge work
- b. simple service work, goods-producing jobs, and skilled knowledge work
- c. simple service work, skilled knowledge work, and goods-producing jobs
- d. skilled knowledge work, simple service work, and goods-producing jobs

ANS:A

26. _____ refers to acquiring capabilities toward suppliers.

- a. Advancing integration
- b. Horizontal integration
- c. Forward integration
- d. Backward integration

ANS:D

27. _____ is the process of having suppliers provide goods and services that were previously provided internally.

a.	Outsourcing
b.	Horizontal integration
c.	Reshoring
d.	Vertical integration

ANS: A

28. The United States has experienced three waves of outsourcing. Which of the following is NOT one of the waves?

a.	Skilled knowledge work
b.	Mass customization
c.	Simple service work

d.	Goods-producing jobs
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ANS: B

29. Which of the following costs is NOT considered a variable cost?

a.	Labor cost
b.	Transportation cost
c.	Administrative cost
d.	Material cost

ANS: C

30. When break-even analysis is applied to an outsourcing decision, the break-even quantity is _____.

- a. the ratio of fixed costs to the difference between variable outsourcing cost and variable in-house production cost
- b. the ratio of the difference between variable outsourcing cost and variable in-house production cost to fixed costs
- c. the product of the variable costs and the fixed costs
- d. the product of the variable costs and the production quantity

ANS: A

31. According to the input-output perspective, a value chain begins with _____.

a.	feedback
b.	processes
c.	inputs
d.	suppliers

ANS: D

32. Outsourcing is _____.

a.	the same as offshoring
b.	the opposite of vertical integration
c.	the opposite of backward integration
d.	the same as diversifying

ANS: B

33. A hospital is evaluating whether to outsource or perform in-house a large set of blood and urine laboratory tests. The fixed cost of the laboratory located in the hospital is \$800,000, and the weighted average variable cost per test if performed in-house is \$28.75. A third-party lab located one city block from the hospital will perform the same tests and distribute the results electronically to the hospital at a price of \$32.00. If the annual volume last year was 250,000 tests, the hospital should:

- a. outsource these lab tests to this third-party lab.

- b. offshore these lab tests to this third-party lab.
- c. perform these lab tests in-house at the hospital.
- d. reduce fixed costs \$200,000 and then outsource.

ANS: C

34. Pre-planning, response, and recovery from natural or anthropogenic disasters is called _____.

a.	reshoring
b.	offshoring
c.	emergency management
d.	vertical integration

ANS: C

35. Which of the following constitutes a postproduction service in a value chain?

- a. Customized and team-oriented product design
- b. Recycling and remanufacturing initiatives
- c. Product and service guarantees
- d. Purchasing and supplier services

ANS: B

36. Which of the following terms is NOT used to describe sustainability?

- a. Green operations
- b. Green manufacturing
- c. Green practices
- d. Green integration

ANS: D

True/False Questions

1. A value chain describes the flow of customer information through a production system.

ANS: F

2. A supply chain is more inclusive than a value chain.

ANS: F

3. A value chain views an organization from an integrative perspective of goods and services, while a supply chain focuses mainly on the physical movement of goods and materials.

ANS: T

4. While cultural differences are important in managing operations in different countries, they

have little impact in designing the overall value chain.

ANS: F

5. Proportional increases or decreases in perceived benefits as well as price or cost result in no net change in value.

ANS: T

6. One approach to increasing value is to maintain perceived benefits while increasing price or cost.

ANS: F

7. The success of the entire value chain depends on how it is designed and managed.

ANS: T

8. The focus on value has forced many traditional goods-producing companies to reduce services to their customer benefits packages.

ANS: F

9. Global purchasing can be a difficult process to manage when sources of supply, regional economies, and even governments remain constant over time.

ANS: F

10. The decision to purchase a good or service or a customer benefit package is based on an assessment by a customer of the perceived benefits in relation to its price.

ANS: T

11. A value chain can be considered a "cradle-to-grave" input-output model of the operations function.

ANS: T

12. A value chain begins with the goods and services that are provided to customers.

ANS: F

13. Preproduction services might include warranty and claim services.

ANS: F

14. Postproduction services might include customer financing, customer benefit package design, and promotion/advertising.

ANS: F

15. The focus of preproduction services is on gaining a customer while that of postproduction services is on keeping the customer.

ANS: T

16. Support processes are the ones that directly create and deliver goods and services.

ANS: F

17. A vertical integration strategy generally reduces the complexity of managing a value chain.

ANS: F

18. An organization that outsources still retains ownership of an outsourced process or function.

ANS: F

19. Vertical integration is a modern method of outsourcing.

ANS: F

20. Outsourcing is the opposite of vertical integration.

ANS: T

21. Decentralizing value chain activities lessens the control that a firm has over cost, quality, and other important business metrics, and often leads to higher levels of risk.

ANS: T

22. Forward integration might include acquiring a customer.

ANS: T

23. Backward integration refers to acquiring capabilities toward distribution.

ANS: F

24. In break-even analysis, whenever the anticipated volume is greater than the break-even quantity, the firm should not outsource.

ANS: T

25. Value chain integration for goods-producing firms requires consolidating information systems among suppliers, factories, distributors, and customers; managing the supply chain and

scheduling factories; and studying new ways to use technology.

ANS: T

26. Third-party “system integrators” are often used for vertical integration strategies.

ANS: F

27. Offshoring is the process of moving operations back to a company's domestic location.

ANS: F

28. Offshoring is the same as outsourcing in terms of transferring ownership and control.

ANS: F

29. The decision to offshore or outsource involves a variety of economic and noneconomic issues.

ANS: T

30. General Electric would be considered a multinational enterprise because it sources, markets, and produces its goods in several countries.

ANS: T

31. Global value chains face higher levels of risk and uncertainty, requiring more inventory and day-to-day monitoring to prevent product shortages.

ANS: T

32. Sustainable practices can lead to increased revenues.

ANS: T

Case Study Questions (To reward students who attend class, listen and learn, and take good class notes on the case discussion and/or student team presentation.)

1. Which one of the following statements regarding the Bookmaster case study is TRUE?
 - a. Advantages of the bricks-and-mortar value chain include more customization, more product variety, and using more customer labor (self-service).
 - b. Operations play no role in the Internet-based value chain.
 - c. The nature of the service encounter did not change between the bricks-and-mortar versus Internet-based value chain.
 - d. The case is an example of where physical assets are replaced by information.

ANS: D

2. Which one of the following statements is TRUE regarding the Bookmaster case study?
- One advantage of the virtual (web-based) value chain is mass customization using self-service (i.e., customer labor).
 - One advantage of the bricks-and-mortar value chain is more customer convenience and scope of greater product selection.
 - One advantage of the virtual (web-based) value chain is more management control.
 - One advantage of the bricks-and-mortar value chain is less of a carbon footprint.

ANS: A

3. Which of the following lessons from the Bookmaster case study is FALSE?
- Total customer processing time increases in the traditional bricks-and-mortar book value chain compared to an e-book value chain.
 - An advantage of the internet-based e-book value chain is convenience.
 - The nature of service encounters changed from the traditional bricks-and-mortar book value chain to an e-book value chain.
 - The carbon footprint for the total traditional bricks and mortar book value chain is less than for an e-book value chain.

ANS: D

Problems for Manual Grading, Take-Home Exams and Partial Credit (Also, review the OM Instructor’s Manual for end-of-chapter questions/problems)

1. Define value and discuss three ways for organizations to increase value.

ANS:

Value is the perception of the benefits associated with a good, service, or bundle of goods and services in relation to what buyers are willing to pay for them.

One of the simplest functional forms of value is:

Value = Perceived benefits/Price (cost) to the customer.

To increase value, an organization must:

1.	increase perceived benefits while holding price or cost constant;
2.	increase perceived benefits while reducing price or cost; or
3.	decrease price or cost while holding perceived benefits constant.

2. Explain a value proposition. Relate this to a customer benefits package of goods and services.

ANS:

A competitively dominant customer experience is often called a value proposition. The economist Adam Smith, in his 1776 book *The Wealth of Nations*, recognized that economic exchange is based on the production of goods that acquire value during design and manufacturing processes. However, he also noted that “real value” is represented by “value in-

use”; that is, a good such as a cell phone provides value only when used, and thus reflects the importance of services in a value proposition. The focus on value has forced many traditional goods-producing companies to add services and, increasingly, digital content to their customer benefit packages.

3. Differentiate a supply chain from a value chain.

ANS:

A supply chain is the portion of the value chain that focuses primarily on the physical movement of goods and materials and the supporting flows of information and financial transactions through the supply, production, and distribution processes. A value chain is broader in scope than a supply chain and is easier to apply to service-providing organizations as well as to goods-producing firms. A value chain is a network of facilities and processes that describes the flow of materials, finished goods, services, information, and financial transactions from suppliers, through the facilities and processes that create goods and services, and those that deliver them to customers. Value chains involve all major functions in an organization. This includes not only operations but also purchasing, marketing and sales, human resource management, finance and accounting, information systems and technology, distribution, and service and support.

4. Explain the input-output perspective of a value chain.

ANS:

According to the input-output perspective, a value chain can be depicted as a “cradle-to-grave” input-output model of the operations function. A value chain begins with suppliers who provide inputs to a goods-producing or service-providing process or network of processes. The inputs provided by suppliers might be physical goods or information. Inputs are transformed into value-added goods and services through processes that are supported by such resources as equipment and facilities, labor, money, and information. Value chain processes include core processes, support processes, and general management processes. Finally, the value chain outputs—goods and services—are delivered or provided to customers and targeted market segments. The success of the entire value chain depends on how it is designed and managed. This includes measuring performance and using the feedback from measurements to improve all aspects of the value chain.

5. What are the major decisions organizations must address in designing and configuring their value chains?

ANS:

Organizations face numerous decisions in designing and configuring their value chains. These decisions must include the number, type, and location of manufacturing plants, distribution centers, retail stores, repair facilities, and customer service or technical support centers; the choice of technology and processes to make goods and deliver services; ways of managing information flow throughout the value chain; the selection of suppliers and partners; and the integration of all the pieces into an effective and efficient system.

6. Contrast outsourcing with vertical integration. Also, contrast backward integration with forward integration.

ANS:

Outsourcing is the process of having suppliers provide goods and services that were previously provided internally. Vertical integration refers to the process of acquiring and consolidating elements of a value chain to achieve more control.

Backward integration refers to acquiring capabilities toward suppliers, whereas forward integration refers to acquiring capabilities toward distribution or even customers.

7. Explain the notion of value chain integration.

ANS:

Value chain integration is the process of managing information, physical goods, and services to ensure their availability at the right place, at the right time, at the right cost, at the right quantity, and with the highest attention to quality. Value chain integration includes improving internal processes for the client as well as external processes that tie together suppliers, manufacturers, distributors, and customers. For goods-producing firms it requires consolidating information systems among suppliers, factories, distributors, and customers; managing the supply chain and scheduling factories; and studying new ways to use technology.

8. A company has two alternatives for meeting a customer requirement for 5,000 units of a specialty molding. If done in-house, fixed cost would be \$350,000 and variable cost is \$20 per unit. Alternative two is to outsource for a total cost of \$40 per unit. Determine the break-even quantity and determine if they should make the item in-house or outsource it.

ANS:

$$VC_1 = \$20$$

$$VC_2 = \$40$$

$$FC = \$350,000$$

$$\text{Break-even point} = Q^* = \$350,000 / (\$40 - \$20) = 17,500 \text{ units.}$$

Since the anticipated volume is 5,000 units and is lesser than the break-even quantity, the firm should not produce it in-house and should outsource to meet customer requirements.

9. Two alternatives are being considered for a customer's order whose anticipated volume is not yet known. If the firm produces in-house, the fixed cost is \$340,000 and variable cost is \$2.90 per unit. If the firm chooses to outsource, it will incur a fixed cost of \$275,000 and variable cost of \$3.50 per unit. Determine the break-even quantity and a decision rule of when to outsource.

ANS:

(This problem requires the student to view the break-even quantity model for outsourcing in a more general fashion and apply some basic logic to develop the correct analysis.)

The total cost of in-house production is $2.9Q + 340000$

The total cost of outsourcing is $3.5Q + 275000$

Setting these equal to each other, we have:

$$2.9Q + 340000 = 3.5Q + 275000$$

$$65000 = 0.6Q$$

Q = 108,333 units

If the volume is less than 108,333 units, the firm should outsource; if the volume is larger than this, it should produce the order in-house.

10. A manufacturing company needs to know whether to make in-house or buy an injection molding machine for its new fax machine production. The company expects to produce 9,000 units per year. The following estimates have been made:

	<u>Make</u>	<u>Buy</u>
Fixed cost per year	\$9,000	\$0
Variable cost per part	\$6.45	\$7.20

a.	What is the annual cost to make an injection molding machine?
b.	What is the annual cost to buy an injection molding machine?
c.	At what volume are they indifferent regarding the decision to make or buy?

ANS:

a.	Cost to make: $\$9,000 + \$6.45(9,000) = \$67,050$
b.	Cost to buy: $\$7.20(9,000) = \$64,800$ Buy an injection molding machine since it has lower cost.
c.	$\$9000 + \$6.45X = \$7.20X \Rightarrow X = 12,000$ units

11. A U.S. motorcycle manufacturer has the option of either making the tires in their newly designed motorcycle, or subcontracting it out to a manufacturer from Singapore. Costs for the two options are:

<u>Source</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
Make in-house	\$15,000	\$21.50
Buy from Singapore	\$0	\$29.00

a.	Which option would be preferred at an annual volume of 3,000 tires?
b.	Which option would be preferred at an annual volume of 5,000 tires?
c.	For what range of production volume would it be better to make the tires in-house?

ANS:

a.	Make:	$TC = \$15,000 + \$21.50(3000) = \$79,500$
	Buy:	$TC = \$0 + \$29.00(3000) = \$87,000$
	Making in-house is more economical by \$7,500.	
b.	Make:	$TC = \$15,000 + \$21.50(5000) = \$122,500$

Buy:	$TC = \$0 + \$29.00(5000) = \$145,000$
Making in-house is more economical by \$22,500.	
c.	$\$29X = \$15,000 + \$21.50X \Rightarrow 7.50X = 15,000 \Rightarrow X = 2000$ tires

12. A large hotel and casino in Las Vegas is currently under construction. There will be an Italian restaurant in the hotel that will serve pizza. Management is trying to decide whether to make the pizza themselves or buy it frozen and simply heat it to customer order. There are two major sources of commercial-grade frozen pizza: Ma Ma's Products and the Chun-Yee Corporation. If they make the pizza themselves, a substantial amount of preparation equipment will be required, along with skilled personnel. Frozen pizza needs either a conventional oven (Ma Ma's) or a microwave (Chun-Yee). Financial data is as shown below (variable costs are estimated based on an average pizza purchase):

Source	Fixed Cost/year	Variable Cost
Make in-house	\$7,870	\$3.20
Ma Ma's	\$ 860	\$5.60
Chun-Yee	\$2,460	\$4.50

a.	At what volume is either Ma Ma's or Chun-Yee acceptable?
b.	At what volume is the company indifferent to either Chun-Yee or make in-house?

ANS:

a.	Ma Ma's—Chun-Yee: $\$860 + \$5.60X = \$2460 + \$4.50X \Rightarrow 1.10X = 1600 \Rightarrow X = 1455$ pizzas
b.	Chun-Yee—Make in-house: $\$2460 + \$4.50X = \$7870 + \$3.20X \Rightarrow 1.30X = 5410 \Rightarrow X = 4162$ pizzas

13. John Morton, director of materials management for Computer Products Corporation (CPC) in San Jose, is reviewing next year's plans for the supply of a component that is purchased from Osiega Ltd., a company in Japan. The component is the PS100 power supply assembly that is used in many of CPC's products.

CPC pays the supplier more than \$7 million per year for these units, and John wonders if money could be saved by developing another supplier for this component or if CPC should gear up to manufacture the power supply assemblies in-house within one of CPC's own production plants.

John's purchasing-analysis staff has developed the following estimates:

Supply Source for PS100	Description of Cost	Annual Fixed Cost	Variable Cost per Unit
Osiega Ltd.	Annual tooling	\$50,000	
	Inspection and rework		\$0.16
	Shipping		\$0.95

	Purchase price		\$11.88
Atlanta Spier	Annual tooling	\$95,000	
	Inspection and rework		\$1.05
	Shipping		\$0.15
	Purchase price		\$10.59
In-house	Annual tooling	\$70,000	
	Inspection and rework		\$0.55
	Shipping		\$0.25
	Production costs	\$ 5,000	\$11.50

The purchasing-analysis group has learned that CPC will need about 550,000 of the PS100 units next year.

a.	Which supply source provides the least cost for next year?
b.	How many PS100 units would have to be bought next year for each of the sources to be the least-cost source?

ANS:

a.	TC = FC + (VC)Q	
	$TC_{OL} = 50,000 + 12.99(550,000)$	= \$7,194,500
	$TC_{AS} = 95,000 + 11.79(550,000)$	= \$6,579,500 (least cost)
	$TC_{CPC} = 75,000 + 12.30(550,000)$	= \$6,840,000
	Atlanta Spier is the least-cost choice for next year.	
b.	Determine the break-even points between the sources.	
	<u>CPC vs. Osiega Ltd:</u>	
	$TC_{CPC} = TC_{OL}$	
	$75,000 + 12.30(Q) = 50,000 + 12.99(Q)$	
	$0.69(Q) = 25,000$	
	$Q = 36,231.9$ units	
	<u>CPC vs. Atlanta Spier:</u>	
	$TC_{CPC} = TC_{AS}$	
	$75,000 + 12.30(Q) = 95,000 + 11.79(Q)$	
	$0.51(Q) = 20,000$	
	$Q = 39,215.7$ units	
	If the annual volume is between 1 and 36,231.9 units, Osiega Ltd. would be preferred. If annual volume is between 36,231.9 and 39,215.7 units, CPC (in-house) would be preferred.	
	If annual volume is more than 39,215.7 units, Atlanta Spier would be preferred. Obviously, with an estimated annual demand of 550,000 units, Atlanta Spier is the preferred source.	

14. Define multinational enterprises. What challenges do they pose to operations managers?

ANS:

A multinational enterprise is an organization that sources, markets and produces its goods and services in several countries to minimize costs and to maximize profit, customer satisfaction, and social welfare. Some issues that operations managers must confront in a global business environment include (1) how to design a value chain to meet the slower growth of industrialized countries and more rapid growth of emerging economies; (2) where to locate manufacturing and distribution facilities around the globe to capitalize on value chain efficiencies and improve customer value; (3) what performance metrics to use in making critical value chain decisions; and (4) how to decide if partnerships should be developed with competitors to share engineering, manufacturing, or distribution technology knowledge.

15. List the variety of economic and noneconomic issues to be considered when making offshore decisions.

ANS:

Economic issues include—low labor costs, lower import duties and fees, lower capital costs, growing global market share, avoiding national currency fluctuations, preempting competitors from entering global market, hiring worldwide skills and knowledge workers, building robust value chain networks for global markets, and building relationships with government officials.

Noneconomic issues include—developing secure sources of supply and reducing risks, building relationships with suppliers, avoiding environmental regulations and laws, possible political instability in offshore country, lack of communication and/or technical skills, and learning foreign markets and cultures.

16. Discuss six issues that make global value chains more difficult to manage than small domestic value chains.

ANS:

Complex global value chains are more difficult to manage than small domestic value chains. Some of the many issues include the following:

•	Global value chains face higher levels of risk and uncertainty, requiring more inventory and day-to-day monitoring to prevent product shortages.
•	Transportation is more complex in global value chains.
•	The transportation infrastructure may vary considerably in foreign countries.
•	Global purchasing can be a difficult process to manage when sources of supply, regional economies, and even governments change.
•	International purchasing can lead to disputes and legal challenges relating to such things as price fixing, nongreen practices, and quality defects.
•	Privatizing companies and property is another form of major changes in global trade and regulatory issues.