

Supply Chain Management, 6e (Chopra/Meindl)
Chapter 14 Transportation in a Supply Chain

14.1 True/False Questions

1) Transportation plays a key role in every supply chain because products are usually produced and consumed in the same location.

Answer: FALSE

Diff: 1

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

2) A distributor makes investment decisions regarding the transportation infrastructure and then makes operating decisions to try to maximize the return from these assets.

Answer: FALSE

Diff: 3

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

3) A carrier uses transportation to minimize the total cost (transportation, inventory, information, and facility) while providing an appropriate level of responsiveness to the customer.

Answer: FALSE

Diff: 3

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

4) Transportation is a significant component of the costs incurred by most supply chains.

Answer: TRUE

Diff: 1

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

5) The vehicle-related cost is incurred whether the vehicle is operating or not and is considered fixed for short-term operational decisions by the carrier.

Answer: TRUE

Diff: 2

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

6) A carrier's decisions are affected by the prices that the market will bear, but not the responsiveness it seeks to provide its target segment.

Answer: FALSE

Diff: 2

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

7) Transportation cost depends on the prices offered by different carriers and the extent to which the shipper uses inexpensive and slow, or expensive and fast, means of transportation.

Answer: TRUE

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

8) Rail is the dominant mode of freight transportation in the United States and accounts for over 75 percent of the nation's freight bill.

Answer: FALSE

Diff: 2

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

9) Quasi-market prices for transportation infrastructure result in higher prices at peak locations and times and lower prices otherwise.

Answer: TRUE

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

10) A *milk run* is a route in which a truck either delivers product from a single supplier to multiple retailers or goes from multiple suppliers to a single retailer.

Answer: TRUE

Diff: 1

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

11) Milk runs reduce outbound transportation costs by consolidating large shipments.

Answer: FALSE

Diff: 1

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

12) The most important operational decision related to transportation in a supply chain is the routing and scheduling of deliveries.

Answer: TRUE

Diff: 2

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

13) The mode of transportation that results in the lowest transportation cost will lower total costs for a supply chain.

Answer: FALSE

Diff: 2

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

14) Ignoring inventory costs when making transportation decisions can result in choices that worsen the performance of a supply chain.

Answer: TRUE

Diff: 2

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

15) A dabba uses the Mumbai railway system to carry about 40 lunches each day.

Answer: FALSE

Diff: 2

Topic: 14.5 Mumbai Dabbawalas: A Highly Responsive Distribution Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

16) Firms can significantly reduce the safety inventory they require by physically aggregating inventories in one location, which will also decrease transportation cost.

Answer: FALSE

Diff: 2

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

17) Temporal aggregation decreases a firm's responsiveness because of shipping delay but also decreases transportation costs because of economies of scale that result from larger shipments.

Answer: TRUE

Diff: 1

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

18) A firm can meet customer needs by using tailored transportation to provide the appropriate transportation choice based on customer and product characteristics, but at a higher cost.

Answer: FALSE

Diff: 2

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

19) Tailored transportation is the use of different transportation networks and modes based on customer and product characteristics.

Answer: TRUE

Diff: 1

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

20) The use of software to determine transportation routes has been the most common IT application in transportation.

Answer: TRUE

Diff: 1

Topic: 14.8 The Role of IT in Transportation

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

14.2 Multiple Choice Questions

1) The movement of product from one location to another as it makes its way from the beginning of a supply chain to the customer's hands is referred to as

- A) transportation.
- B) retailing.
- C) distribution.
- D) manufacturing.

Answer: A

Diff: 2

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

2) Transportation plays a key role in every supply chain because

- A) products are normally produced and consumed in the same location.
- B) products are rarely produced and consumed in the same location.
- C) the cost of transportation is inconsequential.
- D) transportation is not a factor in determining profitability.

Answer: B

Diff: 1

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

3) The key players in any transportation that takes place within a supply chain are

- A) the shipper and the receiver.
- B) the shipper and the supplier.
- C) the shipper and the manufacturer.
- D) the shipper and the carrier.

Answer: D

Diff: 2

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

4) Investment decisions regarding the transportation infrastructure (rails, locomotives, trucks, airplanes, etc.) are the primary concern of

- A) the shipper.
- B) the supplier.
- C) the manufacturer.
- D) the carrier.

Answer: D

Diff: 3

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

5) Which of the following uses transportation to minimize the total cost (transportation, inventory, information, and facility) while providing an appropriate level of responsiveness to the customer?

- A) The shipper
- B) The supplier
- C) The manufacturer
- D) The carrier

Answer: A

Diff: 2

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

6) The _____ is the party that requires the movement of the product between two points in the supply chain.

- A) carrier
- B) producer
- C) shipper
- D) consumer

Answer: C

Diff: 3

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

7) The _____ is the party that moves or transports the product.

- A) carrier
- B) producer
- C) shipper
- D) consumer

Answer: A

Diff: 1

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

8) Which of the following is the fastest delivery method of transportation?

- A) Rail
- B) Truck
- C) Air
- D) Intermodal

Answer: C

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

9) _____ carriers offer a very fast and fairly expensive mode of transportation for cargo.

- A) Air
- B) Truck
- C) Rail
- D) Water

Answer: A

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

10) _____ typically move commodities over large distances at lower costs per unit shipped.

- A) Air
- B) Truck
- C) Rail
- D) Package carriers

Answer: C

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

11) _____ are the preferred mode of transport for online businesses such as Amazon.com and Dell, as well as for companies such as W.W. Grainger and McMaster-Carr that send small packages to customers.

- A) Air
- B) Package carriers
- C) Rail
- D) Water

Answer: B

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

12) Which mode of transportation is the most expensive?

- A) Air
- B) Truck
- C) Rail
- D) Water

Answer: A

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

13) Which mode of transportation is the least expensive?

- A) Air
- B) Truck
- C) Rail
- D) Water

Answer: D

Diff: 2

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

14) Which mode of transportation is the dominant form of freight transportation?

- A) Air
- B) Truck
- C) Rail
- D) Water

Answer: B

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

15) Which mode of transportation is used primarily for petroleum and natural gas?

- A) Air
- B) Truck
- C) Water
- D) Pipeline

Answer: D

Diff: 1

Topic: 14.2 Modes of Transportation and Their Performance Characteristics

AACSB: Application of knowledge

Objective: LO 14.2: Evaluate the strengths and weaknesses of different modes of transportation.

16) In almost all countries, roads, seaports, airports, rail and canals have this in common.

- A) They were built and/or managed by the government.
- B) They are located near the water.
- C) They are the source of most of the tax revenue for municipalities.
- D) They are staffed by foreign nationals.

Answer: A

Diff: 1

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

17) Suppose that a highway is governed by a use fee charged to motorists that is based on congestion, operation and maintenance. The total traffic t is used to determine the cost of $5t^2$. What is the average cost per motorist?

- A) 2.5
- B) 5
- C) $5t$
- D) $2.5t$

Answer: C

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Analytical thinking

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

18) Suppose that a highway is governed by a use fee charged to motorists that is based on

congestion, operation and maintenance. The total traffic t is used to determine the cost of $5t^2$. What is the marginal cost?

- A) 5
- B) $5t$
- C) 10
- D) $10t$

Answer: D

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Analytical thinking

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

19) Suppose that a highway is governed by a use fee charged to motorists that is based on congestion, operation and maintenance. The total traffic t is used to determine the cost of $5t^2 + 7t$. What is the average cost per motorist?

- A) 12
- B) $5t + 7$
- C) 10
- D) $10t + 7$

Answer: B

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Analytical thinking

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

20) Suppose that a highway is governed by a use fee charged to motorists that is based on congestion, operation and maintenance. The total traffic t is used to determine the cost of $5t^2 + 7t$. What is the marginal cost?

- A) 12
- B) $5t + 7$
- C) 10
- D) $10t + 7$

Answer: D

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Analytical thinking

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

21) Which of these statements about use fees for a highway is best?

- A) A flat rate results in lower use by most individuals.
- B) A flat rate results in higher use by most individuals.
- C) A flat rate has no impact on use by most individuals.
- D) A fee based on congestion results in higher use by most individuals.

Answer: B

Diff: 1

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

22) When infrastructure is publicly owned, it is important to price usage to reflect

- A) the cost of rebuild the infrastructure once it is fully depreciated.
- B) the incremental profit from the use of the infrastructure.
- C) the marginal impact on the cost to society.
- D) the market clearing price.

Answer: C

Diff: 2

Topic: 14.3 Transportation Infrastructure and Policies

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

23) Which transportation network design option has the elimination of intermediate warehouses and its simplicity of operation and coordination as its major advantage?

- A) Direct shipping network
- B) Direct shipping with milk runs
- C) All shipments via central DC
- D) Shipping via DC using milk runs

Answer: A

Diff: 1

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

24) Which transportation network design option establishes an extra layer between suppliers and retailers to store inventory and to serve as a transfer location?

- A) Direct shipping network
- B) Direct shipping with milk runs
- C) All shipments via central DC
- D) Shipping via DC using milk runs

Answer: C

Diff: 2

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

25) Which transportation network design option uses a combination of other options to reduce the cost and improve responsiveness of the supply chain?

- A) Direct shipping network
- B) Direct shipping with milk runs
- C) Shipping via DC using milk runs
- D) Tailored network

Answer: D

Diff: 1

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

26) Cheaper modes of transport typically have

- A) shorter lead times and smaller minimum shipment quantities.
- B) shorter lead times and larger minimum shipment quantities.
- C) longer lead times and smaller minimum shipment quantities.
- D) longer lead times and larger minimum shipment quantities.

Answer: D

Diff: 1

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

27) The most important operational decision related to transportation in a supply chain is

- A) minimizing cost of transportation.
- B) maximizing profitability of the supply chain.
- C) reducing the level of cycle inventory.
- D) the routing and scheduling of deliveries.

Answer: D

Diff: 3

Topic: 14.4 Design Options for a Transportation Network

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

28) The Mumbai dabbawalas perform

- A) a forward logistics function.
- B) a reverse logistics function.
- C) both a forward and a reverse logistics function.
- D) neither a forward nor a reverse logistics function.

Answer: C

Diff: 3

Topic: 14.5 Mumbai Dabbawalas: A Highly Responsive Distribution Network

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

29) At a train station where lines intersect, the Mumbai dabbawalas perform

- A) a forward logistics function.
- B) a reverse logistics function.
- C) a milk run.
- D) a cross-dock function.

Answer: D

Diff: 2

Topic: 14.5 Mumbai Dabbawalas: A Highly Responsive Distribution Network

AACSB: Application of knowledge

Objective: LO 14.3: Discuss the role of infrastructure and policies in transportation.

30) The total amount paid to various carriers for transporting products to customers is

- A) transportation cost.
- B) inventory cost.
- C) facility cost.
- D) processing cost.

Answer: A

Diff: 1

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

31) The cost of holding inventory incurred by the shipper's supply chain network is

- A) transportation cost.
- B) inventory cost.
- C) facility cost.
- D) processing cost.

Answer: B

Diff: 1

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

32) The cost of various facilities in the shipper's supply chain network is

- A) transportation cost.
- B) inventory cost.
- C) facility cost.
- D) processing cost.

Answer: C

Diff: 1

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

33) The cost of loading/unloading orders, as well as other processing costs associated with transportation, is considered

- A) transportation cost.
- B) inventory cost.
- C) facility cost.
- D) processing cost.

Answer: D

Diff: 1

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

34) Temporal aggregation

- A) is the process of combining orders across time.
- B) increases a firm's responsiveness.
- C) decreases transportation costs because of economies of scale.
- D) all of the above

Answer: A

Diff: 2

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

35) Serving a high density of customers at a long distance is best done using

- A) an LTL carrier.
- B) a cross dock distribution center with milk runs.
- C) a package carrier.
- D) a private fleet with milk runs.

Answer: B

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

36) Serving a low density of customers at a long distance is best done using

- A) an LTL carrier.
- B) a cross dock distribution center with milk runs.
- C) a package carrier.
- D) a private fleet with milk runs.

Answer: C

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

37) Serving a high density of customers at a short distance is best done using

- A) an LTL carrier.
- B) a cross dock distribution center with milk runs.
- C) a package carrier.
- D) a private fleet with milk runs.

Answer: D

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

38) Serving a medium density of customers at a medium distance is best done using

- A) an LTL carrier.
- B) a cross dock distribution center with milk runs.
- C) a package carrier.
- D) a private fleet with milk runs.

Answer: A

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

39) Serving a medium density of customers at a short distance is best done using

- A) an LTL carrier.
- B) third party milk runs.
- C) a package carrier.
- D) a private fleet with milk runs.

Answer: B

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

40) It is best to disaggregate all inventories and use an inexpensive mode of transportation for replenishment when you have a

- A) high-value product and high demand.
- B) high-value product and low demand.
- C) low-value product and high demand.
- D) low-value product and low demand.

Answer: C

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

41) A shrewd supply chain manager would aggregate only safety inventory and use an inexpensive mode of transportation for replenishing cycle inventory if she is dealing with a

- A) high-value product and high demand.
- B) high-value product and low demand.
- C) low-value product and high demand.
- D) low-value product and low demand.

Answer: D

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

42) The skillful supply chain manager declared she would not only disaggregate cycle inventory, but she would also aggregate safety inventory and use an inexpensive mode of transportation for replenishing cycle inventory and fast mode when using safety inventory for her product that had

- A) high value and high demand.
- B) high value and low demand.
- C) low value and high demand.
- D) low value and low demand.

Answer: A

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

43) The competent supply chain manager decided to aggregate all inventories and as required, use fast mode of transportation for filling customer orders of his

- A) high-value and high-demand product.
- B) high-value and low-demand product.
- C) low-value and high-demand product.
- D) low-value and low-demand product.

Answer: B

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

44) The most common use of information technology in transportation is to

- A) determine transportation routes using software.
- B) calculate shipping rates.
- C) connect buyers and sellers.
- D) place person to person calls using cellular technology.

Answer: A

Diff: 2

Topic: 14.8 The Role of IT in Transportation

AACSB: Information technology

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

45) The complexity and scale of transportation makes it an excellent area within the supply chain for the use of

- A) a dedicated logistics manager.
- B) a fleet of vehicles.
- C) information technology systems.
- D) a common unit of money.

Answer: C

Diff: 2

Topic: 14.8 The Role of IT in Transportation

AACSB: Information technology

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

46) Real time location tracking of vehicles relies on

- A) citizen band radios.
- B) vehicles.
- C) teamsters.
- D) global positioning systems.

Answer: D

Diff: 1

Topic: 14.8 The Role of IT in Transportation

AACSB: Information technology

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

47) The most common problems in the use of IT in transportation relate to

- A) cross-enterprise collaboration.
- B) network security.
- C) vibration-resistant hardware.
- D) maintaining an Internet connection while in motion.

Answer: A

Diff: 2

Topic: 14.8 The Role of IT in Transportation

AACSB: Information technology

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

48) Managers should ensure that a firm's transportation strategy

- A) involves cost minimization.
- B) involves profit maximization.
- C) supports its competitive strategy.
- D) is separate from competitive strategy.

Answer: C

Diff: 3

Topic: 14.9 Making Transportation Decisions in Practice

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

49) Ignoring uncertainty in demand encourages a greater use of

- A) expensive but flexible transportation modes.
- B) inexpensive and inflexible transportation modes.
- C) inexpensive and flexible transportation modes.
- D) expensive and inflexible transportation modes.

Answer: B

Diff: 2

Topic: 14.9 Making Transportation Decisions in Practice

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

50) Inexpensive and inflexible transportation modes tend to

- A) perform poorly.
- B) perform very poorly when plans change.
- C) perform well when everything goes as planned.
- D) all of the above

Answer: C

Diff: 2

Topic: 14.9 Making Transportation Decisions in Practice

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

14.3 Essay Questions

1) Discuss the two key players involved in any transportation in the supply chain.

Answer: There are two key players in any transportation that takes place within a supply chain. The *shipper* is the party that requires the movement of the product between two points in the supply chain. The *carrier* is the party that moves or transports the product.

When making transportation-related decisions, factors to be considered vary depending on whether one takes the perspective of a carrier or shipper. A carrier makes investment decisions regarding the transportation infrastructure (rails, locomotives, trucks, airplanes, etc.) and then makes operating decisions to try to maximize the return from these assets. A shipper, in contrast, uses transportation to minimize the total cost (transportation, inventory, information, and facility) while providing an appropriate level of responsiveness to the customer.

Diff: 2

Topic: 14.1 The Role of Transportation in a Supply Chain

AACSB: Application of knowledge

Objective: LO 14.1: Understand the role of transportation in a supply chain.

2) What trade-offs do managers need to consider when making transportation decisions?

Answer: The cost of coordinating operations is generally hard to quantify. Companies should evaluate different transportation options in terms of various costs as well as revenues and then rank them according to coordination complexity. A manager can then make the appropriate transportation decision. Managers must consider the following trade-offs when making transportation decisions:

- Transportation and inventory cost trade-off
- Transportation cost and customer responsiveness trade-off

The trade-off between transportation and inventory costs is significant when designing a supply chain network. Two fundamental supply chain decisions involving this trade-off are:

- Choice of transportation mode
- Inventory aggregation

When selecting a mode of transportation, managers must account for inventory costs. Modes with high transportation costs can be justified if they result in significantly lower inventories. Firms can significantly reduce the safety inventory they require by physically aggregating inventories in one location. Transportation cost, however, increases when inventory is aggregated.

The transportation cost a supply chain incurs is closely linked to the degree of responsiveness the supply chain aims to provide. If a firm has high responsiveness and ships all orders within a day of their receipt from the customer, it will have small outbound shipments resulting in a high transportation cost. If it decreases its responsiveness and aggregates orders over a longer time horizon before shipping them out, it will be able to exploit economies of scale and incur a lower transportation cost because of larger shipments.

Diff: 2

Topic: 14.6 Trade-Offs in Transportation Design

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

3) Explain why transportation systems should be tailored.

Answer: Tailored transportation is the use of different transportation networks and modes based on customer and product characteristics. A firm can meet customer needs at a lower cost by using tailored transportation to provide the appropriate transportation choice based on customer and product characteristics.

Firms must consider customer density and distance from warehouse when designing transportation networks. Firms must consider customer size and location when designing transportation networks. The degree of inventory aggregation and the modes of transportation used in a supply chain network should vary with the demand and value of a product.

Tailoring transportation based on customer density and distance, customer size, or product demand and value allows a supply chain to achieve appropriate responsiveness and cost.

Diff: 2

Topic: 14.7 Tailored Transportation

AACSB: Application of knowledge

Objective: LO 14.4: Identify the relative strengths and weaknesses of various transportation network design options.

4) Discuss the relationship between transportation strategy and competitive strategy.

Answer: Transportation strategy needs to be aligned with competitive strategy. Managers should ensure that a firm's transportation strategy supports its competitive strategy. They should design functional incentives that help achieve this goal. Historically, the transportation function within firms has been evaluated based on the extent to which it can lower transportation costs. Such a focus leads to decisions that lower transportation costs but hurt the level of responsiveness provided to customers and may raise the firm's total cost.

Diff: 2

Topic: 14.9 Making Transportation Decisions in Practice

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.

5) Discuss the importance of designing flexibility into the transportation network.

Answer: Flexibility needs to be designed into the transportation network. When designing transportation networks, managers should take into account uncertainty in demand, as well as availability of transportation. Ignoring uncertainty encourages a greater use of inexpensive and inflexible transportation modes that perform well when everything goes as planned. Such networks, however, perform very poorly when plans change. When managers account for uncertainty, they are more likely to include flexible, though more expensive, modes of transportation within their network. Although these modes may be more expensive for a particular shipment, including them in the transportation options allows a firm to reduce the overall cost of providing a high level of responsiveness.

Diff: 2

Topic: 14.9 Making Transportation Decisions in Practice

AACSB: Application of knowledge

Objective: LO 14.5: Identify trade-offs that shippers need to consider when designing a transportation network.