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- b. What are the risks associated with a heavy concentration of manufacturing assets in China?
 - c. What strategies might Philips adopt to maximize the benefits and mitigate the risks associated with moving so much product?
 5. Explain how an efficient logistics function can help an international business compete more effectively in the global marketplace.

Research Task globaleedge.msu.edu

Global Production, Outsourcing, and Logistics

Use the globalEDGE website (globaleedge.msu.edu) to complete the following exercises:

Exercise 1

The globalization of production makes many people aware of the differences in manufacturing costs worldwide. The U.S. Department of Labor's Bureau of International Labor Affairs publishes the *Chartbook of International Labor Comparisons*. Locate the latest edition of this report, and identify the hourly compensation costs for manufacturing workers in China, Brazil, Mexico, Turkey, Germany, and the United States.

Exercise 2

The World Bank's *Logistics Performance Index* (LPI) assesses the trade logistics environment and performance of countries. Locate the most recent LPI ranking. What components for each country are examined to construct the index? Identify the top 10 logistics performers. Prepare an executive summary highlighting the key findings from the LPI. How are these findings helpful for companies trying to build a competitive supply chain network?

CLOSING CASE

Making the Amazon Kindle

When online retailer Amazon.com invented its revolutionary e-book reader, the Kindle, the company had to decide where to have it made. Guiding the decision was an understanding that if the Kindle was going to be successful, it had to have that magic combination of low price, high functionality, high reliability, and design elegance. Over time, this has only become more important as competitors have emerged. These have included Sony with various readers, Barnes & Noble with its Nook, and, most notably, Apple with its multipurpose iPad, which can function as a digital reader among other things. Amazon's goal has been to aggressively reduce the price of the Kindle so that it both has an edge over competitors and becomes feasible to have a couple Kindles lying around the house as a sort of digital library.

Amazon designed the Kindle in a lab in California, precisely because this is where the key R&D expertise was located. One of the Kindle's crucial components, the "ink" (the tiny microcapsule beads used in its display) were designed and are made by E Ink, a company based in Cambridge, Massachusetts. Much of the rest of the

value of the Kindle, however, is outsourced to manufacturing enterprises in Asia.

The market research firm iSuppli estimates that when it was introduced in 2009, the total manufacturing cost for the Kindle 2 ran about \$185. The most expensive single component was the display, which cost about \$60. Although the display used E Ink's technology, there were no American firms with the expertise required to manufacture a bistable electrophoretic display that will show an image even when it is not drawing on battery power. This technology is central to the Kindle because it allows very long battery life. Ultimately, Amazon contracted with a Taiwanese firm, Prime View International, to make the display. Prime View had considerable expertise in the manufacture of LCDs and was known as an efficient and reliable manufacturer. Estimates suggest that 40 to 50 percent of the value of the display is captured by E Ink, with the rest going to Prime View.

After the display, the next most expensive component is the wireless card that allows the Kindle to connect to Amazon's digital bookstore through a wireless link. The card



costs about \$40. Novatel Wireless, a South Korean enterprise that has developed considerable expertise in making wireless chipsets for cell phone manufacturers, produces this component. The card includes a \$13 chip that was designed by Qualcomm of San Diego. This too is manufactured in Asia. The brain of the Kindle is an \$8.64 microprocessor chip designed by Texas-based Freescale

Semiconductor. Freescale outsources its chip making to foundries in Taiwan and China. Another key component, the lithium polymer battery, costs about \$7.50 and is manufactured in China. In sum, out of a total manufacturing cost of about \$185, perhaps \$40 to \$50 is accounted for by activities undertaken in the United States by E Ink, Qualcomm, and Freescale, with the remainder being outsourced to manufacturers in Taiwan, China, and South Korea.⁴⁰



A selection of Amazon Kindles.

Case Discussion Questions

1. What criteria drove Amazon's decision of where to produce the different components that go into the Kindle? Were these the right criteria?
2. Some have argued that the fact that only \$40–\$50 of the value associated with manufacturing the Kindle goes to U.S. companies is a sign of the decline of American competitiveness. Do you agree with this assessment?
3. If Amazon had decided to design and manufacture the Kindle and all its components in the United States, what do you think the consequences would have been for Amazon?

Endnotes

1. S. Denning, "The Boeing Debacle: Seven Lessons Every CEO Must Learn," *Forbes*, January 17, 2013; J. Surowiecki, "Requiem for a Dreamliner," *The New Yorker*, February 4, 2013; and J. N. Stewart, "Japan's Role in Making Batteries for Boeing," *The New York Times*, January 25, 2013.
2. B. C. Arntzen, G. G. Brown, T. P. Harrison, and L. L. Trafton, "Global Supply Chain Management at Digital Equipment Corporation," *Interfaces* 25 (1995), pp. 69–93; and Diana Farrell, "Beyond Offshoring," *Harvard Business Review*, December 2004, pp. 1–8.
3. D. A. Garvin, "What Does Product Quality Really Mean," *Sloan Management Review* 26 (Fall 1984), pp. 25–44.
4. See the articles published in the special issue of the *Academy of Management Review on Total Quality Management* 19, no. 3 (1994). The following article provides a good overview of many of the issues involved from an academic perspective: J. W. Dean and D. E. Bowen, "Management Theory and Total Quality," *Academy of Management Review* 19 (1994), pp. 392–418. Also see T. C. Powell, "Total Quality Management as Competitive Advantage," *Strategic Management Journal* 16 (1995), pp. 15–37; and S. B. Han et al., "The Impact of ISO 9000 on TQM and Business Performance," *Journal of Business and Economic Studies* 13, no. 2 (2007), pp. 1–25.
5. For general background information, see "How to Build Quality," *The Economist*, September 23, 1989, pp. 91–92; A. Gabor, *The Man Who Discovered Quality* (New York: Penguin, 1990); P. B. Crosby, *Quality Is Free* (New York: Mentor, 1980); and M. Elliot et al., "A Quality World, a Quality Life," *Industrial Engineer*, January 2003, pp. 26–33.
6. G. T. Lucier and S. Seshadri, "GE Takes Six Sigma beyond the Bottom Line," *Strategic Finance*, May 2001, pp. 40–46; and U. D. Kumar et al., "On the Optimal Selection of Process Alternatives in a Six Sigma Implementation," *International Journal of Production Economics* 111, no. 2 (2008), pp. 456–70.
7. M. Saunders, "U.S. Firms Doing Business in Europe Have Options in Registering for ISO 9000 Quality Standards," *Business America*, June 14, 1993, p. 7; and Han et al. "The Impact of ISO 9000."
8. G. Stalk and T. M. Hout, *Competing against Time* (New York: Free Press, 1990).
9. N. Tokatli, "Global Sourcing: Insights from the Global Clothing Industry—The Case of Zara, a Fast Fashion Retailer," *Journal of Economic Geography* 8, no. 1 (2008), pp. 21–39.
10. Diana Farrell, "Beyond Offshoring," *Harvard Business Review*, December 2004, pp. 1–8; and M. A. Cohen and H. L. Lee, "Resource Deployment Analysis of Global Manufacturing and Distribution Networks," *Journal of Manufacturing and Operations Management* 2 (1989), pp. 81–104.
11. B. Einhorn, "Philips' Expanding Asia Connections," *BusinessWeek Online*, November 27, 2003; K. Leggett and P. Wonacott, "The World's Factory: A Surge in Exports from China Jolts the Global Industry," *The Wall Street Journal*, October 10, 2002,