

Many European companies require that their vendors meet these standards as a condition for obtaining contracts.

 **Business Process Reengineering** The need to become lean to remain competitive in the global economic recession in the 1990s pushed companies to seek innovations in the processes by which they run their operations. The flavor of business process reengineering (BPR) is conveyed in the title of Michael Hammer's influential article in *Harvard Business Review*: "Reengineering Work: Don't Automate, Obliterate." The approach seeks to make revolutionary changes as opposed to evolutionary changes (which are commonly advocated in TQM). It does this by taking a fresh look at what the organization is trying to do in all its business processes, and then eliminating non-value-added steps and computerizing the remaining ones to achieve the desired outcome.

Hammer actually was not the first consultant to advocate eliminating non-value-added steps and reengineering processes. In the early 1900s, Frederick W. Taylor developed principles of scientific management that applied scientific analysis to eliminating wasted effort from manual labor. Around the same time, Frank and Lillian Gilbreth used the new technology of the time, motion pictures, to analyze such diverse operations as bricklaying and medical surgery procedures. Many of the innovations this husband-and-wife team developed, such as time and motion study, are widely used today.

Six Sigma Quality Originally developed in the 1980s as part of total quality management, six sigma quality in the 1990s saw a dramatic expansion as an extensive set of diagnostic tools was developed. These tools have been taught to managers as part of "Green and Black Belt Programs" at many corporations. The tools are now applied not only to the well-known manufacturing applications, but also to nonmanufacturing processes such as accounts receivable, sales, and research and development. Six sigma has been applied to environmental, health, and safety services at companies and is now being applied to research and development, finance, information systems, legal, marketing, public affairs, and human resources processes.

Supply Chain Management The central idea of supply chain management is to apply a total system approach to managing the flow of information, materials, and services from raw material suppliers through factories and warehouses to the end customer. Trends such as outsourcing and **mass customization** are forcing companies to find flexible ways to meet customer demand. The focus is on optimizing core activities to maximize the speed of response to changes in customer expectations.

Electronic Commerce The quick adoption of the Internet and the World Wide Web during the late 1990s was remarkable. The term *electronic commerce* refers to the use of the Internet as an essential element of business activity. The Internet is an outgrowth of a government network called ARPANET, which was created in 1969 by the Defense Department of the U.S. government. The use of Web pages, forms, and interactive search engines has changed the way people collect information, shop, and communicate. It has changed the way operations managers coordinate and execute production and distribution functions.

Service Science A direct response to the growth of services is the development of a major industry and university program called Service Science Management and Engineering (SSME). SSME aims to apply the latest concepts in information technology to continue to improve service productivity of technology-based organizations. An interesting question raised by Jim Spohrer, leader of the IBM team that started the effort, is where will the labor go once productivity improves in the service sector? "The short answer is new service sector

Mass customization

The ability to produce a unique product exactly to a particular customer's requirements.

- 2 Why should a service organization worry about being world-class if it does not compete outside its own national border? What impact does the Internet have on this?
- 3 What are the major priorities associated with operations and supply chain strategy? How has their relationship to one another changed over the years?
- 4 Find examples where companies have used features related to environmental sustainability to "win" new customers.
- 5 For each priority in question 3, describe the unique characteristics of the market niche with which it is most compatible.
- 6 A few years ago, the dollar showed relative weakness with respect to foreign currencies such as the yen, euro, and pound. This stimulated exports. Why would long-term reliance on a lower-valued dollar be at best a short-term solution to the competitiveness problem?
- 7 In your opinion, do business schools have competitive priorities?
- 8 Why does the "proper" operations and supply chain strategy keep changing for companies that are world-class competitors?
- 9 What is meant by the expressions *order winners* and *order qualifiers*? What was the order winner(s) for your last major purchase of a product or service?
- 10 Identify an operations and supply chain-related "disruption" that recently impacted a company. What could the company have done to have minimized the impact of this type of disruption prior to it occurring?
- 11 What do we mean when we say productivity is a "relative" measure?

Problems *

- 1 As operations manager, you are concerned about being able to meet sales requirements in the coming months. You have just been given the following production report:

	JAN	FEB	MAR	APR
Units produced	2300	1800	2800	3000
Hours per machine	325	200	400	320
Number of machines	3	5	4	4

Find the average monthly productivity (units per machine hour).

- 2 Sailmaster makes high-performance sails for competitive windsurfers. Below is information about the inputs and outputs for one model, the Windy 2000.

Units sold	1,217
Sale price each	\$1,700
Total labor hours	46,672
Wage rate	\$12/hour
Total materials	\$60,000
Total energy	\$4,000

Calculate the productivity in **sales revenue/labor expense**.

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