PART II
ANSWERS TO END-OF-CHAPTER QUESTIONS

CHAPTER 2: LOGISTICS AND INFORMATION TECHNOLOGY

2-1. In what ways can information be helpful in logistics and supply-chain management?

There are a number of ways in which information can be helpful in logistics and supply-chain management. These include, but are not limited to, greater knowledge and visibility across the supply chain, which makes it possible to replace inventory with information; greater awareness of customer demand via point-of-sale data, which can help improve planning and reduce variability in the supply chain; better coordination of manufacturing, marketing, and distribution through enterprise resource planning systems; streamlined order processing and reduced lead times enabled by coordinated logistics information systems.

2-2. Name the six general types of information systems, and give one logistics application for each one that you've named.

One type is office automation systems, and a logistics application could be spreadsheets that calculate optimal order quantities. A second is communication systems; one logistics example is voice-based order picking. Transaction processing systems are a third general type, with point-of-sale systems being a logistics application. Management and executive information systems are a fourth general type of information systems; a logistics application involves logistics information systems. A fifth general type of information system is decision support systems, with warehouse management systems being a logistics-related application. The sixth, and final, general type of information system is the enterprise system, represented by logistics modules of enterprise resource planning systems.

2-3. Do you view the spreadsheet as the most relevant general software package for logisticians? Why or why not?

The text indicates that spreadsheets are indeed the most relevant general software package for logisticians. Today's spreadsheets have developed to the point that they are able to solve for basic logistics optimization models. These spreadsheet-based optimization models provide a method for logisticians to conduct a variety of "what-if" analysis in support of their decision making.

2-4. How can communication systems facilitate logistics management in the immediate aftermath of situations such as terrorist attacks and natural disasters?

One example involves the substitution of information for inventory. The total shutdown of the U.S. aviation system following the terrorist attacks of September 11, 2001 caused many air shipments to be diverted to trucks—thus adding to delivery times. Airfreight

companies such as FedEx used their communication systems to inform customers that their shipments were being diverted and when the shipments would be arriving.

2-5. What advances in telecommunications technology do you view as being most beneficial to logistics management? Why?

The answer to this question is likely to vary from student to student. Certainly cell phones, e-mail, smart phones, and wireless communications would be popular choices.

2-6. Discuss how global positioning systems have become quite valuable in transportation management.

Global positioning systems (GPS) have become quite valuable in transportation management because of high fuel costs and the relentless pressure to improve efficiency and productivity. Indeed, transportation companies that have implemented GPS have reported an increase in worker productivity, reduced operating costs, and improved customer relations. One study found that GPS implementation allows transportation companies to recapture nearly one hour per day of their drivers' time, which translates into labor savings of approximately $5,500 per employee.

2-7. Discuss the benefits and drawbacks of EDI.

Potential benefits to EDI include reductions in: document preparation and processing time; inventory carrying costs; personnel costs; information float; shipping errors; returned goods; lead times; order cycle times; and ordering costs. In addition, EDI may lead to increases in: cash flow; billing accuracy; productivity; and customer satisfaction. Potential drawbacks include a lack of awareness of its benefits; high setup costs; lack of standard formats; and incompatibility of computer hardware and software.

2-8. Discuss the relationship between automatic identification technologies and point-of-sale systems.

Automatic identification systems are an essential component in point-of-sale (POS) systems; the idea behind POS systems is to provide data and enhance managerial decision making, and automatic identification technologies can be very helpful in so doing. Operationally, POS systems involve scanning Universal Product Code (UPC) labels, either by passing the product over an optical scanner or recording it with a handheld scanner.

2-9. Why are some companies hesitant to adopt RFID technology?

A major drawback to RFID adoption involves the costs of installing the related hardware and software, which can range from $100,000 for smaller companies to $20 million for larger companies. Another drawback to RFID adoption involves privacy concerns, such as the inappropriate use of the technology. Yet another drawback is that data accuracy can be lower items with high moisture content, such as fruits and vegetables.

2-10. Discuss the importance of timely and accurate information to a logistics information system.

Timely information can involve several dimensions. For example, "timely" can refer to the up-to-date status of information, which can be influenced by a company's collection and analyses procedures. Although such information should ideally involve internal and external sources, internal sources of logistics information are not always as plentiful as would be desired. "Timely" can also refer to how quickly a manager receives the requested information; this is influenced by a company's retrieval and dissemination procedures. Faster and more powerful technology has helped to reduce retrieval and dissemination times.

Accurate information may reflect the effectiveness and efficiency of a company's logistics information system. This means that a logistics information system needs to consider the nature and quality of the relevant data. For example, although the Internet can be a very cheap source of external information, some Internet information is of questionable validity.

2-11. What benefits are associated with transportation and warehouse management systems?

Organizations that have implemented transportation management systems have reported decreased empty vehicle miles, reduced fuel consumption, and reduced transportation expenditures. Potential benefits to warehouse management systems include dramatic reductions in data entry errors as well as dramatic reductions in the travel distances for order picking. Other benefits to warehouse management systems include reduced operating expenses, fewer stockouts, increased inventory accuracy, and improved service to customers.

2-12. What is data mining? How might it be used in logistics?

Data mining can be defined as the application of mathematical tools to large bodies of data in order to extract correlations and rules; it uses sophisticated quantitative techniques to find "hidden" patterns in large volumes of data. Data mining has allowed Wal-Mart to discover that when hurricanes are projected to hit the state of Florida, there is a dramatic increase in demand for beer and Kellogg's Pop Tarts®. As a result, Wal-Mart makes sure that additional stocks of these products are available when hurricanes are projected to hit Florida.

2-13. Discuss advantages and disadvantages of enterprise resource planning systems.

ERP systems are attractive because they offer the potential for lower costs and both increased productivity and customer satisfaction. In theory, ERP systems provide an opportunity for all functional areas within a firm to access and analyze a common database. This should allow for enterprise-wide coordination of relevant business

processes. One of the most frequently mentioned shortcomings involves the costs of installation, and companies often fail to consider relevant costs such as upgraded hardware and employee training. Moreover, ERP implementation can be quite time consuming; actual implementation times may be 2 to 4 times longer than vendor estimates. A third shortcoming of ERP systems is that they initially lacked strong application-specific logistical capabilities such as transportation or warehouse management systems.

2-14. Refer back to the logistical activities listed in Chapter 1; pick two that you are interested in and research how they have been influenced by the Internet. Are you surprised by your findings? Why or why not?

There is any number of acceptable answers for this question.

2-15. From a logistical perspective, what are some of the differences between online and in-store retailing?

For one, the orders associated with online shopping tend to be more plentiful and in much smaller quantities that those associated with in-store retailing. As such, online retailing requires an order management system capable of handling high volumes of orders. Because of smaller order quantities, online shopping is characterized by open-case, rather than full-case picking; open-case picking is facilitated by materials handling equipment such as totes and push carts. In addition, the smaller order quantities occasioned by online retailing tend to favor transport companies with extensive delivery networks and expertise in parcel shipments.

2-16. Why is a "one size fits all" logistics strategy not likely to facilitate effective or efficient online shopping?

Rather than "one size fits all," a variety of logistics strategies might need to be applied to online shopping and it's important to recognize the potential trade-offs with these strategies. For example, one way of addressing the last-mile issue of customer unavailability would be to install some type of receptacle for the product at the customer's residence. However, these receptacles might not be feasible for large items (such as a refrigerator), perishable items (such as certain types of food), or extremely valuable items (such as jewelry).

2-17. Discuss the advantages and disadvantages of cloud computing.

Its pay-per-use formula allows customers to avoid high capital costs, and thus becomes a viable option for many companies that could not afford to purchase, install, and maintain application-specific software. Other advantages include faster and less costly installation, a smaller information technology staff, and regular upgrades and updates from the software provider. One drawback is that the regular upgrades and updates can be too frequent and numerous, and customers struggle to keep up with them. There are also

limited opportunities for customization and because the Internet is the primary transaction medium, security issues such as data protection can be a concern.

2-18. Discuss the benefits and drawbacks to electronic procurement.

Four types of benefits, transactional, compliance, management information, and price, are associated with electronic procurement. As an example, transactional benefits measure the transactional benefits, such as a reduced invoice-to-payment time, that come from e-procurement. One concern with electronic procurement involves the security of information that is being transmitted; there is a risk that sensitive or proprietary information could end up in the wrong hands. Another concern is that e-procurement can be impersonal in the sense that human interaction is replaced by computer transactions.

2-19. What is an online reverse auction? Why do buyers like them?

In a reverse auction, a buyer (rather than seller) invites bids from multiple sellers, and the seller with the lowest bid is generally awarded the business. Buyers tend to like reverse auctions because they aim to generate low procurement prices and the online nature of reverse auctions allows buyers to drill down to a seller's low price very quickly.

2-20. What are some of the macro-level information technology challenges that managers face?

The text identifies three macro-level information technology challenges, the first of which is that information technology is a tool that can help managers to address organizational problems and not a panacea for them. Security is a second macro-level concern, and it's important that websites be as secure as possible from computer viruses or computer hackers. A third information technology challenge involves human resource issues, and employee resistance has been identified as a major cause of information technology implementation failure.