

***Supply Chain Management, 6e (Chopra/Meindl)***

**Chapter 4 Designing Distribution Networks and Applications to e-Business**

**4.1 True/False Questions**

1) Distribution occurs between every pair of stages in the supply chain.

Answer: TRUE

Diff: 2

Topic: 4.1 The Role of Distribution in the Supply Chain

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

2) Companies in the same industry often select very different distribution networks, because the choice of the distribution network can be used to achieve a variety of supply chain objectives ranging from low cost to high responsiveness.

Answer: TRUE

Diff: 2

Topic: 4.1 The Role of Distribution in the Supply Chain

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

3) A customer does not necessarily want the highest level of performance along all dimensions of customer service, including response time, product variety, product availability, customer experience, order visibility, and returnability.

Answer: TRUE

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

4) Outbound transportation costs per unit tend to be lower than inbound costs, because inbound lot sizes are typically larger.

Answer: FALSE

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

5) Transportation costs are high with drop-shipping because the average outbound distance to the end consumer is large and package carriers are used to shipping the product.

Answer: TRUE

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

6) As long as inbound transportation economies of scale are maintained, increasing the number of facilities decreases total transportation cost.

Answer: TRUE

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

7) Customers always want the highest level of performance along all the dimensions response time, product variety and returnability.

Answer: FALSE

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

8) A decrease in the response time customers desire increases the number of facilities required in the network.

Answer: TRUE

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Analytical thinking

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

9) The main advantage of in-transit merge over drop-shipping is the somewhat lower transportation cost and improved customer experience.

Answer: TRUE

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

10) The main advantage of a distribution network with local storage is that it can lower the delivery cost and provide a faster response than other networks.

Answer: TRUE

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

11) The major disadvantage of a distribution network with local storage is the increased inventory and facility costs.

Answer: TRUE

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

12) A distribution network designer needs to consider product characteristics as well as network requirements when deciding on the appropriate delivery network.

Answer: TRUE

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

13) Only niche companies will end up using a single distribution network.

Answer: TRUE

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

14) Distributors add value to a supply chain between a supply stage and a customer stage if there are many small players at the customer stage, each requiring a small amount of the product at a time.

Answer: TRUE

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

15) For physical products, i.e., products that cannot be downloaded, customer requests take longer to fulfill through online sales than in a retail store setting.

Answer: TRUE

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

16) It is much easier to return a product to an online retailer than to a traditional bricks and mortar seller.

Answer: FALSE

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

17) Compared to a business with many retail outlets, an online seller with aggregated inventories tends to have lower per unit transportation costs across the entire supply chain.

Answer: FALSE

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

18) It is more common for a manufacturer to not own the distribution network.

Answer: TRUE

Diff: 2

Topic: 4.5 Distribution Networks in Practice

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

19) Consumers prefer purchasing commoditized products at a one-stop shop.

Answer: TRUE

Diff: 2

Topic: 4.5 Distribution Networks in Practice

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

20) To extract the maximum benefit from the online channel for physical goods, firms should keep it separate from their existing supply chain networks.

Answer: FALSE

Diff: 2

Topic: 4.5 Distribution Networks in Practice

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

## 4.2 Multiple Choice Questions

1) The steps taken to move and store a product from the supplier stage to a customer stage in the supply chain are referred to as

A) transportation.

B) retailing.

C) wholesaling.

D) distribution.

Answer: D

Diff: 1

Topic: 4.1 The Role of Distribution in the Supply Chain

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

2) Where does distribution occur in the supply chain?

A) Between every pair of stages

B) Everywhere downstream from production

C) Between production and the retailer

D) Between suppliers and retailers

Answer: A

Diff: 2

Topic: 4.1 The Role of Distribution in the Supply Chain

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

3) Distribution is a key driver of the overall profitability of a firm because

A) the addition of distributors only adds cost to the supply chain.

B) it directly impacts both the supply chain cost and the customer experience.

C) it slows down the responsiveness of the supply chain.

D) it cannot be developed as a part of supply chain strategy.

Answer: B

Diff: 2

Topic: 4.1 The Role of Distribution in the Supply Chain

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

- 4) Companies in the same industry often select very different distribution networks because
- A) some companies are poorly run.
  - B) different companies try to avoid using the same approach.
  - C) different companies have different objectives for their supply chain.
  - D) all of the above

Answer: C

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

- 5) Which of the following would not be the result of a poor/inappropriate distribution network?
- A) High profitability
  - B) Low level of customer service
  - C) High cost
  - D) Poor profitability

Answer: A

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

- 6) The number of different products/configurations that a customer desires from the distribution network is
- A) response time.
  - B) product variety.
  - C) product availability.
  - D) customer experience.

Answer: B

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

7) The probability of having a product in stock when a customer order arrives is

- A) response time.
- B) product variety.
- C) product availability.
- D) customer experience.

Answer: C

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

8) The ease with which the customer can place and receive their order as well as other aspects of value that the sales staff provides is

- A) customer experience.
- B) order visibility.
- C) product availability.
- D) response time.

Answer: A

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

9) The ability of the customer to track their order from placement to delivery is

- A) customer experience.
- B) order visibility.
- C) product availability.
- D) response time.

Answer: B

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

10) The costs incurred in bringing material into a facility are

- A) sourcing transportation costs.
- B) outbound transportation costs.
- C) crossbound transportation costs.
- D) inbound transportation costs.

Answer: D

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

11) The costs incurred in sending material out of a facility are

- A) sourcing transportation costs.
- B) outbound transportation costs.
- C) crossbound transportation costs.
- D) inbound transportation costs.

Answer: B

Diff: 1

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

12) Outbound transportation costs per unit tend to be

- A) about the same as inbound costs.
- B) higher than inbound costs.
- C) lower than inbound costs.
- D) neither higher or lower than inbound costs.

Answer: B

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

13) As the number of facilities in a supply chain increases

- A) the inventory and resulting inventory costs also increase.
- B) the inventory and resulting inventory costs decrease.
- C) the inventory increases and resulting inventory costs decrease.
- D) the inventory decreases and resulting inventory costs increase.

Answer: A

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.



14) As the response time desired by the customer decreases, the required number of facilities in the distribution network

- A) decreases.
- B) remains the same.
- C) increases.
- D) increases and then decreases.

Answer: C

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Analytical thinking

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

15) As the number of facilities in a supply chain increases, total facility costs

- A) decrease.
- B) increase.
- C) increase to a point and then decrease.
- D) decrease to a point and then increase.

Answer: B

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Analytical thinking

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

16) Total logistics costs for a supply chain network are a sum of

- A) inventory and facility costs.
- B) inventory, facility, and distributor costs.
- C) facility, transportation, and distributor costs.
- D) inventory, transportation, and facility costs.

Answer: D

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Analytical thinking

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

17) In which distribution network design is product shipped directly from the manufacturer to the end customer, bypassing the retailer (who takes the order and initiates the delivery request)?

- A) Manufacturer storage with direct shipping
- B) Manufacturer storage with direct shipping and in-transit merge
- C) Distributor storage with package carrier delivery
- D) Distributor storage with last mile delivery

Answer: A

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

18) Which distribution network is also referred to as drop-shipping with product delivered directly from the manufacturer to the customer location?

- A) Manufacturer storage with direct shipping
- B) Manufacturer storage with direct shipping and in-transit merge
- C) Distributor storage with package carrier delivery
- D) Distributor storage with last mile delivery

Answer: A

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

19) Which of the following is an advantage of manufacturer storage with direct shipping?

- A) Transportation costs are low because the average outbound distance to the end consumer is small and package carriers are used to shipping the product.
- B) Supply chains save on the fixed cost of facilities, because the need for other warehousing space in the supply chain has been eliminated.
- C) Response times tend to be small because the order has to be transmitted from the retailer to the manufacturer.
- D) Order tracking is easy to implement because of the complete integration of information systems at both the retailer and the manufacturer.

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

20) Which of the following would be a disadvantage of manufacturer storage with direct shipping?

- A) The ability to reduce cost of inventory by centralizing inventories at the manufacturer.
- B) The manufacturer has to postpone customization until after the customer order has been placed.
- C) Supply chains have to eliminate other warehousing space to save on the fixed cost of facilities.
- D) Response times tend to be large because the order has to be transmitted from the retailer to the manufacturer and shipping distances are on average longer from the manufacturer's centralized site.

Answer: D

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

21) Which distribution network design is similar to pure drop-shipping, except that pieces of the order coming from different locations are combined so that the customer gets a single delivery?

- A) Manufacturer storage with direct shipping
- B) Manufacturer storage with direct shipping and in-transit merge
- C) Distributor storage with package carrier delivery
- D) Distributor storage with manufacturer pickup

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

22) The main advantage of in-transit merge over drop-shipping is

- A) the ability to reduce cost of inventory by centralizing inventories at the manufacturer.
- B) supply chains save on the fixed cost of facilities, because the need for other warehousing space in the supply chain has been eliminated.
- C) somewhat lower transportation cost and improved customer experience.
- D) order tracking is easy to implement because of the complete integration of information systems at both the retailer and the manufacturer.

Answer: C

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

- 23) The major disadvantage of in-transit merge compared to drop-shipping is
- A) transportation costs are high because the average outbound distance to the end consumer is large and package carriers are used to shipping the product.
  - B) response times tend to be large because the order has to be transmitted from the retailer to the manufacturer and shipping distances are on average longer from the manufacturer's centralized site.
  - C) order tracking becomes harder to implement because it requires complete integration of information systems at both the retailer and the manufacturer.
  - D) the additional effort during the merge itself.

Answer: D

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

- 24) Which distribution network design is being used when inventory is not held by manufacturers at the factories, but is held by distributors/retailers in intermediate warehouses and package carriers are used to transport products from the intermediate location to the final customer?

- A) Manufacturer storage with direct shipping
- B) Manufacturer storage with direct shipping and in-transit merge
- C) Distributor storage with package carrier delivery
- D) Distributor storage with manufacturer pickup

Answer: C

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

- 25) Which of the following is an advantage of distributor storage with carrier delivery?
- A) Inventory cost is higher than with manufacturer storage.
  - B) Product variety is lower than with manufacturer storage.
  - C) Order visibility for the customer is easier than with manufacturer storage.
  - D) Higher cost to provide the same level of product availability as manufacturer storage.

Answer: C

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

26) Which of the following is a disadvantage of distributor storage with carrier delivery?

- A) Information infrastructure is simpler than manufacturer storage.
- B) Response time is faster than with manufacturer storage.
- C) Returnability is easier than with manufacturer storage.
- D) Product variety is lower than with manufacturer storage.

Answer: D

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

27) Which distribution network design is being used when the distributor/retailer delivers the product to the customer's home instead of using a package carrier?

- A) Manufacturer storage with direct shipping
- B) Manufacturer/distributor storage with customer pickup
- C) Distributor storage with package carrier delivery
- D) Distributor storage with last mile delivery

Answer: D

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

28) Which of the following is an advantage of distributor storage with last mile delivery?

- A) It is more expensive to provide product availability than any other option except retail stores.
- B) Inventory cost is higher than distributor storage with package carrier delivery.
- C) Response time is very quick ranging from same day to next day delivery.
- D) Transportation cost is higher than any other distribution option.

Answer: C

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

29) Which of the following is a disadvantage of distributor storage with last mile delivery?

- A) Transportation cost is higher than any other distribution option.
- B) Information cost is similar to distributor storage with package carrier delivery.
- C) Customer experience is very good, particularly for bulky items.
- D) Returnability is easier to implement than other options.

Answer: A

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

30) Which distribution network design is being used when inventory is stored at the manufacturer or distributor warehouse but customers place their orders online or on the phone and then come to designated pickup points to collect their orders?

- A) Manufacturer storage with direct shipping
- B) Manufacturer/distributor storage with customer pickup
- C) Distributor storage with package carrier delivery
- D) Distributor storage with last mile delivery

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

31) Which of the following is an advantage of manufacturer/distributor storage with customer pickup?

- A) Facility costs can be very high if new facilities have to be built.
- B) Transportation cost is lower than the use of package carriers, especially if using an existing delivery network.
- C) Order visibility is difficult but essential.
- D) Product variety is similar to other manufacturer or distributor storage options.

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

32) Which of the following is a disadvantage of manufacturer/distributor storage with customer pickup?

- A) Customer experience is lower than other options because of the lack of home delivery.
- B) Response time is similar to package carrier delivery with manufacturer or distributor storage.
- C) Returnability is somewhat easier given that pickup location can handle returns.
- D) Product availability is similar to other manufacturer or distributor storage options.

Answer: A

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

33) Which distribution network design is being used when inventory is stored locally at retail stores and customers walk into the retail store or place an order online or on the phone and pick it up at the retail store?

- A) Manufacturer storage with direct shipping
- B) Distributor storage with package carrier delivery
- C) Distributor storage with last mile delivery
- D) Retail storage with customer pickup

Answer: D

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

34) Which of the following is an advantage of retail storage with customer pickup?

- A) Inventory cost is higher than all other options.
- B) Transportation cost is lower than all other options.
- C) Facilities and handling costs are higher than other options.
- D) Product variety is lower than all other options.

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

35) Which of the following is a disadvantage of retail storage with customer pickup?

- A) Returnability is easier than other options given that pickup location can handle returns.
- B) Inventory cost is higher than all other options.
- C) Transportation cost is lower than all other options.
- D) Facilities and handling costs are lower than other options.

Answer: B

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

36) Distributors add value to a supply chain between a supply stage and a customer stage

- A) if there is a small number of customers requiring a large amount of product.
- B) if there is a large number of customers requiring a large amount of product.
- C) if there are many small players at the customer stage, each requiring a small amount of the product at a time.
- D) if there are a few large players at the customer stage, each requiring a large amount of the product at a time.

Answer: C

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Analytical thinking

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

37) Improvement in supply chain performance at the result of distributors occurs for which of the following reasons?

- A) Reduction in transportation cost because of LTL shipments from manufacturers to distributor.
- B) Reduction in outbound transportation cost because the distributor combines products from many customers into a single outbound shipment.
- C) Reduction in inventory costs because distributor disaggregates safety inventory rather than aggregating at each retailer.
- D) A more stable order stream from distributor to manufacturer (compared to erratic orders from each retailer) allows manufacturers to lower cost by planning production more effectively.

Answer: D

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

38) \_\_\_\_\_ is a cost factor performance characteristic of Retail Storage at Consumer Pickup Sites that is higher than all other options.

- A) Transportation
- B) Inventory
- C) Information
- D) Facilities and Handling

Answer: B

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

39) \_\_\_\_\_ is a service factor performance characteristic of Retail Storage at Consumer Pickup Sites that is lower than all other options.

- A) Response time
- B) Product variety
- C) Product availability
- D) Time to market

Answer: B

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.



40) \_\_\_\_\_ is a service factor performance characteristic of Manufacturer or Distributor Storage with Customer Pickup that is lower than other options because of the lack of home delivery. Experience is very sensitive to capability of pickup location.

- A) Response time
- B) Product variety
- C) Customer experience
- D) Time to market

Answer: C

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

41) \_\_\_\_\_ is a cost factor performance characteristic of Manufacturer or Distributor Storage with Customer Pickup that is lower than the use of package carriers, especially if using an existing delivery network.

- A) Transportation
- B) Inventory
- C) Information
- D) Facilities and Handling

Answer: A

Diff: 1

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

42) In general, traditional brick and mortar retail sales outperform online sales along the dimension of

- A) product variety.
- B) request fulfillment.
- C) time to market for a new product.
- D) order status tracking.

Answer: B

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

43) In general, traditional brick and mortar retail sales outperform online sales along the dimension of

- A) product variety.
- B) efficient funds transfer.
- C) product returns.
- D) order status tracking.

Answer: C

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

44) In general, online sales outperform traditional brick and mortar retail sales along the dimension of

- A) order fulfillment.
- B) trying before you buy.
- C) product returns.
- D) order status tracking.

Answer: D

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

45) Online sales increase \_\_\_\_\_ when compared to the performance of traditional brick and mortar retail stores.

- A) outbound transportation costs
- B) the inventory holding cost
- C) the cost of building and maintaining facilities in a supply chain network
- D) overall supply chain costs

Answer: A

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

- 46) An online grocery store has a distinct advantage over a traditional model in the area of
- A) Processing costs
  - B) Transportation costs
  - C) Facility costs
  - D) Information costs

Answer: C

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

- 47) An online book store has a distinct disadvantage over a traditional model in the area of
- A) Product variety
  - B) Transportation
  - C) Product availability
  - D) Flexible pricing

Answer: B

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

- 48) Which of these costs was higher for Netflix than for their vanquished competitor, Blockbuster?

- A) Property
- B) Inventory
- C) Facility
- D) Transportation

Answer: D

Diff: 2

Topic: 4.4 Online Sales and the Distribution Network

AACSB: Application of knowledge

Objective: LO 4.3: Understand how online sales have affected the design of distribution networks in different industries.

49) Which of these statements about distribution networks is best?

- A) A manufacturer that owns their own distribution network cannot control the network's actions.
- B) Customers are willing to have a relationship built around high value, specialized products.
- C) Distribution networks that have identical physical flows but different ownership structures have identical performance.
- D) It is important to have static distribution networks.

Answer: B

Diff: 1

Topic: 4.5 Distribution Networks in Practice

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

50) In order to reap the greatest return from the online channel for physical goods, firms should

- A) maximize the return for each distinct supply chain member.
- B) minimize interactions between the buyer and the other supply chain members.
- C) integrate it with their existing supply chain networks.
- D) ensure that they have total ownership of the supply chain.

Answer: C

Diff: 2

Topic: 4.5 Distribution Networks in Practice

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

#### 4.3 Essay Questions

1) Explain the measures of customer service that are influenced by the structure of the distribution network.

Answer: Response time is the time between when a customer places an order and receives delivery.

Product variety is the number of different products/configurations that a customer desires from the distribution network.

Availability is the probability of having a product in stock when a customer order arrives. Customer experience includes the ease with which the customer can place and receive their order. It also includes purely experiential aspects, such as the possibility of getting a cup of coffee and the value that the sales staff provides.

Order visibility is the ability of the customer to track their order from placement to delivery. Returnability is the ease with which a customer can return unsatisfactory merchandise and the ability of the network to handle such returns.

Diff: 2

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

2) Explain how the design of the distribution network affects the cost of the four supply chain drivers.

Answer: As the number of facilities in a supply chain increases, the inventory and resulting inventory costs also increase. To decrease inventory costs, firms try to consolidate and limit the number of facilities in their supply chain network.

Outbound transportation costs per unit tend to be higher than inbound costs because inbound lot sizes are typically larger. Increasing the number of warehouse locations decreases the average outbound distance to a customer and makes outbound transportation distance a smaller fraction of total distance traveled by the product. Thus, as long as inbound transportation economies of scale are maintained, increasing the number of facilities decreases total transportation cost. Facility costs decrease as the number of facilities is reduced, because a consolidation of facilities allows a firm to exploit economies of scale. As the number of facilities increases, total logistics costs first decrease and then increase. Each firm should have at least the number of facilities that minimize total logistics costs.

As a firm wants to further reduce the response time to its customers, it may have to increase the number of facilities beyond the point that minimizes logistics costs. A firm should add facilities beyond the cost-minimizing point only if managers are confident that the increase in revenues because of better responsiveness is greater than the increase in costs because of the additional facilities. In general, no distribution network will outperform others along all dimensions. Thus, it is important to ensure that the strengths of the distribution network fit with the strategic position of the firm.

Diff: 3

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Application of knowledge

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.

3) Explain the six distinct distribution network designs that may be used to move products from factory to customer.

Answer: In manufacturer storage with direct shipping, product is shipped directly from the manufacturer to the end customer, bypassing the retailer (who takes the order and initiates the delivery request). This option is also referred to as drop-shipping with product delivered directly from the manufacturer to the customer location.

Manufacturer storage with direct shipping and in-transit merge is similar to pure drop-shipping, except that pieces of the order coming from different locations are combined so that the customer gets a single delivery.

Distributor storage with package carrier delivery is being used when inventory is not held by manufacturers at the factories, but is held by distributors/retailers in intermediate warehouses, and package carriers are used to transport products from the intermediate location to the final customer.

Distributor storage with last mile delivery is being used when the distributor/retailer delivers the product to the customer's home instead of using a package carrier.

Manufacturer/distributor storage with customer pickup is being used when inventory is stored at the manufacturer or distributor warehouse but customers place their orders online or on the phone and then come to designated pickup points to collect their orders.

Retail storage with customer pickup is being used when inventory is stored locally at retail stores and customers walk into the retail store or place an order online or on the phone and pick it up at the retail store.

Diff: 2

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

4) Explain how distributors add value to a supply chain and improve its performance.

Answer: Distributors add value to a supply chain between a supply stage and a customer stage if there are many small players at the customer stage, each requiring a small amount of the product at a time. The value added increases if distributors carry products from many manufacturers.

Improvement in supply chain performance occurs for the following reasons:

- Reduction in inbound transportation cost because of TL shipments from manufacturers to distributor.
- Reduction in outbound transportation cost because the distributor combines products from many manufacturers into a single outbound shipment.
- Reduction in inventory costs because distributor aggregates safety inventory rather than disaggregating at each retailer.
- A more stable order stream from distributor to manufacturer (compared to erratic orders from each retailer) allows manufacturers to lower cost by planning production more effectively.
- By carrying inventory closer to the point of sale, distributors are able to provide a better response time than manufacturers can.
- Distributors are able to offer one-stop shopping with products from several manufacturers.

Diff: 3

Topic: 4.3 Design Options for a Distribution Network

AACSB: Application of knowledge

Objective: LO 4.2: Discuss the strengths and weaknesses of various distribution options.

5) Total logistics costs are the sum of inventory, transportation, and facility costs for a supply chain network. What occurs as the number of facilities increases?

Answer: Total logistics costs first decrease and then increase as the number of facilities increases. Each firm should have *at least* the number of facilities that minimize total logistics costs. For example, Amazon has more than one warehouse primarily to reduce its logistics costs (and improve response time). If a firm wants to reduce the response time to its customers further, it may have to increase the number of facilities beyond the point that minimizes logistics costs. A firm should add facilities beyond the cost-minimizing point only if managers are confident that the increase in revenues because of better responsiveness is greater than the increase in costs because of the additional facilities.

Diff: 3

Topic: 4.2 Factors Influencing Distribution Network Design

AACSB: Analytical thinking

Objective: LO 4.1: Identify the key factors to be considered when designing a distribution network.