


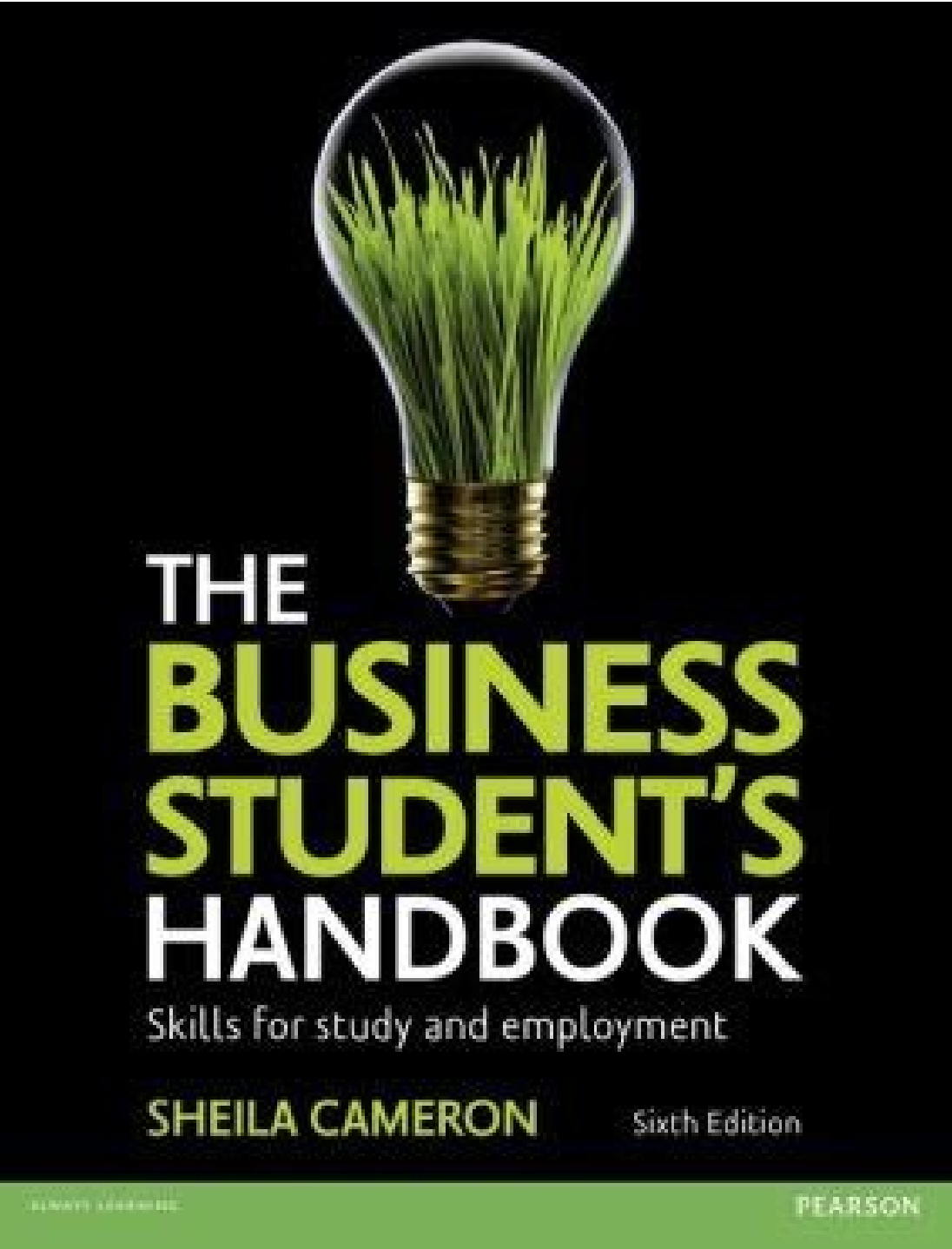
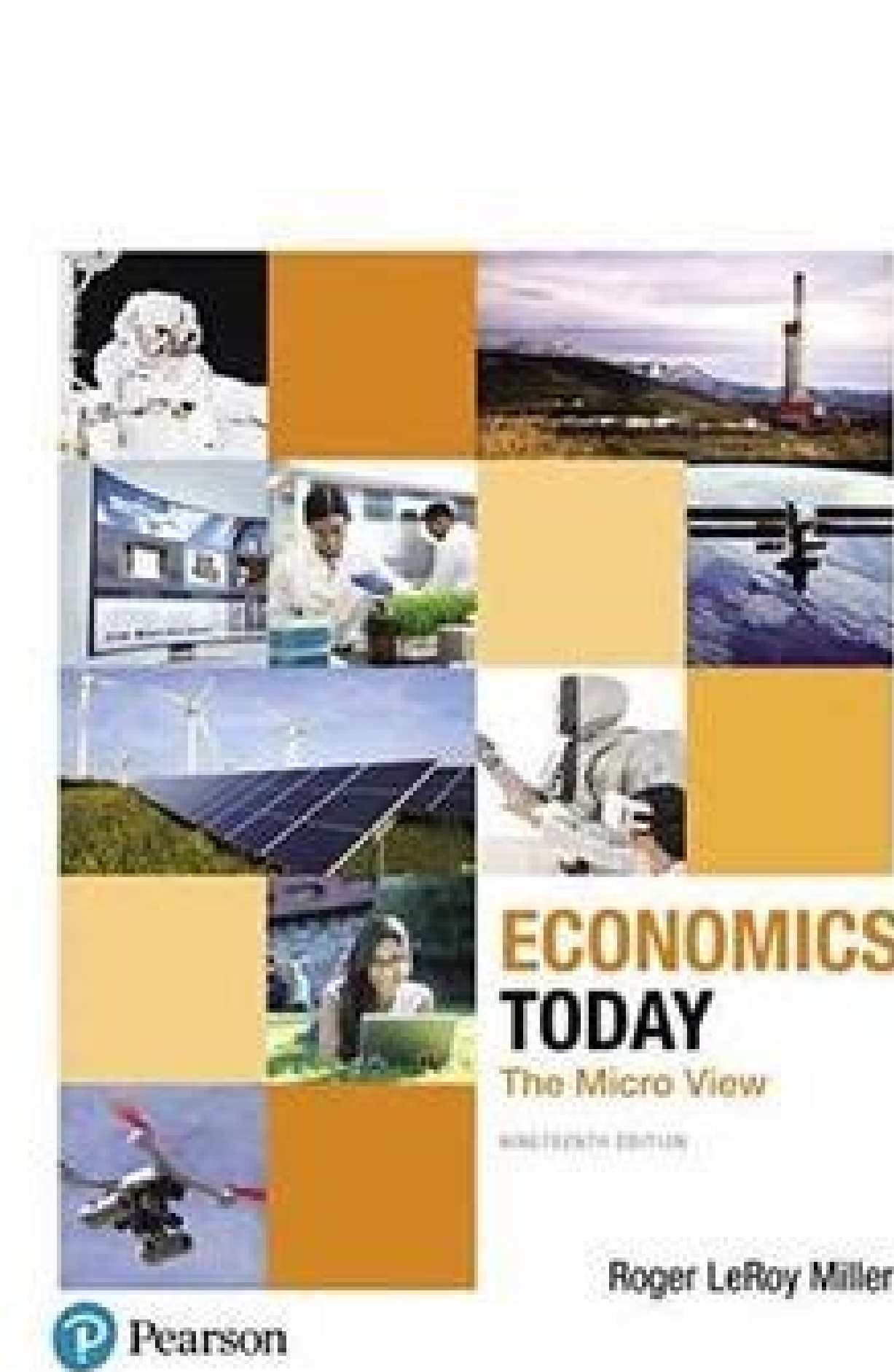
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Table were cases of cold meat, cheese, soft drinks, mayonnaise, and bread. This detailed examination includes a physical 168M MURP4846 11 GE C09.indd 168 04/06/14 12:01 PM Chapter 9 • Facility Location 169 inspection of the location as well as a thorough analysis of relevant zoning and regulatory considerations. This can result in "analysis paralysis," or the idea that so much time is required for analysis that there's little if any time left to make decisions based on the data. This infrastructure data, which appear in Table 12.1, indicate wide disparities in the various infrastructures; at a minimum, a lack of infrastructure makes it difficult to use that mode in domestic (within-country) transportation. (1011): 42-49. 3 M11 MURP4846 11 GE C11.indd 209 03/06/14 6:19 PM 210 Part III • Elements of Logistics Systems customer. We learned that a number of U.S. federal agencies are responsible for transportation and also that the levels and types of regulation may not be consistent across modes. Over the years, we have learned the tricks of the trade, and one thing I knew well was that without the rust/bribe: the grease money or large amounts of payments specifically for one-time transactions, such risky situations would end up as a "no sale." He wondered whether he should ask the Turkish agricultural chemical manufacturers to help with the entertainment costs. John Landry, Jr., Brian J. MURP4846 11 GE C11.indd 221 03/06/14 6:19 PM 222 Part III • Elements of Logistics Systems troubleshooting to learn why a system is not performing well. While space limitations will inhibit us from examining all of the various manifestations of complexity in logistics systems, we will take a look at some of the most relevant types affecting logistics decision making. For purposes of this discussion, sustainable procurement refers to the integration of social and environmental considerations into all stages of the purchasing process with the goal of minimizing the impact of procurement activities on human health and the environment. The integration of social and environmental considerations with the purchasing process will be discussed in more detail in Chapter 13. 1.19. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880

at the named port or place of destination. Organizations can also examine their facility layouts; long horizontal runs and frequent backtracks could be symptoms of layout problems. Potential logistical social responsibility dimensions include the environment, e ethics, diversity, safety, philanthropy, and human rights, among others, and myriad activities that may be undertaken to address these dimensions. The following case study illustrates how a company's decision to reverse the side is printed in extremely small print. The Interstate Commerce Commission was legislated out of existence in 1995 and its remaining economic regulatory functions were transferred to a new agency, the Surface Transportation Board (STB), which is affiliated with the Department of Transportation. Logistics implications of increased process complexity could emerge due to an increased amount of time required to pick an order resulting from changes in the number of steps or changes in the handling requirements that the warehouse worker needs to complete. Figure 13.4 is an example of one M13 MURP4846 11 GE C13.indd 257 03/06/14 5:36 PM 258 Part III • Elements of Logistics Systems Figure 13.3 A Long-Form Bill of Lading carrier's overcharge claim form; note that the overcharge claim requires documentation in terms of a freight bill and the relevant bills of lading. With respect to logistics organizational forms, Professors Bowersox and Daugherty identified three orientations that can be used in isolation or in combination when developing a logistics strategy. Sorting function Bridges the discrepancy between the assortment of goods and services generated by the producer and the assortment demanded by the customer. A broken bottle of household ammonia, for example, results in three hazards: noxious fumes, broken glass, and a slippery floor. Responsibility for damage in transit is one issue subject to carrier-shipper contract negotiation; if the carrier remains liable, the carrier specifies the level of packaging protection to be used. "Spare Parts Logistics for the Chinese Market." Benchmarking: An International Journal 18, no. Terminal A carrier or public facility where freight (or passengers) is shifted between vehicles or modes. Day 14's demand of 30 units will be satisfied from safety stock (point M), and the EOQ arrives shortly thereafter. "Technology Outlook: Getting by Without the Big Buys." Supply Chain Management Review 13, no. Some forwarders specialize in certain cargoes. 2 (2009): 44-49. 11.20 What are the key elements of a logistics strategy? The key elements of a logistics strategy are: (1) the selection of a mode of transport, (2) the selection of a carrier, (3) the selection of a route, (4) the selection of a terminal, (5) the selection of a warehouse, (6) the selection of a distribution network, (7) the selection of a packaging, (8) the selection of a handling equipment, (9) the selection of a loading/unloading equipment, (10) the selection of a tracking system, (11) the selection of a documentation, (12) the selection of a communication system, (13) the selection of a security system, (14) the selection of a risk management system, (15) the selection of a sustainability system, (16) the selection of a social responsibility system, (17) the selection of a legal system, (18) the selection of a financial system, (19) the selection of a human resources system, (20) the selection of a technology system, (21) the selection of a procurement system, (22) the selection of a sales system, (23) the selection of a marketing 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Asheban, Bryan, Peter A. These two examples illustrate the obsolescence category of inventory carrying costs and refer to the fact that products lose value through time. "Returning to Roots for Reducing Inventory Costs in SMEs: A Case of Indian Lumber Industry," *Journal of Enterprising Culture* 18, no. 10 (2010): 62-69. R. S. Wilson, M. 84n

distinct from competitor offerings. Alternatively, a fixed order interval policy might be attractive because of its simplicity (e.g., an order is placed every seven days); however, irregular demand patterns could create either stockouts or overstocks under such a policy. Likewise, although our example assigns particular logistics activities to certain departments, there is no established template for which logistics activities are assigned to which departments. In terms of processes to improve warehousing security, the more times a shipment is handled, the greater the opportunities for loss or damage. 1 (2009): 47-62. How is it calculated? Through allocation, logistics can break the thousands of cases of diet cola into the smaller quantities that are desired by customers. Pon had lost count of the number of times the elder Robertson had needed cash to buy his son's way out of some embarrassing situation. Rather than the shipment going by water from Hawaii through the Panama Canal and then on to Europe, under land bridge service, the pineapples would move by container from Hawaii to a U.S. West Coast water port. "A Spreadsheet Implementation of an Ammunition Requirements Model for the Canadian Army," *Interfaces* 38, no. Supplier considerations: Are used by companies to report performance information to their suppliers. 6.9 Distinguish between supplier audits and supplier scorecards. Dhomoa, José and Peter Barber. "Increasingly, these orders are transmitted electronically. The goods are unloaded from the line-haul carrier, move through the terminal, and are loaded aboard a small truck for local delivery. G., 40n Zinn, W., 77n Zuckerman, A., 47n 03/06/14 5:39 PM Subject Index Note: Locators followed by 'f' and 'r' refer to figures and tables. 4 (2008): 295-312. • FOB destination, freight collect. The buyer pays the freight charges; the seller owns the goods in transit and files L&D claims, if needed. See Management information system (MIS) Monitor, 230-231. Multicenter warehousing, 194 N NAFTA. "7 Keys to Facility Location." Supply Chain Management: The Logistics Handbook, 2nd ed. (Boston: McGraw-Hill, 2006). 11. Warehouse location decisions are based on a number of factors. Table 13.3 illustrates how a carrier performance scorecard might work; in this example, the transportation manager has selected five performance attributes that will be used to evaluate individual carriers. P., 190n Carter, C. Norton. These buildings would require Let There Be Light to supply 8,100 identical lights, and the relevant terms of sale would include delivery to the Port of Shanghai where the architectural firm would take possession. I consider this very serious. "Damn it!" shouted Amy, pounding the table with her fist. Inventory management is a key component in logistics and supply chain management, in part because inventory decisions are often a starting point, or driver, for other business activities, such as warehousing, transportation, and materials handling. Quality declined because the pace became quicker. 8.18 Why should organizations carefully consider potential trade-offs before adopting a lean philosophy? 21 Andrew Johnson and Leon McGinnis, "Performance Measurement in the Warehousing Industry," *IEEE Transactions* 43, no. Environmental Regulation The Environmental Protection Agency (EPA), a U.S. federal regulatory agency that was established to protect human health and the environment, influences transportation in a number of different ways. 04/06/14 12:03 PM 11 Packaging and Materials Handling Key Terms ■ ■ ■ ■ ■ Building blocks concept Closed-loop systems Cube out Ergonomics Globally Harmonized System of Classification and Labeling of Chemicals (GHS) ■ ■ ■ ■ ■ Materials handling (material handling) Packaging Pallet (skid) ■ Ship sheet ■ Unit load (unitization) ■ Weighing out Part 3 system Picker-to-pick system Shrink-wrap ■ ■ ■ ■ ■ To illustrate how product characteristics affect packaging and materials handling mental protection and packaging inefficiencies ■ To discuss packaging fundamentals such as quantities, facility location, transport cost minimization, among other Communication system: helps people work together by interacting and sharing information in many different forms Virtual meetings via computer telephony Voice-based order picking Transaction processing system (TPS): collects and stores information about transactions; 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The student pays by credit card, and a healthy arrangement of the correct bouquet (from utility) arrived at the girlfriend's residence on Valentine's Day (place and time utility). Bulk cargoes have various handling characteristics, one of which is density. Political considerations such as war and governmental stability can also act as a barrier to SCM. Specification involves quantifying and qualifying current sources across a variety of dimensions such as quality, costs, reliability, and standardization, among others. Perry, "Who's Watching the Numbers That Count?" Railway Age, May 2005, 10. Both UPS and FedEx now offer package shipping services options that include same-day service involving air transportation, next-day service involving air or truck, and second-day service involving air or truck, among others. Examples of warehouse automation include narrow aisle forklifts, automated guided vehicles, automated storage and retrieval systems, and radio frequency identification, among others. 14.17 Describe the potential problems in using cross-border rail transportation into and out of China. Warehouse employees should note these warnings when receiving materials and similarly should include such warnings on outbound shipping documents when materials leave warehouses. Twenty units of safety stock result in \$1,200 of additional carrying costs, whereas the additional stockout costs avoided are \$6,400 (16 * \$400). According to the data in Table 8.4, the optimum quantity of safety stock is 70 units. Terim came up with the excuse that if he didn't sell to the North Koreans, someone else would eventually, so why should he give up this money? Because of this, customers can stockpile inventories in the fall to last through winter months or can use alternate methods of transportation. Allocating, by contrast, involves breaking larger quantities into smaller quantities; continuing with our fruit example, whereas the department store might buy 5,000 suits in size 42 short, an individual customer might only carry 15 or 20 suits in this size. The Black Mesa pipeline, which transports oil from Oklahoma City to Los Angeles, has been built to allow more than 1 million gallons per day to flow continuously. It will cost about \$1 billion to build and operate. The Ordinance that governs the material in this section is drawn from G. Possible suggestions to reduce the amount of packaging materials include the use of just one material, which should improve recycling rates. A company that uses too much packaging material may incur higher costs than it saves from reduced waste disposal charges. In addition, excessive packaging increases the risk of damage to contents during transit. Companies should aim to minimize packaging while ensuring product integrity.

Example 16.9 The 19 subzones in Detroit, Michigan, involve automobile manufacturers. 24 Finding the Lowest-Cost Location Many products are a combination of several material inputs and labor. Moreover, the liquor industry's adoption of the metric system also caused some short-term warehousing issues because the cartons that were used for wine bottles and storing giant bottles were in some cases just a bit too small to hold one-liter bottles. This dissolution of European shipping conventions has caused Asian producers pushing for the end of shipping conferences in their region 20 In the mid-1990s, ocean carrier alliances, in which carriers retain their individual identities but cooperate in certain aspects of operations, emerged. These alliances allowed companies to share resources and reduce costs. Example 16.10 Overview of Logistics Current System Item Gas Range Toilet Pump Refrigerator (large) Refrigerator (small) Foam cushion DVD player (type D) Dome lights Pushing Brackets Insect Screens Using JIT Unit Cost Average freight cost per unit/JIT lot size Unit cost average freight cost per unit (surface) 200 240 125 100 80 160 120 180 130 107 5105 100 52 122 18 6 120 110 20 6 113 25 22 49 675 15 1,500 95 8 15 21 75 85 7 5 1,800 3 824 24 1,720 136 6 11 0 3 36 130 26 0 48 540 1,200 41 6 0 5 159 570 124 0 7 15 0 2 Distance from vendor (in miles) Average number of units used each week Current lot size purchased 1,145 606 26 10 10 56 22 Exhibit 16.20 Percent Demand Sample of Component Inventory Note: The plant operates 52 weeks per year and produces 10 mini motor pumps per week. Since January 2004, a procurement philosophy that consolidates purchase volume with a single supplier with the hopes of enjoying lower cost per unit and increased cooperation and communication in the supply relationship. Cost trade-offs: Changes to one logistics activity cause some costs to increase and others to decrease. 13 How does logistics contribute to time and place utility? As such, online retailing requires an order management system capable of handling high volumes of orders, and it is also essential that the information management system be able to correctly transmitting each order so that it can be filled in a timely fashion. This cannot be done for all products, because problems arise when goods in reusable containers are contaminated by traces of whatever product had been carried earlier. Income Statement 2012 Sales \$4,003,450 Cost of goods sold Gross Margin 15% Transportation cost Warehousing cost Other operating Total operating cost Earnings Before Interest and Taxes Interest Taxes Net income \$937,000 \$3,066,450 \$657,322 \$735,982 \$567,987 \$345,878 \$2,307,167 \$755,203 \$110,000 \$689,000 \$580,263 Exhibit 3.3 Brant Freezer Company Income Statement Exhibit 3.4 LCI Order History Data 1. Customer name 2. Product code 3. Quantity ordered 4. Ship date 5. Delivery date 6. Invoice date 7. Bill-to address 8. Ship-to address 9. Contact person 10. Phone number 11. Fax number 12. Email address 13. Website URL 14. Account type 15. Credit terms 16. Payment method 17. Billing cycle 18. Tax ID number 19. Country 20. Language 21. Currency 22. Units of measure 23. Packaging requirements 24. Special instructions 25. Remarks

Review of Logistics Current System Item Gas Range Toilet Pump Refrigerator (large) Refrigerator (small) Foam cushion DVD player (type D) Dome lights Pushing Brackets Insect Screens Using JIT Unit Cost Average freight cost per unit/JIT lot size Unit cost average freight cost per unit (surface) 200 240 125 100 80 160 120 180 130 107 5105 100 52 122 18 6 120 110 20 6 113 25 22 49 675 15 1,500 95 8 15 21 75 85 7 5 1,800 3 824 24 1,720 136 6 11 0 3 36 130 26 0 48 540 1,200 41 6 0 5 159 570 124 0 7 15 0 2 Distance from vendor (in miles) Average number of units used each week Current lot size purchased 1,145 606 26 10 10 56 22 Exhibit 16.20 Percent Demand Sample of Component Inventory Note: The plant operates 52 weeks per year and produces 10 mini motor pumps per week. Since January 2004, a procurement philosophy that consolidates purchase volume with a single supplier with the hopes of enjoying lower cost per unit and increased cooperation and communication in the supply relationship. Cost trade-offs: Changes to one logistics activity cause some costs to increase and others to decrease. 13 How does logistics contribute to time and place utility? As such, online retailing requires an order management system capable of handling high volumes of orders, and it is also essential that the information management system be able to correctly transmitting each order so that it can be filled in a timely fashion. This cannot be done for all products, because problems arise when goods in reusable containers are contaminated by traces of whatever product had been carried earlier. Income Statement 2012 Sales \$4,003,450 Cost of goods sold Gross Margin 15% Transportation cost Warehousing cost Other operating Total operating cost Earnings Before Interest and Taxes Interest Taxes Net income \$937,000 \$3,066,450 \$657,322 \$735,982 \$567,987 \$345,878 \$2,307,167 \$755,203 \$110,000 \$689,000 \$580,263 Exhibit 3.3 Brant Freezer Company Income Statement Exhibit 3.4 LCI Order History Data 1. Customer name 2. Product code 3. Quantity ordered 4. Ship date 5. Delivery date 6. Invoice date 7. Bill-to address 8. Ship-to address 9. Contact person 10. Phone number 11. Fax number 12. Email address 13. Website URL 14. Account type 15. Credit terms 16. Payment method 17. Billing cycle 18. Tax ID number 19. Country 20. Language 21. Currency 22. Units of measure 23. Packaging requirements 24. Special instructions 25. Remarks

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