

11 Marketing Processes and Consumer Behavior

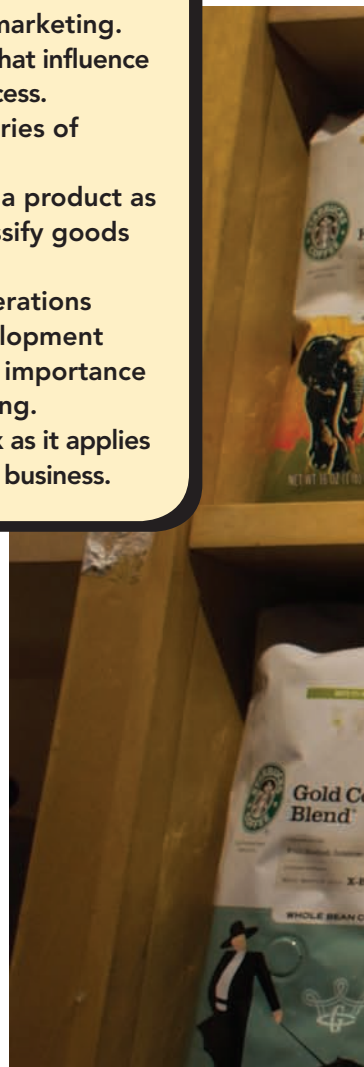
Starbucks Brews a New Marketing Mix

For lovers of upscale coffee products, Starbucks has long been the standout brand with a premium image as the “home of affordable luxury.” With its well-established line of tasty lattes and Frappuccinos—some priced above \$4 and all presented by service-savvy baristas—Starbucks gained great popularity in the connoisseur coffee market. Seeking to tap the market’s full potential, Chairman and CEO Howard Schultz spearheaded an ambitious expansion dream for 40,000 retail outlets globally, creating a massive network of stores dispensing Starbucks products, along with an infusion of Starbucks’s “romance, warmth and theater,” to millions of coffee gourmets. All of that changed, however, with the sting of the 2008–2010 recession.

To stay afloat, Starbucks is reconsidering all aspects of its marketing strategy, including downsizing the distribution network of retail stores, refashioning its line of products and prices, and promoting a repositioned Starbucks image. The new strategy—presenting Starbucks as being more affordable—reflects the company’s tighter budget and realignment with the target market, as consumers adjust to the realities of a down-turning economy. Instead of adding 2,500 locations annually, hundreds of the once-17,000 locations have been closed, including stores in areas such as Florida and California that have seen widespread home foreclosures. And fewer of the planned new stores have opened. The strategy also refocuses its products back onto what made Starbucks great—coffee—instead of side-tracking into movies and music. New entries in the product mix include a line of instant

After reading this chapter, you should be able to:

- 1** Explain the concept of marketing and identify the five forces that constitute the external marketing environment.
- 2** Explain the purpose of a marketing plan and identify the four components of the marketing mix.
- 3** Explain market segmentation and how it is used in target marketing.
- 4** Describe the key factors that influence the consumer buying process.
- 5** Discuss the three categories of organizational markets.
- 6** Explain the definition of a product as a value package and classify goods and services.
- 7** Describe the key considerations in the new product development process, and explain the importance of branding and packaging.
- 8** Discuss the marketing mix as it applies to international and small business.



coffee (once shunned by Starbucks). In a competitive response to McDonald's (with its own specialty coffee drinks) and Dunkin' Donuts, Starbucks has presented a newer line of recession-friendly value meals, including a choice of breakfast sandwich paired with a coffee product, at a reduced-price savings of as much as \$1.20. To keep its customers and bolster sales, the company launched Starbucks Card Rewards, a customer loyalty promotion that gets you free coffee refills and other extras, all to support the affordability image.¹

Will it work? Can Starbucks reposition the brand so it appeals to the convenience market without tarnishing the company's premium image? Some observers note that the new approach may attract some cost-conscious customers at the same time that it alienates others in the coffee connoisseur segment. It's a marketing risk that Starbucks is taking.

Our opening story continues on page 292.

Richard Levine/Alamy

WHAT'S IN IT FOR ME?

Adjusting its marketing strategy is an example of how a company can apply marketing basics in an innovative way to appeal to the forces of the external marketing environment. This chapter discusses these basics along with the marketing plan and components of the marketing mix, as well as target marketing and market segmentation. It also explores key factors that influence consumer and organizational buying processes, as well as how new products are developed and how they are defined by branding and packaging. By grasping the marketing methods and ideas in this chapter, you will not only be better prepared as a marketing professional, but also as an informed consumer.

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1 Explain the concept of marketing and identify the five forces that constitute the external marketing environment.

What Is Marketing?

What comes to mind when you think of marketing? Most of us think of marketing as advertisements for detergents, social networking, and soft drinks. Marketing, however, encompasses a much wider range of activities. The American Marketing Association defines **marketing** as “an organizational function and a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders.”² To see this definition in action we’ll continue this chapter by looking at some marketing basics, including the ways marketers build relationships with customers. We’ll then examine forces that constitute the external marketing environment, followed by the marketing plan, the components of the marketing mix, and we’ll discuss market segmentation and how it is used in target marketing. We’ll then look at key factors that influence the buying processes of consumers and industrial buyers. Finally, we’ll explore how new products are developed and see how branding and packaging help establish their identity in the marketplace.

Delivering Value

What attracts buyers to one product instead of another? Although our desires for the many goods and services available to us may be unbounded, limited financial resources force most of us to be selective. Accordingly, customers buy products that offer the best value when it comes to meeting their needs and wants.

Value and Benefits The **value** of a product compares its benefits with its costs. Benefits include not only the functions of the product, but also the emotional satisfaction associated with owning, experiencing, or possessing it. But every product has costs, including sales price, the expenditure of the buyer’s time, and even the emotional costs of making a purchase decision. A satisfied customer perceives the benefits derived from the purchase to be greater than its costs. Thus, the simple but important ratio for value is derived as follows:

$$\text{Value} = \frac{\text{Benefits}}{\text{Costs}}$$

The marketing strategies of leading firms focus on increasing value for customers. Marketing resources are deployed to add benefits and decrease costs of products to provide greater value. To satisfy customers, a company may:

- Develop an entirely new product that performs better (provides greater performance benefits) than existing products;
- Keep a store open longer hours during a busy season (adding the benefit of greater shopping convenience);
- Offer price reductions (the benefit of lower costs).
- Offer information that explains how a product can be used in new ways (the benefit of new uses at no added cost).

Value and Utility To understand how marketing creates value for customers, we need to know the kind of benefits that buyers get from a firm’s goods or services. As we discussed in Chapter 7, those benefits provide customers with **utility**—the ability of a product to satisfy a human want or need. Marketing strives to provide four kinds of utility in the following ways:

- *Form utility.* Marketing has a voice in designing products with features that customers want.
- *Time utility.* Marketing creates a time utility by providing products when customers will want them.



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- *Place utility.* Marketing creates a place utility by providing products where customers will want them.
- *Possession utility.* Marketing creates a possession utility by transferring product ownership to customers by setting selling prices, setting terms for customer credit payments, if needed, and providing ownership documents.

Because they determine product features, and the timing, place, and terms of sale that provide utility and add value for customers, marketers must understand customers' wants and needs. Their methods for creating utility are described in this and the following chapter.

Goods, Services, and Ideas

The marketing of tangible goods is obvious in everyday life. It applies to two types of customers: those who buy consumer goods and those who buy industrial goods. Think of the products that you bought the last time you went to the mall or the grocery store or on the Internet. In a department store an employee asks if you'd like to try a new cologne. A pharmaceutical company proclaims the virtues of its new cold medicine. Your local auto dealer offers an economy car at an economy price. These products are all **consumer goods**: tangible goods that you, the consumer, may buy for personal use. Firms that sell goods to consumers for personal consumption are engaged in consumer marketing, also known as B2C (business-to-consumer) marketing.

Marketing also applies to **industrial goods**: physical items used by companies to produce other products. Surgical instruments and bulldozers are industrial goods, as are such components and raw materials as integrated circuits, steel, and plastic. Firms that sell goods to other companies are engaged in industrial marketing, also known as B2B (business-to-business) marketing.

But marketing techniques are also applied to **services**—products with intangible (nonphysical) features, such as professional advice, timely information for decisions, or arrangements for a vacation. Service marketing—the application of marketing for services—continues to be a major growth area in the United States. Insurance companies, airlines, public accountants, and health clinics all engage in service marketing, both to individuals (consumer markets) and to other companies (industrial markets). Thus, the terms consumer marketing and industrial marketing include services as well as goods.

Finally, marketers also promote ideas. Ads in theaters, for example, warn us against copyright infringement and piracy. Other marketing campaigns may stress the advantages of avoiding fast foods, texting while driving, or quitting smoking—or they may promote a political party or candidate.

Relationship Marketing and Customer Relationship Management

Although marketing often focuses on single transactions for products, services, or ideas, marketers also take a longer-term perspective. Thus, **relationship marketing** emphasizes building lasting relationships with customers and suppliers. Stronger relationships—including stronger economic and social ties—can result in greater long-term satisfaction, customer loyalty, and customer retention.³ Starbucks's Card Rewards attracts return customers with free coffee refills and other extras. Similarly, commercial banks offer economic incentives to encourage longer lasting relationships.

Marketing organizational function and a set of processes for creating, communicating, and delivering value to customers, and for managing customer relationships in ways that benefit the organization and its stakeholders.

Value relative comparison of a product's benefits versus its costs

Utility ability of a product to satisfy a human want or need

Consumer Goods physical products purchased by consumers for personal use

Industrial Goods physical products purchased by companies to produce other products

Services products having nonphysical features, such as information, expertise, or an activity that can be purchased

Relationship Marketing marketing strategy that emphasizes building lasting relationships with customers and suppliers

Long-time customers who purchase a certain number of the bank's products (for example, checking accounts, savings accounts, and loans) accumulate credits toward free or reduced-price products or services, such as free investment advice.

Customer Relationship Management Like many other marketing areas, the ways that marketers go about building relationships with customers have changed dramatically. **Customer relationship management (CRM)** is an organized method that an enterprise uses to build better information connections with clients, so that stronger enterprise-client relationships are developed. The power of Internet communications coupled with the ability to gather and assemble information on customer preferences allows marketers to better predict what clients will want and buy. The compiling and storage of customers' data, known as *data warehousing*, provides the raw materials from which marketers can extract information that enables them to find new clients. It also identifies their best customers who can then be posted on upcoming new products, and supplied with special information such as post-purchase service reminders. *Data mining* automates the massive analysis of data by using computers to sift, sort, and search for previously undiscovered clues about what customers look at, react to, and how they might be influenced. The hoped-for result is a clearer picture of how marketing, knowing a client's preferences, can more effectively use its resources to better satisfy those particular needs, thereby building closer, stronger relationships with customers.⁴

Toronto-based Fairmont Resort Hotels, for example, first used data mining to rebuild its customer-relations package by finding out what kinds of vacations their customers prefer, and then placed ads where they were more likely to reach those customers. When data mining revealed the worldwide destinations of Fairmont customers, it helped determine Fairmont's decision to buy their customers' number-one preference—the Savoy in London.⁵ More recently, Fairmont's enhanced CRM is attracting new guests, along with heightening relationships and loyalty among existing clients, through web-based promotions and incentives. Using profiles of guest information, Fairmont identifies target traveler segments and supplies travelers with personalized price discounts and special hotel services.⁶ We'll discuss data warehousing and data mining in more detail in Chapter 13.

The Marketing Environment

Marketing strategies are not determined unilaterally by any business—rather, they are strongly influenced by powerful outside forces. As you see in Figure 11.1, every marketing program must recognize the factors in a company's *external environment*, which is everything outside an organization's boundaries that might affect it. In this section we'll discuss how these external forces affect the marketing environment in particular.

Political-Legal Environment Political activities, both global and domestic, have profound effects on marketing. For example, environmental legislation has determined the destinies of entire industries. The political push for alternative energy sources is creating new markets and products for emerging companies such as India's Suzlon Energy Limited (large wind turbines), wind-powered electric generators by Germany's Nordex AG, and wind farms and power plants by Spain's Gamesa Corporation. Marketing managers try to maintain favorable political and legal environments in several ways. To gain public support for products and activities, marketers use ad campaigns to raise public awareness of important issues. Companies contribute to political candidates and frequently support the activities of political action committees (PACs) maintained by their respective industries.

Sociocultural Environment Changing social values force companies to develop and promote new products for both individual consumers and industrial customers. Just a few years ago, organic foods were available only in specialty food stores like Whole Foods. Today, in response to a growing demand for healthy foods, Target's Archer Farms product line brings affordable organic food to a much larger audience. New industrial products, too, reflect changing social values: A growing number of wellness programs are available to companies for improving employees' health. Quest Diagnostics, for



Figure 11.1 The External Marketing Environment

example, a B2B company, supplies a “Blueprint for Wellness” service that assesses employee health-care risks in client companies and recommends programs for reducing those risks. This and other trends reflect the values, beliefs, and ideas that shape society.

Technological Environment New technologies create new goods and services. New products make existing products obsolete, and many products change our values and lifestyles. In turn, lifestyle changes often stimulate new products not directly related to the new technologies themselves. Cell phones and PDAs, for example, facilitate business communication just as pre-packaged meals provide convenience for busy household cooks. Both kinds of products also free up time for recreation and leisure.

Economic Environment Because they determine spending patterns by consumers, businesses, and governments, economic conditions influence marketing plans for product offerings, pricing, and promotional strategies. Marketers are concerned with such economic variables as inflation, interest rates, and recession. Thus, they monitor the general business cycle to anticipate trends in consumer and business spending.

The interconnected global economy has become an increasingly important concern for marketers worldwide—for example, in 2008, rising oil prices broke records on an almost daily basis. Fed up with gas prices, U.S. drivers drove less, decreasing the demand and prices for gasoline. As the global economy continued to sour, the Canadian government demanded its automakers reduce production costs and auto prices to qualify for the government’s bailout fund. Meanwhile, the continuing U.S. housing crisis is leaving many former homeowners awash in debt they cannot afford



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Marketing strategies are strongly influenced by powerful outside forces. For example, new technologies create new products, such as the cell phone “gas station” shown here. These recharging stations enable customers to recharge their mobile devices just as they would refuel their cars. The screens at the stations also provide marketers with a new way to display ads to waiting customers.

Customer Relationship Management (CRM)

organized methods that a firm uses to build better information connections with clients, so that stronger company-client relationships are developed

MANAGING IN TURBULENT TIMES

Feeling the Pressure for “Green”

Today’s marketers are struggling with pressures from several outside forces: The political-legal, sociocultural, technological, and economic environments are all pushing for change. Industries ranging from autos to energy to housing are grappling with a common environmental theme: green. Public sentiment turned decidedly toward alternatives to gas-guzzling cars. Home buyers, too, want energy-efficient heating and cooling, such as geothermal heat, in their next home. Environmentalists are pushing for alternative energy sources, notably wind and solar power, to replace fossil fuels. Local utilities are offering incentives for construction using environmentally sensitive building designs to conserve energy. Purchases of tiny-size houses are growing. Solar-powered wells are replacing mechanical windmills on farms. In Washington, the Obama administration and Congress are struggling to reverse severe economic conditions and meet commitments for a cleaner environment using energy-saving technologies.

These outside pressures present challenges to all areas of marketing, from identifying the new target markets, to designing new products for those markets and, in some cases, finding technologies to make those products. Success depends on coordinating the various marketing activities—making them compatible with one another. Marketers need to present a convincing rationale for a product’s pricing and demonstrate how the product provides the benefits sought by the target markets. Distribution methods—delivering products and after-services to customers—have to match up with promises in the promotional message so that, together, the marketing activities provide a persuasive package that delivers the desired value and benefits. Further, this integrated marketing strategy must be coordinated with financial management and production operations to provide timely customer satisfaction.

The marketing blueprint for Toyota’s Prius automobile utilized an integrated marketing mix for meeting the challenge of *going green*. While developing the fuel-efficient hybrid



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technology, Toyota identified niche target markets of users in some 40 countries and determined a price range compatible with the company’s performance reliability and quality reputation. Promotion in the U.S. market started two years before the car was released so customers could view and purchase a Prius. One pre-launch promotion involved teaming up with the Sierra Club; in addition, lending the Prius to environmentally sensitive Hollywood superstars provided exposure and allowed car testing in the target market. The main ad campaign to general audiences emphasized that consumers can still have speed and comfort along with environmental friendliness. And pre-orders were delivered on time to buyers. As a result, the Prius is the most successful hybrid automobile in the United States and the rest of the world.⁷

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to repay. As a result, money-strapped consumers have shifted to used cars (instead of new) and to down-sized, more modest housing. This product shift by consumers affects all areas of marketing—target markets, pricing, promotion, and distribution—for cars, fuel, and housing.⁸

Competitive Environment In a competitive environment, marketers must convince buyers that they should purchase one company’s products rather than those of some other seller. Because both consumers and commercial buyers have limited resources, every dollar spent on one product is no longer available for other purchases. Each marketing program, therefore, seeks to make its product the most attractive. Expressed in business terms, a failed program loses the buyer’s dollar forever (or at least until it is time for the next purchase decision).

To promote products effectively, marketers must first understand which of three types of competition they face:

- **Substitute products** may not look alike or they may seem very different from one another, but they can fulfill the same need. For example, your cholesterol level may

be controlled with either of two competing products: a physical fitness program or a drug regimen. The fitness program and the drugs compete as substitute products.

- **Brand competition** occurs between similar products and is based on buyers' perceptions of the benefits of products offered by particular companies. For Internet searches do you turn to the Google, Bing, or Yahoo search engine? Brand competition is based on users' perceptions of the benefits offered by each product.
- **International competition** matches the products of domestic marketers against those of foreign competitors. The intensity of international competition has been heightened by the formation of alliances, such as the European Union and NAFTA. In 2009 the U.S. Air Force opened bidding to foreign manufacturers for three new planes to replace the existing Presidential Air Force One fleet (made by Boeing). If Europe's Airbus had won the contract it would have been the first time a U.S. President has flown in a non-U.S. made Air Force One.⁹ Instead, however, Airbus withdrew from bidding, leaving Boeing the sole competitor.

Having identified the kind of competition, marketers can then develop a strategy for attracting more customers.

Strategy: The Marketing Mix

A company's **marketing managers** are responsible for planning and implementing all the activities that result in the transfer of goods or services to its customers. These activities culminate in the **marketing plan**—a detailed strategy for focusing marketing efforts on customers' needs and wants. Therefore, marketing strategy begins when a company identifies a customer need and develops a product to meet it. Starbucks's revised strategy in our opening case, for example, recognizes consumers' needs for more affordable coffee products in a down-turned economy.

In planning and implementing strategies, marketing managers develop the four basic components (often called the "Four Ps") of the **marketing mix**: product, pricing, place, and promotion.

2 Explain the purpose of a marketing plan and identify the four components of the marketing mix.

Product

Marketing begins with a **product**—a good, a service, or an idea designed to fill a customer's need or want. Conceiving and developing new products is a constant challenge for marketers, who must always consider the factor of change—changing technology, changing wants and needs of customers, and changing economic conditions. Meeting these changing conditions often means changing existing products—such as Starbucks's introduction of its new line of instant coffee—to keep pace with emerging markets and competitors.

Product Differentiation Producers often promote particular features of products in order to distinguish them in the marketplace. **Product differentiation** is the creation of a feature or image that makes a product differ enough from existing products to attract customers. For example, Jann Wenner started *Rolling Stone* magazine in 1967, and it's been the cash cow of Wenner Media ever since. In 1985, however, Wenner bought *US*

Substitute Product product that is dissimilar from those of competitors but that can fulfill the same need

Brand Competition competitive marketing that appeals to consumer perceptions of benefits of products offered by particular companies

International Competition competitive marketing of domestic products against foreign products

Marketing Manager manager who plans and implements the marketing activities that result in the transfer of products from producer to consumer

Marketing Plan detailed strategy for focusing marketing efforts on consumers' needs and wants

Marketing Mix combination of product, pricing, promotion, and place (distribution) strategies used to market products

Product good, service, or idea that is marketed to fill consumers' needs and wants

Product Differentiation creation of a product feature or product image that differs enough from existing products to attract customers



Wenner Media Chair and CEO Jann Wenner (above) is hoping that his strategy for greater differentiation between his *Us Weekly* magazine and rival *People* will continue to pay off. *People* is news driven, reporting on ordinary people as well as celebrities, whereas *Us Weekly* features more coverage of celebrity sex and glitter.

magazine and set out to compete with *People*. Wenner's strategy calls for greater differentiation between the two products. *People* is news driven, reporting on ordinary people as well as celebrities, and Wenner has punched up *Us Weekly* with more coverage of gossipy celebrity sex and glitter. So far, he hasn't been as successful as some expected: *People* reaches 3.7 million readers, *Us Weekly* about 1.9 million.¹⁰

Pricing

The **pricing** of a product—selecting the best price at which to sell it—is often a balancing act. On the one hand, prices must support a variety of costs—operating, administrative, research costs, and marketing costs. On the other hand, prices can't be so high that customers turn to competitors. Successful pricing means finding a profitable middle ground between these two requirements. By offering a reduced-price savings for its breakfast meals, Starbucks is promoting its affordability image.

Both low-and high-price strategies can be effective in different situations. Low prices, for example, generally lead to larger sales volumes. High prices usually limit market size but increase profits per unit. High prices may also attract customers by implying that a product is of high quality. We discuss pricing in more detail in Chapter 12.

Place (Distribution)

In the marketing mix, **place** refers to **distribution**. Placing a product in the proper outlet—for example, a retail store—requires decisions about several activities, all of which are concerned with getting the product from the producer to the consumer. Decisions about warehousing and inventory control are distribution decisions, as are decisions about transportation options.

Firms must also make decisions about the **channels** through which they distribute products. Many manufacturers, for example, sell goods to other companies that, in turn, distribute them to retailers. Others sell directly to major retailers, such as Target and Sears. Still others sell directly to final consumers. We explain distribution decisions further in Chapter 12.

Promotion

The most visible component of the marketing mix is no doubt **promotion**, which refers to techniques for communicating information about products. The most important promotional tools include advertising, personal selling, sales promotions, publicity/public relations, and direct or interactive marketing. Promotion decisions are discussed further in Chapter 12.

Blending It All Together: Integrated Strategy

An **integrated marketing strategy** ensures that the Four Ps blend together so that they are compatible



American Eagle Outfitters (AEO) is a chain of more than 900 stores specializing in clothes, accessories, and personal care products designed to appeal to a demographic consisting of girls and guys ages 15 to 25. In 2006, the brand expanded its line with Aerie, a chain of standalone stores in the U.S. and Canada, and an online store, that sell girls' intimates, workout wear, and Aerie's Dormwear—a collection of leggings, hoodies, and fashionable sweats appropriate for lounging in the dorm or wearing to a morning class.

with one another and with the company's non-marketing activities as well. As an example, Toyota has become the world's largest automaker: Its nearly 30-year auto superiority, even with its massive product recalls in 2008–2009, stems from a coherent marketing mix that is tightly integrated with its production strategy. Offering a relatively small number of different models, Toyota targets auto customers that want high quality, excellent performance reliability, and moderate prices (a good value for the price). With a smaller number of different models than U.S. automakers, fewer components and parts are needed, purchasing costs are lower, and less factory space is required for inventory and assembly in Toyota's lean production system. Lean production's assembly simplicity yields higher quality, the factory's cost savings led to lower product prices, and speedy production gives shorter delivery times in Toyota's distribution system. Taken together, this integrated strategy is completed when Toyota's advertising communicates its message of industry-high customer satisfaction.¹¹

Target Marketing and Market Segmentation

3 Explain market segmentation and how it is used in target marketing.

Marketers have long known that products cannot be all things to all people. The emergence of the marketing concept and the recognition of customers' needs and wants led marketers to think in terms of **target markets**—groups of people or organizations with similar wants and needs and who can be expected to show interest in the same products. Selecting target markets is usually the first step in the marketing strategy.

Target marketing requires **market segmentation**—dividing a market into categories of customer types or “segments.” Once they have identified segments, companies may adopt a variety of strategies. Some firms market products to more than one segment. General Motors, for example, once offered automobiles with various features and at various price levels. GM's past strategy was to provide an automobile for nearly every segment of the market. The financial crisis, however, has forced GM's changeover to fewer target markets and associated brands by closing Saturn, phasing out Pontiac, and selling or shutting down Hummer and Saab.

In contrast, some businesses offer a narrower range of products, such as Ferrari's high-priced sports cars, aiming at just one segment. Note that segmentation is a strategy for analyzing consumers, not products. Once a target segment is identified, the marketing of products for that segment begins. The process of fixing, adapting, and communicating the nature of the product itself is called **product positioning**.

Identifying Market Segments

By definition, members of a market segment must share some common traits that affect their purchasing decisions. In identifying consumer segments, researchers look at several different influences on consumer behavior. Here are five of the most important variables:

Pricing process of determining the best price at which to sell a product

Place (Distribution) part of the marketing mix concerned with getting products from producers to consumers

Promotion aspect of the marketing mix concerned with the most effective techniques for communicating information about products

Integrated Marketing Strategy strategy that blends together the Four Ps of marketing to ensure their compatibility with one another and with the company's non-marketing activities as well

Target Market group of people who have similar wants and needs and can be expected to show interest in the same products

Market Segmentation process of dividing a market into categories of customer types, or “segments”

Product Positioning process of fixing, adapting, and communicating the nature of a product

Geographic Segmentation Many buying decisions are affected by the places people call home. Urban residents don't need agricultural equipment, and sailboats sell better along the coasts than on the Great Plains. **Geographic variables** are the geographic units, from countries to neighborhoods, that may be considered in a segmentation strategy. McDonald's restaurants in Germany, in contrast to those in the United States, offer beer on the menu. Pharmacies in Jackson Hole, Wyoming, sell firearms that are forbidden in Chicago.

Demographic Segmentation **Demographic variables** describe populations by identifying traits, such as age, income, gender, ethnic background, marital status, race, religion, and social class, as detailed in Table 11.1. Depending on the marketer's purpose, a demographic segment can be a single classification (ages 20–34) or a combination of categories (ages 20–34, married without children, earning \$25,000–\$44,999 a year).

For example, Hot Topic is a California-based chain that specializes in clothes, accessories, and jewelry designed to appeal to the Generation Y and Millennials—a demographic consisting of American consumers between 13 and 17. The theme is pop culture music—anything from rock and rockabilly to rave and acid rap—because it's the biggest influence on the demographic's fashion tastes.

Geo-Demographic Segmentation **Geo-demographic variables** are a combination of geographic and demographic traits and is becoming the most common segmentation tool. An example would be Young Urban Professionals—well educated, 25- to 34-year-olds with high paying professional jobs living in the “downtown” zip codes of major cities. Segmentation is more effective because the greater number of variables defines the market more precisely.

Psychographic Segmentation Markets can also be segmented according to such **psychographic variables** as lifestyles, interests, and attitudes. For example, Burberry, whose raincoats have been a symbol of British tradition since 1856, has repositioned itself as a global luxury brand, like Gucci and Louis Vuitton. The strategy calls for attracting a different type of customer—the top-of-the-line, fashion-conscious individual—who shops at stores like Neiman Marcus and Bergdorf Goodman. Psychographics are particularly important to marketers because, unlike demographics and geographics, they can be changed by marketing efforts. For example, Polish companies have overcome consumer resistance by promoting the safety and desirability of using credit cards rather than depending on solely using cash.¹²

Behavioral Segmentation **Behavioral variables** include such areas as heavy users (buy in bulk, the key to Sam's and Costco); situation buyers (Halloween is now the second largest “holiday” in terms of spending)¹³; or specific purpose (All Free is a new detergent for people who have skin reactions to additives in other detergents).

TABLE 11.1 Demographic Variables

Age	Under 5, 5–11, 12–19, 20–34, 35–49, 50–64, 65+
Education	Grade school or less, some high school, graduated high school, some college, college degree, advanced degree
Family Life Cycle	Young single, young married without children, young married with children, older married with children under 18, older married without children under 18, older single, other
Family Size	1, 2–3, 4–5, 6+
Income	Under \$15,000, \$15,000–\$24,999, \$25,000–\$50,000, \$50,000–\$100,000, over \$100,000
Nationality	African, American, Asian, British, Eastern European, French, German, Irish, Italian, Latin American, Middle Eastern, Scandinavian
Race	Native American, Asian, African American, Caucasian
Religion	Buddhist, Catholic, Hindu, Jewish, Muslim, Protestant
Sex	Male, female

Understanding Consumer Behavior

4 Describe the key factors that influence the consumer buying process.

Although marketing managers can tell us what features people want in a new refrigerator, they cannot tell us why they buy particular refrigerators. What desire are consumers fulfilling? Is there a psychological or sociological explanation for why they purchase one product and not another? These questions and many others are addressed in the study of **consumer behavior**—the study of the decision process by which people buy and consume products.

Influences on Consumer Behavior

To understand consumer behavior, marketers draw heavily on such fields as psychology and sociology. The result is a focus on four major influences on consumer behavior: *psychological*, *personal*, *social*, and *cultural*. By identifying which influences are most active in certain circumstances, marketers try to explain consumer choices and predict future buying behavior.

Psychological influences include an individual's motivations, perceptions, ability to learn, and attitudes.

Personal influences include lifestyle, personality, and economic status.

Social influences include family, opinion leaders (people whose opinions are sought by others), and such reference groups as friends, coworkers, and professional associates.

Cultural influences include culture (the way of living that distinguishes one large group from another), subculture (smaller groups with shared values), and social class (the cultural ranking of groups according to such criteria as background, occupation, and income).

Although these factors can have a strong impact on a consumer's choices, their effect on actual purchases is sometimes weak or negligible. Some consumers, for example, exhibit high **brand loyalty**—they regularly purchase products, such as McDonald's foods, because they are satisfied with their performance. Such people are less subject to influence and stick with preferred brands.¹⁴ On the other hand, the clothes you wear, the social network you choose, and the way you decorate your room, often reflect social and psychological influences on your consumer behavior.

The Consumer Buying Process

Students of consumer behavior have constructed various models to help show how consumers decide to buy products. Figure 11.2 presents one such model. At the core of this and similar models is an awareness of the many influences that lead to consumption. Ultimately, marketers use this information to develop marketing plans.

Geographic Variables geographic units that may be considered in developing a segmentation strategy

Demographic Variables characteristics of populations that may be considered in developing a segmentation strategy

Geo-Demographic Variables combination of geographic and demographic traits used in developing a segmentation strategy

Psychographic Variables consumer characteristics, such as lifestyles, opinions, interests, and attitudes that may be considered in developing a segmentation strategy

Behavioral Variables behavioral patterns displayed by groups of consumers and that are used in developing a segmentation strategy

Consumer Behavior study of the decision process by which people buy and consume products

Brand Loyalty pattern of regular consumer purchasing based on satisfaction with a product's performance

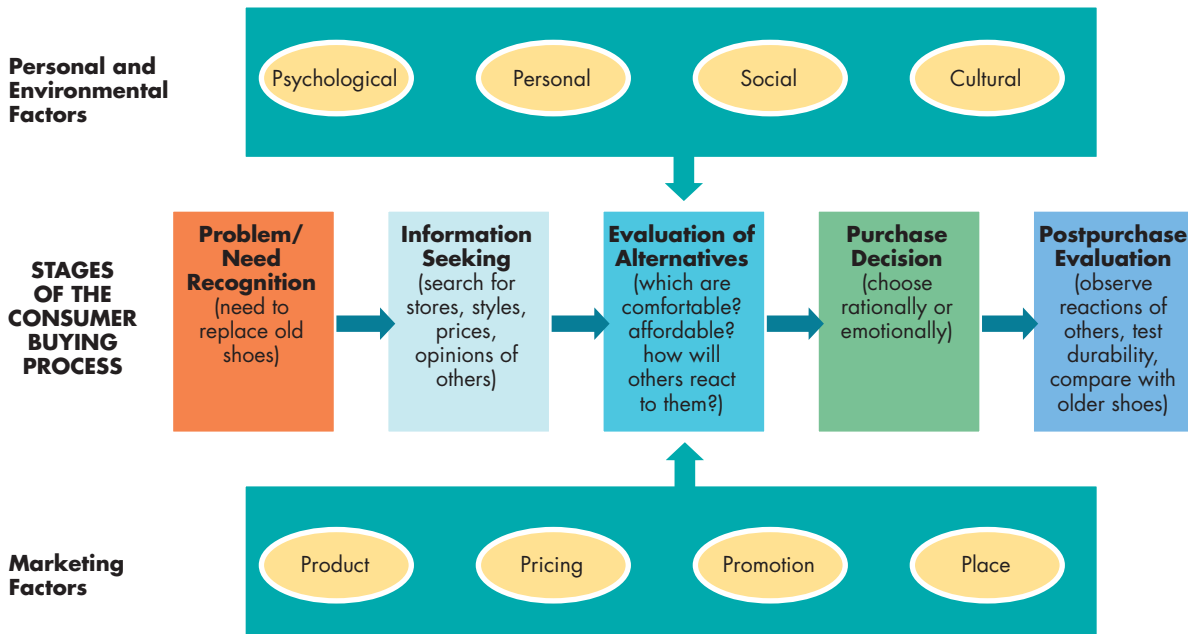


Figure 11.2 The Consumer Buying Process

Problem/Need Recognition This process begins when the consumer recognizes a problem or need. Need recognition also occurs when you have a chance to change your buying habits. When you obtain your first job after graduation, your new income may let you buy things that were once too expensive for you. You may find that you need professional clothing, apartment furnishings, and a car. Bank of America and Citibank cater to such shifts in needs when they market credit cards to college students.

Information Seeking Having recognized a need, consumers often seek information. The search is not always extensive, but before making major purchases, most people seek information from personal sources, public sources, and experience. From this information search, consumers develop an **evoked set** or **consideration set**, which is the group of products they will consider buying.

Evaluation of Alternatives If someone is in the market for skis, they probably have some idea of who makes skis and how they differ. By analyzing product attributes (price, prestige, quality) of the consideration set, consumers compare products before deciding which one best meets their needs.

Purchase Decision Ultimately, consumers make purchase decisions. “Buy” decisions are based on rational motives, emotional motives, or both. **Rational motives** involve the logical evaluation of product attributes: cost, quality, and usefulness. **Emotional motives** involve nonobjective factors and include sociability, imitation of others, and aesthetics. For example, you might buy the same brand of jeans as your friends to feel accepted in a certain group, not because your friends happen to have the good sense to prefer durable, comfortably priced jeans.

Postpurchase Evaluation Marketing does not stop with the sale of a product. What happens after the sale is important. Marketers want consumers to be happy after buying products so that they are more likely to buy them again. Because consumers do not want to go through a complex decision process for every purchase, they often repurchase products they have used and liked. Not all consumers are satisfied with their purchases. These buyers are not likely to purchase the same product(s) again and are much more apt to broadcast their experiences than are satisfied customers.

Organizational Marketing and Buying Behavior

5 Discuss the three categories of organizational markets.

In the consumer market, buying and selling transactions are visible to the public. Equally important, though far less visible, are organizational (or commercial) markets. Marketing to organizations that buy goods and services used in creating and delivering consumer products involves various kinds of markets and buying behaviors different from those in consumer markets.

Business Marketing

Business marketing involves organizational or commercial markets that fall into three B2B categories: industrial, reseller, and government/institutional markets. Taken together, the B2B markets do over \$25 trillion in business annually—more than two times the amount done in the U.S. consumer market.¹⁵

Industrial Market The **industrial market** includes businesses that buy goods to be converted into other products or that are used up during production. It includes farmers, manufacturers, and some retailers. For example, clockmaking company Seth Thomas buys electronics, metal components, and glass from other companies to make clocks for the consumer market. The company also buys office supplies, tools, and factory equipment—items never seen by clock buyers—that are used during production.

Reseller Market Before products reach consumers, they pass through a **reseller market** consisting of intermediaries, including wholesalers and retailers, that buy and resell finished goods. For example, as a leading distributor of parts and accessories for the pleasure boat market, Coast Distribution System buys lights, steering wheels, and propellers and resells them to marinas and boat-repair shops.

Government and Institutional Market In addition to federal and state governments, there are some 87,000 local governments in the United States. State and local governments annually spend nearly \$7 trillion for durable goods, nondurables, services, and construction.¹⁶ The **institutional market** consists of nongovernmental organizations, such as hospitals, churches, museums, and charities, that also use supplies and equipment as well as legal, accounting, and transportation services.

B2B Buying Behavior

In some respects, organizational buying behavior bears little resemblance to consumer buying practices. Differences include the buyers' purchasing skills and an emphasis on buyer-seller relationships.

Differences in Buyers Unlike most consumers, organizational buyers purchase in large quantities, and are professional, specialized, and well informed.

- Industrial buyers buy in bulk or large quantities. Because of this fact, and with so much money at stake, the following are also characteristics of organizational buyers.

Evoked Set (or Consideration Set) group of products consumers will consider buying as a result of information search

Rational Motives reasons for purchasing a product that are based on a logical evaluation of product attributes

Emotional Motives reasons for purchasing a product that are based on nonobjective factors

Industrial Market organizational market consisting of firms that buy goods that are either converted into products or used during production

Reseller Market organizational market consisting of intermediaries that buy and resell finished goods

Institutional Market organizational market consisting of such nongovernmental buyers of goods and services as hospitals, churches, museums, and charitable organizations

- As professionals, B2B buyers are trained in methods for negotiating purchase terms. Once buyer-seller agreements have been reached, they also arrange formal contracts.
- As a rule, industrial buyers are company specialists in a line of items and are often experts about the products they buy. As one of several buyers for a large bakery, for example, you may specialize in food ingredients. Another buyer may specialize in baking equipment (industrial ovens and mixers), whereas a third may buy office equipment and supplies.

Differences in the Buyer-Seller Relationship Consumer-seller relationships are often impersonal, short-lived, one-time interactions. In contrast, B2B situations often involve frequent and enduring buyer-seller relationships. The development of a long-term relationship provides each party with access to the technical strengths of the other as well as the security of knowing what future business to expect. Thus, a buyer and a supplier may form a design team to create products to benefit both parties. Accordingly, industrial sellers emphasize personal selling by trained representatives who understand the needs of each customer.

6 Explain the definition of a product as a value package and classify goods and services.

What Is a Product?

In developing the marketing mix for any product, whether goods or services, marketers must consider what customers really want when they purchase products. Only then can these marketers plan strategies effectively.

The Value Package

Whether it is a physical good, a service, or some combination of the two, customers get value from the various benefits, features, and even intangible rewards associated with a product. **Product features** are the qualities, tangible and intangible, that a company builds into its products, such as a 12-horsepower motor on a lawnmower. However, as we discussed earlier, to attract buyers, features must also provide benefits: The lawnmower must produce an attractive lawn. The owner's pleasure in knowing that the mower is nearby when needed is an intangible reward.

Today's customer regards a product as a bundle of attributes—benefits and features—that, taken together, marketers call the **value package**. Increasingly, buyers expect to receive products with greater value—with more benefits and features at reasonable costs—so firms must compete on the basis of enhanced value packages. Consider, for example, the possible attributes in a personal computer value package:

- Easy access to understandable prepurchase information
- Features, such as wireless capability
- Attractive color and design
- Useful software packages
- Attractive prices
- Fast, simple ordering via the Internet
- Secure credit card purchasing
- Assurance of speedy delivery
- Warranties
- Easy access to technical support

Although the computer includes physical *features*—processing devices and other hardware—many items in the value package are services or intangibles that, collectively, add value by providing *benefits* that increase the customer's satisfaction. Reliable data processing is certainly a benefit, but so too are speedy delivery and easy access to technical support. Top-performing companies find that the addition of a new service often pleases customers far beyond the cost of providing it. Just making the purchase transaction faster and more convenient, for example, adds value by sparing customers long waits and cumbersome paperwork.

Classifying Goods and Services

We can classify products according to expected buyers, who fall into two groups: buyers of consumer products and buyers of organizational products. As we saw earlier in this chapter, the consumer and industrial buying processes differ significantly. Similarly, marketing products to consumers is vastly different from marketing products to companies and other organizations.

Classifying Consumer Products Consumer products are commonly divided into three categories that reflect buyer behavior: **convenience goods and services**, **shopping goods and services**, and **specialty goods and services**. These are outlined in Table 11.2.

Classifying Organizational Products Depending on how much they cost and how they will be used, organizational products can be divided into three categories: **production items**, **expense items**, and **capital items**. These are explained in Table 11.3.

TABLE 11.2 Categories of Consumer Products

Category	Description	Examples
Convenience goods and services	<ul style="list-style-type: none"> Consumed rapidly and regularly Inexpensive Purchased often and with little input of time and effort 	<ul style="list-style-type: none"> Milk Newspaper Fast food
Shopping goods and services	<ul style="list-style-type: none"> Purchased less often More expensive Consumers may shop around and compare products based on style, performance, color, price, and other criteria. 	<ul style="list-style-type: none"> Television set Tires Car insurance
Specialty goods and services	<ul style="list-style-type: none"> Purchased infrequently Expensive Consumer decides on a precise product and will not accept substitutions and spends a good deal of time choosing the “perfect” item. 	<ul style="list-style-type: none"> Jewelry Wedding gown Catering

Product Features tangible and intangible qualities that a company builds into its products

Value Package product marketed as a bundle of value-adding attributes, including reasonable cost

Convenience Good/Convenience Service inexpensive good or service purchased and consumed rapidly and regularly

Shopping Good/Shopping Service moderately expensive, infrequently purchased good or service

Specialty Good/Specialty Service expensive, rarely purchased good or service

Production Item industrial product purchased and used directly in the production process that creates other goods or services

Expense Item industrial product purchased and consumed within a year by firms producing other products

Capital Item expensive, long-lasting, infrequently purchased industrial product, such as a building, or industrial service, such as a long-term agreement for data warehousing services

TABLE 11.3 Organizational Products

Category	Description	Examples
Production items	<ul style="list-style-type: none"> • Goods or services used directly in the production process 	<ul style="list-style-type: none"> • Loads of tea processed into tea bags • Information processing for real-time production
Expense items	<ul style="list-style-type: none"> • Goods or services that are consumed within a year by firms producing other goods or supplying other services 	<ul style="list-style-type: none"> • Oil and electricity for machines • Building maintenance • Legal services
Capital items	<ul style="list-style-type: none"> • Permanent (expensive and long-lasting) goods and services • Life expectancy of more than a year • Purchased infrequently so transactions often involve decisions by high-level managers 	<ul style="list-style-type: none"> • Buildings (offices, factories) • Fixed equipment (water towers, baking ovens) • Accessory equipment (computers, airplanes)

The Product Mix

The group of products that a company makes available for sale, whether consumer, industrial, or both, is its **product mix**. Black & Decker, for example, makes toasters, vacuum cleaners, electric drills, and a variety of other appliances and tools. 3M makes everything from Post-it Notes to laser optics.

Product Lines Many companies begin with a single product. Over time, they find that the initial product fails to suit every customer shopping for the product type. To meet market demand, they introduce similar products—such as flavored coffees and various roasts—designed to reach more customers. For example, Starbucks stores expanded the line of coffees by adding various Italian-style espresso beverages that include mochas, cappuccinos, and lattes—hot and iced—and flavored blended cremes. A group of products that are closely related because they function in a similar manner (e.g., flavored coffees) or are sold to the same customer group (e.g., stop-in coffee drinkers) who will use them in similar ways is a **product line**.

Companies may extend their horizons and identify opportunities outside existing product lines. The result—multiple (or diversified) product lines—is evident at Starbucks. Beyond just serving beverages to customers at coffee bars, Starbucks has lines of home-brewing equipment, supermarket products, music products, and industry services. Multiple product lines allow a company to grow rapidly and can help offset the consequences of slow sales in any one product line.

7 Describe the key considerations in the new product development process, and explain the importance of branding and packaging.

Developing New Products

To expand or diversify product lines—in fact, just to survive—firms must develop and introduce streams of new products. Faced with competition and shifting customer preferences, no firm can count on a single successful product to carry it forever.

The New Product Development Process

For many years, the growing demand for improved health care has stimulated the development of new dietary supplements, heart medicines, and other pharmaceuticals. However, companies that develop and sell these products face a big problem: It costs well over \$100 million, sometimes over \$1 billion, and can take as long as 8 to 10 years to get a new product through the approval process at the U.S. Food and Drug Administration (FDA).

Testing, both for FDA approval and for marketing, can be the most time-consuming stage of development. For example, Merck & Co. is developing an experimental heart drug—called anacetrapib—to raise levels of good cholesterol, thereby reducing the

risk of heart attack. Years of laboratory work were followed by a lengthy test study using 1,600 patients, and the results of that study must undergo further analysis. Thereafter, a major 30,000-patient study beginning in 2011 must be completed before the drug may be deemed ready for approval and use sometime after 2015.¹⁷ If successful, Merck could cash in on the growth of the cholesterol-lowering drug market, but it requires an immense amount of time, patience, money, and risk of failure.

Product development is a long and expensive process, and like Merck & Co., many firms have research and development (R&D) departments for exploring new product possibilities. Why do they devote so many resources to exploring product possibilities, rejecting many seemingly good ideas along the way? First, high *mortality rates* for new ideas mean that only a few new products reach the market. Second, for many companies, *speed to market* with a product is as important as care in developing it.

Product Mortality Rates

It is estimated that it takes 50 new product ideas to generate one product that finally reaches the market. Even then, only a few of these survivors become successful products. Many seemingly great ideas have failed as products. Creating a successful new product has become increasingly difficult—even for the most experienced marketers. Why? The number of new products hitting the market each year has increased dramatically; more than 180,000 new household, grocery, and drugstore items are introduced annually. In 2009 the U.S. consumer packaged goods industry alone launched 45,000 new products (foods, beverages, school supplies, and other nonfood products).¹⁸ At any given time, however, the average North American supermarket carries a total of only 45,000 different items. Because of lack of space and customer demand, about 9 out of 10 new products will fail. Those with the best chances are innovative and deliver unique benefits. The single greatest factor in product failure is the lack of significant difference (i.e., the new product is a “me-too” product). Some prominent examples of this are Mr. Pibb versus Dr. Pepper, which while still on the market is an “also-ran,” and Burger King’s Big King, their answer to the Big Mac.

Speed to Market The more rapidly a product moves from the laboratory to the marketplace, the more likely it is to survive. By introducing new products ahead of competitors, companies establish market leadership. They become entrenched in the market before being challenged by newer competitors. For example, sales of Apple’s new iPad surged after its introduction in early 2010, and estimates are that more than 13 million units were sold by year end. Industry observers expect nearly every other company in the industry will try to come out with competing products beginning later in 2011, but the iPad’s visibility and popularity make it a formidable market leader. How important is **speed to market** (or *time compression*)—that is, a firm’s success in responding rapidly to customer demand or market changes? One study reports that a product that is only three months late to market (three months behind the leader) loses 12 percent of its lifetime profit potential. At six months, it will lose 33 percent.

Product Life Cycle

When a product reaches the market, it enters the **product life cycle (PLC)**: a series of stages through which it passes during its commercial life. Depending on the product’s ability to attract and keep customers, its PLC may be a matter of months, years,



Myroslav Prylypko/Dreamstime

Designers used to create products, such as this head for a human-like toy, by sculpting models out of clay. Now they use “rapid prototyping,” a technology that allows several employees to work simultaneously on 3D digital/visual “models” that can be e-mailed to clients for instant review. It now takes days, or just hours, instead of weeks to make an initial sculpture.

Product Mix group of products that a firm makes available for sale

Product Line group of products that are closely related because they function in a similar manner or are sold to the same customer group who will use them in similar ways

Speed To Market strategy of introducing new products to respond quickly to customer or market changes

Product Life Cycle (PLC) series of stages in a product’s commercial life

or decades. Strong, mature products (such as Clorox bleach and H&R Block tax preparation) have had long productive lives.

Stages in the PLC The life cycle for both goods and services is a natural process in which products are born, grow in stature, mature, and finally decline and die. Look at the two graphics in Figure 11.3. In Figure 11.3(a), the four phases of the PLC are applied to several products with which you are familiar:

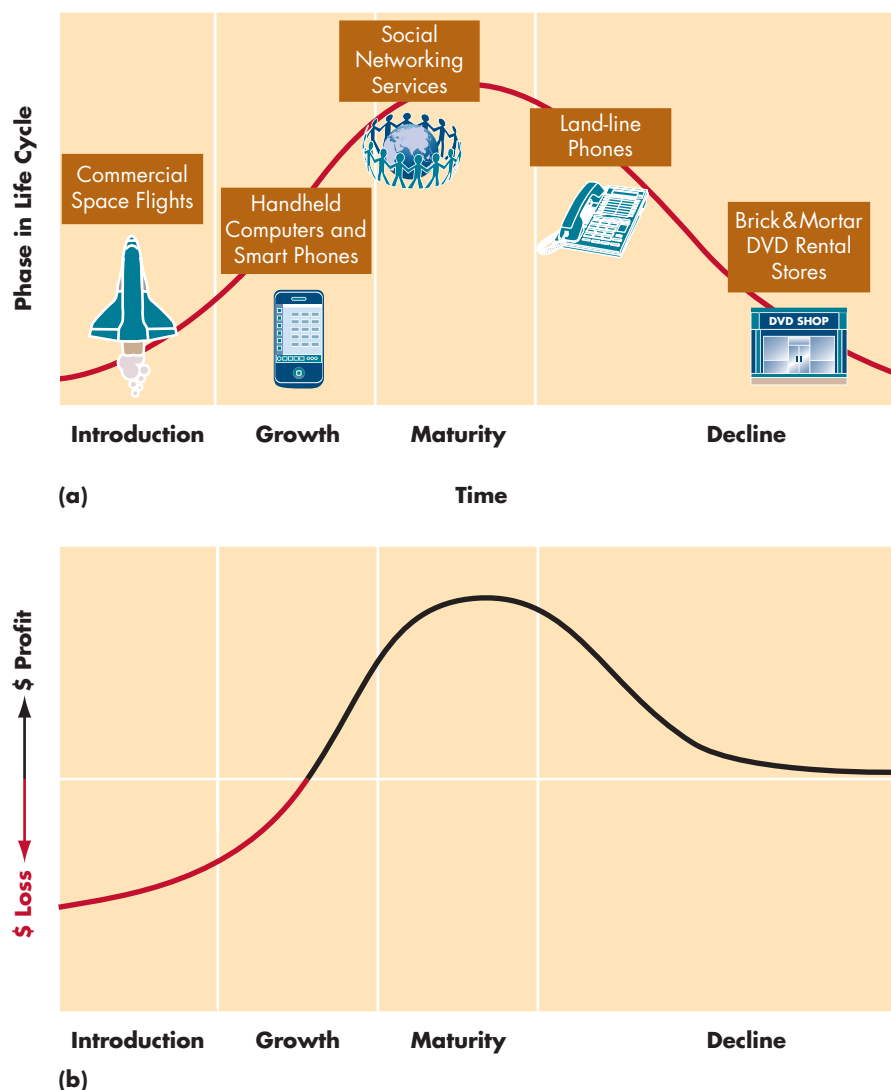
Introduction. This stage begins when the product reaches the marketplace. Marketers focus on making potential customers aware of the product and its benefits. Extensive development, production, and sales costs erase all profits.

Growth. If the new product attracts enough customers, sales start to climb rapidly. Marketers lower price slightly and continue promotional expenditures to increase sales. The product starts to show a profit as revenues surpass costs, and other firms move rapidly to introduce their own versions.

Maturity. Sales growth starts to slow. Although the product earns its highest profit level early in this stage, increased competition eventually forces price-cutting, increasing advertising and promotional expenditures, and lower profits. Toward the end of the stage, sales start to fall.

Figure 11.3 Products in the Life Cycle: (a) Phases and (b) Profit (or Loss)

Source: Adapted from Jay Heizer and Barry Render, *Operations Management*, 7th ed. (Upper Saddle River, NJ: Prentice Hall, 2004), 157.



Decline. Sales and profits continue to fall, as new products in the introduction stage take away sales. Firms end or reduce promotional support (ads and sales-people), but may let the product linger to provide some profits.

Figure 11.3(b) plots the relationship of the PLC to a product's typical profits (in black) or losses (in red). Although the early stages of the PLC often show financial losses, increased sales for successful products recover earlier losses and continue to generate profits until the decline stage. For many products, profitable life spans are short—thus, the importance placed by so many firms on the constant replenishment of product lines.

Identifying Products

Marketers must also identify products so that consumers recognize them. Two important tools for this task are branding and packaging.

Branding Products Coca-Cola is the best-known brand in the world. Some Coke executives claim that if all the company's other assets were obliterated, they could go to the bank and borrow \$100 billion on the strength of the brand name alone. Indeed, Interbrand, the brand-ranking firm, says the Coke brand in 2010 was worth over \$70 billion in terms of revenue generation from its ability to create demand for the product. Industry observers regard brands as a company's most valuable asset.¹⁹ **Branding** is a process of using names and symbols, like Coca-Cola or McDonald's golden arches, to communicate the qualities of a particular product made by a particular producer. Brands are designed to signal uniform quality; customers who try and like a product can return to it by remembering its name or its logo.

Several benefits result from successful branding, including brand loyalty and **brand awareness**—the brand name that first comes to mind when you consider a particular product category. What company, for example, comes to mind when you need to ship a document a long way on short notice? For many people, FedEx has the necessary brand awareness.

Gaining Brand Awareness The expensive, sometimes fierce struggle for brand recognition is perhaps nowhere more evident than in branding battles among dot-com firms. Collectively, the top Internet brands—Google (ranked fourth), eBay (forty-third), and Amazon.com (thirty-sixth)—spend billions a year, even though only Google, Amazon, and eBay have cracked the ranks of the top 50 global brands.²⁰ Moreover, the mounting costs of establishing a brand identity mean that many more would-be e-businesses do and will probably fail.

With its growing importance in nearly every industry, marketers are finding more effective, less expensive ways to gain brand awareness. Recent successes have been found with several methods, including product placements, buzz marketing, viral marketing, and social networking.

Product Placements Television commercials can be a real turnoff for many viewers, but entertainment programming gets our full attention. And that's when marketers are turning up the promotional juice with **product placement**—a promotional tactic for brand exposure in which characters in television, film, music, magazines, or video games use a real product with a brand visible to viewers.

Branding process of using symbols to communicate the qualities of a product made by a particular producer

Brand Awareness extent to which a brand name comes to mind when a consumer considers a particular product category

Product Placement a promotional tactic for brand exposure in which characters in television, film, music, magazines, or video games use a real product with its brand visible to viewers

Product placements are effective because the message is delivered in an attractive setting that holds the customer's interest. When used in successful films and TV shows, the brand's association with famous performers is an implied celebrity endorsement. The idea is to legitimize the brand in the mind of the customer. In all, nearly \$5 billion is spent annually on product placements, especially in television, and major marketers are putting more into product placements instead of television advertisements. A Minute Maid beverage and Clorox make appearances in the hit movie *Madagascar*, while the new Mini Cooper brand was launched in the movie, *The Italian Job*. In print placements, Hewlett-Packard computers appear in the photo layouts in the IKEA catalog. Television placements are widespread, including Hyundai in *Leverage* and *Burn Notice*, and are especially effective as digital video recorders (DVRs) remain popular. Viewers can use their DVRs to skip commercials in recorded shows, but product placements are unavoidable.

Buzz Marketing One method for increasing brand awareness is **buzz marketing** which relies on word-of-mouth to spread "buzz" about a particular product or idea. Buzz marketing agencies provide volunteer participants with new products to try and ask them to share the buzz with their friends, family, coworkers, and others in their social network. Here's the key—most companies running word-of-mouth campaigns require full disclosure, which means the participants should let people know they are participating in a campaign. This is essential so that those on the receiving end of the "buzz" don't feel tricked or taken advantage of.

Viral Marketing and Social Networking **Viral marketing** is the new form of buzz marketing that relies on social networking on the Internet to spread information like a "virus" from person to person. Messages about new cars, sports events, and numerous other goods and services flow via networks among potential customers who pass the information on to others. Using various social network formats—games, contests, chat rooms, blogs, and bulletin boards—marketers encourage potential customers to try out products and tell other people about them. Marketers—including such giants as Bank of America, McDonald's, eBay, and Cisco—are using **corporate blogs** increasingly for public relations, branding, and otherwise spreading messages that stimulate chat about products to target markets.²¹ Many major consumer companies now have their own Facebook page.

How effective can it be? Viral marketing can lead to consumer awareness faster and with wider reach than traditional media messages—and at a lower cost. It works for two reasons. First, people rely on the Internet for information that they used to get from newspapers, magazines, and television. Equally important, however, is the interactive element: The customer becomes a participant in the process of spreading the word by forwarding information to other Internet users. Success of the movie *Avatar* is credited to 20th Century Fox's use of pre-release viral tactics for stimulating public awareness of the blockbuster movie.

Types of Brand Names Just about every product has a brand name. Generally, different types of brand names—national, licensed, or private—increase buyers' awareness of the nature and quality of competing products. When customers are satisfied with a product, marketers try to build brand loyalty among the largest possible segment of repeat buyers.

National Brands **National brands** are produced by, widely distributed by, and carry the name of the manufacturer. These brands are often widely recognized by customers because of national advertising campaigns, and they are, therefore, valuable assets. Because the costs of developing a national brand are high, some companies use a national brand on several related products, called **brand extension**. Procter & Gamble now markets Ivory Shampoo, capitalizing on the name of its bar soap and dishwashing liquid. While cost efficient, this can sometimes dilute the original brand's effectiveness. Coors Light Beer now outsells original Coors Beer.

Licensed Brands We have become used to companies (and even personalities) selling the rights to put their names on products. These are called **licensed brands**.

For example, the popularity of auto racing is generating millions in revenues for the NASCAR brand, which licenses its name on car accessories, ladies and men's apparel, headsets, and countless other items with the names of popular drivers such as Martin, Johnson, Stewart, and Edwards. Harley-Davidson's famous logo—emblazoned on boots, eyewear, gloves, purses, lighters, and watches—brings the motorcycle maker more than \$200 million annually. Along with brands such as Coors and Ferrari, licensing for character-based brands—Tinker Bell, Mickey Mouse, and other Disney characters—are equally lucrative. Marketers exploit brands because of their public appeal—the image and status that customers hope to gain by associating with them.

Private Brands When a wholesaler or retailer develops a brand name and has a manufacturer put it on a product, the resulting name is a **private brand** (or **private label**). Sears, which carries such lines as Craftsman tools, Canyon River Blues denim clothing, and Kenmore appliances, is a well-known seller of private brands.

Packaging Products With a few exceptions, products need some form of **packaging** to reduce the risk of damage, breakage, or spoilage, and to increase the difficulty of stealing small products. A package also serves as an in-store advertisement that makes the product attractive, displays the brand name, and identifies features and benefits. Also, packaging features, such as no-drip bottles of Clorox bleach, add utility for consumers.

The International Marketing Mix

8 Discuss the marketing mix as it applies to international and small business.

Marketing internationally means mounting a strategy to support global business operations. Foreign customers, for example, differ from domestic buyers in language, customs, business practices, and consumer behavior. If they go global, marketers must reconsider each element of the marketing mix—product, pricing, place, and promotion.

International Products

Some products can be sold abroad with virtually no changes. Coca-Cola and Marlboro are the same in Peoria, Illinois, and Paris, France. In other cases, U.S. firms have had to create products with built-in flexibility—for example, an electric shaver that is adaptable to either 120- or 230-volt outlets, so travelers can use it in both U.S. and European electrical outlets. Frequently, however, domestic products require a major redesign for buyers in foreign markets. To sell computers in Japan, for example, Apple had to develop a Japanese-language operating system.

International Pricing

When pricing for international markets, marketers must consider the higher costs of transporting and selling products abroad. For example, because of the higher costs of buildings, rent, equipment, and imported meat, a McDonald's Big Mac costs more in Switzerland than in the United States.

Buzz Marketing promotional method that relies on word of mouth to create buzz about products and ideas

Viral Marketing type of buzz marketing that relies on the Internet to spread information like a "virus" from person to person about products and ideas

Corporate Blogs comments and opinions published on the web by or for an organization to promote its activities

National Brand brand-name product produced by, widely distributed by, and carrying the name of a manufacturer

Brand Extension a company's use of a national brand on several additional related products

Licensed Brand brand-name product for whose name the seller has purchased the right from an organization or individual

Private Brand (Private Label) brand-name product that a wholesaler or retailer has commissioned from a manufacturer

Packaging physical container in which a product is sold, advertised, or protected



Indranil Kishor/Majority World/Photoshot

Before creating an international ad like this Chinese advertisement for Coca-Cola, it is crucial to research what disparities, such as meaning of words, traditions, and taboos, exist between different societies. For example, German manufacturers of backpacks label them as “body bags,” not terribly enticing to the U.S. consumer. Can you guess why Gerber baby food is not sold in France? The French translation of Gerber is “to vomit”! Effective marketing does not just involve knowledge of culture abroad, but also requires a general sensitivity to social trends and language.

International Distribution

In some industries, delays in starting new international distribution networks can be costly. Therefore, companies with existing distribution systems often enjoy an advantage. Many companies have avoided time delays by buying existing businesses with already-established distribution and marketing networks. Procter & Gamble, for example, bought Revlon’s Max Factor and Betrix cosmetics, both of which have distribution and marketing networks in foreign markets. And many times, distribution methods used in the United States don’t fit in international markets. For example, in Europe, Breathe Right Nasal Strips are identified as “medicinal” and must be sold in pharmacies.

International Promotion

Occasionally, a good ad campaign is a good campaign just about anywhere. Quite often, however, U.S. promotional tactics do not succeed in other countries. Many Europeans believe that a product must be inherently shoddy if a company resorts to any advertising, particularly the American hard-sell variety.

International marketers are ever more aware of cultural differences that can cause negative reactions to improperly advertised products. Some Europeans, for example, are offended by TV commercials that show weapons or violence. Meanwhile, cigarette commercials that are banned from U.S. television thrive in many Asian and European markets. Product promotions must be carefully matched to local customs and cultural values.

Because of the need to adjust the marketing mix, success in international markets is hard won. But whether a firm markets in domestic or international markets, the basic principles of marketing still apply; only their implementation changes.

Small Business and the Marketing Mix

Many of today’s largest firms were yesterday’s small businesses. Behind the success of many small firms lies a skillful application of the marketing concept and an understanding of each element in the marketing mix.

Small-Business Products Some new products and firms are doomed at the start because few customers want or need what they have to offer. Many fail to estimate realistic market potential, and some offer new products before they have clear pictures of their target segments. In contrast, a thorough understanding of what customers want has paid off for many small firms. Take, for example, the case of Little Earth Productions, Inc., a company that makes fashion accessories, such as handbags. Originally, the company merely considered how consumers would use its handbags. But after examining shopping habits, Little Earth Productions redesigned for better in-store display. Because stores can give handbags better visibility by hanging them instead of placing them on floors or low countertops, Little Earth Productions added small handles specifically for that purpose.

ENTREPRENEURSHIP AND NEW VENTURES

Social Networking for Job Opportunities in Tough Times

If you're out of work, looking for a job, and wondering where to turn, help is as close as your PC or iPod. While troubled times have dampened demand for many products, others are getting a boost. Service products such as social networking sites are an example. While popular entertainment sites—including Facebook and MySpace—began as cyber highways for recreational and friendship interactions, social networking is no longer just for entertainment. In today's economy, there's a different kind of traffic—professional networking for career transition—among the list of cyber networking products for job-hunting assistance.

LinkedIn, started by five co-founders in the living room of Reid Hoffman in 2002, is an example of an interconnected network that now serves professionals in 200 countries and some 170 industries. Officially founded in 2003, this Mountain View, California, start-up had 4,500 members in the network after just one month. Today, profiles from more than 85 million members include executives from all *Fortune 500* companies. Users can post résumés, search companies, and find job openings. The LinkedIn jobs directory allows users choices for searching by industry, or by job function, geographic region, job title, or by company. However, the key attraction of the network is personal connections: One member knows other LinkedIn users, who link with still others, and so on as information flows to those looking for good candidates until they find a word-of-mouth prospect that looks good. The system is based on trusted relationships and connections, and it works: LinkedIn is the world's largest business network, and it connects a huge pool of talent that keeps on growing.

In addition to professionals looking for jobs, there are also business members, some searching for prospective employees, industry experts, potential clients, or new business opportunities. Others are interested in sharing the latest business developments within their networks of contacts. LinkedIn Open Groups, for example, consists of specialty network-groups of businesses focused on particular industries, including Social Media Marketing, or Finance and Accounting Professionals, or Business in Japan, to name just three of many. Group members may share industry-specific information on performance-enhancing practices, legal issues, current events, and even participate in determining new directions for their industry. LinkedIn's further growth depends on the value it provides for meeting its members' needs for professional fulfillment.²²

MyBizLab



Vika Sabo/Alamy

Small-Business Pricing Haphazard pricing can sink a firm with a good product. Small-business pricing errors usually result from a failure to estimate operating expenses accurately. Owners of failing businesses have often been heard to say, "I didn't realize how much it costs to run the business!" But when small businesses set prices by carefully assessing costs, many earn satisfactory profits.

Small-Business Distribution The ability of many small businesses to attract and retain customers depends partly on the choice of location, especially for new service businesses.

In distribution as in other aspects of the marketing mix, however, smaller companies may have advantages over larger competitors. A smaller company may be able to address customers' needs more quickly and efficiently with an added personal touch. Everex Systems, Inc. of Fremont, California, designs and sells computers to wholesalers and dealers through a system that the company calls *zero response time*. Because Everex Systems is small and flexible, phone orders can be reviewed every two hours and factory assembly adjusted to match demand.

Small-Business Promotion Successful small businesses plan for promotional expenses as part of start-up costs. Some hold down costs by using less expensive promotional methods, like publicity in local newspapers. Other small businesses identify themselves and their products with associated groups, organizations, and events. Thus, a crafts gallery might join with a local art league to organize public showings of their combined products.



Richard Levine/Alamy

Continued from page 269

Can Starbucks Have the Best of Both Markets—Luxury AND Affordability?

Howard Schultz, Starbucks CEO, admits that the recession is propelling not only economic behavior, but social behavior as well. Among the recession's belt-tightening behaviors are consumers' purchasing habits, including their choices for coffee products. Convenience and affordability have moved to the forefront with coffee-drinkers, and Starbucks wants to show it is moving with them with lower prices and more value packages. Can the prestige-oriented Starbucks brand fend off competitors, including McDonald's, with its already-established image for affordability and convenience? Even at its Seattle home base, Starbucks officials may have blanched at an aggressive McDonald's billboard ad with its pointed broadside about coffee-drink prices: "Four bucks is dumb."

Part of its repositioning, then, involves changing any misperceptions that may linger among coffee consumers, especially regarding Starbucks's luxury image with upscale coffees and prices. Starting in-house, the company's baristas are being trained to communicate to consumers that its prices are affordable: 90 percent of the drinks cost less than \$4, with an average drink price under \$3. And the new value-pricing with meals drives prices even lower: At \$3.95, you can get a 12 ounce coffee with a breakfast sandwich. Are the company's promotional efforts working? One report in 2009 indicates that while Starbucks's prices remain higher than McDonald's, the gap has narrowed since 2007.²³ But pricing is only one factor that can turn around decreasing sales and reverse a recent profitability shrinkage of nearly 70 percent. That's why Starbucks continues to revise its distribution network globally—to reduce operating costs by closing hundreds of existing stores and opening fewer new ones.²⁴



B Christopher/Alamy

In addition to its upscale coffee houses, Starbucks can also be found at non-traditional locations as part of its "convenience and affordability" movement, as seen here.

QUESTIONS FOR DISCUSSION

- 1 What forces in the external environment are influencing the changes in Starbucks's marketing strategy? Explain.
- 2 How are the components of Starbucks's marketing mix being used for implementing the new marketing strategy?
- 3 Identify the main factors favoring success for Starbucks's crossover into the affordability market. What prominent factors suggest major problems or even failure for this crossover attempt?
- 4 Applying this chapter's definition of product value to Starbucks's plans, what are the benefits in Starbucks's affordability offerings? What are the costs?
- 5 In what ways, if any, does Starbucks's plan for closing some existing stores and opening fewer new ones have any impact on the product value of its new affordability products and its more-established luxury products?

SUMMARY OF LEARNING OBJECTIVES MyBizLab

1. Explain the concept of marketing and identify the five forces that constitute the external marketing environment. (pp. 270–275)

Marketing is responsible for creating, communicating, and delivering value and satisfaction to customers at a profit. Marketing manages customer relationships to benefit the organization and its stakeholders. After identifying customers' needs and wants, it develops plans to satisfy them by creating products, establishing their prices, methods for distributing them, and ways for promoting them to potential customers. Marketing is successful if satisfied buyers perceive that the benefits derived from each purchase outweigh its costs, and if the firm, in exchange for providing the products, meets its organizational goals. Five outside factors comprise a company's external environment and influence its marketing programs: (1) *political and legal actions*, (2) *sociocultural factors*, (3) *technological changes*, (4) *economics*, and (5) *competition*.

2. Explain the purpose of a marketing plan and identify the four components of the marketing mix. (pp. 275–277)

The *marketing plan* is a detailed strategy for focusing marketing efforts on meeting consumer needs and wants. The plan defines the organization's marketing goals, and identifies all the activities for reaching those goals, that will result in the successful transfer of goods and services to its customers. In planning and implementing strategies, marketing managers focus on the four elements (Four Ps) of the *marketing mix*: (1) *products* for consumers, (2) *pricing* of products, (3) *place (distribution)* of products to consumers, and (4) *promotion* of products.

3. Explain market segmentation and how it is used in target marketing. (pp. 277–278)

Marketers think in terms of *target markets*—groups of people or organizations with similar wants and needs and who can be expected to show interest in the same products. Target marketing requires *market segmentation*—dividing a market into categories of customer types or “segments.” Members of a market segment must share some common traits that influence purchasing decisions. Once they identify segments, companies adopt a variety of strategies for attracting customers in one or more of the chosen target segments. The following are five variables used for segmentation: (1) *Geographic variables* are the geographical units that may be considered in developing a segmentation strategy. (2) *Demographic variables* describe populations by identifying such traits as age, income, gender, ethnic background, and marital status. (3) *Geo-demographic variables* combine demographic variables with geographic variables, such as an age category coupled with urban areas. (4) *Psychographic variables* include lifestyles, interests, and attitudes. (5) *Behavioral variables* include categories of behavioral patterns such as online consumers or large-volume buyers.

4. Describe the key factors that influence the consumer buying process. (pp. 279–280)

One consumer behavior model considers five influences that lead to consumption: (1) *Problem/need recognition*: The buying process begins when the consumer recognizes a problem or need. (2) *Information seeking*: Having recognized a need, consumers seek information. The information search leads to an evoked set (or consideration set)—a group of products they will consider buying. (3) *Evaluation of alternatives*: By analyzing product attributes (price, prestige, quality) of the consideration

set, consumers compare products to decide which product best meets their needs. (4) *Purchase decision*: “Buy” decisions are based on rational motives, emotional motives, or both. *Rational motives* involve the logical evaluation of product attributes, such as cost, quality, and usefulness. *Emotional motives* involve nonobjective factors and include sociability, imitation of others, and aesthetics. (5) *Postpurchase evaluations*: Consumers continue to form opinions after their purchase. Marketers want consumers to be happy after the consumption of products so that they are more likely to buy them again.

5. Discuss the three categories of organizational markets. (pp. 281–282)

(1) The *industrial market* consists of businesses that buy goods to be converted into other products or that are used during production. It includes farmers, manufacturers, and some retailers. (2) Before products reach consumers, they pass through a *reseller market* consisting of intermediaries—wholesalers and retailers—that buy finished goods and resell them. (3) The *government and institutional market* includes federal, state, and local governments, and nongovernmental buyers—hospitals, churches, and charities—that purchase goods and services needed for serving their clients. Taken together, these organizational markets do more than two times the business annually than that of the U.S. consumer markets.

6. Explain the definition of a product as a value package and classify goods and services. (pp. 282–284)

Customers buy products to receive value that satisfies a want or a need. Thus, a successful product is a *value package*—a bundle of attributes that, taken together, provides the right features and offers the right benefits that satisfy customers' wants and needs. *Features* are the qualities, tangible and intangible, that are included with the product. To be satisfying, features must provide *benefits* that allow customers to achieve the end results they want. The value package has services and features that add value by providing benefits that increase the customer's satisfaction.

Products (both goods and services) can be classified according to expected buyers as either *consumer products* or *organizational products*. *Convenience products* are inexpensive consumer goods and services that are consumed rapidly and regularly. *Shopping products* are more expensive and are purchased less often than convenience products. *Specialty products* are extremely important and expensive goods and services. *Organizational products* are classified as either *production items*, *expense items* or *capital items*. *Production items* are goods and services used directly in the production process. *Expense items* are goods or services consumed within a year to produce other products. *Capital items* are expensive and long-lasting goods and services that have expected lives of several years.

7. Describe the key considerations in the new product development process, and explain the importance of branding and packaging. (pp. 284–289)

To expand or diversify product lines, new products must be developed and introduced. Many firms have research and development (R&D) departments for continuously exploring new product possibilities because high mortality rates for new ideas result in only a few new products reaching the market. Even then, only a few of these survivors become successful products. *Speed to market*—how fast a firm responds with new products or market

changes—determines a product’s profitability and success. A continuous product development process is necessary because every product has a *product life cycle*—a series of stages through which it passes during its commercial life. The development of new products, then, is the source for renewal of the firm’s product offerings in the marketplace.

Branding and *packaging* identify products so that consumers recognize them. Branding is the use of names and symbols, like Coca-Cola or McDonald’s golden arches, to communicate the qualities of a particular product made by a particular producer. The goal in developing a brand is to distinguish a product from others so that consumers develop a preference for that particular brand name. Most products need some form of *packaging*—a physical container in which it is sold, advertised, or protected. A package makes the product attractive, displays the brand name, and identifies features and benefits. It also reduces the risk of damage, breakage, or spoilage, and it lessens the likelihood of theft.

8. Discuss the marketing mix as it applies to international and small business. (pp. 289–291)

In going *global*, marketers must reconsider each element of the marketing mix—product, pricing, place, and promotion—because foreign customers differ from domestic

buyers in language, customs, business practices, and consumer behavior. While some products can be sold abroad with virtually no changes, others require major redesign. Pricing must consider differences in the costs of transporting and selling products abroad. Delays in starting international distribution networks can be costly, so companies with existing distribution systems enjoy an advantage. Often, U.S. promotional tactics do not succeed in other countries, so promotional methods must be developed and matched to local customs and cultural values.

Each element in the marketing mix can determine success or failure for any *small business*. Many *products* are failures because consumers don’t need what they have to offer. A realistic market potential requires getting a clearer picture of what target segments want. Small-business pricing errors usually result from a failure to estimate operating expenses accurately. By carefully assessing costs, prices can be set to earn satisfactory profits. Perhaps the most crucial aspect of *place*, or distribution, is location because it determines the ability to attract customers. Although *promotion* can be expensive and is essential for small businesses, costs can be reduced by using less expensive promotional methods. Local newspaper articles and television cover business events, thus providing free public exposure.

KEY TERMS MyBizLab

behavioral variables (p. 278)
brand awareness (p. 287)
brand competition (p. 275)
brand extension (p. 288)
brand loyalty (p. 279)
branding (p. 287)
buzz marketing (p. 288)
capital item (p. 283)
consumer behavior (p. 279)
consumer goods (p. 271)
convenience good/convenience service (p. 283)
corporate blogs (p. 288)
customer relationship management (CRM) (p. 272)
demographic variables (p. 278)
emotional motives (p. 280)
evoked set (or consideration set) (p. 280)
expense item (p. 283)
geo-demographic variables (p. 278)
geographic variables (p. 278)

industrial goods (p. 271)
industrial market (p. 281)
institutional market (p. 281)
integrated marketing strategy (p. 276)
international competition (p. 275)
licensed brand (p. 288)
market segmentation (p. 277)
marketing (p. 270)
marketing manager (p. 275)
marketing mix (p. 275)
marketing plan (p. 275)
national brand (p. 288)
packaging (p. 289)
place (distribution) (p. 276)
pricing (p. 276)
private brand (private label) (p. 289)
product (p. 275)
product differentiation (p. 275)
product features (p. 282)
product life cycle (PLC) (p. 285)
product line (p. 284)

product mix (p. 284)
product placement (p. 287)
product positioning (p. 277)
production item (p. 283)
promotion (p. 276)
psychographic variables (p. 278)
rational motives (p. 280)
relationship marketing (p. 271)
reseller market (p. 281)
services (p. 271)
shopping good/shopping service (p. 283)
specialty good/specialty service (p. 283)
speed to market (p. 285)
substitute product (p. 274)
target market (p. 277)
utility (p. 270)
value (p. 270)
value package (p. 282)
viral marketing (p. 288)

QUESTIONS AND EXERCISES

QUESTIONS FOR REVIEW

1. What are the key similarities and differences between consumer buying behavior and B2B buying behavior?
2. Why and how is market segmentation used in target marketing?
3. What are the various classifications of consumer and industrial products? Give an example of a good and a service for each category other than those discussed in the text.

4. How is the concept of the value package useful in marketing to consumers and industrial customers?

QUESTIONS FOR ANALYSIS

5. Select an everyday product (personal fitness training, CDs, dog food, cell phones, or shoes, for example). Show how different versions of your product are aimed toward different market segments. Explain how the marketing mix differs for each segment.

6. Select a second everyday product and describe the consumer buying process that typically goes into its purchase.
7. Consider a service product, such as transportation, entertainment, or health care. What are some ways that more customer value might be added to this product? Why would your improvements add value for the buyer?
8. How would you expect the branding and packaging of convenience, shopping, and specialty goods to differ? Why? Give examples to illustrate your answers.

APPLICATION EXERCISES

9. Identify a company with a product that interests you. Consider ways the company could use customer relationship

management (CRM) to strengthen relationships with its target market. Specifically, explain your recommendations on how the company can use each of the four basic components of the marketing mix in its CRM efforts.

10. Select a product made by a foreign company and sold in the United States. What is the product's target market? What is the basis on which the target market is segmented? Do you think that this basis is appropriate? How might another approach, if any, be beneficial? Why?
11. Choose a product that could benefit from word-of-mouth buzz marketing. Then create a marketing campaign kit for participants to spread the word about this product.

BUILDING YOUR BUSINESS SKILLS

Dealing with Variables

Goal

To encourage you to analyze the ways in which various market segmentation variables affect business success.

Background Information

You and four partners are thinking of purchasing a heating and air conditioning (H/AC) dealership that specializes in residential applications priced between \$2,000 and \$40,000. You are now in the process of deciding where that dealership should be located. You are considering four locations: Miami, Florida; Westport, Connecticut; Dallas, Texas; and Spokane, Washington.

Method

Step 1

Working with your partnership group, examine some business information sources to learn how H/AC makers market residential products. Check for articles in the *Wall Street Journal*, *Business Week*, *Fortune*, and other business publication sources.

Step 2

Continue your research by focusing on the specific marketing variables that define each prospective location. Check Census Bureau and Department of Labor data at your library and on the Internet and contact local chambers of commerce (by phone and via the Internet) to learn about the following factors for each location:

1. Geography
2. Demography (especially age, income, gender, family status, and social class)
3. Geo-demographic information
4. Psychographic factors (lifestyles, interests, and attitudes)
5. Behavioral patterns of consumers

Step 3

As a group, determine which location holds the greatest promise as a dealership site. Base your decision on your analysis of market segment variables and their effects on H/AC sales.

FOLLOW-UP QUESTIONS

1. Which location did you choose? Describe the segmentation factors that influenced your decision.
2. Identify the two most important variables that you believe will affect the dealership's success. Why are these factors so important?
3. Which factors were least important? Why?
4. When equipment manufacturers advertise residential H/AC products, they often show them in different climate situations (winter, summer, or high-humidity conditions). Which market segments are these ads targeting? Describe these segments in terms of demographic and psychographic characteristics.

EXERCISING YOUR ETHICS: INDIVIDUAL EXERCISE

Driving a Legitimate Bargain

The Situation

A firm's marketing methods are sometimes at odds with the consumer's buying process. This exercise illustrates how ethical issues can become entwined with personal selling activities, product pricing, and customer relations.

The Dilemma

In buying his first new car, Matt visited showrooms and websites for every make of SUV. After weeks of reading and test-driving, he settled on a well-known Japanese-made vehicle with a manufacturer's suggested retail price of \$37,500 for the 2011 model. The price included accessories and options that Matt considered essential. Because he planned to own the car for at least five years, he was willing to wait for just the right package rather than accept

a lesser-equipped car already on the lot. Negotiations with Gary, the sales representative, continued for two weeks. Finally, a sales contract was signed for \$33,600, with delivery due no more than two or three months later if the vehicle had to be special-ordered from the factory and earlier if Gary found the exact car when he searched other dealers around the country. On April 30, to close the deal, Matt had to write a check for \$1,000.

Matt received a call on June 14 from Angela, Gary's sales manager: "We cannot get your car before October," she reported, "so it will have to be a 2012 model. You will have to pay the 2012 price." Matt replied that the agreement called for a stated price and delivery deadline for 2011, pointing out that money had exchanged hands for the contract. When asked what the 2012 price would be, Angela responded that it had not yet been announced. Angrily, Matt replied that he would be foolish to agree now on some

unknown future price. Moreover, he didn't like the way the dealership was treating him. He told Angela to send him back everything he had signed; the deal was off.

QUESTIONS TO ADDRESS

- 1 Given the factors involved in the consumer buying process, how would you characterize the particular ethical issues in this situation?

- 2 From an ethical standpoint, what are the obligations of the sales representative and the sales manager regarding the pricing of the product in this situation?
- 3 If you were responsible for maintaining good customer relations at the dealership, how would you handle this matter?

EXERCISING YOUR ETHICS: TEAM EXERCISE

Cleaning Up in Sales

The Situation

Selling a product—whether a good or a service—requires the salesperson to believe in it, to be confident of his or her sales skills, and to keep commitments made to clients. Because so many people and resources are involved in delivering a product, numerous uncertainties and problems can give rise to ethical issues. This exercise encourages you to examine some of the ethical issues that can surface in the selling process for industrial products.

The Dilemma

Along with 16 other newly hired graduates, Denise Skisel has just completed the sales training program for a new line of high-tech machinery that Cleaning Technologies Corporation (CTC) manufactures for industrial cleaners. As a new salesperson, Denise is eager to meet potential clients, all of whom are professional buyers for companies—such as laundries and dry cleaners, carpet cleaners, and military cleaners—that use CTC products or those of competitors. Denise is especially enthusiastic about several facts that she learned during training: CTC's equipment is the most technically advanced in the industry, carries a 10-year performance guarantee, and is safe—both functionally and environmentally.

The first month was difficult but successful: In visits to seven firms, Denise successfully closed three sales, earning large commissions (pay is based on sales results) as well as praise from the sales manager. Moreover, after listening to her presentations, two more potential buyers had given verbal commitments and were about to sign for much bigger orders than any Denise had closed to date. As she was catching her flight to close those sales, Denise received two calls—one from a client and one from a competitor. The client, just getting started with CTC equipment, was having

some trouble: Employees stationed nearby were getting sick when the equipment was running. The competitor told Denise that the U.S. Environmental Protection Agency (EPA) had received complaints that CTC's new technology was environmentally unsafe because of noxious emissions.

Team Activity

Assemble a group of four students and assign each group member to one of the following roles:

- Denise: CTC salesperson (employee)
- CTC sales manager (employer)
- CTC customer
- CTC investor

ACTION STEPS

- 1 Before hearing any of your group's comments on this situation, and from the perspective of your assigned role, what do you recommend Denise should say to the two client firms she is scheduled to visit? Write down your recommendation.
- 2 Gather your group together and reveal, in turn, each member's recommendation.
- 3 Appoint someone to record main points of agreement and disagreement within the group. How do you explain the results? What accounts for any disagreement?
- 4 Identify any ethical issues involved in group members' recommendations. Which issues, if any, are more critical than others?
- 5 From an ethical standpoint, what does your group finally recommend Denise should say to the two client firms she is scheduled to visit? Explain your result.
- 6 From the standpoint of customer relationship management, identify the advantages and drawbacks resulting from your recommendations.

VIDEO EXERCISE MyBizLab

DC Shoes

Learning Objectives

The purpose of this video is to help you:

- 1 Understand the importance of branding.
- 2 Describe how market segmentation is used to create a target market for a product.
- 3 Discuss the components of the value package.

Synopsis

DC Shoes is a manufacturer and distributor of clothing and accessories for extreme sports enthusiasts. Founded in 1993 by rally racer Ken Block and skateboarder Damon Way, DC Shoes sells products for skateboarding, snowboarding, surfing, motocross, and BMX. The company's media arm, DC Films, produces high

quality videos that define and sustain the brand. Video shorts produced by DC Films often feature the company's products, but that is only the beginning. The films highlight extreme sports athletes and embody the lifestyle and priorities of their target market.

DISCUSSION QUESTIONS

- 1 Describe DC Shoes's target market in terms of age, gender, and lifestyle. How does the company's marketing mix appeal to this target market?
- 2 What are the components of DC Shoes's value package?
- 3 How does DC Shoes use its media arm, DC Films, to attract and retain customers?
- 4 How does DC Shoes differentiate themselves from their competition?

- 5 Recently, DC Shoes signed skateboarder Chris Cole. How did DC Shoes use buzz marketing before the announcement?

Online Exploration

DC Shoes has a multimedia approach to building its brand. Go to YouTube (www.youtube.com) and search for “DC Shoes” to find

the company’s YouTube channel. View a sample of the hundreds of videos, paying particular attention to the videos introducing Chris Cole. How does DC Shoes use YouTube and social media to build and define the brand? How is YouTube particularly suited to the company’s target market?

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- ²² McClatchy Newspapers (Minneapolis), “Social Networking Sites Make Powerful Job-Hunting Tools,” *Columbia Daily Tribune*, January 21, 2009, 7B; Press Release, “LinkedIn Launches New Tools to Boost HR Professionals’ Efficiency as Responses to Job Postings Double in Challenging Economy,” February 2, 2009, at <http://press.linkedin.com/linkedin-new-hr-tools>; *LinkedIn.com*, accessed on December 29, 2010 at <http://www.linkedin.com>.
- ²³ Janet Adamy, “Starbucks Plays Common Joe,” *The Wall Street Journal*, February 9, 2009, accessed at <http://online.wsj.com/article/SB123413848760761577>.
- ²⁴ Wendy Stueck, “Hold the Frappuccino, Starbucks is Retrenching Globally,” *ScrippsNews*, April 16, 2009, accessed at <http://www.scrippsnews.com/node/42556>; Claire Cain Miller, “Starbucks to Close 300 Stores and Open Fewer New Ones,” *The New York Times*, January 29, 2009, accessed at <http://www.nytimes.com/2009/01/29/business/29sbux.html>.

13 Information Technology for Business

Online Pirates Feast on Economic Downturn

Start a 'work-at-home' job as an 'international sales representative' or a 'shipping manager,' with excellent pay. Simply open a new bank account in your name, accept money transfers into the account, then forward the money to our customers at locations around the globe." For out-of-work computer users, this e-mail message can be quite appealing. In reality, the victim is tricked into becoming a "mule" in a money-laundering racket. The new "employee" provides anonymous racketeers a safe way to launder stolen or otherwise illegal money. As Internet money transfers arrive, the mule relays them (illegally) to a global network of recipient racketeers. With rising unemployment, the volume of mule e-mails is growing; more job-seekers seem willing to take the risk of being arrested.

Financial fears are a boon to scammers, as businesses and consumers grasp at schemes that are ordinarily ignored. Fake websites, mobile devices, and Internet-based phones boast high-paying jobs, low-cost loans, and can't-miss lotteries. Text messages, saying victims' credit cards have been deactivated, lure bank customers into relaying account information. Internet-based phone users receive fake caller IDs of real hospitals, government agencies, banks, and other businesses in a new form of telephone phishing that talks victims into revealing personal information. Perhaps most impressive, cyber-thieves

After reading this chapter, you should be able to:

- 1** Discuss the impacts information technology has had on the business world.
- 2** Identify the IT resources businesses have at their disposal and how these resources are used.
- 3** Describe the role of information systems, the different types of information systems, and how businesses use such systems.
- 4** Identify the threats and risks information technology poses on businesses.
- 5** Describe the ways in which businesses protect themselves from the threats and risks information technology poses.

are using marketing techniques—most notably “targeting”—to reach specific audiences. Also known as “spear phishing,” with targeting, scammers do research to identify wealthy individuals, families, and professional money managers. Victims receive friendly-sounding e-mails containing contaminated attachments that, once opened, infect their computers, exposing bank account and other identity information to scammers. While computer security devices—spam filters, data encryption, firewalls, and anti-virus software—catch a vast number of intrusions, the threat remains.¹

Our opening story continues on page 350.

WHAT’S IN IT FOR ME?

Protecting against cyber-attacks is an extreme example of the way the Internet and related technologies are reshaping the business landscape. But even the most traditional businesses must change with the times, whether those times are defined by paper and pencil, telephone and fax machine, or digital language translators and smartphones. Indeed, it may seem like the times are changing more rapidly with each passing year, and it is in this context that our discussion of the various kinds of information technology, their functions, and the benefits and risks associated with each assumes particular importance. By understanding the material in this chapter, you’ll have a clearer picture of how technology is used by and affects business, and how you can use it to your best advantage.

MyBizLab Where you see MyBizLab in this chapter, go to www.mybizlab.com for additional activities on the topic being discussed.

Dave Pilibosian/iStockphoto.com



1 Discuss the impacts information technology has had on the business world.

IT Impacts

The effect of **Information technology (IT)** on business has been immeasurable. In fact, IT—the various appliances and devices for creating, storing, exchanging, and using information in diverse modes, including visual images, voice, multimedia, and business data—has altered the very structure of business organizations, radically changing the way employees and customers interact. We see ads all the time for the latest cell phones, iPads, laptops, PDAs, and smartphones, and most of us connect daily to the Internet. E-mail has become a staple in business, and even such traditionally “low-tech” businesses as nail salons and garbage collection companies are becoming dependent on the Internet, computers, and networks. As consumers, we interact with databases every time we withdraw money from an ATM, order food at McDonalds, or check on the status of a package at UPS.com. Technology and its effects are evident everywhere.

E-commerce (short for *electronic commerce*)—the use of the Internet and other electronic means for retailing and business-to-business transactions—has created new market relationships around the globe. In this section, we’ll look at how businesses are using IT to bolster productivity, improve operations and processes, create new opportunities, and communicate and work in ways not possible before.

Creating Portable Offices: Providing Remote Access to Instant Information

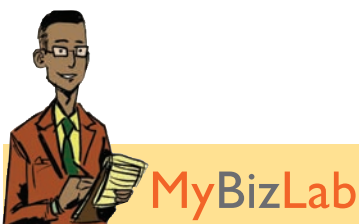
IT appliances such as BlackBerry® smartphones, Nokia smartphones, and others feature wireless Internet access and PC-style office applications, saving businesses time and travel expenses by enabling employees, customers, and suppliers to communicate from any location. IT’s mobile messaging capabilities mean that a geographic separation between the workplace and headquarters is more common. Employees no longer work only at the office or the factory, nor are all of a company’s operations performed at one place; employees take the office with them. When using such devices, off-site employees have continuous access to information, instead of being forced to be at a desk to access their files and the Internet. Client project folders, e-mail, and voice messaging are accessible from any location. Such benefits have attracted 55 million enthusiastic subscribers to BlackBerry® smartphones, making it a leader in the handheld wireless industry until losing its top spot to the iPad.²

Enabling Better Service by Coordinating Remote Deliveries

Meanwhile, with access to the Internet, company activities may be geographically scattered but remain coordinated through a networked system that provides better service for customers. Many businesses, for example, coordinate activities from one centralized location, but their deliveries flow from several remote locations, often at lower cost. When you order furniture—for example, a chair, a sofa, a table, and two lamps—from an Internet storefront, the chair may come from a warehouse in Philadelphia and the lamps from a manufacturer in California; the sofa and table may be shipped direct from different suppliers in North Carolina. Beginning with the customer’s order, activities are coordinated through the company’s network, as if the whole order were being processed at one place. This avoids the expensive in-between step of first shipping all the items to a central location.

Creating Leaner, More Efficient Organizations

Networks and technology are also leading to leaner companies with fewer employees and simpler structures. Because networks enable firms to maintain information linkages among both employees and customers, more work and



Gain hands-on experience through an interactive, real-world scenario. This chapter’s simulation entitled Technology Direction is located at www.mybizlab.com.

customer satisfaction can be accomplished with fewer people. Bank customers dial into a 24-hour information system and monitor their accounts without employee assistance. Instructions that once were given to assembly workers by supervisors are now delivered to workstations electronically. IT communications provide better use of employee skills and greater efficiencies from physical resources. For example, truck drivers used to return to a shipping terminal to receive instructions from supervisors on reloading freight for the next delivery. Today, one dispatcher using IT has replaced several supervisors. Instructions to the fleet arrive on electronic screens in trucks on the road so drivers know in advance the next delivery schedule, while satellite navigation services, such as the XM NavTraffic, alert drivers of traffic incidents ahead so they can reroute to avoid delivery delays.³



Barack Obama's Blackberry uses an encrypted system for secure messaging with advisors and colleagues.

Enabling Increased Collaboration

Collaboration among internal units and with outside firms is greater when firms use collaboration (collaborative) software and other IT communications devices, which we'll discuss later in this chapter. Companies are learning that complex problems can be better solved through IT-supported collaboration, either with formal teams or spontaneous interaction among people and departments. The design of new products, for example, was once an engineering responsibility. Now it is a shared activity using information from people in marketing, finance, production, engineering, and purchasing who, collectively, determine the best design. For example, the design of Boeing's 787 Dreamliner aircraft is the result of collaboration, not just among engineers, but also from passengers (who wanted electric outlets to recharge personal electronic devices), cabin crews (who wanted more bathrooms and wider aisles), and air-traffic controllers (who wanted larger, safer air brakes).

Enabling Global Exchange

The global reach of IT is enabling business collaboration on a scale that was unheard of before. Consider Lockheed Martin's contract for designing and supplying thousands of Joint Strike Fighters in different versions for the United States, Britain, Italy, Denmark, Canada, and Norway. Lockheed can't do the job alone—over the project's 20-year life, more than 1,500 firms will supply everything from radar systems to engines to bolts. In just the startup phase, Lockheed collaborated with Britain's BAE Systems along with more than 70 U.S. and 18 international subcontractors at some 190 locations, including an Australian manufacturer of aviation communications and a Turkish electronics supplier. In all, 40,000 remote computers are collaborating on the project using Lockheed's Internet-based system. Web collaboration on a massive scale is essential for coordinating design, testing, and construction while avoiding delays, holding down costs, and maintaining quality.⁴

Information Technology (IT) various appliances and devices for creating, storing, exchanging, and using information in diverse modes, including visual images, voice, multimedia, and business data

E-commerce use of the Internet and other electronic means for retailing and business-to-business transactions

Improving Management Processes

IT has also changed the nature of the management process. The activities and methods of today's manager differ significantly from those that were common just a few years ago. At one time, upper-level managers didn't concern themselves with all of the detailed information filtering upward from the workplace because it was expensive to gather, slow in coming, and quickly became out of date. Workplace management was delegated to middle and first-line managers.

With databases, specialized software, and networks, however, instantaneous information is accessible and useful to all levels of management. For example, consider *enterprise resource planning (ERP)*: an information system for organizing and managing a firm's activities across product lines, departments, and geographic locations. The ERP stores real-time information on work status and upcoming transactions and notifies employees when action is required if certain schedules are to be met. It coordinates internal operations with activities of outside suppliers and notifies customers of upcoming deliveries and billings. Consequently, more managers use it routinely for planning and controlling company-wide operations. Today, a manager at Hershey Foods, for example, uses ERP to check on the current status of any customer order for Kisses or strawberry Twizzlers, inspect productivity statistics for each workstation, and analyze the delivery performance on any shipment. Managers can better coordinate company-wide performance. They can identify departments that are working well together and those that are lagging behind schedule and creating bottlenecks.

Providing Flexibility for Customization

IT advances also create new manufacturing capabilities that enable businesses to offer customers greater variety, customizable options, and faster delivery cycles. Whether it's an iPhone app or a Rawlings baseball glove, today's design-it-yourself world is possible through fast, flexible manufacturing using IT networks. At Ponoko.com you can design and make just about anything, from electronics to furniture. Buyers and materials suppliers, meeting electronically, have rapidly generated thousands of product designs online. The designs can be altered to suit each buyer's tastes. Similarly, at San Francisco-based Timbuk2's website, you can "build your own" custom messenger bag at different price levels with your choice of size, fabric, color combination, accessories, liner material, strap, and even left- or right-hand access.⁵ This principle is called **mass-customization**: Although companies produce in large volumes, IT allows each item to feature the unique options the customer prefers. With IT, the old standardized assembly line has become quickly adaptable because workers have instantaneous access to assembly instructions for all the product options, and equipment can be changed quickly for each customer's order.

As shown in Figure 13.1, flexible production and speedy delivery depend on an integrated network of information to coordinate all the activities among customers, manufacturers, suppliers, and shippers.

Providing New Business Opportunities

Not only is IT improving existing businesses, it is creating entirely new businesses where none existed before. For big businesses, this means developing new products, offering new services, and reaching new clients. Only a few years ago, today's multibillion-dollar behemoth known as Google was a fledgling search engine. That company boasts not just a search engine but hundreds of services including virtual maps, YouTube video, instant messaging, e-mail, and online software services such as photo editing and document creation.

The IT landscape has also presented small-business owners with new e-business opportunities. Consider Richard Smith. His love for stamp collecting began at age seven. Now, some 50 years after saving that first stamp, he's turned his hobby into a profitable eBay business. Each day begins at the PC in his home office, scanning eBay's listings for items available and items wanted by sellers and buyers around the world. With more than 3,000 sales transactions to date, Richard maintains a perfect

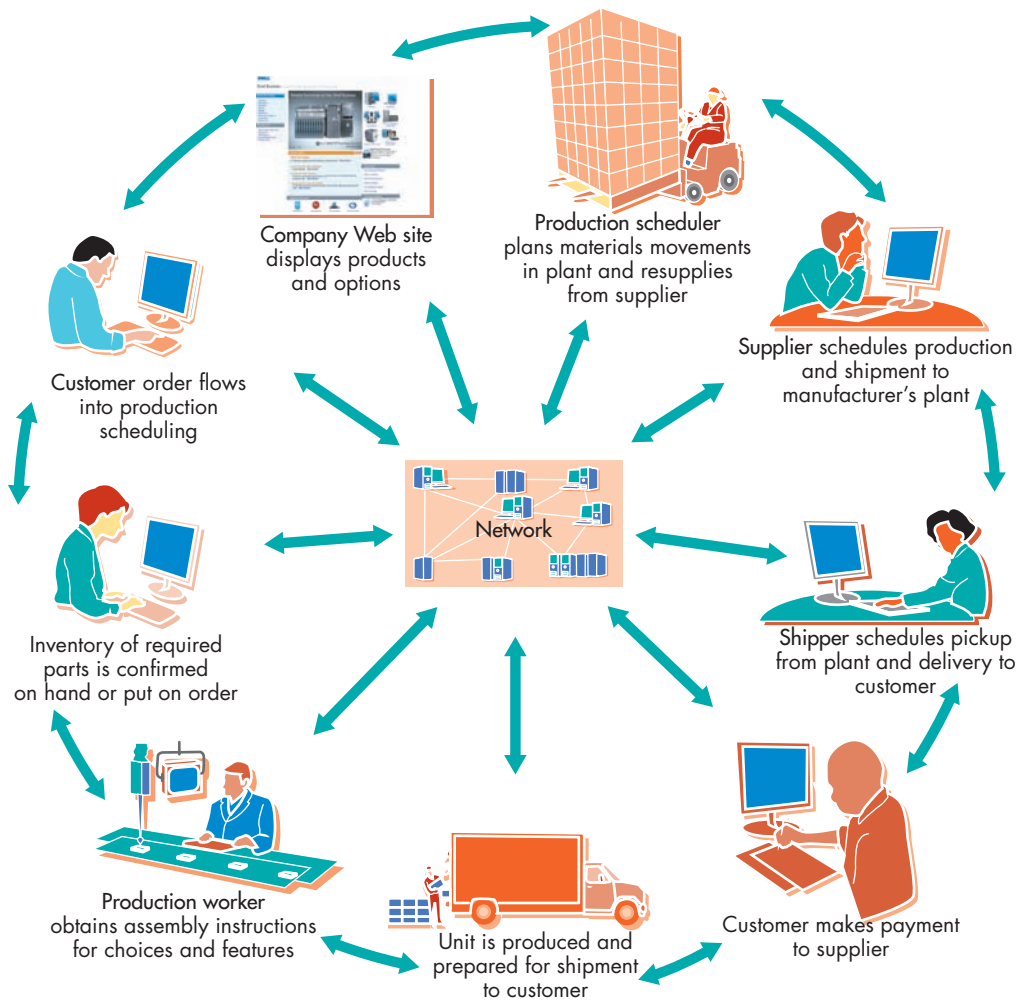


Figure 13.1 Networking for Mass Customization

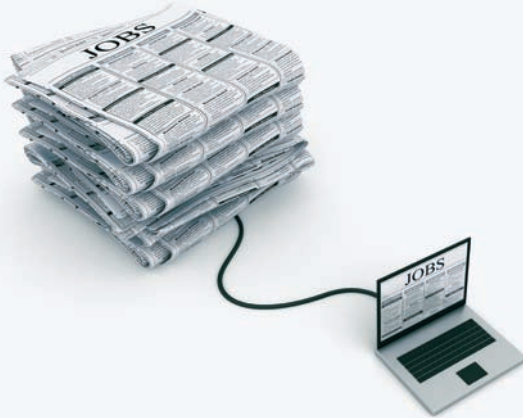
customer rating and recently earned more than \$4,000 on a single eBay transaction. More than 600 online marketplaces allow entrepreneurs to sell directly to consumers, bypassing conventional retail outlets, and enable B2B selling and trading with access to a worldwide customer base. To assist start-up businesses, eBay's services network is a ready-made online business model, not just an auction market. Services range from credit financing to protection from fraud and misrepresentation, information security, international currency exchanges, and post-sales management. These features enable users to complete sales transactions, deliver merchandise, and get new merchandise for future resale, all from the comfort of their own homes. Many eBay users, like Richard Smith, have carved profitable new careers.

Improving the World and Our Lives

Can advancements in IT really make the world a better place? The development of smartphones and other electronic devices has certainly brought enjoyment and convenience to the everyday lives of millions of people around the globe. Extending technology beyond earlier cell phones and PCs, new technologies provide access to endless choices of *apps* (shorthand for *application software*), allowing each user to "build it your way," depending on what you want your device to do and how you'll be using it. Apps

Mass-Customization principle in which companies produce in large volumes, but each item features the unique options the customer prefers

Alex Slobodkin/iStockphoto.com



Social Networking as a Service The many forms of social media—blogs, chats, and networks such as LinkedIn, Twitter, and Facebook—are no longer just playthings for gossips and hobbyists. They're also active tools for getting a job. With the economic meltdown, millions of job seekers have turned to online networking—tapping leads from friends, colleagues, and acquaintances—for contacts with companies that may be hiring. Peers and recruiters are networking using electronic discussion forums and bulletin boards at websites of professional associations and trade groups, technical schools, and alumni organizations. Some social sites provide occupation-specific career coaching and job tips: Scientists are connecting with Epernicus, top managers use Meet the Boss, and graduate students are connecting with Graduate Junction.⁶

RED HUBER KRT/Newscom



After this capsule is swallowed, the camera inside it can transmit almost 50,000 images during its eight-hour journey through the digestive tract.

for computers and smartphones include *programs* for learning languages, music, work, games, traveling, art, and almost any other area of interest. Just two years after its opening, Apple's App Store had supplied over 10 billion app downloads worldwide to users of Macs, iPhones, iPads, and iPod touches.

Organizations, too, including hospitals and medical equipment companies are embracing IT advancements to provide better services. For example, when treating combat injuries, surgeons at Walter Reed Army Medical Center rely on high-tech imaging systems that convert two-dimensional photographs of their patients' anatomies into three-dimensional physical models for presurgical planning. These 3-D mockups of shoulders, femurs, and facial bones give doctors the opportunity to see and feel the anatomy as it will be seen in the operating room, before they even use their scalpels. Meanwhile, pill-sized cameras that patients swallow are providing doctors with images of the insides of the human body, helping them to make better diagnoses for such ailments as ulcers and cancer.⁷

IT Building Blocks: Business Resources

Businesses today have a wide variety of IT resources at their disposal. In addition to the Internet and e-mail, these include communications technologies, networks, hardware devices, and software, as shown at technology media sites such as Techweb.com.

2 Identify the IT resources businesses have at their disposal and how these resources are used.

The Internet and Other Communication Resources

The **Internet** is a gigantic system of interconnected computer networks belonging to millions of collaborating organizations and agencies—government, business, academic, and public—linked together by voice, electronic, and wireless technologies.⁸ Computers within the networks are connected by various communications protocols, or standardized coding systems, such as the **hypertext transfer protocol (HTTP)**—which is used for the **World Wide Web**, a branch of the Internet consisting of interlinked hypertext documents, or web pages. Other protocols serve a variety of purposes such as sending and receiving e-mail. The World Wide web and its protocols provide the common language that allows information sharing on the Internet. For thousands of businesses, the Internet has replaced the telephone, fax machine, and standard mail as the primary communications tool.



In this map of the Internet, from The Opte Project, each line represents a connection between computers or other network devices.

The Internet has spawned a number of other business communications technologies, including *intranets*, *extranets*, *electronic conferencing*, and *VSAT satellite communications*.

Intranets Many companies have extended Internet technology by maintaining internal websites linked throughout the firm. These private networks, or **intranets**, are accessible only to employees and may contain confidential information on benefits programs, a learning library, production management tools, or product design resources. The Ford Motor Company's intranet is accessible to 200,000 people daily at workstations in Asia, Europe, and the United States. It contains private information on Ford's employee benefits, production management tools, and product design resources. Sharing information on engineering, distribution, and marketing has reduced the lead time for getting new models into production and has shortened customer delivery times.⁹

Extranets **Extranets** allow outsiders limited access to a firm's internal information network. The most common application allows buyers to enter a system to see which products are available for sale and delivery, thus providing convenient product-availability information. Industrial suppliers are often linked into customers' information networks so that they can see planned production schedules and prepare supplies for customers' upcoming operations. The extranet at Chaparral

Internet gigantic system of interconnected computer networks linked together by voice, electronic, and wireless technologies

Hypertext Transfer Protocol (HTTP) communications protocol used for the World Wide Web, in which related pieces of information on separate web pages are connected using hyperlinks

World Wide Web branch of the Internet consisting of interlinked hypertext documents, or web pages

Intranet organization's private network of internally linked websites accessible only to employees

Extranet system that allows outsiders limited access to a firm's internal information network

Steel Company, for example, lets customers shop electronically through its storage yards and gives them electronic access to Chaparral's planned inventory of industrial steel products.

Electronic Conferencing Electronic conferencing allows groups of people to communicate simultaneously from various locations via e-mail, phone, or video, thereby eliminating travel time and saving money. One form, called *dataconferencing*, allows people in remote locations to work simultaneously on one document. *Videoconferencing* allows participants to see one another on video screens while the conference is in progress. For example, Lockheed Martin's Joint Strike Fighter project, discussed earlier, uses Internet collaboration systems with both voice and video capabilities. Although separated by oceans, partners can communicate as if they were in the same room for redesigning components and production schedules. Electronic conferencing is attractive to many businesses because it eliminates travel and saves money.

VSAT Satellite Communications Another Internet technology businesses use to communicate is **VSAT satellite communications**. VSAT (short for *very small aperture terminal*) systems have a transmitter-receiver (*transceiver*) that sits outdoors with a direct line of sight to a satellite. The hub—a ground-station computer at the company's headquarters—sends signals to and receives signals from the satellite, exchanging voice, video, and data transmissions. An advantage of VSAT is privacy. A company that operates its own VSAT system has total control over communications among its facilities, no matter their location, without dependence on other companies. A firm might use VSAT to exchange sales and inventory information, advertising messages, and visual presentations between headquarters and store managers at remote sites. For example, stores in Minneapolis, London, and Boston might communicate with headquarters in New York, sending and receiving information via a satellite, as shown in Figure 13.2.

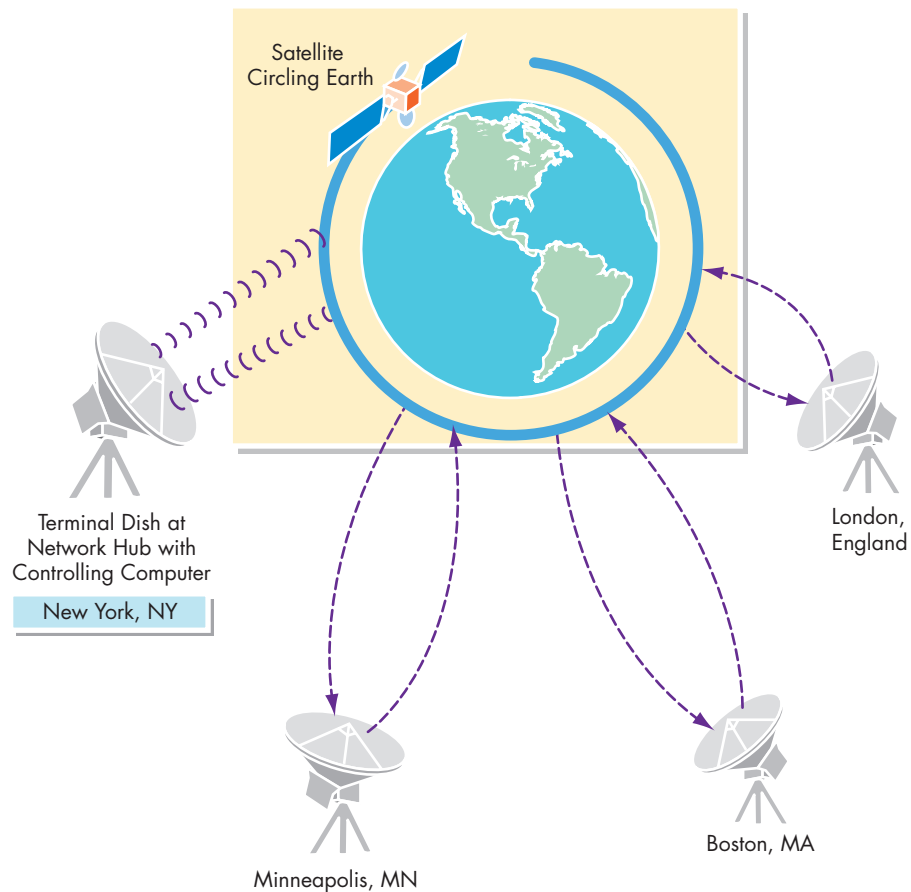


Figure 13.2 A VSAT Satellite Communication Network

Networks: System Architecture

A **computer network** is a group of two or more computers linked together, either hard-wired or wirelessly, to share data or resources, such as a printer. The most common type of network used in businesses is a **client-server network**. In client-server networks, *clients* are usually the laptop or desktop computers through which users make requests for information or resources. *Servers* are the computers that provide the services shared by users. In big organizations, servers are usually assigned a specific task. For example, in a local university or college network, an *application server* stores the word-processing, spreadsheet, and other programs used by all computers connected to the network. A *print server* controls the printers, stores printing requests from client computers, and routes jobs as the printers become available. An *e-mail server* handles all incoming and outgoing e-mail. With a client-server system, users can share resources and Internet connections—and avoid costly duplication.

Networks can be classified according to geographic scope and means of connection (either wired or wireless).

Wide Area Networks (WANs) Computers that are linked over long distances—statewide or even nationwide—through telephone lines, microwave signals, or satellite communications make up what are called **wide area networks (WANs)**. Firms can lease lines from communications vendors or maintain private WANs. Walmart, for example, depends heavily on a private satellite network that links thousands of U.S. and international retail stores to its Bentonville, Arkansas, headquarters.

Local Area Networks (LANs) In **local area networks (LANs)**, computers are linked in a smaller area such as an office or a building. For example, a LAN unites hundreds of operators who enter call-in orders at TV's Home Shopping Network facility. The arrangement requires only one computer system with one database and one software system.

Wireless Networks Wireless networks use airborne electronic signals to link network computers and devices. Like wired networks, wireless networks can reach across long distances or exist within a single building or small area. For example, the BlackBerry® smartphones system shown in Figure 13.3 consists of devices that send and receive transmissions on the **wireless wide area networks (WWANs)** of more than 100 service providers—such as Cellular One (United States), T-Mobile (United Kingdom and United States), and Vodafone Italia (Italy)—in countries throughout the world. The wireless format that the system relies on to control wireless messaging is supplied by Research In Motion® (RIM®), the company that makes the BlackBerry® smartphone, and is installed on the user-company's computer. A *firewall* provides privacy protection. We'll discuss firewalls in more detail later in the chapter.

Wi-Fi You've no doubt heard of "hotspots"—nearly 1 million locations worldwide, such as coffee shops, hotels, airports, and cities that provide wireless Internet connections for people on the go. Each hotspot, or **Wi-Fi** (a play on audio recording term Hi-Fi) access point, uses its own small network, called a **wireless local area network (wireless LAN or WLAN)**. Although wireless service is free at some hotspots, others charge a fee—a daily or hourly rate—for the convenience of Wi-Fi service.

Electronic Conferencing IT that allows groups of people to communicate simultaneously from various locations via e-mail, phone, or video

VSAT Satellite Communications network of geographically dispersed transmitter-receivers (transceivers) that send signals to and receive signals from a satellite, exchanging voice, video, and data transmissions

Computer Network group of two or more computers linked together by some form of cabling or by wireless technology to share data or resources, such as a printer

Client-Server Network common business network in which **clients** make requests for information or resources and **servers** provide the services

Wide Area Network (WAN) computers that are linked over long distances through telephone lines, microwave signals, or satellite communications

Local Area Network (LAN) computers that are linked in a small area, such as all of a firm's computers within a single building

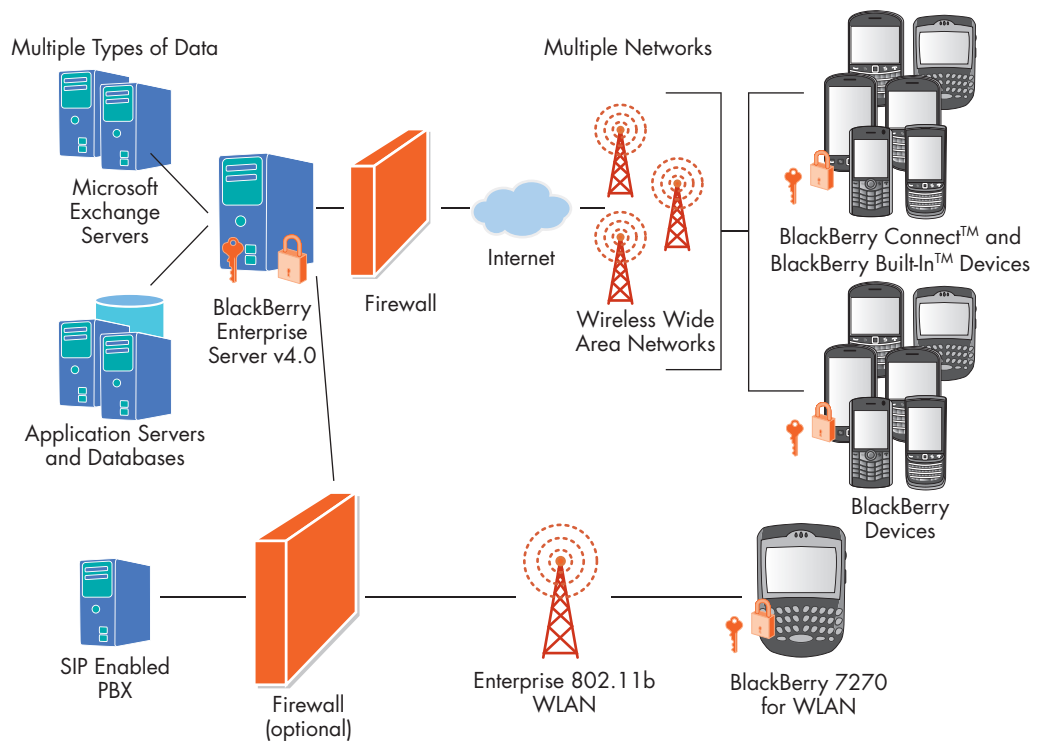
Wireless Wide Area Network (WWAN) network that uses airborne electronic signals instead of wires to link computers and electronic devices over long distances

Wi-Fi technology using a wireless local area network

Wireless Local Area Network (Wireless Lan or Wlan) local area network with wireless access points for PC users

Figure 13.3 Core Components in BlackBerry Wireless Internet Architecture

Source: Major modifications of diagrams at the BlackBerry Web site, modified from Research In Motion, Limited, technical images, at http://www.blackberry.com/images/technical/bes_exchange_architecture.gif. BlackBerry®, RIM®, Research In Motion® y las marcas comerciales, los nombres y los logos relacionados son propiedad de Research In Motion Limited y están registrados y/o se utilizan en los Estados Unidos y en otros países. Uso bajo licencia de Research In Motion Limited.



The benefit of Wi-Fi is that its millions of users are not tethered to a wire for accessing the Internet. Employees can wait for a delayed plane in the airport and still be connected to the Internet through their wireless-enabled laptops or other devices. However, as with every technology, Wi-Fi has limitations, including a short range of distance. This means that your laptop's Internet connection can be severed if you move farther than about 300 feet from the hotspot. In addition, thick walls, construction beams, and other obstacles can interfere with the signals sent out by the network. So, while a city may have hundreds of hotspots, your laptop must remain near one to stay connected. *WiMAX* (*Worldwide Interoperability for Microwave Access*), the next step in wireless advancements, improves this distance limitation with its wireless range of up to 30 miles.

Hardware and Software

Any computer network or system needs **hardware**—the physical components, such as keyboards, monitors, system units, and printers. In addition to the laptops, desktop computers, and BlackBerry® smartphones mentioned earlier, *handheld computers* and smartphones are also used often in businesses. For example, Target employees roam the store aisles using handhelds to identify, count, and order items; track deliveries; and update backup stock at distribution centers to keep store shelves replenished with merchandise.

The other essential in any computer system is **software**: programs that tell the computer how to function. Software includes *system software*, such as Microsoft Windows 7 for PCs, which tells the computer's hardware how to interact with the software, what resources to use, and how to use them. It also includes *application software* (apps) such as Microsoft's Live Messenger and Photo Gallery, which are programs that meet the needs of specific users. Some application programs are used to address such common, long-standing needs as database management and inventory control, whereas others have been developed for a variety of specialized tasks ranging from mapping the oceans' depths to analyzing the anatomical structure of the human body. For example, IBM's Visualization Data Explorer software uses data from field samples to model the underground structure of an oil field. The imagery in Figure 13.4, for example, provides engineers with better information on oil location and reduces the risk of their hitting less productive holes.



Figure 13.4 3-D computer modeling software gives engineers a better idea of where oil might be located

Finally *groupware*—software that connects group members for e-mail distribution, electronic meetings, message storing, appointments and schedules, and group writing—allows people to collaborate from their own desktop PCs, even if they’re remotely located. It is especially useful when people work together regularly and rely heavily on information sharing. Groupware systems include IBM Lotus Sametime and Novell GroupWise.

Information Systems: Harnessing the Competitive Power of IT

3 Describe the role of information systems, the different types of information systems, and how businesses use such systems.

Business today relies on information management in ways that no one could foresee a decade ago. Managers now treat IT as a basic organizational resource for conducting daily business. At major firms, every activity—designing services, ensuring product delivery and cash flow, and evaluating personnel—is linked to *information systems*. An **information system (IS)** uses IT resources that enable managers to take **data**—raw facts and figures that, by themselves, may not have much meaning—and turn those data into **information**—the meaningful, useful interpretation of data. Information systems also enable managers to collect, process, and transmit that information for use in decision making.

One company well-known for its strategic use of information systems is Walmart. The nerve center for company operations is a centralized IS in Bentonville, Arkansas. The IS drives costs down and raises efficiency because the same methods and systems are applied for all 9,000-plus stores in 15 countries. Data on the billions of

Hardware physical components of a computer network, such as keyboards, monitors, system units, and printers

Software programs that tell the computer how to function, what resources to use, how to use them, and application programs for specific activities

Information System (IS) system that uses IT resources to convert data into information and to collect, process, and transmit that information for use in decision making

Data raw facts and figures that, by themselves, may not have much meaning

Information meaningful, useful interpretation of data

MANAGING IN TURBULENT TIMES

When Cash Gets Scarce, Businesses Switch to Internet Bartering

For many companies, the economic downturn involves tighter credit, a drop in sales revenues, and a shortage of cash for doing business. Without cash and credit, companies can't buy the materials, services, and supplies needed to produce products for customers, so business prospects grow even dimmer. Or do they? Enter an unexpected liberator—bartering. This ancient trade practice survives even today, but in an Internet-enhanced form with global reach and instantaneous access to a vast network of swap agreements. And best of all, it can be done without cash: For example, Firm A provides an advertising program for Firm B that, in return, has vacant building space needed by Firm A. Thus, the needs of both are met, and a cashless swap is born. As the recession has deepened, the popularity of bartering is booming. In 2010, BarterQuest.com had more than 50,000 monthly visitors from Australia, USA, and elsewhere. Activity has tripled at U-Exchange.com, where its “Barter 101” gets you started, and you can barter as much as you like at no cost. Overall, the electronically based barter business has grown to a \$600 billion industry.¹⁰

Whether it's B2B or business-to-consumer, online bartering is an efficient way around the recession's credit crunch because it enables companies and individuals to get goods and services without using cash. Restaurants, for example, can trade meals or catering for advertising or for cooking equipment. Bartering can also be a good way to move excessive inventory and get needed benefits in return. An unemployed electrician bartered with homeowners who needed electrical wiring; in return, the homeowners gave up unneeded furniture and laptops that the electrician later sold to make mortgage payments.



Yuri Arcurs/Shutterstock

For avid swappers of services, websites such as PeopleTrading Services.com make it easy for small business owners to find barter matchups with hundreds of kinds of services, ranging from gardeners to songwriters to clergy. As a barter matchmaker, PeopleTradingServices.com posts members' profiles, lists services they trade, and provides a convenient way to contact member professionals online. Along with endless trading possibilities, the cash conservation can be a life-saver for any cash-strapped small business during troubled times.¹¹

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sales transactions—time, date, and place—flow to Bentonville. The information system tracks millions of stock-keeping units (SKUs) weekly, enforces uniform reordering and delivery procedures on its suppliers, including 57,000 in the U.S. and 22,000 in China, and regulates the flow of merchandise through its distribution centers and stores.

Beyond the firm's daily operations, information systems are also crucial in planning. Managers routinely use the IS to decide on products and markets for the next 5 to 10 years. The company's vast database enables marketing managers to analyze demographics, and it is also used for financial planning, materials handling, and electronic funds transfers with suppliers and customers.

Walmart, like most businesses, regards its information as a private resource—an asset that's planned, developed, and protected. Therefore, it's not surprising that they have **information systems managers** who operate the systems used for gathering, organizing, and distributing information, just as they have production, marketing, and finance managers. These managers use many of the IT resources

we discussed earlier—the Internet, communications technologies, networks, hardware, and software—to sift through information and apply it to their jobs.

Leveraging Information Resources: Data Warehousing and Data Mining

Almost everything you do leaves a trail of information about you. Your preferences in movie rentals, television viewing, Internet sites, and groceries; the destinations of your phone calls, your credit card charges, your financial status; personal information about age, gender, marital status, and even your health are just a few of the items about each of us that are stored in scattered databases. The behavior patterns of millions of users can be traced by analyzing files of information gathered over time from their Internet usage and in-store purchases.

The collection, storage, and retrieval of such data in electronic files is called **data warehousing**. For managers, the data warehouse is a goldmine of information about their business. Indeed, Kroger Co., the Ohio-based grocery chain, collects data on customer shopping habits to find ways to gain greater customer loyalty. As part owner of a data-mining firm, Kroger accumulates information from its shopper cards, analyzes the data to uncover shopping patterns, and sends money-saving coupons to regular customers for the specific products they usually buy. Kroger's precision targeting pays off, especially in the recession economy. With a rate of coupon usage up to as much as 50 times the industry average, it's a money-saver for Kroger customers and boosts the company's sales, too.¹²

Data Mining After collecting information, managers use **data mining**—the application of electronic technologies for searching, sifting, and reorganizing pools of data to uncover useful information. Data mining helps managers plan for new products, set prices, and identify trends and shopping patterns. By analyzing what consumers actually do, businesses can determine what subsequent purchases they are likely to make and then send them tailor-made ads. The *Washington Post*, for example, uses data-mining software to analyze census data and target households likely to respond to sales efforts.¹³

Information Linkages with Suppliers The top priority for Walmart's IS—improving in-stock reliability—requires integration of Walmart's and suppliers' activities with store sales. That's why P&G, Johnson & Johnson, and other suppliers connect into Walmart's information system to observe up-to-the-minute sales data on individual items, by store. They can use the system's computer-based tools—spreadsheets, sales forecasting, and weather information—to forecast sales demand and plan delivery schedules. Coordinated planning avoids excessive inventories, speeds up deliveries, and holds down costs throughout the supply chain while keeping shelves stocked for retail customers.



Marc F. Henning/Alamy

Retailers such as Wal-Mart and Sam's Club rely on data warehousing and mining to keep shelves stocked with in-demand merchandise.

Information Systems Managers managers who operate the systems used for gathering, organizing, and distributing information

Data Warehousing the collection, storage, and retrieval of data in electronic files

Data Mining the application of electronic technologies for searching, sifting, and reorganizing pools of data to uncover useful information

ENTREPRENEURSHIP AND NEW VENTURES

Speaking Loud and Clear: A New Voice Technology

IT users for years have sought a natural-sounding voice interface to enhance IT systems with vocal output, beyond traditional print or visual output. Vocal technologies, however, were less than effective, that is until 2005 when Matthew Aylett and Nick Wright formed CereProc (short for Cerebral Processing) in Edinburgh, Scotland.¹⁴ From the outset, the firm has been dedicated to creating better synthetic voices with character and emotion that stimulates listeners with natural-sounding messages. Before CereProc, these lofty goals were prohibitive. Speech experts couldn't create text-to-voice software that sounds realistically conversational, varying tone-of-voice and providing various vocal inflections for different situations. Previous software couldn't adapt incoming text (from word processing or from text messages) into natural voice formats. To attack these challenges CereProc brought together a team of leading speech experts. It also partnered with leading universities and research programs in speech science technology, and in developing new applications and markets for voice output.

The company's main product is CereVoice, an advanced text-to-voice technology available on mobile devices, PCs, servers, and headsets, and that has applications in most any company's products for better synthetic voices. Any computer's existing voice system can be replaced with more natural-sounding speech in a choice of accents, including Southern British English, Scottish, and American that can be sampled with live voice demos at the firm's web-site.¹⁵ Potential applications are endless—kitchen appliances, alarm systems, traffic controllers, automobile appliances, radio broadcasting, telephone messaging, and movies, to name a few. Although consumers may not see the CereVoice label, they will be hearing its various voices often in their everyday lives.

CereProc's Voice Creation service can create a synthesized imitation of a person's voice, including its tones and inflections. That's how noted film critic Roger Ebert got

his voice back, four years after losing the ability to speak following cancer-related surgery. CereProc's voice engineers used recordings of Ebert's voice from 40 years of past television broadcasts, capturing individual sounds and identifying various voice characteristics. With meticulous care, specialists then pieced them back together into software that mimics the Pulitzer-Prize winner's earlier voice. Ebert types his comments into a computer that, in turn, converts the text into words that are spoken in his voice. This first-of-its-kind application made a memorable public appearance on the Oprah show, as Roger enthusiastically demonstrated his voice coming from the computer.¹⁶ Beyond its technical success, this project vividly displays a compassionate side in CereProc's business.

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ABS WENN Photos/Newscom

Types of Information Systems

Employees have a variety of responsibilities and decision-making needs, and a firm's *information system* may actually be a set of several systems that share information while serving different levels of the organization, different departments, or different operations. Because they work on different kinds of problems, managers and their employees have access to the specialized information systems that satisfy their different information needs.

In addition to different types of users, each business *function*—marketing, human resources, accounting, production, or finance—has its own information needs, as do groups working on major projects. Each user group and department, therefore, may need a special IS.

Information Systems for Knowledge Workers As we discussed in Chapter 10, *knowledge workers* are employees for whom information and knowledge are the raw materials of their work, such as engineers, scientists, and IT specialists who rely on IT to design new products or create new processes. These workers require **knowledge information systems**, which provide resources to create, store, use, and transmit new knowledge for useful applications—for instance, databases to organize and retrieve information, and computational power for data analysis.

Specialized support systems have also increased the productivity of knowledge workers. **Computer-aided design (CAD)** helps knowledge workers—and now ordinary people too, as we saw at the beginning of this chapter—design products ranging from cell phones to jewelry to auto parts by simulating them and displaying them in 3-D graphics. In a more advanced version, known as *rapid prototyping*, the CAD system electronically transfers instructions to a computer-controlled machine that quickly builds a prototype—a physical model—of the newly designed product. The older method—making handcrafted prototypes from wood, plastic, or clay—is replaced with faster, cheaper prototyping.

In archaeology, CAD is helping scientists uncover secrets hidden in fossils using 3-D computer models of skeletons, organs, and tissues constructed with digital data from CT (computed tomography) scans of dinosaur fossils. From these models, scientists have learned, for example, that the giant apatosaurus's neck curved downward, instead of high in the air as once thought. By seeing how the animals' bones fit together with cartilage, ligaments, and vertebrae, scientists are discovering more about how these prehistoric creatures interacted with their environment.¹⁷

In a direct offshoot of computer-aided design, **computer-aided manufacturing (CAM)** uses computers to design and control the equipment needed in a manufacturing process. For example, CAM systems can produce digital instructions to control all the machines and robots on a production line. CAD and CAM coupled together (CAD/CAM) is useful to engineers in a manufacturing environment for designing and testing new products and then designing the machines and tools to manufacture the new product.

Information Systems for Managers Each manager's information activities and IS needs vary according to his or her functional area (accounting or marketing and so forth) and management level. The following are some popular information systems used by managers for different purposes.

Management Information Systems **Management information systems (MIS)** support managers by providing reports, schedules, plans, and budgets that can then be used for making decisions, both short- and long-term. For example, at Walsworth Publishing Company, managers rely on detailed information—current customer orders, staffing schedules, employee attendance, production schedules, equipment status, and materials availability—for moment-to-moment decisions during the day. They require similar information to plan such mid-range activities as personnel



Roger Harris/Photo Researchers, Inc.

The 3-D computer model of this dinosaur is constructed from digital scans of fossilized tissue.

Knowledge Information System information system that supports knowledge workers by providing resources to create, store, use, and transmit new knowledge for useful applications

Computer-Aided Design (CAD) IS with software that helps knowledge workers design products by simulating them and displaying them in three-dimensional graphics

Computer-Aided Manufacturing (CAM) IS that uses computers to design and control equipment in a manufacturing process

Management Information System (MIS) computer system that supports managers by providing information—reports, schedules, plans, and budgets—that can be used for making decisions

training, materials movements, and cash flows. They also need to anticipate the status of the jobs and projects assigned to their departments. Many MIS—cash flow, sales, production scheduling, and shipping—are indispensable for helping managers complete these tasks.

For longer-range decisions involving business strategy, Walsworth managers need information to analyze trends in the publishing industry and overall company performance. They need both external and internal information, current and future, to compare current performance data to data from previous years and to analyze consumer trends and economic forecasts.

Decision Support Systems Managers who face a particular kind of decision repeatedly can get assistance from **decision support systems (DSS)**—interactive systems that create virtual business models and test them with different data to see how they respond. When faced with decisions on plant capacity, for example, Walsworth managers can use a capacity DSS. The manager inputs data on anticipated sales, working capital, and customer-delivery requirements. The data flow into the DSS processor, which then simulates the plant's performance under the proposed data conditions. After experimenting with various data conditions, the DSS makes recommendations on the best levels of plant capacity for each future time period.

4 Identify the threats and risks information technology poses on businesses.

IT Risks and Threats

As with other technologies throughout history, IT has attracted abusers set on doing mischief, with severity ranging from mere nuisance to outright destruction. Eager IT users everywhere are finding that even social networking and cell phones have a “dark side”—privacy invasion. Facebook postings of personal information about users can be intercepted and misused by intruders. Beacon caused a public uproar when it published peoples’ online purchases publicly on their Facebook newsfeeds. And with cellular technology, some features of Bluetooth connections allow savvy intruders to read a victim’s text messages, listen in on live conversations, and even view unwary users’ photos.¹⁸

Businesses, too, are troubled with IT’s “dark side.” Hackers break into computers, stealing personal information and company secrets, and launching attacks on other computers. Meanwhile, the ease of information sharing on the Internet has proven costly for companies who are having an increasingly difficult time protecting their intellectual property, and viruses that crash computers have cost companies many billions annually. In this section, we’ll look at these and other IT risks. In the next section, we’ll discuss ways in which businesses are protecting themselves from these risks.

Hackers

Breaking and entering no longer refers merely to physical intrusion. Today, it applies to IT intrusions as well. **Hackers** are cybercriminals who gain unauthorized access to a computer or network, either to steal information, money, or property or to tamper with data. Another common hacker activity is to launch *denial of service (DoS) attacks*. DoS attacks flood networks or websites with bogus requests for information and resources, thereby shutting the networks or websites down and preventing legitimate users from accessing them.

Wireless mooching is a profitable industry for cybercriminals. In just five minutes, a *St. Petersburg Times* (Florida) reporter using a laptop found six unprotected wireless networks that were wide open to outside users.¹⁹ Once inside an unsecured wireless network, hackers can use it to conduct illegal business, such as child pornography or money laundering. When police officers try to track down these criminals, they’re long gone, leaving you, the network host, exposed to criminal prosecution.

Of Pirates and Profits Hackers often break into company networks to steal company or trade secrets. But it's not just hackers who are doing the stealing. Because the chances of getting caught seem slim, home users continue, illegally, to download unpaid-for movies, music, and other resources from file-swapping networks. A recent study shows that sound piracy costs the United States \$12.5 billion and 71,060 jobs annually. However, these losses also showcase what can happen to businesses who fail to adapt to changes in technology. The recording industry has been reluctant to embrace the Internet as a path for distribution, preferring to prosecute pirates rather than offer them legal online alternatives. On the other hand, Apple has benefitted immensely from its online distribution models, with over 10 billion songs sold—some analysts predict that by 2012 Apple's iTunes music store will account for 28 percent of all music sold throughout the world.²⁰

Identity Theft

Once inside a computer network, hackers are able to commit **identity theft**, the unauthorized stealing of personal information (such as Social Security number and address) to get loans, credit cards, or other monetary benefits by impersonating the victim. With up to 10 million victims each year, identity theft is the fastest growing crime in the United States.

Clever crooks get information on unsuspecting victims by digging in trash, stealing mail, or using *phishing* or *pharming* schemes to lure Internet users to bogus web-sites. For instance, a cybercriminal might send an America Online subscriber an e-mail notifying him or her of a billing problem with his or her account. When the customer clicks on the AOL Billing Center link, he or she is transferred to a spoofed (falsified) web page, modeled after AOL's. The customer then submits the requested information—credit card number, Social Security number, and PIN—into the hands of the thief. Her accounts are soon empty.

Intellectual Property Theft

Nearly every company faces the dilemma of protecting product plans, new inventions, industrial processes, and other **intellectual property**: something produced by the intellect or mind that has commercial value. Its ownership and right to its use may be protected by patent, copyright, trademark, and other means.

Hackers often break into company networks to steal company or trade secrets. But it's not just hackers who are doing the stealing. Because the chances of getting caught seem slim, home users continue, illegally, to download or copy unpaid-for movies, music, and other resources. The Commerce Department estimates that illegal product usage in the global market is costing U.S. companies hundreds of billions annually.

Computer Viruses, Worms, and Trojan Horses

Another IT risk facing businesses is rogue programmers who disrupt IT operations by contaminating and destroying software, hardware, or data files. Viruses, worms, and Trojan horses are three kinds of malicious programs that, once installed, can

Decision Support System (DSS) interactive system that creates virtual business models for a particular kind of decision and tests them with different data to see how they respond

Hacker cybercriminal who gains unauthorized access to a computer or network, either to steal information, money, or property or to tamper with data

Identity Theft unauthorized use of personal information (such as Social Security number and address) to get loans, credit cards, or other monetary benefits by impersonating the victim

Intellectual Property something produced by the intellect or mind that has commercial value

shut down any computer system. A *computer virus* exists in a file that attaches itself to a program and migrates from computer to computer as a shared program or as an e-mail attachment. It does not infect the system unless the user opens the contaminated file, and users typically are unaware they are spreading the virus by file sharing. It can, for example, quickly copy itself over and over again, using up all available memory and effectively shutting down the computer.

Worms are a particular kind of virus that travel from computer to computer within networked computer systems, without your needing to open any software to spread the contaminated file. In a matter of days, the notorious Blaster worm infected some 400,000 computer networks, destroying files and even allowing outsiders to take over computers remotely. The worm replicates itself rapidly, sending out thousands of copies to other computers in the network. Traveling through Internet connections and e-mail address books in the network's computers, it absorbs system memory and shuts down network servers, web servers, and individual computers.

Unlike viruses, a *Trojan horse* does not replicate itself. Instead, it most often comes into the computer, at your request, masquerading as a harmless, legitimate software product or data file. Once installed, the damage begins. For instance, it may simply redesign desktop icons or, more maliciously, delete files and destroy information.

Spyware

As if forced intrusion isn't bad enough, Internet users unwittingly invite spies—masquerading as a friendly file available as a giveaway or shared among individual users on their PCs. This so-called **spyware** is downloaded by users that are lured by “free” software. Once installed, it crawls around to monitor the host's computer activities, gathering e-mail addresses, credit card numbers, passwords, and other inside information that it transmits back to someone outside the host system. Spyware authors assemble incoming stolen information to create their own “intellectual property” that they then sell to other parties to use for marketing and advertising purposes or for identity theft.²¹

Spam

Spam—junk e-mail sent to a mailing list or a newsgroup (an online discussion group)—is a greater nuisance than postal junk mail because the Internet is open to the public, e-mail costs are negligible, and massive mailing lists are accessible through file sharing or by theft. Spam operators send unwanted messages ranging from explicit pornography to hate mail to advertisements, and even destructive computer viruses. In addition to wasting users' time, spam also consumes a network's bandwidth, thereby reducing the amount of data that can be transmitted in a fixed amount of time for useful purposes. U.S. industry experts estimate spam's damage in lost time and productivity at more than \$140 billion worldwide in 2008 alone.²²

5 Describe the ways in which businesses protect themselves from the threats and risks information technology poses.

IT Protection Measures

Security measures against intrusion and viruses are a constant challenge. Most systems guard against unauthorized access by requiring users to have protected passwords. Other measures include firewalls, special software, and encryption.

Preventing Unauthorized Access: Firewalls

Firewalls are security systems with special software or hardware devices designed to keep computers safe from hackers. A firewall is located where two networks—for example, the Internet and a company's internal network—meet. It contains two components for filtering incoming data:

- The company's *security policy*—Access rules that identify every type of data that the company doesn't want to pass through the firewall.

- A *router*—A table of available routes or paths; a “traffic switch” that determines which route or path on the network to send each piece of data after it is tested against the security policy.

Only that information that meets the conditions of the user’s security policy is routed through the firewall and permitted to flow between the two networks. Data that fail the access test are blocked and cannot flow between the two networks.

Preventing Identity Theft

While foolproof prevention is impossible, steps can be taken to avoid being victimized. A visit to the Identity Theft Resource Center (<http://www.idtheftcenter.org>) is a valuable first step to get information on everything from scam alerts to victim issues to legislation such as the Fair and Accurate Credit Transactions Act (FACTA). FACTA strengthens identity-theft protections by specifying how organizations must destroy information instead of dropping it in a dumpster. When a company disposes of documents that contain credit or Social Security information, they must be shredded, pulverized, or burned, and all electronic records (in computers and databases) must be permanently removed to keep them out of the hands of intruders.²³

Preventing Infectious Intrusions: Anti-Virus Software

Combating viruses, worms, Trojan horses, and any other infectious software (collectively known as *malware*) has become a major industry for systems designers and software developers. Installation of any of hundreds of **anti-virus software** products protects systems by searching incoming e-mail and data files for “signatures” of known viruses and virus-like characteristics. Contaminated files are discarded or placed in quarantine for safekeeping.

Many viruses take advantage of weaknesses in operating systems, such as Microsoft Windows, in order to spread and propagate. Network administrators must make sure that the computers on their systems are using the most up-to-date operating system that includes the latest security protection.

Protecting Electronic Communications: Encryption Software

Security for electronic communications is another concern for businesses. Unprotected e-mail can be intercepted, diverted to unintended computers, and opened, revealing the contents to intruders. Protective software is available to guard against those intrusions, adding a layer of security by encoding e-mails so that only intended recipients can open them. An **encryption system** works by scrambling an e-mail message so that it looks like garbled nonsense to anyone who doesn’t possess the key.

Spyware program unknowingly downloaded by users that monitors their computer activities, gathering e-mail addresses, credit card numbers, and other information that it transmits to someone outside the host system

Spam junk e-mail sent to a mailing list or a newsgroup

Firewall security system with special software or hardware devices designed to keep computers safe from hackers

Anti-Virus Software product that protects systems by searching incoming e-mails and data files for “signatures” of known viruses and virus-like characteristics

Encryption System software that assigns an e-mail message to a unique code number (digital fingerprint) for each computer so only that computer, not others, can open and read the message

Avoiding Spam and Spyware

To help their employees avoid privacy invasion and to improve productivity, businesses often install anti-spyware and spam-filtering software on their systems. While dozens of anti-spyware products provide protection—software such as Webroot Spy Sweeper and Microsoft Windows Defender—they must be continually updated to keep pace with new spyware techniques.

The federal CAN-SPAM Act of 2003 requires the Federal Trade Commission to shield the public from falsified header information, sexually explicit e-mails that are not so labeled, Internet spoofing (using trickery to make a message appear as if it came from a trusted source), and hijacking of computers through worms or Trojan horses. While it cannot be prevented entirely, spam is abated by many Internet service providers (ISPs) that ban the spamming of ISP subscribers. In a now-classic punishment, an ISP in Iowa was awarded \$1 billion in a lawsuit against 300 spammers that jammed the ISP system with an astounding 10 million e-mails a day. Anti-spam groups, too, promote the public's awareness of known spammers. The Spamhaus Project (<http://www.spamhaus.org>), for example, maintains a list—the Register of Known Spam Operators (ROKSO)—of around 100 professional spammers that are responsible for over 80 percent of spam traffic in North America and Europe.

Ethical Concerns in IT

It is apparent that IT developments and usage are progressing faster than society's appreciation for the potential consequences, including new ethical concerns. Along with IT's many benefits, its usage is creating previously unanticipated problems for which solutions are needed, yet they don't exist. Ease of access to computers, mobile devices, and the Internet, together with messaging capabilities and social networking, promote widespread public exposure about people's private lives, including personal information about how they think and feel. Just how this information should be used, by whom, under what conditions, and with what restrictions, if any, are issues teeming with ethical considerations. Several real-life episodes with ethical implications are shown in Table 13.1. See if you can identify significant ethical issues among the episodes in the table.

TABLE 13.1 Areas for Ethical Concerns in Information Technology and Its Uses

- In a now-classic case of cyber-bullying, a 13-year-old girl hanged herself after being taunted by a hoax message on her MySpace page.
- Secret webcasts of other people's behavior have resulted in embarrassment and even death: A university student, leaving a final message on his Facebook page, jumped from a bridge to his death after other students covertly webcast his sexual activities with another student.
- IT is used increasingly for sending out cries for help. Many college students have posted public messages requesting physical and emotional support. Others, having read those messages, are unsure if they should respond, or not.
- Employers and employees struggle about the extent of personal use of the company's IT. Many employees admit they use social networking and personal e-mailing at work, but should they? Many company's say "no," adding that employees should know that the company has access to all e-mails sent, received, and stored on its IT system.
- States are forming database pools, sharing information to check on suspicious prescription drug activities. Data are gathered on purchases at pharmacies, physicians' prescriptions, and police records to identify drug abuse by individuals and companies within states, and are being shared across state lines.
- Using drug prescription records for marketing purposes, companies collect data from pharmacies that keep track of physicians' histories in prescribing drugs. The companies then use data mining to uncover patterns of physician prescriptions, including the names of drugs and manufacturers. The data-mining companies then sell the resulting information to pharmaceutical manufacturers that can use it for selling their drugs to physicians who are prescribing competitors' drugs.

TABLE 13.1 *Continued*

- A Google engineer created a program that recorded personal information obtained from unsecured wireless networks by dispatching cars in several countries to identify wireless networks and to take photos for use in online mapping. The recordings captured unauthorized personal passwords, e-mails, and website addresses.
- A University of Iowa student flunked out of school due to his uncontrollable addiction to a video game that consumed all his attention.
- The Department of Homeland Security abandoned one of its major data-mining tools for combating terrorism after questions about its compliance with privacy rules. It was discovered that DHS had tested the data-mining program using information about real people, without ensuring the privacy of that information.
- To save money, IT users retrieve and share intellectual property—movies, articles, books, music, industrial information—with others, ignoring copyright, trademark, and patent protections. Written content is often taken from the Internet, inserted into the user’s written work and is represented as the user’s own original creation without citing its true source.



Dave Pilibosian/iStockphoto.com

Continued from page 329

Online Piracy Means Tougher Economic Times

Cyber cheating in many forms continues its upsurge during economic downturns. In one popular “work-at-home” scam, the unsuspecting victim (the new online “employee”) cashes checks sent from the “employer” in a foreign country and gets to keep 10 percent of the cash as a payment for service. The remaining 90 percent is sent via Western Union back to the employer. Because the checks are bogus, they bounce, and the victim must repay the full amounts to the bank. Alerting the public to another scam, SC Johnson, the company that makes household products such as Raid, Windex, and Pledge furniture cleaner, warns of phony online job offers for work-at-home customer service jobs, falsely using the Johnson name. The scammers say the job pays trainees \$20 an hour initially, advancing to \$25 after training, but employees must first buy some training software—which, of course, they pay for but never receive.

Organizations, too, are victims of cyber con-jobs: Why did U.S. DVD sales fall from \$20 billion in 2006 to \$14 billion in 2010? One reason is piracy, including simple tactics such as focusing a video camera at the computer screen that’s showing the movie. How are international industrial firms gaining competitive advantage in today’s tight world economy? Security consultants say that global cyber-attacks originating in China, and known as Night Dragon, are invading computers of oil companies, stealing information on competitive bidding, financing, and operations practices. Some governments, to save money, are actively scamming others, using hackers to steal technology secrets for leading-edge military equipment, including defense systems of other countries. Organizations of all kinds are finding cyber security more difficult as more and more employees use their personal phones and computers for conducting business. Organizational information, then, is more widely dispersed and increasingly susceptible to intrusion via mobile-phone malware, virus-contaminated applications, and links containing spyware sent from text messages.²⁴

QUESTIONS FOR DISCUSSION

- 1 Think about recent spam e-mails you’ve seen on PCs, and scam messages received via cell phone or smartphone. What kinds of information were the intruders seeking?
- 2 Continuing with the above question, were you able to identify the e-mails and messages to be “scams” before opening them, or was it later after they were opened that you discovered their real contents?
- 3 In what ways might the “opened” message from a scammer be harmful to you? To your IT devices and systems?
- 4 What steps can you take (or have you taken) to protect against such intrusions? What costs would be involved for gaining that protection?
- 5 Consider the various IT systems you use daily. What kinds of protective devices do they have to protect against invasion by cyber pirates?

SUMMARY OF LEARNING OBJECTIVES

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1. Discuss the impacts information technology has had on the business world. (pp. 330–334)

The growth of IT has changed the very structure of business organizations. Its adoption provides new modes of communication, including portable offices, resulting in the geographic separation of the workplace from headquarters for many employees. By providing instantaneous access to company information, IT has altered the workforces in many companies, enabling them to streamline with fewer employees and simpler structures. It also contributes to greater flexibility in serving customers and enables closer coordination with suppliers. IT's global reach facilitates project collaboration with remote business partners and the formation of new market relationships around the globe. Just as electronic collaboration has changed the way employees interact with each other, IT networks have created new manufacturing flexibility for mass customization, and Internet access has brought new opportunities for small businesses.

2. Identify the IT resources businesses have at their disposal and how these resources are used. (pp. 334–339)

The Internet and the World Wide Web serve computers with information and provide communication flows among networks around the world. For many businesses, the Internet has replaced the telephone, fax machine, and standard mail as the primary communications tool. To support internal communications, many companies maintain internal websites—intranets—accessible only to employees. Some firms give limited network access to outsiders via extranets for coordination with suppliers and customers. Electronic conferencing allows simultaneous communication among groups from various locations, saving travel time and expenses. VSAT satellite networks provide private remote communications for voice, video, and data transmissions. Computer networks (wide area networks, local area networks) enable the sharing of information, hardware, software, and other resources over wired or wireless connections. Hardware refers to the computer's physical components. System software tells computer components and resources what to do. Application software includes programs to meet specific user needs, such as groupware with voice and video connections for remote collaboration.

3. Describe the role of information systems, the different types of information systems, and how businesses use such systems. (pp. 339–344)

An information system (IS) enables users to create, process, and transmit information for use in decision making. Knowledge information systems support knowledge workers by providing resources to create, store, use, and transmit new knowledge for useful applications. Management information systems (MIS) support managers

by providing reports, schedules, plans, and budgets that can then be used for making decisions at all levels ranging from detailed daily activities to long-range business strategies. The many uses of information systems include experimenting with *decision support systems* to test the effectiveness of potential decisions, data mining to identify shopping trends and to plan for new products, and planning for delivery schedules from suppliers and to customers.

4. Identify the threats and risks information technology poses on businesses. (pp. 344–346)

IT has attracted abusers that do mischief, with severity ranging from mere nuisance to outright destruction, costing companies millions. *Wireless moochers* use victims' networks for illegal activities, exposing the host to criminal prosecution. *Hackers* break into computers, stealing personal information and company secrets, tampering with data, and launching attacks on other computers. Once inside a computer network, hackers are able to commit *identity theft*, the unauthorized stealing of personal information to get loans, credit cards, or other monetary benefits by impersonating the victim. Even the ease of information sharing on the Internet poses a threat: It has proven costly for companies who are having a difficult time protecting their *intellectual property*, such as software products, movies, and music. Another IT risk facing businesses is system shutdown and destruction of software, hardware, or data files by *viruses*, *worms*, and *Trojan horses*. After invading a victim's computer, *spyware* gathers inside information and transmits it to outside spies. *Spam's* damage, too, is costly in terms of lost time and productivity.

5. Describe the ways in which businesses protect themselves from the threats and risks information technology poses. (pp. 346–349)

Most systems guard against unauthorized access by requiring users to have protected passwords. In addition, many firms rely on *firewalls*, so that only messages that meet the conditions of the company's security policy are permitted to flow through the network. Firms can protect against identity theft by using assistance from advisory sources, such as the Identity Theft Resource Center, and by implementing the identity-theft protection provisions of the federal FACTA rule for maintaining and destroying personal information records. To combat viruses, worms, and Trojan horses, *anti-virus software* products search incoming e-mail and data files for "signatures" of known viruses and virus-like characteristics. Contaminated files are discarded or placed in quarantine for safe-keeping. Additional intrusion protection is available by installing *anti-spyware* and *spam filtering software*. *Encryption* adds security by encoding messages that can be read only by intended recipients.

KEY TERMS MyBizLab

anti-virus software (p. 347)
 client-server network (p. 337)
 computer network (p. 337)
 computer-aided design (CAD) (p. 343)
 computer-aided manufacturing (CAM) (p. 343)
 data (p. 339)
 data mining (p. 341)
 data warehousing (p. 341)
 decision support system (DSS) (p. 344)
 e-commerce (p. 330)
 electronic conferencing (p. 336)
 encryption system (p. 347)
 extranet (p. 335)

firewall (p. 346)
 hacker (p. 344)
 hardware (p. 338)
 hypertext transfer protocol (HTTP) (p. 334)
 identity theft (p. 345)
 information (p. 337)
 information system (IS) (p. 339)
 information systems managers (p. 340)
 information technology (IT) (p. 330)
 intellectual property (p. 345)
 Internet (p. 334)
 intranet (p. 335)
 knowledge information system (p. 343)

local area network (LAN) (p. 337)
 management information system (MIS) (p. 343)
 mass-customization (p. 332)
 software (p. 338)
 spam (p. 346)
 spyware (p. 346)
 VSAT satellite communications (p. 336)
 wide area network (WAN) (p. 337)
 Wi-Fi (p. 337)
 wireless local area network (p. 337)
 wireless wide area network (WWAN) (p. 337)
 World Wide Web (p. 334)

QUESTIONS AND EXERCISES

QUESTIONS FOR REVIEW

1. Why must a business manage information as a resource?
2. How can electronic conferencing increase a company's productivity and efficiency?
3. Why do different users in an organization need different kinds of information from the information system?
4. Why have the BlackBerry® smartphones become a popular tool among business people?
5. What is the definition of *intellectual property*? List three examples of intellectual property.

QUESTIONS FOR ANALYSIS

6. Describe how a company might use data warehousing and data mining in its information system to better plan for new products.
7. Aside from the eBay example in this chapter, describe one or more ways that IT presents new business opportunities for small businesses.

8. Give three examples (other than those in this chapter) of how a company can become leaner and more efficient by adopting IT.

APPLICATION EXERCISES

9. Consider your daily activities—as a consumer, student, parent, friend, homeowner or renter, car driver, employee, etc.—and think about the ways that you are involved with IT systems. Make a list of your recent IT encounters and then recall instances in those encounters that you revealed personal information that could be used to steal your identity. Are some encounters on your list riskier than others? Why or why not?
10. Describe the computer network at your school. Identify its components and system architecture. What features either promote or inhibit intrusions from hackers? What features either promote or inhibit intellectual property theft? What features either promote or inhibit computer viruses and spam?

BUILDING YOUR BUSINESS SKILLS

The Art and Science of Point-and-Click Research

Goal

To learn how to use the web to conduct research more effectively.

Background Information

In a survey of nearly 2,000 web users, two-thirds said they used the web to obtain work-related information. With billions of pages of information on the web, the challenge for business users is: how best to find what they're seeking.

Method

You'll need a computer and access to the web to complete this exercise.

Step 1

Get together with three classmates and decide on a business-related research topic. Choose a topic that interests you—for example, "Business Implications of the War in Afghanistan," "Labor Disputes in Professional Sports," or "Marketing Music Lessons to Parents of Young Children."

Step 2

Search the following sites for information on your topic (dividing sites among group members to speed the process):

- Dogpile (www.dogpile.com)
- Excite (www.excite.com)
- Google (www.google.com)
- Yahoo! (www.yahoo.com)

Take notes as you search so that you can explain your findings to other group members.

Step 3

Working as a group, answer the following questions about your collective search:

Which sites were the easiest to use?

Which sites offered the most helpful results? What specific factors made these sites better than the others?

Which sites offered the least helpful results? What were the problems?

Why is it important to learn the special code words or symbols, called *operators*, that target a search? (Operators are words such as *AND*, *OR*, and *NOT* that narrow search queries. For example, using *AND* in a search tells most search engines to

look only for sites in which all words appear in the results—American *AND* Management *AND* Association.)

FOLLOW-UP QUESTIONS

Research the differences between *search engines* and *subject directories*. Given your topic, would a search engine or a subject directory be more helpful for your research?

1. Why is it important to learn how to use a search site's Help function?
2. Look into some of the sites' Advanced Search pages. How do these pages affect your searches?
3. How has the web changed the nature of business research?

EXERCISING YOUR ETHICS: INDIVIDUAL EXERCISE**Caught in a Cyber Bind****The Situation**

Time pressures to complete project assignments, coupled with easy access to the Internet, can present interesting temptations. This exercise illustrates how ethical issues may arise in using information from the Internet.

The Dilemma

Suppose you are assigned to write a report that requires research into a business problem. In searching the Internet, you find mounds of published articles that discuss the problem, but most of them are complicated write-ups using technical terms that you don't completely understand. As the deadline approaches, you realize that you can't figure out a logical, sensible format for writing the

report. You then recall, from conversations with colleagues, two possible solutions for your problem: (1) From the many articles found on the Internet, you can select the best-sounding phrases, sentences, and paragraphs, arrange them into a logical sequence, and piece them together as your final report, or (2) you can hire an Internet report-writing service at \$20 per page to write your report. Chances of being detected are slim.

QUESTIONS TO ADDRESS

1. Given the factors in this situation, what, if any, ethical issues exist?
2. Would you adopt either of the two "possible solutions" listed above? Why or Why not?
3. If a friend was confronted with this same situation and asked your opinion, what advice would you offer?

EXERCISING YOUR ETHICS: TEAM EXERCISE**This Game Is Getting Serious****The Situation**

Interactive games have become big-time entertainment for millions of enthusiasts playing side by side or among contestants anywhere on the Internet. Amidst the fun, questions can arise about the use of intellectual property and the ownership obligations of gamers. This exercise encourages you to examine some of the ethical issues that can surface in gaming.

The Dilemma

Tracy was enamored with a new adventure-and-strategy game from the moment she bought it. Her favorite character—Goddess Diaphanese—had accumulated overwhelming powers, thanks to Tracy's gaming skills and lots of trial and error, during two months of intense competition. Opponents were consistently overwhelmed by Diaphanese's mystical powers, and her ability to foresee the future, ward off attacks with invincible armor, and elevate her intellect to outsmart opponents in this virtual universe. Tracy's Diaphanese was, in effect, an invincible game character.

Another gamer wanted to buy Tracy's personal version of the game, but she decided instead to list it for sale on a popular Internet auction site. The bid price rose to over 10 times the original game price when Tracy got an e-mail from the manufacturer objecting to her sale of the game, stating that both the game name and the character itself are intellectual properties of the firm. The message insisted that she withdraw the product from auction.

Tracy's response to the company stated that her game cartridge—including the unique version of the powerful Goddess Diaphanese—was not the same product she purchased months earlier but, instead, was entirely different due to months of thoughtful game playing. Accordingly, she was selling her creation—a one-of-a-kind, new product.

Team Activity

Assemble a group of four students and assign each group member to one of the following roles:

- Tracy
- auction winner buying Tracy's version of the game
- manufacturer of the game
- investor/owner of the company that manufactures the game

ACTION STEPS

- 1 Before hearing any of your group's comments, and from the perspective of your assigned role, write down the ethical issues, if any, that you see in this situation.
- 2 Before hearing any of your group's comments, what actions do you think your assigned role should have taken in this situation? Write down your recommended actions.
- 3 Gather your group together and reveal, in turn, each member's comments and recommendations.
- 4 Appoint someone to record main points of agreement and disagreement within the group. How do you explain the results? What accounts for any disagreement?
- 5 From an ethical standpoint, what does your group recommend Tracy do?

VIDEO EXERCISE MyBizLab**ZIPCAR****Learning Objectives**

The purpose of this video is to help you:

- 1 Understand how information technology has influenced business.
- 2 Describe how businesses use information technology to meet the needs of customers and support profitable operations.
- 3 Explain the risks, threats, and ethical concerns related to information technology.

Synopsis

ZipCar's business model is built on the European concept of car sharing. From their first location in Cambridge, Massachusetts, ZipCar has expanded to over fifty cities in the United States and United Kingdom and over one hundred college campuses. ZipCar's business model allows members to have the convenience of having a car at their disposal, without the attendant costs of car ownership, such as car payments, insurance, or even gasoline. To become a member, or Zipster, the applicant pays a one-time fee. A variety of plans are available, with the Zipster paying a daily or hourly rate when they use a car. For those with only occasional use, there is also an annual fee. The member can reserve a car through

a smart phone application or on their computer. Once the reservation is complete, Zipsters gain access to the cars with a swipe of their ZipCard. Technology allows the company to remotely enable and track the car and even allows the company to disable a car when there is unauthorized access.

DISCUSSION QUESTIONS

- 1 The text discusses a number of ways that information technology has influenced business. Discuss how at least three of these relate to ZipCar.
- 2 What technologies allow ZipCar to operate?
- 3 What type of consumers do you think are most likely to use ZipCar?
- 4 How is ZipCar especially well suited to college students?
- 5 What are the ethical concerns related to ZipCar's use of technology?

Online Exploration

ZipCar's website (www.zipcar.com) provides information about how ZipCar meets the needs of individual consumers, businesses, and college students. To find out more about how the technology works, click on "how it works", then "our technology". Briefly describe the steps involved in becoming a Zipster and using a car for the first time.

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