E-Business and E-Commerce. Conducting business electronically is an essential strategy for companies that are competing in today's business environment. *Electronic commerce (EC* or *e-commerce)* describes the process of buying, selling, transferring, or exchanging products, services, or information through computer networks, including the Internet. *E-business* is a somewhat broader concept. In addition to the buying and selling of goods and services, e-business also refers to servicing customers, collaborating with business partners, and performing electronic transactions within an organization. Chapter 7 focuses extensively on this topic. In addition, e-commerce applications appear throughout the text.

You now have a general overview of the pressures that affect companies in today's business environment and the responses that these companies choose to manage these pressures. To plan for the most effective responses, companies formulate strategies. In the new digital economy, these strategies rely heavily on information technology, especially strategic information systems. You examine these topics in the next section.

Before you go on . . .

1. What are the characteristics of the modern business environment?
2. Discuss some of the pressures that characterize the modern global business environment.
3. Identify some of the organizational responses to these pressures. Are any of these responses specific to a particular pressure? If so, then which ones?

2.4 Competitive Advantage and Strategic Information Systems

Author Lecture Videos are available exclusively in *WileyPLUS*.
Apply the Concept activities are available in the Appendix and in *WileyPLUS*.

A *competitive strategy* is a statement that identifies a business's approach to compete, its goals, and the plans and policies that will be required to carry out those goals.[1] A strategy, in general, can apply to a desired outcome, such as gaining market share. A competitive strategy focuses on achieving a desired outcome when competitors want to prevent you from reaching your goal. Therefore, when you create a competitive strategy, you must plan your own moves, but you must also anticipate and counter your competitors' moves.

Through its competitive strategy, an organization seeks a competitive advantage in an industry; that is, it seeks to outperform its competitors in a critical measure such as cost, quality, and time-to-market. Competitive advantage helps a company function profitably with a market and generate higher-than-average profits.

Competitive advantage is increasingly important in today's business environment, as you will note throughout the text. In general, the *core business* of companies has remained the same; that is, information technologies simply offer tools that can enhance an organization's success through its traditional sources of competitive advantage, such as low cost, excellent customer service, and superior supply chain management. **Strategic information systems (SISs)** provide a competitive advantage by helping an organization to implement its strategic goals and improve its performance and productivity. Any information system that helps an organization either achieve a competitive advantage or reduce a competitive disadvantage qualifies as a strategic information system.

Porter's Competitive Forces Model

The best-known framework for analyzing competitiveness is Michael Porter's **competitive forces model**. Companies use Porter's model to develop strategies to increase their competitive edge. Porter's model also demonstrates how IT can make a company more competitive.

[1] M. E. Porter, *Competitive Advantage* (New York: Free Press, 1985).

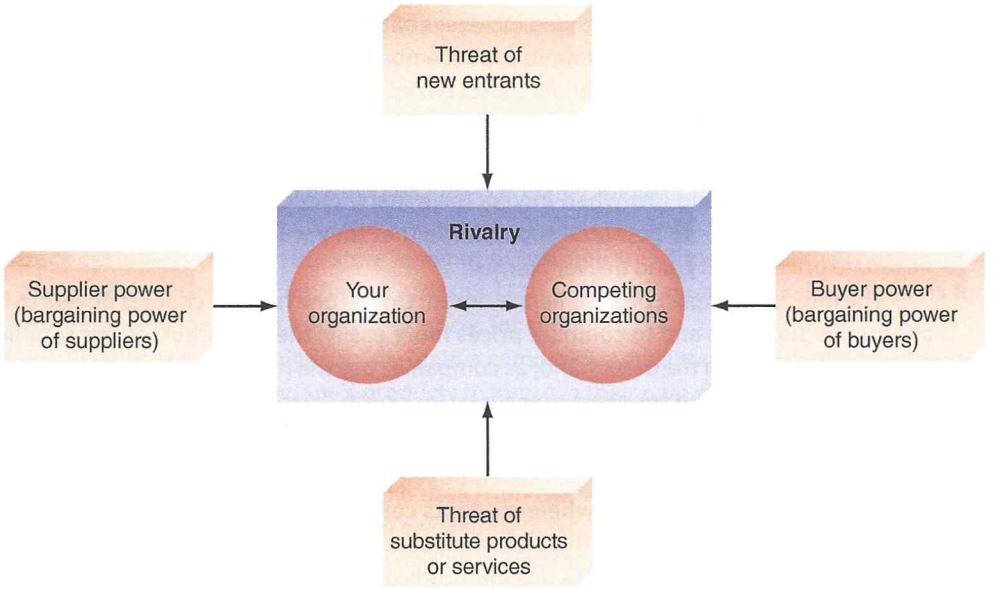

FIGURE 2.3 **Porter's competitive forces model.**

Porter's model identifies five major forces that can endanger or enhance a company's position in a given industry. **Figure 2.3** highlights these forces. Although the Web has changed the nature of competition, it has not changed Porter's five fundamental forces. In fact, what makes these forces so valuable as analytical tools is that they have not changed for centuries. Every competitive organization, no matter how large or small or which business it is in, is driven by these forces. This observation applies even to organizations that you might not consider competitive, such as local governments. Although local governments are not for-profit enterprises, they compete for businesses to locate in their districts, for funding from higher levels of government, for employees, and for many other things.

Significantly, Porter[2] concludes that the *overall* impact of the Web is to increase competition, which generally diminishes a firm's profitability. Let's examine Porter's five forces and the ways that the Web influences them:

1. *The threat of entry of new competitors:* The threat that new competitors will enter your market is high when entry is easy and low when there are significant barriers to entry. An **entry barrier** is a product or service feature that customers have learned to expect from organizations in a certain industry. An organization that seeks to enter the industry must offer this feature to survive in the marketplace. There are many types of entry barriers. Consider, for example, legal requirements, such as admission to the bar to practice law or obtaining a license to serve liquor, where only a certain number of licenses are available.

   Suppose you want to open a gasoline station. To compete in that industry, you would have to offer pay-at-the-pump service to your customers. Pay-at-the-pump is an IT-based barrier to entering this market because you must offer it for free. The first gas station that offered this service gained first-mover advantage and established barriers to entry. This advantage did not last, however, because competitors quickly offered the same service and thus overcame the entry barrier.

   For most firms, the Web *increases* the threat that new competitors will enter the market because it sharply reduces traditional barriers to entry, such as the need for a sales force or a physical storefront. Today, competitors frequently need only to set up a website. This threat of increased competition is particularly acute in industries that perform an *intermediation role*, which is a link between buyers and sellers (e.g., stock brokers and travel agents), as well as in industries in which the primary product or service is digital (e.g., the music industry). The geographical reach of the Web also enables distant competitors to compete more directly with an existing firm.

[2]M. E. Porter, "Strategy and the Internet," *Harvard Business Review*, March 2001.

In some cases, however, the Web increases barriers to entry. This scenario occurs primarily when customers have come to expect a nontrivial capability from their suppliers. For example, the first company to offer Web-based package tracking gained a competitive advantage from that service. Competitors were forced to follow suit.

2. *The bargaining power of suppliers:* Supplier power is high when buyers have few choices from whom to buy and low when buyers have many choices. Therefore, organizations would rather have more potential suppliers so that they will be in a stronger position to negotiate price, quality, and delivery terms.

   The Internet's impact on suppliers is mixed. On the one hand, it enables buyers to find alternative suppliers and to compare prices more easily, thereby reducing the supplier's bargaining power. On the other hand, as companies use the Internet to integrate their supply chains, participating suppliers prosper by locking in customers.

3. *The bargaining power of customers (buyers):* Buyer power is high when buyers have many choices from whom to buy and low when buyers have few choices. For example, in the past, there were few locations where students could purchase textbooks (typically, one or two campus bookstores). In this situation, students had low buyer power. Today, the Web provides students with access to a multitude of potential suppliers as well as detailed information about textbooks. As a result, student buyer power has increased dramatically.

   In contrast, *loyalty programs* reduce buyer power. As their name suggests, loyalty programs reward customers based on the amount of business they conduct with a particular organization (e.g., airlines, hotels, car rental companies). Information technology enables companies to track the activities and accounts of millions of customers, thereby reducing buyer power; that is, customers who receive perks from loyalty programs are less likely to do business with competitors. (Loyalty programs are associated with customer relationship management, which you will study in Chapter 11.)

4. *The threat of substitute products or services:* If there are many alternatives to an organization's products or services, then the threat of substitutes is high. Conversely, if there are few alternatives, then the threat is low. Today, new technologies create substitute products very rapidly. For example, customers can purchase wireless telephones instead of landline telephones, Internet music services instead of traditional CDs, and ethanol instead of gasoline for their cars.

   Information-based industries experience the greatest threat from substitutes. Any industry in which digitized information can replace material goods (e.g., music, books, software) must view the Internet as a threat because the Internet can convey this information efficiently and at low cost and high quality.

   Even when there are many substitutes for their products, however, companies can create a competitive advantage by increasing switching costs. *Switching costs* are the costs, in money and time, imposed by a decision to buy elsewhere. For example, contracts with smartphone providers typically include a substantial penalty for switching to another provider until the term of the contract expires (quite often, two years). This switching cost is monetary.

   As another example, when you buy products from Amazon, the company develops a profile of your shopping habits and recommends products targeted to your preferences. If you switch to another online vendor, then that company will need time to develop a profile of your wants and needs. In this case, the switching cost involves time rather than money.

5. *The rivalry among existing firms in the industry:* The threat from rivalry is high when there is intense competition among many firms in an industry. The threat is low when the competition involves fewer firms and is not as intense.

   In the past, proprietary information systems—systems that belong exclusively to a single organization—have provided strategic advantage to firms in highly competitive industries. Today, however, the visibility of Internet applications on the Web makes proprietary systems more difficult to keep secret. In simple terms, when I see my competitor's new system online, I will rapidly match its features to remain competitive. The result is fewer differences among competitors, which leads to more intense competition in an industry.

To understand this concept, consider the highly competitive grocery industry, in which Walmart, Kroger, Safeway, and other companies compete essentially on price. Some of these companies have IT-enabled loyalty programs in which customers receive discounts and the store gains valuable business intelligence on customers' buying preferences. Stores use this business intelligence in their marketing and promotional campaigns. (You will learn about business intelligence in Chapter 12.)

Grocery stores are also experimenting with RFID to speed up the checkout process, track customers through the store, and notify customers of discounts as they pass by certain products. Grocery companies also use IT to tightly integrate their supply chains for maximum efficiency and thus reduce prices for shoppers.

Established companies can also gain a competitive advantage by allowing customers to use data from the company's products to improve their own performance. For example, Babolat (**www.babolat.com**), a manufacturer of sports equipment, has developed its Babolat Play Pure Drive system. The system has sensors embedded into the handle of its tennis rackets. A smartphone app uses the data from the sensors to monitor and evaluate ball speed, spin, and impact location to give tennis players valuable feedback.

Competition is also being affected by the extremely low variable cost of digital products; that is, once a digital product has been developed, the cost of producing additional units approaches zero. Consider the music industry as an example. When artists record music, their songs are captured in digital format. Physical products, such as CDs or DVDs of the songs for sale in music stores, involve costs. The costs of a physical distribution channel are much higher than those involved in delivering the songs digitally over the Internet.

In fact, in the future, companies might give away some products for free. For example, some analysts predict that commissions for online stock trading will approach zero because investors can search the Internet for information to make their own decisions regarding buying and selling stocks. At that point, consumers will no longer need brokers to give them information that they can obtain themselves, virtually for free.

Porter's Value Chain Model

Organizations use Porter's competitive forces model to design general strategies. To identify specific activities in which they can use competitive strategies for greatest impact, they use his value chain model. A **value chain** is a sequence of activities through which the organization's inputs, whatever they are, are transformed into more valuable outputs, whatever they are. The **value chain model** identifies points for which an organization can use information technology to achieve a competitive advantage (see **Figure 2.4**).

According to Porter's value chain model, the activities conducted in any organization can be divided into two categories: primary activities and support activities. **Primary activities** relate to the production and distribution of the firm's products and services. These activities create value for which customers are willing to pay. The primary activities are buttressed by **support activities**. Unlike primary activities, support activities do not add value directly to the firm's products or services. Rather, as their name suggests, they contribute to the firm's competitive advantage by supporting the primary activities.

Next, you will see examples of primary and support activities in the value chain of a manufacturing company. Keep in mind that other types of firms, such as transportation, health care, education, retail, and others, have different value chains. The key point is that *every* organization has a value chain.

In a manufacturing company, primary activities involve purchasing materials, processing the materials into products, and delivering the products to customers. Manufacturing companies typically perform five primary activities in the following sequence:

1. Inbound logistics (inputs)
2. Operations (manufacturing and testing)
3. Outbound logistics (storage and distribution)

4. Marketing and sales
5. Services

As work progresses in this sequence, value is added to the product in each activity. Specifically, the following steps occur:

1. The incoming materials are processed (in receiving, storage, and so on) in activities called *inbound logistics.*
2. The materials are used in operations, in which value is added by turning raw materials into products.
3. These products are prepared for delivery (packaging, storing, and shipping) in the outbound logistics activities.
4. Marketing and sales sell the products to customers, increasing product value by creating demand for the company's products.
5. Finally, the company performs after-sales service for the customer, such as warranty service or upgrade notification, adding further value.

As noted earlier, these primary activities are buttressed by support activities. Support activities consist of the following:

1. The firm's infrastructure (accounting, finance, management)
2. Human resources management
3. Product and technology development (R&D)
4. Procurement

Each support activity can be applied to any or all of the primary activities. The support activities can also support one another.

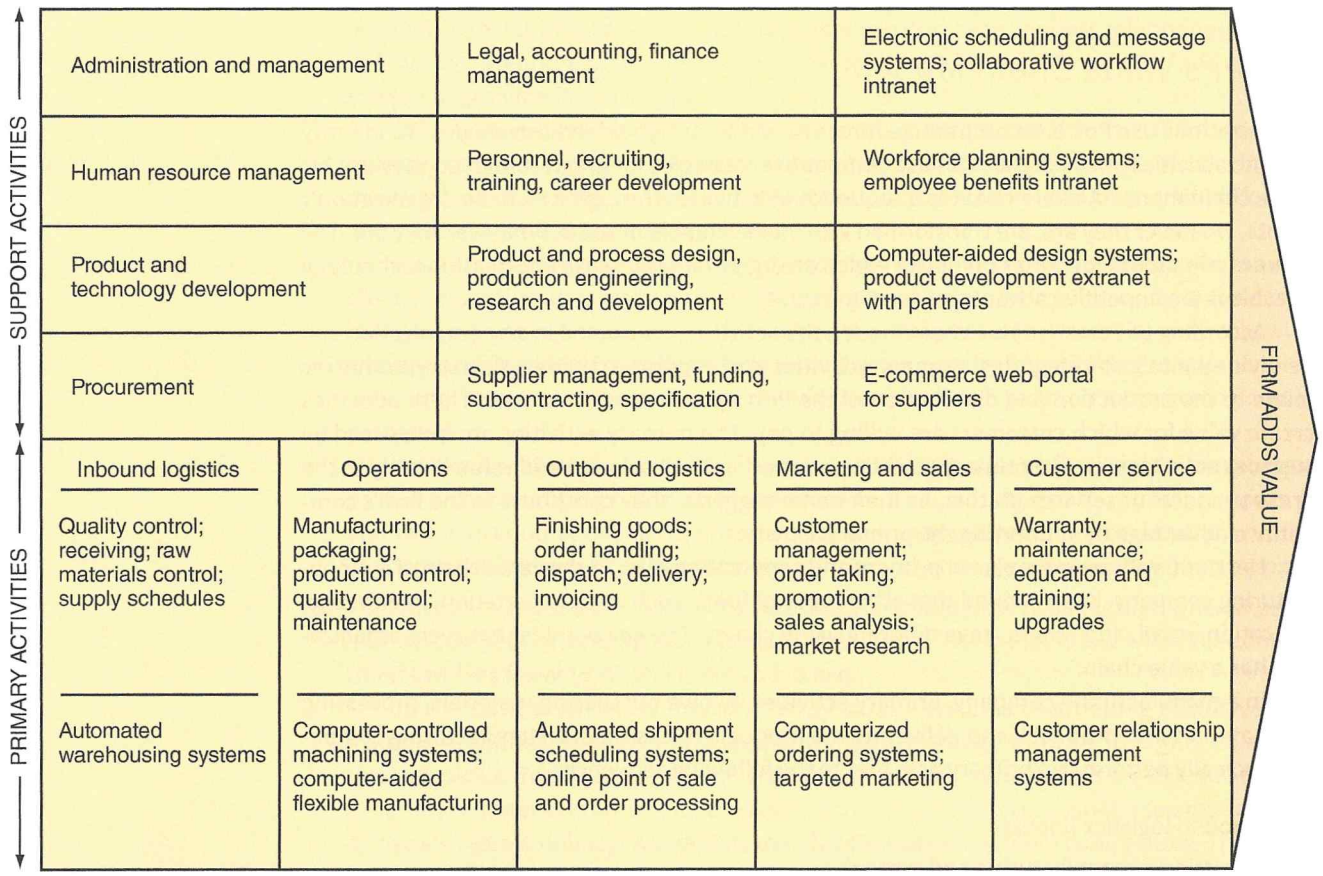

FIGURE 2.4 **Porter's value chain model.**

A firm's value chain is part of a larger stream of activities, which Porter calls a **value system**. A value system, or an *industry value chain*, includes the suppliers that provide the inputs necessary to the firm along with their value chains. After the firm creates products, these products pass through the value chains of distributors (which also have their own value chains), all the way to the customers. All parts of these chains are included in the value system. To achieve and sustain a competitive advantage and to support that advantage with information technologies, a firm must understand every component of this value system.

Strategies for Competitive Advantage

Organizations continually try to develop strategies to counter the five competitive forces identified by Porter. You will learn about five of those strategies here. Before we go into specifics, however, it is important to note that an organization's choice of strategy involves trade-offs. For example, a firm that concentrates only on cost leadership might not have the resources available for research and development, leaving the firm unable to innovate. As another example, a company that invests in customer happiness (customer orientation strategy) will experience increased costs.

Companies must select a strategy and then stay with it because a confused strategy cannot succeed. This selection, in turn, decides how a company will use its information systems. A new information system that can improve customer service but will increase costs slightly will be welcomed at a high-end retailer such as Nordstrom's but not at a discount store such as Walmart. The following list presents the most commonly used strategies. **Figure 2.5** provides an overview of these strategies:

1. *Cost leadership strategy:* Produce products and services at the lowest cost in the industry. An example is Walmart's automatic inventory replenishment system, which enables the company to reduce inventory storage requirements. As a result, Walmart stores use floor space only to sell products and not to store them, thereby reducing inventory costs.
2. *Differentiation strategy:* Offer different products, services, or product features than your competitors. Southwest Airlines, for example, has differentiated itself as a low-cost, short-haul, express airline. This has proved to be a winning strategy for competing in the highly competitive airline industry.
3. *Innovation strategy:* Introduce new products and services, add new features to existing products and services, or develop new ways to produce them. A classic example is the introduction of automated teller machines (ATMs) by Citibank. The convenience and cost-cutting features of this innovation gave Citibank a huge advantage over its competitors. Like many innovative products, the ATM changed the nature of competition in the banking industry. Today, an ATM is a competitive *necessity* for any bank. Another excellent example is Apple's rapid introduction of innovative products.
4. *Operational effectiveness strategy:* Improve the manner in which a firm executes its internal business processes so that it performs these activities more effectively than its rivals. Such improvements increase quality, productivity, and employee and customer satisfaction while decreasing time to market.
5. *Customer orientation strategy:* Concentrate on making customers happy. Web-based systems are particularly effective in this area because they can create a personalized, one-to-one relationship with each customer. Amazon (**www.amazon.com**), Apple (**www.apple.com**), and Starbucks (**www.starbucks.com**) are classic examples of companies devoted to customer satisfaction.

FIGURE 2.5 **Strategies for competitive advantage.**

Business–Information Technology Alignment

The best way for organizations to maximize the strategic value of IT is to achieve business–information technology alignment. In fact, the holy grail of organizations is business–information technology alignment, or strategic alignment (which we will call simply *alignment*). **Business–information technology alignment (business–IT alignment)** is the tight integration of the IT function with the organization's strategy, mission, and goals; that is, the IT function directly supports the business objectives of the organization. There are six characteristics of excellent alignment:

1. Organizations view IT as an engine of innovation that continually transforms the business, often creating new revenue streams.
2. Organizations view their internal and external customers and their customer service function as supremely important.
3. Organizations rotate business and IT professionals across departments and job functions.
4. Organizations provide overarching goals that are completely clear to each IT and business employee.
5. Organizations ensure that IT employees understand how the company makes (or loses) money.
6. Organizations create a vibrant and inclusive company culture.

Unfortunately, many organizations fail to achieve this type of close alignment. In fact, according to a McKinsey and Company survey on IT strategy and spending, approximately 27 percent of the IT and business executives who participated agreed that their organization had adequate alignment between IT and the business. Given the importance of business and IT alignment, why do so many organizations fail to implement this policy? The major reasons are the following:

- Business managers and IT managers have different objectives.
- The business and IT departments are ignorant of the other group's expertise.
- A lack of communication.

Put simply, business executives often know little about information technology, and IT executives understand the technology but may not understand the real needs of the business. One solution to this problem is to foster a collaborative environment in organizations so that business and IT executives can communicate freely and learn from each other.

Businesses can also use enterprise architecture to foster alignment. Originally developed as a tool to organize a company's IT initiatives, the enterprise architecture concept has evolved to encompass both a technical specification (the information and communication technologies and the information systems used in an organization) and a business specification (a collection of core business processes and management activities).

Before you go on . . .

1. What are strategic information systems?
2. According to Porter, what are the five forces that could endanger a firm's position in its industry or marketplaces?
3. Describe Porter's value chain model. Differentiate between Porter's competitive forces model and his value chain model.
4. What strategies can companies use to gain competitive advantage?
5. What is business–IT alignment?
6. Give examples of business–IT alignment at your university, regarding student systems. (*Hint:* What are the "business" goals of your university with regard to student registration, fee payment, grade posting, and so on?)

What's in IT for me?

For All Business Majors

All functional areas of any organization are literally composed of a variety of business processes, as we can see from the examples in this chapter. Regardless of your major, you will be involved in a variety of business processes from your first day on the job. Some of these processes you will do by yourself; some will involve only your group, team, or department; and others will involve several (or all) functional areas of your organization.

It is important for you to be able to visualize processes, understand the inputs and outputs of each process, and know the "customer" of each process. If you can do these things, you will contribute to making processes more efficient and effective, which often means incorporating information technology in the process. It is also important for you to know how each process fits into your organization's strategy.

In addition, all functional areas in any organization must work together in an integrated fashion for the firm to respond adequately to business pressures. These responses typically require each functional area to use a variety of information systems to support, document, and manage cross-functional business processes. In today's competitive global marketplace, the timeliness and accuracy of these responses are even more critical.

Closely following this discussion, all functional areas must work together for the organization to gain a competitive advantage in its marketplace. Again, the functional areas use a variety of strategic information systems to achieve this goal.

You have seen why companies must be concerned with strategic advantage. But why is this chapter so important for you? There are several reasons. First, the business pressures you have learned about have an impact on your organization, but they also affect you as an individual. So, it is critical that you understand how information systems can help you—and eventually your organization—respond to these pressures.

Achieving a competitive advantage is also essential for your organization's survival. In many cases, you, your team, and all of your colleagues will be responsible for creating a competitive advantage. Therefore, having general knowledge about strategy and about how information systems affect the organization's strategy and competitive position will help you in your career.

You also need a basic knowledge of your organization's strategy, mission, and goals as well as its business problems and how it makes (or loses) money. You now know how to analyze your organization's strategy and value chain as well as the strategies and value chains of your competitors. You also have acquired a general knowledge of how information technology contributes to organizational strategy. This knowledge will help you to do your job better, to be promoted more quickly, and to contribute significantly to the success of your organization.

Summary

2.1 Discuss ways in which information systems enable cross-functional business processes and processes for a single functional area.

A business process is an ongoing collection of related activities that produce a product or a service of value to the organization, its business partners, and its customers. Examples of business processes in the functional areas are managing accounts payable, managing accounts receivable, managing after-sale customer follow-up, managing bills of materials, managing manufacturing change orders, applying disability policies, employee hiring, computer user and staff training, and applying Internet use policy. The procurement and fulfillment processes are examples of cross-functional business processes.

2.2 Compare and contrast business process reengineering and business process management to determine the different advantages and disadvantages of each.

Business process reengineering (BPR) is a radical redesign of business processes that is intended to improve the efficiency and effectiveness of an organization's business processes. The key to BPR is for enterprises to examine their business processes from a "clean-sheet" perspective and then determine how they can best reconstruct those processes to improve their business functions. Because BPR proved difficult to implement, organizations have turned to business process management. Business process management (BPM) is a management technique that includes methods and tools to support the design, analysis, implementation, management, and optimization of business processes.

2.3 Identify effective IT responses to different kinds of business pressures.

- *Market pressures:* An example of a market pressure is powerful customers. Customer relationship management is an effective IT response that helps companies achieve customer intimacy.
- *Technology pressures:* An example of a technology pressure is information overload. Search engines and business intelligence applications enable managers to access, navigate, and use vast amounts of information.
- *Societal/political/legal pressures:* An example of a societal/political/legal pressure is social responsibility, such as the state of the physical environment. Green IT is one response that is intended to improve the environment.

2.4 Describe the strategies that organizations typically adopt to counter Porter's five competitive forces.

Porter's five competitive forces:

- *The threat of entry of new competitors:* For most firms, the Web increases the threat that new competitors will enter the market by reducing traditional barriers to entry. Frequently, competitors need only to set up a website to enter a market. The Web can also increase barriers to entry, as when customers come to expect a nontrivial capability from their suppliers.
- *The bargaining power of suppliers:* The Web enables buyers to find alternative suppliers and to compare prices more easily, thereby reducing suppliers' bargaining power. From a different perspective, as companies use the Web to integrate their supply chains, participating suppliers can lock in customers, thereby increasing suppliers' bargaining power.
- *The bargaining power of customers (buyers):* The Web provides customers with incredible amounts of choices for products as well as information about those choices. As a result, the Web increases buyer power. However, companies can implement loyalty programs in which they use the Web to monitor the activities of millions of customers. Such programs reduce buyer power.
- *The threat of substitute products or services:* New technologies create substitute products very rapidly, and the Web makes information about these products available almost instantly. As a result, industries (particularly information-based industries) are in great danger from substitutes (e.g., music, books, newspapers, magazines, software). However, the Web also can enable a company to build in switching costs so that it will cost customers time or money to switch from your company to that of a competitor.
- *The rivalry among existing firms in the industry:* In the past, proprietary information systems provided a strategic advantage for firms in highly competitive industries. The visibility of Internet applications on the Web makes proprietary systems more difficult to keep secret. Therefore, the Web makes strategic advantage more short lived.

The five strategies are as follows:

- *Cost leadership strategy:* Produce products and services at the lowest cost in the industry.
- *Differentiation strategy:* Offer different products, services, or product features.
- *Innovation strategy:* Introduce new products and services, put new features in existing products and services, or develop new ways to produce them.
- *Operational effectiveness strategy:* Improve the manner in which internal business processes are executed so that a firm performs similar activities better than its rivals.
- *Customer orientation strategy:* Concentrate on making customers happy.