Principles of Supply Chain Management - A Balanced Approach 7th edition Wisner Solutions Manual

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Solution and Answer Guide

WISNER/TAN/LEONG 9798214057705; 7TH EDITION; CHAPTER 1: PRINCIPLES SUPPLY CHAIN MANAGEMENT BALANCED APPROACH

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DISCUSSION QUESTIONS

1. Define the term *supply chain management* in your own words and list its most important activities. (LO1)

   Answer: The Supply-Chain Council's definition of supply chain management is "[m]anaging supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer."

   These are also the most important activities; however, integration of key supply chain processes might also be included in there.

2. Can a small business like a local sandwich or bicycle shop benefit from practicing supply chain management? What aspects would they most likely concentrate on? (LO1)

   Answer: Yes, any organization can implement at least some of the important concepts. A good place to start is the rationalization or reduction of the supply base. Small businesses might also want to concentrate on customers as a starting point.

3. Describe and draw a supply chain for a bicycle repair shop, and list the important supply chain members. (LO2)

   Answer: This will vary from student to student, but should include, for instance, parts suppliers, bicycle suppliers, and other suppliers (e.g., helmet suppliers) and services (e.g., repair services) as 1st-tier suppliers and bicycle owners as 1st-tier customers.

4. Can a bicycle repair shop have more than one supply chain? Explain. (LO2)

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Answer: Yes. Every repair item the firm stocks has potentially a different supply chain associated with it.

5. What is a cold chain? Why did it become so important in 2020? (LO1)

   Answer: An alliance of companies that can monitor and protect the temperature of perishable products in order to maintain quality and safety from the point of origin through distribution to the final consumer. Cold chains became a popular news item in 2020 as COVID vaccines began to be distributed globally by Pfizer and Moderna. The two vaccines must be stored and transported at sub-zero temperatures.

6. How did the global pandemic impact supply chain management? (LO1)

   Answer: In general, it made things more difficult, particularly for global supply chains—some companies went bankrupt, retailers stopped buying regularly, ports shut down unexpectedly, and many purchases shifted to online as people stayed home. Companies had to react quickly to the changes. Some companies started buying domestically and carrying more inventory.

7. What roles do collaboration and trust play in the practice of supply chain management? (LO2)

   Answer: This is essential for process integration. Sharing information and determining joint strategies is part of the integration/collaboration process, and to do this, trust must be present between the customer/focal firm/supplier.

8. Why do firms not just become more vertically integrated (e.g., buy out suppliers and customers), instead of trying to manage their supply chains? (LO2)

   Answer: This could cause a loss of focus and keep managers/employees from doing their core competencies, resulting in loss of performance.

9. What types of organizations would benefit the most from practicing supply chain management? What sorts of improvements could be expected? (LO2)

   Answer: Firms with many suppliers, many complex products, large inventories, and many customers (in other words, firms with many supply chains). Gains would be lower purchasing costs, lower carrying costs, better product quality, and better customer service.

10. What are the benefits of supply chain management? (LO2)

    Answer: Reduction of the bullwhip effect, better buyer/supplier relationships, better quality, lower costs, better customer service, higher demand, and more profits.

11. Can nonprofit, educational, or government organizations benefit from supply chain management? How? (LO3)

    Answer: Yes. All services and organizations can benefit in terms of at least better customer service, better inventory management, and cheaper purchase prices.

12. What does the term *third-tier supplier* mean? What about *third-tier customer*? What about the *focal firm*? Provide examples. (LO3)

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Answer: First-tier suppliers are the focal firm's direct suppliers. 2nd-tier suppliers are the focal firm's suppliers' direct suppliers. 3rd-tier suppliers are the focal firm's suppliers' suppliers' suppliers. Company A sells wood to Company B. Company B sells furniture to Company C. Company C sells the furniture to Wal-Mart. Company A is Wal-Mart's 3rd-tier supplier. Similarly, the focal firm's customers' customers' customers are their 3rd-tier customers. The focal firm just refers to the firm in question, or in the topic of discussion.

13. What is the bullwhip effect and what causes it? How would you try to reduce the bullwhip effect? (LO5)

    Answer: The magnification of safety stock and erratic buying behavior as customers along the supply chain forecast demand and add safety stock to their forecasts and production schedules causes the bullwhip effect. As we move further back up the supply chain, then, more and more of the output is in the form of safety stocks. Reducing the need to forecast (by agreeing on a future purchase quantity or using CPFR) is one way to reduce the bullwhip effect.

14. When did the idea and term *supply chain management* first begin to be thought about and discussed? Which two operations management practices became the origin of supply chain management? (LO3)

    Answer: The general idea of supply chain management had been discussed for many years prior to the chain of events shown in Figure 1.2. Back in 1915, Arch W. Shaw of the Harvard Business School wrote the textbook *Some Problems in Market Distribution*, considered by many to be the first on the topic of what we now refer to as supply chain management. The text included discussions of how best to purchase raw materials, transport products, locate facilities, and analyze productivity and waste. According to C. John Langley, Jr., professor of supply chain management at the Georgia Institute of Technology, "The idea that companies ought to work together and coordinate activities has always been around, but ask people today what one of the biggest problems with supply chains are today, and they say companies don't work very well together."

    The 1980s were the breakout years for supply chain management. One of the first widely recorded uses of the term *supply chain management* came about in a paper published in 1982. Intense global competition beginning in the 1980s (and continuing today) provided an incentive for U.S. manufacturers to offer lower-cost, higher-quality products along with higher levels of customer service. Manufacturers utilized just-in-time (JIT) and total quality management (TQM) strategies to improve quality, manufacturing efficiency, and delivery times. In a JIT manufacturing environment with little inventory to cushion scheduling and/or production problems, firms began to realize the potential benefits and importance of strategic and cooperative supplier-buyer-customer relationships. The concept of these partnerships or alliances emerged as manufacturers experimented with JIT and TQM. These were the origins of SCM.

15. Do you think supply chain management is simply the latest trend in management thinking and will likely die out in a few years? Why or why not? (LO5)

    Answer: This answer will vary because it was not specifically discussed; however, considering that the ideas of SCM have been around for many, many years makes one think that the practice is here to stay.

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16. How has technology impacted supply chain management? (LO5)

    Answer: SCM software and e-commerce has aided supply chain integration and aided in the evolution and adoption of supply chain management. Sharing information with supply chain partners through the Internet has enabled firms to integrate stocking, logistics, materials acquisition, shipping, and other functions to create a more proactive and effective style of business management and customer responsiveness.

17. What are the four foundation elements of supply chain management? Describe some activities within each element. (LO2)

    Answer: The four elements are supply (supply base reduction, supplier alliances, SRM, global sourcing, ethical and sustainable sourcing), operations (demand management, CPFR, inventory management, MRP, ERP, lean systems, Six Sigma quality), logistics (logistics management, CRM, network design, RFID, global supply chains, sustainability, service response logistics), and integration (barriers to integration, risk and security management, performance measurement, green supply chains).

18. Is the use of a large number of suppliers a good idea? Why? (LO2)

    Answer: This somewhat depends. Certainly, SCM suggests fewer suppliers and longer-term relationships; however there can always be exceptions to this rule. Purchasing a widely available common product like soap or tissue paper might be better done with a large number of suppliers competing for this business. But this works against ever creating trusting and lasting supply chain partnerships. In most cases though, use of a few key suppliers for an item is considered a good idea, since it means larger supply quantities, leading to lower prices and better service.

19. Do you think the proper way to choose a supplier is to always find the one that will give you the lowest price? When might this not be a good idea? (LO2)

    Answer: Absolutely not. Low price is sometimes fine, if quality or service is not an issue, as in buying some MRO items. But when quality and service matter, price should only be one of the purchase criteria.

20. What is supplier management? What are some of the activities of supplier management? (LO2)

    Answer: Simply put, this means encouraging or helping the firm's suppliers to perform in some desired fashion, and there are a number of ways to do this. This involves assessing suppliers' current capabilities and then deciding if and how they need to improve them. Thus, one of the key activities in supplier management is supplier evaluation, or determining the current capabilities of suppliers.

21. What is the difference between supply chain management and logistics? (LO2)

    Answer: Logistics involves only the transportation and distribution functions. SCM includes logistics as well as production, supply management, and integration of processes.

22. What is demand management, and why is this an important part of supply chain management? (LO2)

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Answer: Demand management is when management tries to match demand to available capacity, either by improving production scheduling, curtailing demand, using a back-order system, or increasing capacity. In a recent survey of supply chain managers, stockouts were considered the most pressing issue in the use of demand management activities, followed closely by excess inventories and long lead times.

23. What is the difference between an MRP system and an ERP system? (LO4)

    Answer: MRP systems are the older materials management system software applications, and are used for essentially basic assembly and purchase decisions. ERP systems came about a number of years later and tied all of a company's geographically distant units together by having one central database to track system inventories.

24. What role do information systems play in supply chain management? Give some examples. (LO2)

    Answer: Information systems play very important roles in most supply chains. They give supply chain members information visibility, tracking capabilities, and quick communication capabilities.

25. Briefly describe the terms lean production and Six Sigma systems. (LO5)

    Answer: Lean refers to low waste and inventories and used to be referred to as JIT. Six Sigma originated at Motorola and refers to a quality management philosophy.

26. What are 3PLs, and what role do they play in SCM? (LO4)

    Answer: Third-party logistics service providers. These allow firms to concentrate more on their capabilities while allowing 3PLs to perform logistics activities like delivery and storage.

27. What is logistics? What is the objective of logistics? (LO4)

    Answer: Logistics is the movement and storage of raw materials, work-in-process, and finished goods. The objective is to deliver products to customers at the right time, quality, and volume, which requires a high level of planning and cooperation between the firm, its customers, and the various logistics elements or services employed (such as transportation, warehousing, and break-bulk or repackaging services). In contrast, services are produced and delivered to the customer simultaneously in most cases, so services are extremely dependent upon server capacity and successful service delivery to meet customer requirements.

28. What is the triple bottom line and how would you describe it for Walmart? (LO4)

    Answer: The term **sustainability** as applied to supply chains is a broad term that includes protecting the environment, some aspects of social responsibility, as well as financial performance (hence the linking of sustainability to what is termed the **triple bottom line**, or people, planet, and profits). For Walmart, it is its employees/customers, how its products impact the environment, and the money it makes.

29. What trade-offs must be considered in designing a distribution system? (LO5)

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Answer: Logistics decisions typically involve a trade-off between cost and delivery timing or customer service. Motor carriers (trucks), for example, are more expensive to use than rail carriers, but offer more flexibility and speed, particularly for short routes. Air carriers are even more expensive but much faster than any other transportation mode. Water carriers are the slowest but are also the least expensive. Finally, pipeline transportation is used to transport oil, water, natural gas, and coal slurry. Many transportation services offer various modal combinations, as well as warehousing and customs-clearing services.

30. What are the advantages and risks involved with global supply chains? (LO5)

    Answer: Some of the advantages include a larger market for products, economies of scale in purchasing and production, lower labor costs, a supply base of potentially cheaper, higher-quality suppliers, and the generation of new product ideas from foreign suppliers and employees. Some of the risks include fluctuating exchange rates affecting production, warehousing, and purchasing and selling prices; government intervention or political instabilities causing supply disruptions; security concerns; and potential changes in subsidies, tariffs, and taxes.

31. What does process integration mean? Can supply chain management succeed without it? Why, or why not? (LO5)

    Answer: This refers to collaborations that occur between suppliers and buyers in a supply chain. Working together is what allows supply chains to be effective. Processes in a supply chain are said to be integrated when members of the supply chain work together to make purchasing, inventory, production, quality, logistics, and other decisions that impact the overall profits of the supply chain. If one key process activity fails or is performed poorly, then the flow of goods moving along the supply chain is disrupted, jeopardizing the effectiveness of the entire supply chain. Successful supply chain process integration occurs when the participants realize that effective supply chain management must become part of each member's strategic planning process, where objectives and policies are jointly determined based on the end consumers' needs and what the supply chain as a whole can do for them.

32. Should companies require their suppliers to get certified if they are performing well? (LO5)

    Answer: Yes. This could indicate weaknesses in areas covered by the certification instrument.

33. At what point should a supplier be considered to have a strategic partnership with the buying firm? (LO5)

    Answer: Suppliers see significant benefits from the creation of closer working relationships with customers in terms of long-term, higher-volume sales. These trading partner relationships have come to be termed **strategic partnerships.**

34. Why are performance measurement systems important when trying to manage supply chains? (LO5)

    Answer: Performance measurements must be utilized along supply chains to help firms keep track of their supply chain management efforts. It is crucial for firms to know whether certain strategies are working as expected—or not—before they

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become financial drains on the organizations. Firms work together to develop long-term supply chain management strategies and then devise tactics to implement these strategies. Performance measurements help firms decide the value of these tactics and should be developed to highlight performance within the areas of purchasing, operations, logistics, and integration.

35. Does a global supply chain have more risk than a domestic supply chain? Why? (LO5)

    Answer: Yes—distances are longer, which means more things can go wrong; also dealing with other cultures/governments can prove problematic.

36. What are big data and data analytics? How might they be used in supply chains? (LO5)

    Answer: Huge volumes of data generated refer to the term **big data** in business organizations. There is also the rising awareness among executives regarding the benefits of analytics solutions. Analytics can be used along the supply chain for example, to schedule production according to expected supplier deliveries, to route delivery trucks through a distribution network, or to determine when a customer is most likely to be home to accept a delivery.

37. What are some things supply chain members could do to improve sustainability? (LO5)

    Answer: By improving environmental, social, and governance performance throughout the supply chain, companies can enhance processes, reduce costs, increase productivity, uncover product innovation, achieve market differentiation, and improve societal outcomes.

38. What is supply chain sustainability? Give an example. (LO5)

    Answer: Supply chain sustainability refers to meeting the needs of current supply chain members without hindering the ability to meet the needs of future generations in terms of economic, environmental, and social challenges. Cascale, a global, non-profit alliance in the apparel industry, and the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) announced, in 2024, a partnership to transform the sustainability of their global apparel supply chains. The collaboration addresses critical environmental and ethical challenges by leveraging advanced technology to improve transparency and efficiency.

39. Define *supply chain agility* and *resilience*. What did this have to do with the global pandemic? (LO5)

    Answer: Supply chain agility refers to how quickly a supply chain can react to environmental changes and make necessary adjustments. Examples of agile supply chains include those using real-time data to monitor a supply chain and use of a decentralized decision-making process with employees empowered to make decisions quickly. Supply chain resilience is a bit different and is defined as the ability of a supply chain to withstand disruption and minimize the effects of upheaval on revenues, costs, and customers. Examples include supply chains that are designed to withstand disruptions over the long term, such as domestic supply chains and supply chains with multiple sources of supply and excess inventories.

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40. Describe supply chain visibility and why supply chain managers like it. (LO5)

Answer: Supply chain visibility can be defined as the ability of suppliers, manufacturers, business partners, and customers to know exactly where products are, at any point in the supply chain. This inventory visibility is obviously made easier by technology, and can prove very advantageous when dealing with disruptive events like hurricanes or other unexpected events.

CASES

SUPPLY CHAIN MANAGEMENT—THE BIG PICTURE

Case Note

Learning Objectives:

- Describe a supply chain and define supply chain management.
- Describe the objectives and elements of supply chain management.
- Describe local, regional, and global supply chain management activities.
- Describe a brief history and current trends in supply chain management.
- Understand the bullwhip effect and how it impacts the supply chain.

This case highlights how critical supply chain management is at different levels of expansion, i.e., local, regional, and global. The case discusses the four foundation elements of supply chain management, supply, operations, logistics, and integration. The case illustrates that although a company is engaged in global commerce, it may be necessary to look at supply chain management from the perspective of the specific marketplace, e.g., Europe and South America. Depending on the industry, each marketplace may have different regulatory requirements.

Finally, the case emphasizes the importance of supply chain management process integration. Although each of the first three foundation elements are designed well, unless every supply chain partner includes the planning in their strategic planning process, the entire system could fail.

Answers to Questions

1. For the supply chain management element supply, important issues to address are supply base reductions, supplier alliances, supplier relationship management, global sourcing, ethical sourcing, and sustainable sourcing. These will be covered in Chapters 2, 3, and 4.
2. For the supply chain management element operations, important issues to address are demand management, inventory management, lean systems, Six Sigma quality, etc. These will be covered in Chapters 5, 6, 7, and 8.
3. For the supply chain management element logistics, important issues to address are logistics management, network design, global supply chains, sustainability, and service response logistics. These will be covered in Chapters 9, 10, 11, and 12.
4. The issues any company must overcome are cultural norms, adversarial relationships, silos, conflict, and barriers within and between companies. These types of issues or

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obstacles must be broken down, reduced, or eliminated in order for true process integration to be achieved.

Note: Written by Rick Bonsall, D. Mgt., McKendree University, Lebanon, IL. The people and institution are fictional and any resemblance to any person or institution is coincidental. This case was prepared solely to provide material for class discussion. The author does not intend to illustrate either effective or ineffective handling of a managerial situation.

Appendix 1.1 The Beer Game

Questions and Exercises

1. All players but the retailer should answer this question—what do you think the retailer's customer demand pattern appeared like? How did your customer orders vary throughout the game?

   Solution
   Varies. Hopefully, their guesses will be nothing like the relatively constant demand pattern actually experienced by the retailer.

2. What happened to the current inventory levels, reviewing the supply chain from retailer to manufacturer? Why?

   Solution
   The inventory levels should magnify or explode as we go back up the supply chain, as members try to fill ever-increasing orders from customers. This is due to the bullwhip effect.

3. How could the supply chain members reduce total inventory and back-order costs in the future?

   Solution
   Through closer, more timely, and accurate communications.

4. Go to https://beergame.masystem.se and try playing this Internet version of the game. Report on your experiences playing the game.

   Solution
   If possible, try playing it first prior to assigning this question to the class.

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Instructor Manual

Wisner, Tan & Leong, Principles of Supply Chain Management – A Balanced Approach,
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Purpose and Perspective of the Chapter

This chapter defines the supply chain and supply chain management. A description of what the remaining chapters will cover is provided. The importance of supply chain management (SCM) is explained, in addition to the origins of SCM in the United States. The foundations of SCM are presented in terms of the elements of supply, operations, logistics, and integration. Finally, the current trends in SCM are presented: use of supply chain analytics, improving supply chain sustainability, and increasing supply chain visibility.

List of Instructor Downloads

The following product-level supplements provide additional information that may help you prepare for your course. They are available in the Instructor Resource Center.

- A PowerPoint of the book chapter is available for download from the Instructor's Resource Center.
- A solutions and answers guide for the book chapter is available for download from the Instructor's Resource Center.

Chapter Objectives

The following objectives are addressed in this chapter:

LO 1.1	Describe a supply chain and define supply chain management.
LO 1.2	Describe the objectives and elements of supply chain management.
LO 1.3	Describe local, regional, and global supply chain management activities.
LO 1.4	Describe a brief history and current trends in supply chain management.
LO 1.5	Understand the bullwhip effect and how it impacts the supply chain.

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KEY TERMS

Big data: huge volumes of data generated because of the enormous rise in computing capabilities.

Bullwhip effect: the continuing cycle of erratic demand, causing forecasts to include safety stock which in turn magnify supplier forecasts and cause production planning problems.

Business process reengineering: the radical rethinking and redesigning of business processes to reduce waste and increase performance to enhance long-term competitive advantage.

Cold chain: refers to an alliance of companies that can monitor and protect the temperature of perishable products to maintain quality and safety from the point of origin through the distribution to the final consumer.

Customer relationship management: consists of the creation of alliances or partnerships with customers; these long-term close relationships resulted in less finished products safety stock and better use of resources.

Demand management: strategies and systems having the objective of matching available capacity to demand, either by improving production scheduling, curtailing demand, using a back-order system, or increasing capacity.

Distribution network: design of the facilities utilized for successful product delivery, including the number, size, type, and location of regional or local warehouses.

Enterprise resource planning (ERP): client/server supply chain management software that typically includes integrated supply chain management and e-commerce components.

Ethical and sustainable sourcing: purchasing from suppliers that are governed by environmental sustainability and social and ethical practices.

First-tier customers: direct customers of the firm.

First-tier suppliers: direct suppliers of the firm.

Global supply chain: consists of having operations in foreign locations to supply to global markets.

Inventory visibility: order communication system enables management to be aware of inventory status in the supply chain.

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Lean production system: inventory management system based on operating with low inventory levels, faster delivery, lower stockouts, and higher quality; also known as just-in-time or the Toyota production system.

Logistics: delivery of products to customers through several different modes of transportation at the right time, right quality, and right volume based on a high level of planning and cooperation between the firm, its customers, and the various logistics elements employed (such as transportation, warehousing, and repackaging).

Material requirements planning (MRP): software system for managing their inventories, purchases, and production schedules.

Multi-channel fulfillment: allows consumers to shop for what they want, where they want, and then have their purchases delivered quickly and consistently.

Operations management: purchasing, assembling, or processing the items into finished products, inventory, and delivery of products; a foundation of supply chain management.

Radio frequency identification (RFID): system of scanning incoming cartons and pallets with RFID tags to have in-store inventory visibility.

Reengineering: another term or business process reengineering.

Second-tier customers: the customers of the first-tier or direct customers of the focal firm.

Second-tier suppliers: the suppliers of the first-tier or direct suppliers of the focal firm.

Six Sigma quality management: strategic system to ensure continued quality compliance among suppliers and with internal production facilities.

Starting conditions: the initial status of the supply chain in terms of setup and inventory status.

Strategic partnerships: closer working relationships with customers in terms of long-term, higher volume sales.

Supplier certification: allows buyers to assume the supplier will meet certain product quality and service requirements covered by the certification, thus reducing duplicate testing and inspections and the need for extensive supplier evaluations.

Supplier evaluation: determination of the current capabilities of suppliers.

Supplier management: means encouraging or helping the firm's suppliers to perform in some desired fashion by assessing their current capabilities and then deciding how they need to improve.

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Supplier relationship management: consists of utilizing smaller supplier bases and the development of more long-term, trusting, mutually beneficial supplier relationships.

Supply chain: consists of sourcing parts and materials; as well as designing, producing, storing, producing, and transporting goods and services.

Supply chain analytics: tools that harness data from internal and external sources to produce breakthrough insights that can help supply chains reduce costs and risks.

Supply chain management: the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities, including coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers.

Supply chain performance management: utilization of performance measurements along the supply chain to help firms keep track of their process integration and supply chain management efforts.

Supply chain process integration: consists of trading partners in the supply chain working together to make purchasing, inventory, production, quality, and logistics decisions that impact the overall costs and profits of the supply chain.

Supply chain visibility: the ability of suppliers, manufacturers, business partners, and customers to know exactly where their products are, at in point in the supply chain.

Supply management: strategic approach to purchasing.

Sustainability: broad term that includes protecting the environment, some aspects of social responsibility, as well as financial performance.

Third-party logistics providers: companies that provide inbound and outbound shipping, warehousing, and logistics services such as transportation, storage, documentation, and customs clearing services.

Third-party logistics services: providing inbound and outbound shipping, warehousing, and logistics services such as transportation, storage, documentation, and customs clearing services.

Triple bottom line: refers to performance related to people, planet, and profits.

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CHAPTER OUTLINE

The following outline organizes activities (including any existing discussion questions in PowerPoints or other supplements) and assessments by chapter (and therefore by topic), so that you can see how all the content relates to the topics covered in the text.

I. Supply Chain Management Defined (01.01, PPT slides 4-9)

a. Supply chain management (SCM) consists of the activities from purchasing, production, and logistics.
b. Tiers of suppliers and customers are defined.
c. Several definitions of SCM from various sources are provided.
    1. Council of Supply Chain Management Professionals: The planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers and customers.
    2. Institute for Supply Management: The design and management of seamless, value-added processes across organizational boundaries to meet the real needs of the end customer.
    3. Business Dictionary: Management of material and information flows in a supply chain to provide the highest degree of customer satisfaction at the lowest possible cost. Supply chain management requires the commitment of supply chain partners to work closely to coordinate order generation, order taking, and order fulfillment.
d. Activity—Supply chain drawing

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II. The Importance of Supply Chain Management (01.02, 01.05, PPT slides 10-13)
   a. Moderate supply chain management success can mean lower purchasing and inventory carrying costs, better product quality, and higher levels of customer service—all leading to more sales and better profits.
   b. Blue Yonder Group, a U.S. supply chain management company, conducted its 2024 survey of global supply chain executives on their supply chain strategies. Overall, the overwhelming majority (84 percent) reported experiencing supply chain disruptions during 2023. The disruptions were driven primarily by the lack of availability of raw materials (48 percent), extended delivery times from material suppliers (47 percent), lack of labor (44 percent), and lack of availability on shipping vessels (41 percent).
   c. Supply chain resilience is the ability of a supply chain to withstand disruptions and minimize the effects of upheavals on revenues, costs and customers. Firms using Supply Chain Management:
      1. Start with key suppliers
      2. Move on to other suppliers, customers, and logistics services
      3. Get stakeholder buy-in
      4. Integrate second-tier suppliers and customers (second tier refers to the customer's customers and the supplier's suppliers)
   d. The bullwhip effect is described as the continuing cycle of erratic demand, causing forecasts to include safety stock which in turn magnify supplier forecasts and cause production planning problems.

III. The Origins of Supply Chain Management in the United States (01.04, PPT slides 14-18)
   a. The history of development from traditional mass manufacturing to inventory management and planning to JIT, TQM, BPR and alliances to relationships, sustainability and responsibility to increased supply chain capabilities is described.
   b. 1950s to 1960s—U.S. manufacturers focused on mass production techniques. 1960s to 1970s saw the introduction of new computer technologies lead to development of Materials Requirements Planning (MRP) and Manufacturing Resource Planning.
   c. 1980s to 1990s—Intense global competition led U.S. manufacturers to adopt Supply Chain Management, Just-in-Time, Total Quality, Management, Business Process Reengineering, and Customer Relationship Management.
   d. 2000s and Beyond Evolution along two parallel paths
      1. Supply management emphasis from industrial buyer
      2. Logistics and customer service emphasis from wholesalers and retailers

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There is focus on improving supply chain capabilities with initiatives.

e. 2000s—Today emphasis is being placed on the environmental and social impacts of supply chains, sustainability, and triple bottom line.

IV. The Foundations of Supply Chain Management (01.02, 01.03, PPT slides 19-23)
   a. The supply elements are described as supplier base reduction, supplier alliances, SRM, global, ethical, and sustainable sourcing.
   b. The operations elements are demand management, CPFR, inventory management, ERP, lean systems, and Six Sigma quality.
   c. The logistic elements presented are logistics management, CRM, network design, RFID, global supply chains, sustainability, third-party logistics providers, and service response logistics.
   d. The integration elements explained are barriers to integration, risk and security management, performance management, and green supply chains.

V. Current Trends in Supply Chain Management (01.04, PPT slides 24-31)
   a. Supply chain analytics refers to examining raw supply chain data and then reaching conclusions or making predictions with the information.
      1. The growth is being pushed by the enormous rise in computing capabilities and the huge volumes of data generated (big data).
   b. Improving supply chain sustainability is focused on meeting the needs of current supply chain members without hindering the ability to meet the needs of future generations in terms of economic, environmental, and social challenges.
   c. Cascale and Bangladesh Garment Manufacturers and Exporters Ass. (BGMEA) announced a partnership to transform the sustainability of global apparel supply chains.
   d. Use of Artificial Intelligence in Supply Chain can add value to supply chain planning, including production, inventory management, and product distribution. It can also use AI-powered tools to process vast amounts of real-time data, improving the accuracy of demand forecasting. Finally, it can compile and analyze data on traffic conditions at various supply chain locations such as ports and warehouses.
   e. Supply Chain Agility refers to how quickly a supply chain can react to environmental changes and make necessary adjustments. Supply chains that are resilient are designed to withstand disruptions over the long term.
   f. Increasing supply chain visibility is about achieving the ability of suppliers, manufacturers, business partners, and customers to know exactly where the products are, at any point in the supply chain. Sophisticated software applications help this these tasks.
   g. Activity—AI in Supply Chain Mgt.

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Additional Discussion Questions

The following are discussion questions that do not appear in the text, PPTs, or courseware (if courseware exists)—they are for you to use as you wish. You can assign these questions several ways: in a discussion forum in your LMS; as whole-class discussions in person; or as a partner or group activity in class.

1. Second run of The Beer Game: Duration 45 minutes.
    a. A modification of the Beer Game is beneficial for further learning. Gratitude goes to Dr. James Cox III for sharing these innovative modifications. First, have the students play the game the normal way. Then, tell them that we will be playing it again. This time, they can change anything but the time to move shipments between the companies. Let them know that the average demand at the retailer is 10 cases per week based on the uniform distribution with a high value of 20 and a low value of 0. (Create a set of demand cards for this distribution that are the same for each team so that we can compare the results.) Give them time to discuss the changes each team plans to make. First, allow them time for a short break, asking them to come back and discuss the changes. This time, the game can be run more quickly for less time periods—about 20 weeks. We can then discuss our results. The students explain their changes and corresponding results. (Note: Using games is a great way to help students learn and retain the material in a beneficial and interactive experience.)

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