



15

Global Marketing and the Digital Revolution

LEARNING OBJECTIVES

- 15-1** List the major innovations and trends that contributed to the digital revolution.
 - 15-2** Define “convergence” and give an example.
 - 15-3** Define *value network* and explain the differences between sustaining technologies and disruptive technologies.
 - 15-4** Identify current trends in global e-commerce and explain how global companies are expanding their presence on the Web.
 - 15-5** Explain the key issues facing a global company when designing and implementing a Web site.
 - 15-6** Identify the most important new products and services that have been introduced in the past decade.
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CASE 15-1

How Do You Like Your Reality? Virtual? Augmented? Mixed?

Every January, tens of thousands of tech enthusiasts and journalists converge in Las Vegas for a trade show known as International CES. There, attendees test out the hottest tech gadgets and get briefed about the latest industry trends. For the past few years, virtual reality (VR) headsets and software have been among the most buzz-worthy new products on display. (Artificial intelligence [AI] has also generated a lot of buzz at CES.)

Many different companies, including well-known tech giants, have showcased their wares at CES. For example, Facebook demonstrated the \$600 Oculus Rift at the show. Sony's VR entry was the PlayStation VR (\$400); Samsung's offering was Gear VR. Among lesser-known brands, the HTC Vive (\$800) and VR units from Tsinghua Tongfang have also been introduced at CES.

To fully appreciate the VR experience, users don goggles and hold a set of handles. Then, in an area equipped with laser sensors, they are immersed in a 360-degree virtual world (see Exhibit 15-1). That world can be anything from the bottom of the Indian Ocean, where a person might come face-to-face with a shark, to the top of Mount Everest.

Advocates believe that a new user interface is on the horizon, and that VR and augmented reality (AR) have the potential to replace our phones, our TVs, and our desktop computers. But there's more! Have you heard of “mixed reality” (MR)? Some industry experts have even started using terms such as “personal reality” and “preferred reality” (PR) to describe this new experiential world. To find out more about the opportunities and challenges facing companies marketing and activating immersive



Exhibit 15-1 Virtual reality (VR) technology allows people to immerse themselves in a digital experience that replaces reality.

Source: Kobby Dagan/Shutterstock.

technologies and the potential uses of VR, AR, and variants such as MR, turn to the continuation of Case 15-1 at the end of the chapter.

VR and AR are just two examples of the way that the digital revolution is driving the creation of new companies, industries, and markets. It is also contributing to the transformation—and, in some cases, the destruction—of companies, industries, and markets. In short, this revolution is dramatically transforming the world in which we live. As the digital revolution gains traction and picks up speed, global marketers will be forced to adapt to an evolutionary world in which cell phone tablets and other mobile devices play an important role.

This chapter appears after the five-chapter sequence devoted to the marketing mix. Why? Because all the elements of the marketing mix—the four Ps—converge in the world of Internet connectivity and commerce. For example, the product (*P*) includes Facebook, Google, Pinterest, Snapchat, Twitter, Wikipedia, and the myriad other Web sites that can be accessed worldwide. The Web also functions as a distribution channel, and a very efficient one at that. Case in point: iTunes, Pandora, Spotify, and YouTube are rewriting the rules of music and video distribution.

The Internet has also become a key communication platform. Today, almost every company and organization has a presence in the online space. The Internet can be used as an advertising channel, as a public relations (PR) tool, as a means for running a contest or sales promotion, and as support for the personal selling effort.

Finally, there is price. Comparison-shopping Web sites make it easy to check and compare prices for products and services. Moreover, the marginal cost of storing and distributing digitized products—music files, for example—is practically nothing. This has led to some interesting pricing strategy experiments. For example, Radiohead, the innovative rock band from Oxford, England, was one of the first to harness the efficiency of the Web by offering free downloads of its 2007 album *In Rainbows*.

We begin by briefly reviewing the key innovations that served as precursors to the digital revolution. In the next two sections, convergence and the disruptive nature of Internet technology, and their effects on global companies, are discussed. Key e-commerce issues that face global marketers are then examined. The discussion continues with an overview of Web site design issues as they pertain to global marketing. The final section of the chapter examines some of the products and service innovations that are driving the digital revolution.

15-1 The Digital Revolution: A Brief History

The **digital revolution** is a paradigm shift resulting from technological advances that allow for the digitization (i.e., conversion to binary code) of analog sources of information, sounds, and images. The origins of the digital revolution can be traced back to the mid-twentieth century. Over a five-year period between 1937 and 1942, John Vincent Atanasoff and Clifford Berry developed the world's first electromechanical digital computer at Iowa State University. The Atanasoff-Berry Computer (ABC) incorporated several major innovations in computing, including the use

◀ **15-1** List the major innovations and trends that contributed to the digital revolution.

of binary arithmetic, regenerative memory, parallel processing, and separation of the memory and computing functions.

In 1947, William Shockley and two colleagues at AT&T's Bell Laboratories invented a “solid state amplifier,” or **transistor** (the term was coined by information theorist John R. Pierce). This was a critical innovation, because the vacuum tubes used in computers and electronics products at that time were large, consumed a large amount of power, and generated a great deal of heat. Shockley and his collaborators John Bardeen and William Brattain were awarded the Nobel Prize in physics in 1956 for their invention.

In 1948, a Bell Labs researcher named Claude Shannon wrote a technical report titled “A Mathematical Theory of Communication” in which he proposed that all information media could be encoded in *binary digits*, or bits. Eight years earlier, in 1940, Shannon had argued in his doctoral dissertation that the logical values “true” and “false” could be denoted by “1” and “0,” respectively, and that streams of 1s and 0s could transmit media over a wire. Thanks to his pioneering work, Shannon is regarded as the inventor of information theory.

In the early 1950s, Sony licensed the transistor from Bell Labs; Sony engineers boosted the yield of the transistor and created the market for transistor radios. The sound was “lo-fi” but the devices were portable and stylish, which is what consumers—especially teenagers—wanted. Also during the 1950s, Robert Noyce and Jack Kilby independently invented the silicon chip, also known as the **integrated circuit (IC)**.¹ In essence, the IC put the various parts of an electrical circuit—including resistors, diodes, and capacitors—on a single piece of material. The IC gave the transistor its modern form and allowed its power to be harnessed in a reliable, low-cost way.

The IC and the concept of binary code permitted the development of the **personal computer (PC)**, a compact, affordable device whose advent marked the next phase of the digital revolution. Pivotal events and people associated with this era have become the stuff of legend. Seminal research in the early 1970s by Robert Taylor and Alan Kay at the Xerox Palo Alto Research Center (PARC) in California permitted the development of the first PCs. Taylor led a team that created a prototype PC called the Alto. Kay, the director of the Learning Research Group, developed software based on a “desktop metaphor” that used graphical icons.²

Taylor and Kay’s breakthroughs at Xerox PARC had a strong impact on Steve Jobs, who, with partner Steve Wozniak, started Apple Computer in a garage in the late 1970s. The company’s Apple II is widely regarded as the first “true” PC; the Apple II’s popularity received a big boost in 1979 when a spreadsheet program known as VisiCalc was introduced. A computer **spreadsheet** is an electronic ledger that automatically calculates the effect of a change to one number on other entries across rows and down columns; previously, these changes had to be done manually. Although such powerful, time-saving functionality is taken for granted today, VisiCalc was a true milestone in the digital revolution.³

IBM brought its first PC to market in 1981; Bill Gates initially declined an offer to create an **operating system**—the software code that provides basic instructions—for IBM’s new machine. Gates later changed his mind and developed the Microsoft Disk Operating System (MS-DOS). In 1984, Apple introduced the revolutionary Macintosh, with its user-friendly graphical interface and point-and-click mouse. A few years later, Microsoft replaced MS-DOS with Windows. Meanwhile, component manufacturers were innovating as well; Intel began marketing the 286 microprocessor in 1982. This chip was followed in quick succession by the 386 and 486 versions; in 1993, Intel unveiled the Pentium processor.

The rise of the Internet and the World Wide Web marks the next phase of the digital revolution. The Internet’s origins can be traced back to an initiative by the **Defense Advanced Research Projects Agency (DARPA)**, which created a computer network that could maintain lines of communication in the event of a war. Robert Taylor, whose work at Xerox PARC has already been mentioned, was director of the Information Processing Techniques Office at the Pentagon in 1966. It was Taylor who secured the funding to create a single computer network that could connect separate computer research projects. In 1969, the ARPANET was unveiled; this network linked computer research centers at colleges and universities. E-mail within a computer network was made possible by the creation of a file-transfer program in 1972.

There was a problem, however: It was not possible to send e-mail that was created on one network to a computer on a different network. This problem was solved the following year when Vinton Cerf and Robert Kahn created a software framework known as TCP/IP (Transmission Control

Protocol/Internet Protocol) (see Exhibit 15-2). Launched in 1973, this cross-network protocol was the extended architecture that paved the way for a “network of networks.” In December 1974, the term “Internet transmission control” appeared in a technical paper for the first time, and the **Internet** was born.

The ability to exchange e-mail messages on the Internet had a revolutionary impact on society, as technology guru Stewart Brand noted in the late 1980s:

Marshall McLuhan used to remark, “Gutenberg made everybody a reader. Xerox made everybody a publisher.” Personal computers are making everybody an author. E-mail, word processing programs that make revising as easy as thinking, and laser printers collapse the whole writing–publishing–distributing process into one event controlled entirely by the individual. If, as alleged, the only real freedom of the press is to own one, the fullest realization of the First Amendment is being accomplished by technology, not politics.⁴

Of course, the Internet revolution did not end with the advent of e-mail. More hardware and software innovations were yet to come. As America Online (AOL) cofounder Steve Case has noted, the “first wave” of the Internet revolution began in the mid-1980s as companies such as Cisco Systems and Xilinx created the core technologies (e.g., routers) that were the infrastructure or “on ramps” to the Internet.⁵

In 1990, a software consultant named Tim Berners-Lee invented the **Uniform Resource Locator (URL)**, an Internet site’s address on the World Wide Web; **Hypertext Markup Language (HTML)**, a format language that controls the appearance of Web pages; and **Hypertext Transfer Protocol (HTTP)**, which enables hypertext files to be transferred across the Internet.⁶ These innovations allowed Web sites to be linked and visually rich content to be posted and accessed. In short, Berners-Lee is the father of the **World Wide Web**.

In 1992, the U.S. government authorized the use of the Internet for commercial purposes. At the time, it was believed that programmers and scientists would be the heaviest users of this network. In the mid-1990s, however, a computer scientist at the University of Illinois named Marc Andreessen developed a Web browser; called Mosaic, it combined images and words together on the same screen and allowed users to search for and view resources on the Web. Andreessen joined forces with Jim Clark, one of the founders of Silicon Graphics, to form Mosaic Communications. Renamed Netscape Communications, the company became one of the brightest stars in the dot-com era, as commercial demand for the Netscape browser software exploded. As Thomas L. Friedman notes, “Marc Andreessen did not invent the Internet, but he did as much as any single person to bring it alive and popularize it.”⁸

“There are certain limitations that are part of the network, and we are struggling with that. We’re worried that in the zeal to address localization that people will not be able to communicate any more. If someone gives you a business card with the e-mail address in Chinese, what are you to do?”

Vinton G. Cerf, Internet pioneer, former chairman of ICANN, and Chief Internet Evangelist, Google

Exhibit 15-2 Vint Cerf is Chief Internet Evangelist at Google. He is widely considered to be one of the fathers of the Internet. In March 2017, Cerf appeared at the SXSW Interactive Festival in Austin, Texas, where he discussed a new initiative called People-Centered Internet.

Source: Diego Donamaria/Getty Images.



Within five years of the Web's debut, the user base had increased from 600,000 users to 40 million. Although computer makers were slow to add modems to PCs, fledgling online services such as America Online were exhibiting robust subscriber growth. Thanks in part to a direct-mail marketing campaign in which millions of software discs were sent to prospective customers, AOL grew from 5 million subscribers in 1996 to 20 million subscribers in 1999. And, of course, the company's iconic sign-on greeting, "You've got mail," became a part of popular culture.

During the second wave of the Internet revolution, which Case describes as running from 2000 to 2014, the focus shifted from building the Internet to building on top of it. Search engines such as Yahoo! and Google emerged, and encryption and security features were built into the Web. Social media companies, including Facebook, YouTube, and Twitter, exploded onto the scene, and the iPhone launched the "app economy."

Case envisions the third wave as a time when the Internet is seamlessly integrated into everyday life. He also anticipates a period of reinvention and disruption in key economic sectors, including major changes in health care, education, financial services, and transportation. Some of this integration and disruption is already occurring, as evidenced by the popularity of ride-sharing services such as Uber and Lyft. And, as the impact of Uber, Lyft, and other ride-sharing services on traditional industry sectors such as auto manufacturing demonstrates, the third wave is likely to be characterized by an ongoing dialog between attackers and defenders of disruption and revolution.

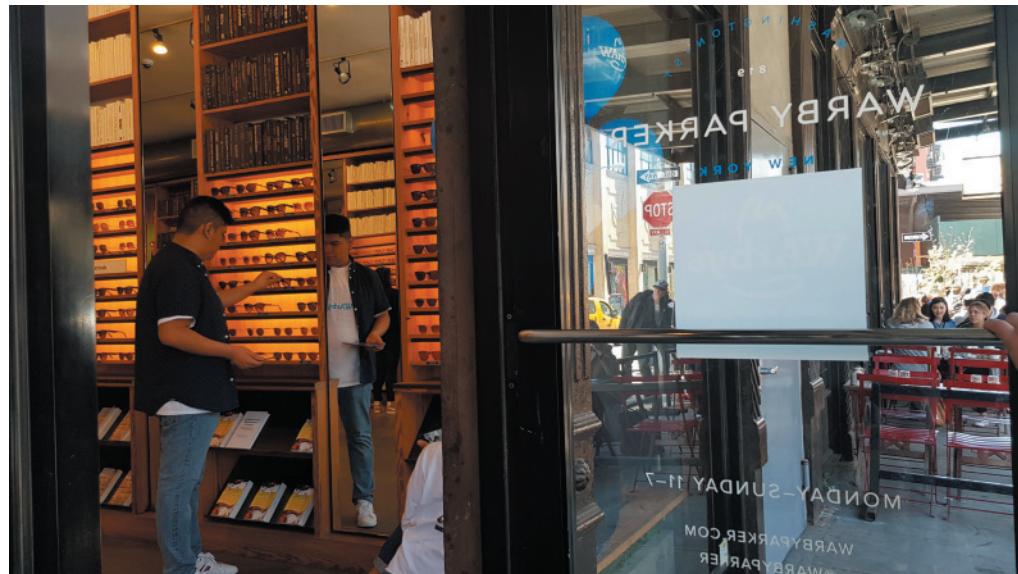
Case foresees four trends during the third wave. Case describes the first trend as "capital for all," with global crowdfunding sites such as GoFundMe, Indiegogo, and Kickstarter growing in importance. The second trend is the reemergence of partnerships; whether in health care or education, *who* a company partners with will be just as important as what the company does. A third trend is the launch of social enterprises that link profit and purpose. Warby Parker, Tesla, and TOMS are three examples (see Exhibit 15-3). Case dubs the fourth trend the "rise of the rest," as the globalization of entrepreneurship gains traction on a regional basis, far from startup hotbeds such as Silicon Valley.

Today, almost 3 billion people—nearly half of the world's population—use the Internet. As noted in Chapter 10, because residents in developing countries lag in terms of Internet access, Google is working to build wireless networks in those areas, especially outside large cities, that are beyond the reach of wired networks.⁹

Despite the promise embodied by the digital revolution, the technology's powerful capabilities and increasing importance have also resulted in a backlash that has manifested itself in various ways. For example, the Chinese government, alarmed by the free flow of information across the Internet, closely monitors the content on Web sites that its citizens access. Facebook, Twitter, and numerous other social media sites are blocked in China.

Exhibit 15-3 Warby Parker is an innovative online purveyor of prescription eyewear. Its direct-sales business model has disrupted the traditional eyewear industry. Warby Parker's commitment to social responsibility is embodied in its buy-a-pair, give-a-pair philosophy.

Source: CrowdSpark/Alamy Stock Photo.



Who controls the Internet? Good question! The first Internet Governance Forum (IGF) was held in Athens, Greece, in 2006. The IGF was charged with guiding “the development and application by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the Internet.” Some people in the global Internet community are concerned about the inclusion of the word “governments” in this statement.

The nonprofit Internet Corporation for Assigned Names and Numbers (ICANN) is based in Marina del Ray, California. ICANN maintains a database of Web addresses, approves new suffixes for Web addresses (e.g., .info and .tv), and performs other behind-the-scenes procedures that are critical for keeping the Internet functioning properly. ICANN’s advisory body includes international members, but the U.S. Department of Commerce retains veto power over all decisions. For example, after ICANN tentatively approved the domain name .xxx for pornography sites, the U.S. Department of Commerce blocked the decision.

Policymakers in some countries are concerned about U.S. control of the Internet. For example, China, India, Brazil, and the European Union (EU) have taken the position that, because the Internet is global, no single country should be in control of it. Accordingly, these nations have sought to have the United Nations assume a role in Internet governance.¹⁰

Privacy is another issue. As Amazon, Facebook, Google, and myriad other companies continue to exploit “conversation commerce” by using the Internet to gather vast amounts of information about customers, privacy issues are becoming a focal point of concern among policymakers and the general public. For example, Russia and China have new cyber-security laws requiring that all data about customers in their respective countries be stored on in-country servers. More than 2,000 U.S. companies have pledged to comply with European data protection standards by signing Privacy Shield, an agreement between the United States and the EU. Moreover, effective in 2018, the General Data Protection Regulation (GDPR) requires all companies conducting business in the EU to comply with strict guidelines for gathering, storing, and using data provided by customers.¹¹

15-2 Convergence

The digital revolution is causing dramatic, disruptive changes in industry structures. Writing in *The New York Times* at the beginning of 2010, columnist Jon Pareles summarized some of these changes as follows:

The 2000s were the broadband decade, the disintermediation decade, the file-sharing decade, the digital recording (and image) decade, the iPod decade, the long-tail decade, the blog decade, the user-generated decade, the on-demand decade, the all-access decade. Inaugurating the new millennium, the Internet swallowed culture whole and delivered it back—cheaper, faster, and smaller—to everyone who can get online.¹²

Convergence is a term that refers to the coming together of previously separate industries and product categories (see Figure 15-1). New technologies often affect the business sector(s) in which a company competes. Which business is Sony in? Originally, Sony was a consumer electronics company best known for innovative products such as transistor radios, Trinitron televisions, VCRs, stereo components, and the Walkman line of personal music players. Then, Sony entered new businesses by acquiring CBS Records and Columbia Motion Pictures. These acquisitions themselves did not represent convergence because they occurred in the early days of the digital revolution, when motion pictures, recorded music, and consumer electronics were still separate industries. Today, however, Sony is in the “bits” business: Its core businesses incorporate digital technology and involve digitizing and distributing sound, images, and data. Now, Sony’s competitors include Apple (music players, smartphones), Dell (computers), Canon (cameras), and Nokia (smartphones).

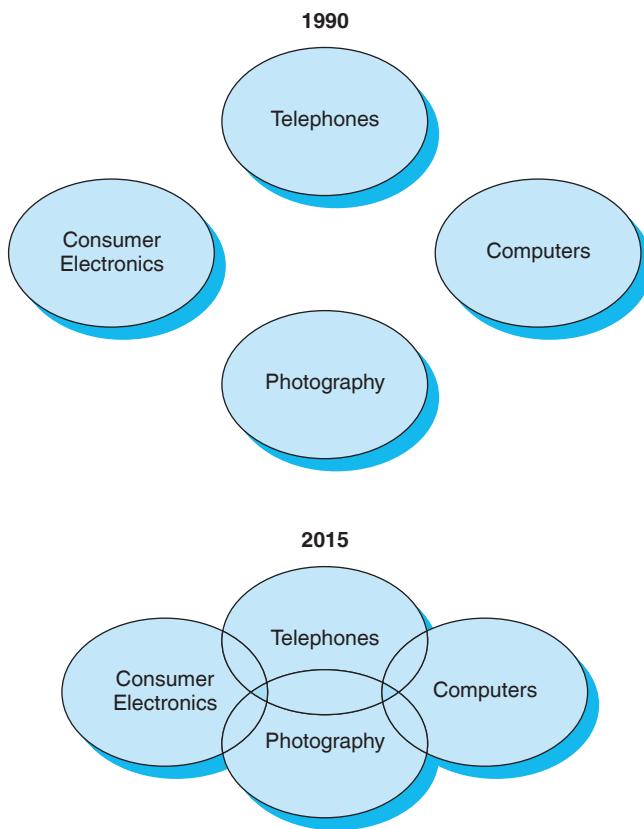
Which kinds of challenges does convergence present? Consider the case of Kodak, the undisputed leader in photography-related products for more than a century. The company struggled to remake its business model as its sales of digital-related products grew from zero to \$1 billion in five years. Through convergence, Kodak’s competitors came to include companies such as Dell and Hewlett-Packard. Moreover, Kodak’s core businesses—film, photographic paper, and

◀ **15-2** Define “convergence” and give an example.

“I think there will be an increasing convergence between content and commerce, that it will be about following consumers instead of making consumers come to you, and I am especially excited about the various platforms that will allow more and more access to customers.”¹³

Natalie Massenet, founder,
Net-a-Porter

FIGURE 15-1
Industry Convergence



chemicals—were disrupted. Competition for Kodak also came from the telecommunications industry. The cell phone camera was invented in 1997; a key benefit of this innovation was the ability to download digital photos from the camera and post them on the Web or e-mail them to friends. Motorola, a key player in the cell phone business, could have been one of the first companies to market a cell phone camera, but its management's attention was distracted by the ill-fated launch of the Iridium satellite phone. Instead, inventor Philippe Kahn took his idea to Japan, where the first cell phone cameras were introduced in 1999.¹⁴ In 2010, annual sales of camera-equipped phones passed the 1-billion-unit mark.

- **15-3** Define *value network* and explain the differences between sustaining technologies and disruptive technologies.

15-3 Value Networks and Disruptive Technologies

As noted in the chapter introduction, the digital revolution has created both opportunities and threats.¹⁵ Dell, IBM, Kodak, Motorola, Xerox, and Sony are just a few examples of global companies that have struggled to remake their businesses in the face of technological innovation. IBM missed out on the minicomputer market, in part because the company's management believed minicomputers promised lower profit margins and represented a smaller market opportunity. DEC, Data General, and Prime created the minicomputer market, but these companies then missed the PC revolution. This time, however, IBM's executive team demonstrated that it had learned its lesson: It set up an independent organizational unit to create the company's first PC. However, IBM subsequently was slow to recognize the growing market demand for laptops; new entrants included Apple, Dell, Toshiba, Sharp, and Zenith. Recently, IBM exited the PC market altogether.

How is it that the managers at so many companies fail to respond to change in a timely manner? According to Harvard professor Clayton Christensen, the problem is that executives become so committed to a current, profitable technology that they fail to provide adequate levels of investment in new, apparently riskier technologies. Indeed, companies may fall into this trap precisely because they adhere too closely to the prevailing marketing orthodoxy—that is, they listen to and respond to the needs of established customers, rather than seeking out new opportunities. Christensen calls this situation the **innovator's dilemma**.



ENTREPRENEURIAL LEADERSHIP, CREATIVE THINKING, AND THE GLOBAL STARTUP

Jack Ma, Alibaba

Jack Ma is an entrepreneur. He has developed several innovative products and services, created new brands, and started companies to market his creations. By applying the basic tools and principles of modern marketing, Ma has achieved remarkable success.

As is true with many of today's entrepreneurs, Ma's key innovation was based on his insights into the possibilities and opportunities provided by the Internet. Today, nearly 80 percent of China's e-commerce is channeled through Alibaba, the company Ma founded in 1999. Not surprisingly, Ma is a billionaire many times over; he is also the richest man in China (see Exhibit 15-4).

In 2003, Ma launched a consumer site called Taobao (Chinese for "search for treasure") as an alternative to eBay. At the time, eBay and its Chinese partner, EachNet, dominated the market. Undeterred, Ma famously remarked at the time, "eBay is a shark in the ocean; we are a crocodile in the Yangtze River. If we fight in the ocean we will lose, but if we fight in the river we will win."

Initially, Taobao set itself apart from eBay by not charging sales commissions or listing fees. Ma was convinced that global Internet companies entering China were making three kinds of mistakes. First, they underestimated the differences between China and the U.S. market. Second, they incurred higher costs than local Chinese operators. Third, they pursued global expansion too quickly. Ma's instincts were correct. In less than five years, eBay's share of the Chinese market was down to single digits, while Taobao dominated the market with an 85 percent share. Another service spun off from Taobao, Tmall, is a mass-market shopping site for Chinese consumers.

In 2005, Yahoo paid \$1 billion for a 40 percent share of Alibaba, and Ma became chief executive of Yahoo's Chinese operations. In 2014, Alibaba made history when its \$25 billion initial public offering on the New York Stock Exchange set a record for both the United States and the world. Ma is also preparing to launch 11 Main, a site specifically targeting American shoppers. Alibaba is making selective investments in innovative startups, including Lyft, the ride-sharing service that competes with Uber. Acknowledging that consumer awareness of Alibaba is low in the United States, company executives are approaching the U.S. market with caution.

Exhibit 15-4 Alibaba founder Jack Ma is a fan of Chinese kung fu novels. His company dominates the e-commerce sector in China, where Alibaba uses VR and AR to drive traffic to both physical and virtual stores.

Source: HOANG DINH NAM/AFP/Getty Images.

Despite the "go-slow" market entry strategy in the United States, by 2016 Alibaba was selling nearly 15 billion items per year—three times more than Amazon. Now Ma has set an ambitious long-term goal for his company: 2 billion global customers by 2025. Ma envisions that the company's AliExpress sales platform will be the main driver of growth, and will lead to a new data-driven business model for e-commerce that he has dubbed Globalization 2.0. Ma hopes that Singles Day, an online shopping event that takes place in China every November 11, will be embraced by shoppers in the rest of the world.

However, Ma's company faces a thorny problem: Some of the Chinese companies that sell on AliExpress are offering counterfeit goods. These can range from fake Nike Air Jordan sneakers to fake Rolex watches to fake Ray-Ban sunglasses. The International Anti-Counterfeiting Coalition estimates that, in 2015 alone, worldwide sales of fake goods totaled \$1.7 trillion.

Alibaba uses data analytics to combat the counterfeiters and protect intellectual property rights. Millions of product listings on Alibaba are scanned each day, and each year the company has been able to close down tens of thousands of stores selling counterfeit goods. Working with brand rights holders and law enforcement, Alibaba has also helped shut down hundreds of facilities that manufacture the fakes.

In 2016, Ma announced the formation of the Alibaba Big Data Anti-Counterfeiting Alliance to address this ongoing problem. The Alliance includes some two dozen companies with well-known brand names. A statement issued by the company indicated that Louis Vuitton, Swarovski, and other alliance members would share data and expertise with the goal of authenticating intellectual property and removing listings on Alibaba that infringe IP rights.

Sources: Louise Lucas, "Do-It-Yourself Globalization: Alibaba," *FT Big Read—Financial Times* (May 23, 2017), p. 9; Marco della Cava, "Alibaba Puts Heat on \$1.7T Fake Goods Market," *USA Today* (January 28, 2017), p. 5B; Gillian Wong, "Counterfeits Test Alibaba's Goals," *The Wall Street Journal* (November 15, 2015), p. B8; David Barboza, "The Jack Ma Way," *The New York Times Sunday Business* (September 7, 2014), pp. 1, 4–5; David Gelles, Hiroko Tabuchi, and Michael J. de la Merced, "Alibaba's American Aspirations," *The New York Times* (May 24, 2014), pp. B1, B5.



"The incumbent leaders never see it coming. They focus on their best customers and try to provide what they need, but the customers who first defect to new technology are usually the least profitable."¹⁶

Clayton Christensen, commenting on the problems facing retailer J. Crew

In every industry, companies are embedded in a **value network**. Each value network has a cost structure associated with it that dictates the margins needed to achieve profitability. The boundaries of the network are defined, in part, by the unique rank ordering of the importance of various product performance attributes. Parallel value networks, each built around a different definition of what makes a product valuable, may exist within the same broadly defined industry. Each network has its own “metrics of value.” For example, for laptop computers, the metrics are small size, low weight, minimal power consumption, and rugged design. During the 1980s, customers who bought portable computers were willing to pay a premium for smaller size; buyers of mainframe computers did not value this attribute. Conversely, mainframe buyers valued (i.e., were willing to pay more for) memory capacity as measured by megabytes; portable computer buyers placed less value on this attribute. In short, the value networks for mainframe computers and portable computers are different.

As firms gain experience within a given network, they are likely to develop capabilities, organizational structures, and cultures tailored to the distinctive requirements of their respective value networks. The industry’s dominant firms—typically those with reputations as “well-managed” firms—lead in developing and/or adopting **sustaining technologies**, which comprise incremental or radical innovations that improve product performance. According to Christensen, most new technologies developed by established companies are sustaining in nature; indeed, the vast majority of innovations are of this type.

In contrast, new entrants to an industry lead in developing **disruptive technologies** that redefine performance. The benefits associated with disruptive technologies go beyond enhancing product performance—these technologies enable something to be done that was previously deemed impossible. Disruptive technologies typically enable new markets to emerge. As Christensen explains, “An innovation that is disrupting to one firm can be sustaining to another firm. The Internet was sustaining technology to Dell, which already sold PCs via direct marketing channels. But it was disruptive technology to Compaq, whose major distribution channel was retailers.”¹⁷

To help managers recognize the innovator’s dilemma and develop appropriate responses to environmental change, Christensen has developed five principles of disruptive innovations:

1. Companies depend on customers and investors for resources. As management guru Rosabeth Moss Kanter points out, the best innovations are user driven; paradoxically, however, if management listens to established customers, opportunities for disruptive innovation may be missed.¹⁸
2. Small markets don’t solve the growth needs of large companies. Small organizations can most easily respond to the opportunities for growth in a small market. This fact may require large organizations to create independent units to pursue new technologies, as IBM did in developing its PC.
3. Markets that don’t exist can’t be analyzed. Christensen recommends that companies embrace *agnostic marketing*. This is the explicit assumption that *no one*—not company personnel, not the company’s customers—can know whether, how, or in what quantities a disruptive product can or will be used before they have experienced using it.
4. An organization’s capabilities define its disabilities. For example, Microsoft was once an industry trendsetter. Today, while it remains firmly committed to its Windows operating system, Microsoft lags behind new industry entrants in high-growth, consumer-oriented areas such as search and social networking.¹⁹
5. Technology supply may not equal market demand. Some products offer a greater degree of sophistication than the market requires. For example, developers of accounting software for small businesses overshot the functionality required by the market, creating an opportunity for a disruptive software technology that provided adequate, not superior, functionality and was simple and more convenient to use. This was the opportunity seized by Scott Cook, developer of Quicken and QuickBooks.

15-4 Global E-Commerce

The term **e-commerce** refers to the general exchange of goods and services using the Internet or a similar online network as a marketing channel. Global e-commerce sales surpassed \$1.3 trillion in 2014, the same year that China surpassed the United States as the world's largest e-commerce market. Hundreds of millions of Chinese consumers are shopping online with greater frequency as smartphone penetration ramps up. The U.S. Census Bureau reported that U.S. online retail sales revenues totaled \$390 billion in 2016, a figure that represents a 100 percent increase since 2011. By comparison, Chinese online retail transactions in 2016 were an estimated \$750 billion—almost twice the U.S. figure.

Internet penetration in some world regions is in the low single digits; this is especially true in Africa. For example, penetration is less than 10 percent in Eritrea, Burundi, Sierra Leone, Somalia, and other low-income countries. By contrast, in several countries, including South Korea, the Netherlands, Greenland, the United Arab Emirates, Bahrain, and Qatar, more than 90 percent of the population is online. Consider the following statistics:

- Between 2003 and 2014, the number of Internet users in China increased from 68 million to 640 million. More than 600 million Chinese people shop online, making China the world's largest e-commerce market. Local companies such as Alibaba and JD.Com dominate the market.
- According to Forrester Research, online retail in Western Europe will grow at a compound annual rate of 11.3 percent between 2017 and 2022. Eighty-five percent of surveyed European mobile phone owners access the Internet at least weekly on a mobile phone.²¹

E-commerce activities can be divided into three broad categories: business-to-consumer (B2C or b-to-c), business-to-business (B2B or b-to-b), and consumer-to-consumer (peer-to-peer: P2P or p-to-p). People often associate e-commerce with well-known consumer-oriented sites such as Amazon.com, Apple's iTunes Store, and eBay.

As noted in Chapter 14, Germany's Otto Group is the world's second-largest B2C e-commerce retailer. Indeed, according to Forrester Research, Germany, France and the United Kingdom together account for more than two-thirds of online retail sales in Western Europe (see Figure 15-2). More recently, consumers in Italy and Spain have begun to embrace online shopping, contributing to rapid growth in those countries. Overall, online purchases of clothing outpace other types of purchases by a two-to-one ratio. However, online sales of consumer electronics, watches, and jewelry are growing as well.²²

In general, B2B commerce constitutes the biggest share of the Internet economy and will likely continue to do so for the foreseeable future. Industry forecasts call for global B2B revenues to reach \$6.7 trillion by 2020, at which point B2C is expected to be \$3.2 trillion.²³

Web sites can be classified by purpose: **Promotion sites** provide marketing communications about a company's goods or services, **content sites** provide news and entertainment and support a company's PR efforts, and **transaction sites** are online retail operations that allow customers to purchase goods and services. Typically, Web sites combine the three functions.

Web sites can also be categorized in terms of content and audience focus. For example, international students at your college or university may have learned about your school via the Internet, even though home-country prospective students constitute the primary target audience for the Web site.

Similarly, Pandora, the online music service, serves only American listeners; Deezer, the French online music-streaming company, is operational in 160 countries. Prior to 2015, Deezer was not available in the United States. Why? For one thing, international copyright laws make it difficult to license performance rights for songs. However, in 2015, Deezer launched a partnership with hi-fi marketers Sonos and Bose, making Deezer Elite available for U.S. customers. As former Pandora CEO Joe Kennedy once remarked, "The good news is that the Internet is global, but the bad news is that copyright law is country by country."²⁴ Apple's iTunes Store began as a U.S.-only retailer. During the next decade, the service was rolled out in dozens of countries. Netflix, the online movie distributor, has evolved from domestic to international in a similar way.

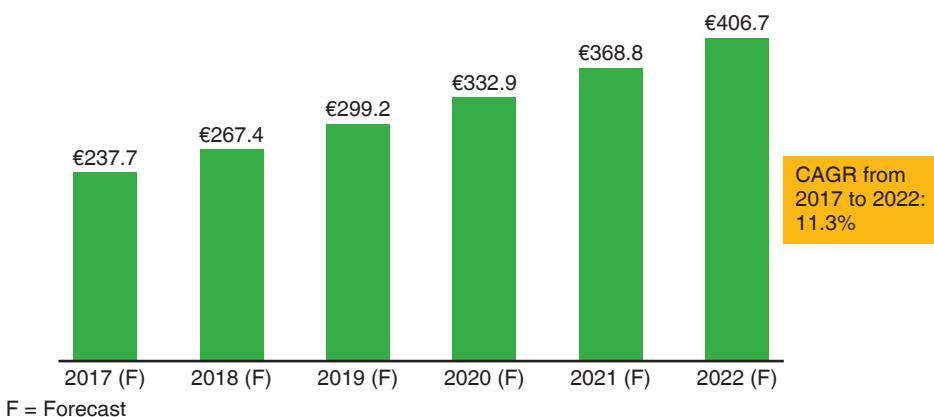
◀ **15-4** Identify current trends in global e-commerce and explain how global companies are expanding their presence on the Web.

"This is the definition of disruption. This is Netflix replacing Blockbuster. This is Uber replacing taxis."²⁰

Brendan Witcher, Vice President and Principal Analyst, Forrester Research, commenting on the potential impact of Amazon's Just Walk Out stores on retailing

FIGURE 15-2
**Western European Online Retail Sales, 2017–2022
(\$ billions)**

Source: Adapted from Michelle Beeson and Claudia Tajima, *Online Retail Will Drive Overall European Retail Sales Growth Through 2022*, Forrester Research (December 5, 2017), p. 2.



Companies such as FedEx and Gucci are global in scope, and the Internet constitutes a powerful, cost-effective communication tool for these firms. Similarly, the interactive marketing staff at Unilever understands that the Web represents an important low-cost medium for promoting products. Unilever's vast archive of TV commercials has been digitized; Web surfers can download the videos for products such as Salon Selectives shampoo and watch them anytime. A decade ago Unilever launched a 12-week series on Yahoo! Food titled *In Search of Real Food*. Hosted by Food Network TV star David Lieberman, the show was created around Hellman's mayonnaise. As Doug Scott, executive director of entertainment at the Ogilvy & Mather ad agency explained, "Content for broadband costs significantly less than TV productions and it allows you to distribute to a much larger audience."²⁵

Companies can also seek e-commerce transactions with customers on a worldwide basis. Amazon.com is the most successful example of this transaction business model. Online book shoppers can choose from millions of book titles on its Web site; many carry discounted prices. And, of course, today Amazon offers a vast range of products.

In the mid-1990s, after assessing a number of potential products in terms of their suitability for online sales, company founder Jeffrey Bezos settled on books for two reasons. First, there were too many titles for any one "brick-and-mortar" store to carry. The second reason was related to industry structure: The publishing industry is highly fragmented, with thousands of publishers found in the United States alone. As a consequence, no single publisher has a high degree of supplier power. Bezos's instincts proved sound: Sales exploded after Amazon's Web site became operational in mid-1995. Within a year, orders were coming in from dozens of countries.

Today, Amazon.com is the world's largest online retail site, with hundreds of millions of annual visitors. The company's 12 international sites generate between 40 percent and 50 percent of its total sales, with Germany, Japan, and the United Kingdom being Amazon's three biggest markets outside the United States. The company employs more than 500,000 people, and Bezos is the world's richest person, with an estimated net worth of \$100 billion.

Online retail in the United States passed the \$400 billion mark in 2017, including orders from abroad. Abercrombie & Fitch, Aéropostale, J. Crew, Macy's, Timberland, and Saks Fifth Avenue are just some of the U.S. retailers targeting foreign buyers by adding international shipping services to their Web sites. The dollar's strength, which translates into higher prices for shoppers paying in euros or other currencies, has prompted more U.S. consumers to order from abroad. Delivery giants FedEx, UPS, and DHL are making key acquisitions and partnering with other firms to help ensure seamless, frictionless ordering and delivery experiences for online shoppers.²⁶

Some products are inherently not suitable candidates for sale via the Internet; for example, McDonald's doesn't sell hamburgers from its Web site. In addition, some global marketers make the strategic decision to establish a presence on the Web without offering transaction opportunities, even though the product could be sold that way. Instead, such companies limit

their Web activities to promotion and information in support of offline retail distribution channels.

Companies may pursue this strategy for several reasons. First, they may lack the infrastructure necessary to process orders from individual customers. Second, it can cost anywhere from \$20 million to \$30 million to establish a fully functioning e-commerce site. Other, product-specific factors may also underlie the decision to forgo Web-based sales. The Web site for Godin Guitars, for example, provides a great deal of product information and a directory of the company's worldwide dealer network. But company founder Robert Godin believes that the best way for a person to select a guitar is to play one, and that requires a visit to a music store.

For consumer products giant Procter & Gamble (P&G), the Internet represents a global promotion and information channel that is an integral part of its brand strategy. For example, Pampers is P&G's number 1 brand, with annual global sales of \$10 billion. Pampers' online presence at www.pampers.com represents a new conceptualization of the brand. Previously, brand managers viewed Pampers disposable diapers as a way of keeping babies happy; the new view is that the Pampers brand is a child development aid. Visitors to the Pampers Village online community can read advice from the Pampers Parenting Institute as well as tips from mothers. Discount coupons are also available.

P&G launched www.thankyoumom.com to position P&G as "a proud sponsor of moms." In 2010, P&G used the site to award \$100,000 in travel vouchers to help mothers reunite with their families. P&G has also launched a retail Web site to sell Pantene shampoo, Pampers baby products, and other brands to consumers. This online strategy change brings P&G into direct competition with Walmart, Target, and other retailers that complement brick-and-mortar stores with Internet selling.²⁷

Until recently, visitors to the Web sites for most luxury goods purveyors were not given the opportunity to buy. The reason is simple: Top design houses strive to create an overall retail shopping experience that enhances the brand. This objective is basically at odds with e-commerce. As Forrester Research analyst Sucharita Mulpuru explained, "There was a belief that there was no way you could communicate your brand essence online."²⁸ This belief is now changing, and some luxury goods marketers have developed smartphone and iPad apps to help consumers shop. Burberry, Chanel, Coach, Gucci, and other luxury brands are cultivating official online communities on Facebook. According to Reggie Bradord, CEO of a social media management company, they are doing the right thing. He says, "Luxury brands should be thinking about 'how can we create a dialogue and get consumers connecting with our brand?'"²⁹

As the Internet has developed into a crucial global communication tool, decision makers in virtually all organizations are realizing that they must include this new medium in their communications planning. Many companies purchase banner ads on popular Web sites; the ads are linked to the company's home page or product- or brand-related sites. Advertisers pay when users click the link. Although creative possibilities are limited with banner ads and **click-through rates**—the percentage of users who click on an advertisement that has been presented—are typically low, the number of companies that use the Web as a medium for global advertising is expected to increase dramatically over the next few years.

One of the most interesting aspects of the digital revolution has been noted by Chris Anderson, the editor of *Wired* magazine and author of *The Long Tail*. The title of Anderson's book refers to the use of the efficient economics of online retail to aggregate a large number of relatively slow-selling products. *The Long Tail* helps explain the success of eBay, Amazon.com, Netflix, and iTunes, all of which offer far more variety and choice than traditional retailers can. As Anderson explains, "The story of the Long Tail is really about the economics of abundance—what happens when the bottlenecks that stand between supply and demand in our culture start to disappear and everything becomes available to everyone." Anderson notes that "below-the-radar" products—for example, obscure books, movies, and music—are driving revenues at e-commerce merchants such as Amazon.com, Netflix, and iTunes. He says, "These millions of fringe sales are an efficient, cost-effective business. . . . For the first time in history, hits and niches are on equal economic footing."³⁰

► **15-5** Explain the key issues facing a global company when designing and implementing a Web site.

15-5 Web Site Design and Implementation

To fully exploit the Internet's potential, company executives must be willing to integrate interactive media into their marketing mixes.³¹ Web sites can be developed in-house, or an outside firm can be contracted to do the job. During the past few years, a new breed of interactive advertising agency has emerged to help companies globalize their Internet offerings (see Table 15-1). Some of these agencies are independent; others are affiliated with other advertising agency brands and holding companies (see Chapter 13). Whether Web development is handled in-house or by an outside agency, several issues must be addressed when setting up for global e-commerce—for example, choosing domain names, arranging payment, localizing sites, addressing privacy issues, and setting up a distribution system.

A critical first step is registering a country-specific domain name. For example, Amazon.com has a family of different domain names, one for each country in which it operates (see Table 15-3). Although it is certainly possible for European consumers to browse Amazon.com's U.S. site, they may prefer a direct link to a site with a local domain name. From both a marketing perspective and a consumer perspective, this makes sense: For European consumers, the Web site of choice will be one that quotes prices in euros rather than dollars, offers a product selection tailored to local tastes, and ships from local distribution points. However, as noted earlier, the weak dollar may make it less expensive for shoppers in, say, Europe, to order from U.S. online retailers.

Moreover, research suggests that visitors spend more time at sites that are in their own language; they also tend to view more pages and make more purchases. Many people will seek information about sites on local versions of well-known search engines. For example, in France, Yahoo!'s local site is <http://fr.Yahoo.com>. The same principle applies to non-U.S. companies targeting the American online consumer market. For example, Waterford Wedgwood, Harrods,

TABLE 15-1 Top Five Digital Agency Networks by 2016 Interactive Marketing Revenues

Agency (Parent Company)	Headquarters	Selected Clients
Accenture Interactive (Accenture)	New York	L'Oréal; SKY Cable
IBM iX (IBM)	Armonk, New York	Atlanta Falcons; Knorr; Migros
Deloitte Digital (Deloitte)	New York	Vodafone Malta; PepsiCo; Estée Lauder
Publicis.Sapient (Publicis)	Boston	McDonald's
PwC Digital Services (PwC)	New York	Hire Heroes USA

Source: Adapted from "Digital Networks: Worldwide," *Ad Age* (May 1, 2017), p. 17.

TABLE 15-2 Selected Amazon.com Domain Names

Domain Name	Country
amazon.com.br	Brazil
amazon.ca	Canada
amazon.cn	China
amazon.fr	France
amazon.de	Germany
amazon.it	Italy
amazon.co.jp	Japan
amazon.es	Spain
amazon.co.uk	United Kingdom

Johnnie Boden, and other well-known companies have acquired U.S. domain names and created sites with prices listed in dollars.³²

While registering a “.com” domain name is a relatively straightforward procedure in the United States, requirements can vary elsewhere. In some countries, a company must establish a legal entity before it can register a site with a local domain-name extension. **Cybersquatting**—the practice of registering a particular domain name for the express purpose of reselling it to the company that should rightfully use it—is also a problem. Avon, Panasonic, and Starbucks are some of the companies that have been victims of cybersquatting.

Payment can be another problem for e-commerce transactions; in some countries, including China, credit card use is low. In such situations, e-commerce operators must arrange payment by bank check or postal money order; cash on delivery is also an option. Another issue is credit card fraud; Indonesia, Russia, Croatia, and Bosnia are among the countries where fraud is rampant. Extra identity measures may have to be taken, such as requiring buyers to fax a photo of the actual credit card they are using as well as photo IDs.³³ In Japan, consumers pay for online purchases at convenience stores (*konbini*). After selecting an item online, the buyer goes to a nearby convenience store (e.g., a 7-Eleven) and pays cash for the item; the clerk transfers the money to the online seller’s account. However, foreign companies can’t participate in the *konbini* system, which means that a foreign online retailer must establish an alliance with a local company.

Ideally, each country-specific site should reflect local culture, language usage, customs, and aesthetic preferences. Logos and other elements of brand identity should be included on the site, with adjustments for color preferences and meaning differences when necessary. For example, the shopping cart icon is familiar to online shoppers in the United States and many European countries, but online companies must determine whether that icon is appropriate in all country markets. Subtle but important language differences can also occur even in English-speaking countries. For example, www.figleaves.com and www.figleaves.com/uk are, respectively, the American and British Web addresses for a UK-based lingerie marketer. However, the U.S. site refers to “panties,” whereas the U.K. site has a listing for “briefs.” When two or more different languages are involved, translators should be used to ensure that the copy reflects current language usage. It is also important not to “reinvent the wheel” by translating the same terms over and over again. Local translators should have access to an in-house dictionary that contains preferred translations of company-specific terms. The database system should be capable of identifying content that has already been translated and then reusing that content.

After Yao Ming joined the Houston Rockets in 2002, the NBA’s Chinese Web site was launched in conjunction with www.SOHU.com, China’s leading Internet portal. Written entirely in Chinese characters, the site is designed to capitalize on basketball’s increasing popularity in the world’s largest market. The NBA has also launched country-specific English-language sites in Africa, Australia, Canada, India, New Zealand, the Philippines, and the United Kingdom. In addition, sites have been developed in several other languages, including German, Greek, Hebrew, Italian, Portuguese, and Spanish.

As the NBA’s Chinese site illustrates, it is not enough to simply translate a Web site from the home-country language into other languages. Thus, another basic step is localizing a Web site in the native language and business nomenclature of the target country. From a technical point of view, Web sites designed to support English, French, German, and other languages that use the Latin alphabet store only a maximum of 256 characters in the American Standard Code for Information Interchange (ASCII) format. Even so, there are language-specific needs; for example, a German-language Web site requires more than double the capacity of an English-language site because German copy takes more space.³⁴ In contrast, languages such as Japanese and Chinese require a database that supports double-ASCII. For this reason, it is wise to start with a double-ASCII platform when designing a Web site’s architecture. The site’s architecture should also be flexible enough to allow different date, currency, and money formatting. For example, to someone living in the United Kingdom, “7/10/16” means October 7, 2016. To an American, it means July 10, 2016.

Another critical global e-commerce issue is privacy. The EU’s regulations related to protection of personal data are among the world’s strictest: Companies are limited in terms of how much personal information—a customer’s age, marital status, and buying patterns, for example—can be

gathered and how long the information can be retained. In 2012, EU Justice Commissioner Viviane Reding announced an overhaul of the EU's data collection rules (see Exhibit 15-5). These rules will apply to companies based outside the EU—Apple, Google, and Facebook, for example—if they offer services to EU citizens. Customers living in the EU also have the “right to be forgotten”; that is, they can request to have their personal data deleted. Moreover, EU citizens must give explicit consent before companies can share their data.³⁵ By contrast, the U.S. government has been reluctant to issue privacy protection rules in part due to First Amendment issues and in part due to national security concerns stemming from the terrorist attacks of 2001. To help ensure compliance with privacy laws, some American companies have created a new executive-level job position: chief privacy officer.³⁶

A number of e-commerce issues are related to physical distribution decisions. As online sales increase in a particular country or region, it may be necessary to establish local warehouse facilities to speed delivery and reduce shipping costs. In the United States, such a step has tax implications, because the marketer may have to collect sales tax. To allay consumer concerns about ordering merchandise online, companies may opt to waive shipping fees and offer free returns and money-back guarantees.

- **15-6** Identify the most important new products and services that have been introduced in the past decade.

15-6 New Products and Services

The digital revolution has spurred innovations in many different industries. Companies in all parts of the world are developing a new generation of products, services, and technologies. These include broadband networks, mobile commerce, wireless connectivity, and smartphones. For example, GoDaddy is used by many entrepreneurs who need help establishing domain names and hosting Web sites. (see Exhibit 15-6).

Broadband

A **broadband** communication system is one that has sufficient capacity to carry multiple voice, data, or video channels simultaneously. *Bandwidth* determines the range of frequencies that can pass over a given transmission channel. For example, traditional telephone networks offered quite limited bandwidth compared with state-of-the-art digital telephone networks. As a result, a

Exhibit 15-5 Viviane Reding is the European Commissioner for Justice, Fundamental Rights, and Citizenship. In her official capacity, Reding has spoken out about data privacy issues. One concern in the European Union is the widespread corporate practice of gathering and using consumer data without permission. The new GDPR will ensure that consumers have the “right to be forgotten,” by requiring companies such as Google to delete user data if requested to do so.

Source: GEORGES GOBET/AFP/Getty Images.



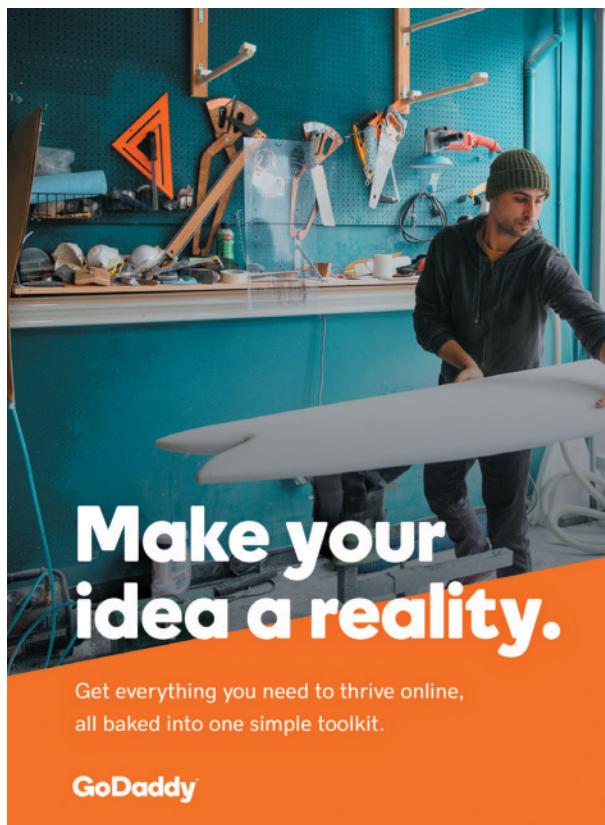


Exhibit 15-6 GoDaddy has raised awareness for its Web hosting and Internet domain registration services with various advertising campaigns. Its Super Bowl ads sometimes courted controversy; recent print ads have been much more straightforward.

Source: GoDaddy.

traditional telephone call sounds “lo-fi.” Bandwidth is measured in units of bits per second (bps); a full page of English text is approximately 16,000 bits. An old-school, 56 Kbps dial-up modem connected to a conventional telephone line could move 16,000 bits per second; by comparison, today’s broadband Internet connections that utilize coaxial cable or DSL (digital subscriber line) technology can move data at speeds measured in gigabits per second.

South Korea currently boasts the world’s fastest average Internet speeds. However, technology upgrades currently under way will mean even higher speeds: The government intends to ensure that every Korean household has a 1-gigabit Internet connection. As Choi Gwang-gi, the engineer overseeing the project, explains, “A lot of Koreans are early adopters, and we thought we needed to be prepared for things like 3D TV, Internet Protocol TV, high-definition multimedia, gaming and videoconferencing, ultra-high definition TV, and cloud computing.”³⁸ Consumers won’t be the only beneficiaries of the upgrade; corporations will also be able to harness gigabit Internet connections for high-definition global videoconferencing and other applications.

As South Korea and other countries forge ahead with massive investments in broadband infrastructure upgrades, politicians and union leaders in laggard countries are taking a keen interest in the issue. A recent study declared that South Korea and several other countries are “ready for tomorrow” in terms of Internet speed. A second tier of countries falls into the category “below today’s applications threshold.” The United States, Germany, and Hong Kong all fall into this category.³⁹ U.S. President Barack Obama responded to this situation in 2011 by promising to spend tens of billions of dollars to improve America’s broadband network.

Why are policymakers following the broadband race so closely? Broadband offers multiple marketing opportunities to companies in a variety of industries. It also allows Internet users to access **streaming media** such as **streaming audio** and **streaming video**. Personalized radio services such as Apple Music, Pandora, Spotify, and Tidal allow users to list their favorite artists and songs; Pandora then uses a proprietary technology called the Music Genome Project to make recommendations for new music that are similar to a listener’s current favorites. Streaming media are also having a profound impact on the television industry, with Amazon.com, iTunes, Netflix, YouTube, and other services offering movie and TV show downloads and streaming as viewing options.

Streaming media represent a major market opportunity for the video game industry, which includes electronics companies (e.g., Microsoft and Sony), game publishers (e.g., Electronic Arts),

“Increased broadband penetration is opening up possibilities that didn’t exist even 2 years ago . . . We need to realize that online is now an important part of the overall communications mix . . . We are not an online business. We’re a beverage business. But we have to develop compelling marketing platforms that are relevant to the lives of young people.”³⁷

Tim Kopp, former vice president of global interactive marketing, Coca-Cola

and Internet portals (e.g., Google). Gamers in different locations, even different countries, can compete against one another using PCs or Xbox or PlayStation consoles. These shared gaming experiences are sometimes called *massively multiplayer online games* (MMOG); the most popular MMOG is *World of Warcraft*. How popular are Internet-based video games? Microsoft's Xbox Live service has more than 48 million subscribers worldwide. Consumer interest in online gaming has been fueled by powerful next-generation game consoles such as Microsoft's Xbox One and Sony's PlayStation 4.

Cloud Computing

In the preceding section, *cloud computing* was referenced as one driver of higher broadband speeds. This term refers to next-generation computing that is performed “in the cloud.” With this approach, rather than installing software such as iTunes or Microsoft Office on a computer hard drive, such applications are delivered through a Web browser. Cloud computing means that archives—including music and movie files, photos, and documents—are stored on massive remote servers and data centers rather than on individual users’ computers. Computer files can be accessed remotely, via the Internet, from any location and from any computer.

Google’s Chrome operating system, which has been described as “a new computing paradigm,” is designed to exploit the opportunities of cloud computing. Amazon.com’s Amazon Web Services (AWS) provides cloud-computing resources for businesses. AWS is a variation on the outsourcing trend that was discussed in Chapter 8; Netflix, Foursquare, and thousands of other companies use the service instead of running their own data centers. Cloud computing is expected to grow at an annual torrid pace of 25 percent over the next several years.⁴⁰

Smartphones

Cell phones have been one of the biggest new-product success stories of the digital revolution. Worldwide, 1.5 billion smartphones were shipped in 2017. Soaring demand has boosted the fortunes of manufacturers such as Apple, Huawei, Oppo, and Samsung, as well as AT&T, Deutsche Telekom, U.S. Cellular, Verizon, and other service providers. New features and functionality give consumers a reason to upgrade their handsets on a regular basis. Conventional cell phones (sometimes called feature phones) allow text messaging via **short message service (SMS)**, a globally accepted wireless standard for sending alphanumeric messages of up to 160 characters. SMS is the technology platform that is the basis for Twitter’s microblogging service. Industry experts expect marketers to integrate SMS with communication via other digital channels, such as interactive digital TV, the Internet, and e-mail.

Smartphones have much greater functionality than feature phones, incorporating many of the capabilities of computers. Case in point: Apple’s wildly successful iPhone comes equipped with a full-blown version of the company’s iOS and Web browser. Worldwide, smartphones represent about one-fourth of all cell phone sales. The popularity of smartphones is due, in part, to the availability of apps such as Action Movie FX, Angry Birds, Pinterest, and Uber. In 2013, Apple’s iTunes store sold its 50 billionth iPhone app. Apple commemorated the milestone with a “50 Billion Apps Download Promotion”: The lucky person who downloaded the 50 billionth app won a \$10,000 gift card—to be redeemed on iTunes, of course! Many of Apple’s rivals use Android, a mobile operating system developed by Google.

\$1 billion

The amount Facebook paid to acquire Instagram in 2012

800 million

The number of Instagram users as of September 2017

75 percent

Instagram users outside the United States

Mobile Advertising and Mobile Commerce

Mobile advertising and **mobile commerce (m-commerce)** are terms that describe the use of cell phones as channels for delivering advertising messages and conducting product and service transactions. Most smartphone and tablet users can access the Internet via **Wi-Fi**, a type of wireless network; in addition, cell phone service providers typically offer data plans that allow Internet connections via 3G or 4G networks. This allows Apple, AOL, Crisp Media, Google, Medialets, Mobext, and other companies to offer clients mobile ad services. For example, Unilever, Nissan, and other companies use Apple’s iAd service to place interactive ads inside iPhone and iPod apps.⁴¹

Total worldwide spending for mobile ads was only about \$1 billion in 2007; according to eMarketer, that figure had passed \$100 billion by the end of 2016. The United States leads all other nations in this kind of spending, with eMarketer reporting that 2017 mobile advertising totaled \$49.9 billion.⁴² Mobile search and mobile display advertising are growing in importance



ENTREPRENEURIAL LEADERSHIP, CREATIVE THINKING, AND THE GLOBAL STARTUP

Reed Hastings, Netflix

Reed Hastings is an entrepreneur. He developed an innovative service, created a brand, and started a company to market it. By applying the basic tools and principles of modern marketing, Hastings has achieved remarkable success.

Today, Netflix is the global leader in video streaming. Canada was Netflix's first international market entry, with operations commencing in 2010. In 2011, 43 countries in Latin America were added, and in 2012 the United Kingdom, Ireland, Denmark, Finland, Norway, and Sweden came online as well.

Such global expansion has proved expensive. Copyright laws require licensing content on a country-by-country basis, and marketing costs are significant as well. One of Hastings's goals is to negotiate worldwide licensing deals that will provide better terms than the country-by-country approach. Another problem: Latin America's Internet infrastructure is underdeveloped, so subscriber growth and viewership in Brazil and elsewhere were low. To address the problem, Netflix deployed a team to install local networks of web servers to ensure coverage.

Another challenge in global markets is billing. In Brazil, for example, many consumers do not have credit cards. Those who do are often distrustful about disclosing credit card information on company Web sites. As new subscribers began signing up for the service on mobile devices, Netflix responded by adding mobile payment options such as iTunes and Google Play.

In January 2016, Netflix service was rolled out in 130 additional international markets. Irrespective of location, streaming subscribers pay roughly the equivalent of the U.S. subscription rate—between \$5.00 and \$8.00 per month. Netflix content can also be accessed on more hundreds of different devices, including smartphones, tablets, and, of course, televisions.

As its global footprint has expanded, Netflix is adjusting the algorithm that powers its content recommendations. For example, when

Netflix first launched in Britain, the algorithm generated recommendations that reflected the preferences of British viewers only. Now, the service aggregates data from users in all parts of the world when making recommendations.

Netflix is also discovering that some locally produced programming has global appeal. One example is *Narcos*, a series about a notorious Colombian drug cartel and its kingpin, Pablo Escobar. The series is a French production, shot on location in Colombia and starring Brazilian actor Wagner Moura. Another original series, *3%*, is a science fiction show shot in São Paulo and starring Brazilian telenovela star Bianca Comparato. In November 2016, Netflix launched the first eight episodes in 191 countries—and the show proved to be a smash hit.

Netflix is also working to stay aligned to the consumer shift to mobile viewing. One challenge: Presenting viewing recommendations on small screens, where the faces of movie and TV stars may be hard to recognize. Instead of scaling down the artwork, which may make the screen cluttered and hard to read, Netflix offers fewer choices on each screen.

Anticipating a day with international subscribers will represent 75 percent of Netflix viewers, Hastings says, "To be a successful global service, we need to be more than Hollywood to the world. We need to be a company that shares stories from all around the world."

Sources: Lucas Shaw, "Building a World of Binge-Watchers [Cover story]," *Bloomberg Businessweek* (January 16, 2017), pp. 40–45; Shalini Ramachandran, "What's New on Netflix: A Big Push to Go Global," *The Wall Street Journal: Journal Report—C-Suite Strategies* (October 3, 2016), p. R6; Resty Woro Yuniar, "Netflix Hits Hurdle in Indonesia," *The Wall Street Journal* (January 28, 2016) p. B4; Emily Steel, "Netflix Accelerates Ambitious Global Expansion as U.S. Growth Slows," *The New York Times* (January 21, 2015), p. B3; Sam Schechner, "Netflix Tries to Woo a Wary Europe," *The Wall Street Journal* (September 8, 2014), p. B1; Ashlee Vance, "The Man Who Ate the Internet [Cover story]," *Bloomberg Businessweek* (May 13, 2013), pp. 56–60; Amol Sharma and Nathalie Tadéna, "Viewers Stream to Netflix," *The Wall Street Journal* (April 23, 2013), pp. B1, B4.

Exhibit 15-7 Original Netflix programs such as *House of Cards*, *Orange Is the New Black*, and *Daredevil* have been well received by viewers and critics alike.

Source: Ethan Miller/Getty Images.



as consumers migrate away from their desktop computers and spend more time on mobile devices. In fact, Google recently announced that it was tweaking its vaunted search algorithms to favor “mobile-friendly sites” with text that can be read on small screens and content that fits the screen. Web sites that are not optimized for mobile use will be demoted in the search process.

A smartphone that is equipped with a **global positioning system (GPS)** can determine the user’s exact geographic position. This capability has created new opportunities for location-based mobile platforms, such as Foursquare and Uber. The popularity of GPS-equipped mobile devices is also driving interest in *location-based advertising*. For example, Alcatel-Lucent, the French telecommunications equipment manufacturer, has launched a service that sends tailored text messages when smartphone users are near a specific location, such as a store, hotel, or restaurant. The service, which is managed by San Francisco–based 1020 Placecast, provides addresses and telephone numbers of the businesses and can also provide links to coupons or other types of sales promotions. Users “opt in” by signing up to receive ads.

NAVTEQ Media Solutions is a digital map data company owned by Nokia. NAVTEQ provides location-based advertising services using the company’s proprietary technology, LocationPoint Advertising (see Exhibit 15-8). NAVTEQ’s global clients include Best Western Germany, Domino’s Pizza India, and McDonald’s Finland. Recent campaigns for a variety of clients have demonstrated that mobile campaigns can provide marketers with important metrics that can be used to calculate return on investment (ROI).

In one campaign, mobile users who were within a 5-mile radius of any McDonald’s location in Finland received an offer to buy a cheeseburger for 1 euro. The result was a 7 percent click-through rate. Of those users, 39 percent used the ad’s click-to-navigate option to request walking or driving directions to the nearest McDonald’s. In India, a campaign to reach existing and prospective Domino’s customers was also successful. Ads were delivered to smartphone users; banner ads were placed on Nokia’s Ovi Services portal as well. The results were impressive: 22.6 percent of users clicked for the map, 10.8 percent clicked to call for home-delivery options, and 8 percent used the ad to access Domino’s Web site.⁴³

Cell phone usage is exploding in India. As Manoj Dawane, CEO of Mumbai software company People Infocom, explains, “In India, mobile phone penetration is high compared to other forms of media like television or the Internet. You can’t have a better place than India for mobile advertising.” One factor driving mobile ads in India is the low rates that subscribers pay—as little as 2 cents per minute. Demographics play an important role, too. Nearly two-thirds of the Indian population lives in rural areas where television ownership and newspaper readership are low.

Exhibit 15-8 NAVTEQ provides digital map data for location-based devices such as smartphones. NAVTEQ data are also used in vehicle navigation devices from Garmin.

Source: Krisztian Bocsi/Bloomberg via Getty Images.



Cellular operators such as BPL Mobile have built networks that reach tens of thousands of Indian villages. Arif Ali, head of brand communications at BPL, has ideas that will keep subscriber costs low. “We are thinking of providing 30- to 60-second commercials over the phone where we will pass on some kind of benefit,” he said.⁴⁴

Bluetooth mobile communication technology has the advantage of consuming less power than Wi-Fi.⁴⁵ This makes Bluetooth well suited for use with cell phones. On the downside, Bluetooth works over shorter distances than Wi-Fi. Both Bluetooth and Wi-Fi technology are being incorporated into automobiles and home appliances such as refrigerators, lighting systems, and microwave ovens. In short, the “Internet of Things” (IoT) is rapidly coming into being.

Autonomous Mobility

The Internet-connected car is becoming a reality as automakers rush to incorporate technology into their vehicles. Indeed, many drivers view their cars as the “ultimate mobile device” that is an extension of their digital selves. Apps now permit drivers to interact with their vehicles in new ways. For example, several automakers have developed Apple Watch apps that enable drivers to remotely check, say, whether the doors are locked and the windows are up. Electric car owners can also check whether their cars’ batteries are fully charged.

With a new era of self-driving “robocars,” electric vehicles, and shared-mobility services rapidly approaching, most global automakers and suppliers have established research laboratories in California’s Silicon Valley tech hub. Tesla seized the industry lead in 2015 with the launch of Autopilot functions that include Autosteer.

Dieter Zetsche, chairman of the board of management at Daimler AG and head of Mercedes-Benz, uses the acronym CASE when summarizing trends in his industry: connected, autonomous, shared, and electric (see Exhibit 15-9). The latest generation of Mercedes-Benz vehicles incorporate vehicle-to-infrastructure (V2X) cloud-based functionality that allows cars to seek out available parking spots. One key component of the system: high-definition mapping.

Other car companies are quickly adapting as well. Investor concern about Ford Motor’s lagging efforts to develop electric and self-driving cars cost CEO Mark Fields his job in mid-2017. At BMW, staffers have received briefings warning that the company trails newcomer Tesla as well as longtime rival Mercedes-Benz.⁴⁶ To speed up its development efforts, BMW has partnered with several firms, including Israel’s Mobileye, Intel, and Delphi, to develop software for self-driving cars.



Exhibit 15-9 Dieter Zetsche, chairman of the board of management at Daimler AG and head of Mercedes-Benz, delivered the keynote address at the 2015 International Consumer Electronics Show in Las Vegas. In his remarks, Zetsche discussed the future of autonomous vehicle technology and other innovations. As of 2017, 7 million Mercedes-Benz vehicles were equipped with sensors that allow the company to gather data that will benefit drivers.

Source: VanderWolf Images/Shutterstock.

"When we talk about mobility, I don't look to Munich or to BMW. We look to China—Didi, for example—and to Uber and Lyft. We look at what Google is doing with Waymo, and also Apple is trying a lot of things. These are the new competitors."⁴⁷

Wilko Stark, head of strategy,
Daimler AG

Mobile Music

Because of rampant illegal sharing of music files, music companies were forced to search for new sources of revenue—and they found them, thanks to technology convergence. Today, the new generation of smartphones is driving changes in the mobile music industry. **Mobile music** is music that is played on a smartphone or other mobile device.

For more than a decade, the market for paid, legal, full-track music downloads was dominated by Apple's iTunes Store. Music purchased from iTunes was played back on computers and mobile devices such as Apple's iPod, iPhone, and iPad. In 2006, iTunes reached a milestone of 1 billion downloads; today, Apple is the world's number 1 music seller, with a cumulative total of 25 billion downloads. (The 25 billionth song was downloaded in Germany in 2013, and the lucky iTunes customer won a €10,000 Apple Gift Card.) Apple's competitors tried, without much success, to develop music players and download services to rival the iPod/iTunes combination.

The market for paid downloads matured rapidly, however, as consumers opted for streaming services such as Spotify and Pandora. According to figures compiled by the International Federation for the Phonographic Industry (IFPI), annual global download revenues peaked in 2012 at approximately \$4 billion. Streaming revenues totaled about \$3.9 billion in 2016 and, with streaming's robust growth as the driver, global recorded music revenues rebounded to \$15.7 billion.

Responding to the changing market, Apple launched Apple Music, a new subscription-only service, in 2015. Some streaming sites—Spotify, for example—offer a free tier as well as a paid, “premium” level of service. The difference is that the paid tier is ad-free while the free tier requires users to listen to mobile ads. Apple Music executives believe their service will be able to offer better personalization features and superior artist recommendations compared to the competing services.⁴⁸

Cloud computing, which was discussed earlier in the chapter, is expected to have a major impact on the mobile music business. Cloud-based music services represent a hybrid of the subscription and online store business models; the new approach addresses some of the shortcomings of the existing methods. For example, iPod owners had to sync their iPods to their computers or other devices. Also, the pricing schemes for the various subscription services can be confusing. By contrast, cloud-based music services, including iTunes Match, Google Play, and Amazon Cloud Player, offer users a music locker; the locker is “in the cloud,” and music files that have been purchased or uploaded can be accessed from a variety of mobile devices.

Mobile Gaming

Mobile gaming is gaining in popularity; revenues from this industry were expected to exceed \$100 billion in 2017, up from \$3.77 billion in 2010. Until mid-2016, *Game of War: Fire Age* and *Clash of Clans* were two of the most widely played mobile games. However, on July 6, 2016, Nintendo's *Pokémon GO* took the mobile gaming world by storm. The game incorporates augmented reality technology with a smartphone's camera and GPS; players hunt for, and try to capture, “pocket monsters.” In record time, the game (“Gotta catch ‘em all!”) topped the “most downloaded apps” rankings in the Apple and Android apps stores in Australia, New Zealand, and the United States. One week later, *Pokémon GO* was launched in Japan, the world's biggest market for mobile games.

The Asia-Pacific region represents more than half of the global games market. China is home to 600 million players, whose annual game-related spending exceeds \$25 billion. The most popular mobile game is *Honor of Kings*, from Chinese Internet giant Tencent. With WeChat and QQZone, Tencent dominates the social network space in a market where Facebook and WhatsApp are blocked.⁴⁹

Some games, including *Pokémon GO*, are available on a free-to-play basis; others, such as *Super Mario Run*, are available for free on a trial basis while the full game costs several dollars. How can a marketer monetize a free game? For a small fee, free games can be upgraded to premium versions. In addition, many games offer users the opportunity to make in-app purchases of virtual goods. *Game of War* is a case in point: It generates \$1 million in revenue every day for parent company Machine Zone. Similarly, *Honor of Kings* is available as a free download, but players spend freely to customize their characters. Indeed, the word “free” can be misleading, as network operators typically charge fees for downloading the games.⁵⁰

Online Gaming and e-Sports

In the past few years, online gaming has morphed into a spectator sport. In fact, the term **e-sports** has been coined to describe video game competitions in which professional gamers and teams compete for cash prizes that can reach \$10 million. Examples include the November 2017 League of Legends World Championship, which was held at Bird's Nest stadium in Beijing (see Exhibit 15-10).

In the United States, fans can watch the matches from locations such as the Ignite lounge in Chicago, the Staples Center in Los Angeles, and the new Blizzard Arena in California's Burbank Studios. Top players with global name recognition include Faker (from South Korea), KuroKy (Germany), and Neo (Poland). Members of leagues such as Overwatch are paid six-figure salaries. E-sports revenues total nearly \$700 million annually; the industry's business model includes money from media rights, advertising, sponsorships, and ticket sales.

Fans of e-sports—some 200 million of them—log 6 billion viewing hours each year. Legions of video game fans use Twitch, a mobile-streaming site that provides video coverage of professional e-sports as well as streams of ordinary people (“variety streamers”) playing video games. In 2014, Amazon outmaneuvered Google by paying \$970 million to buy Twitch. Streamers often interact with viewers; some streamers actually earn their livelihoods by sharing revenues from commercials that run on Twitch and from subscription fees.⁵¹

Mobile Payments

Mobile payments—that is, payments made via smartphones—received a major boost when Apple launched Apple Pay in conjunction with the iPhone 6 in 2014. To make these payments, users first link their smartphones to their bank accounts; a technology called **near-field communication (NFC)** then allows users to “swipe” their phones near a point-of-sale terminal to complete a purchase. Alphabet’s Android Pay is also vying for market acceptance as a mobile payment platform.

Mobile payments have exploded in China, where users make purchases as well as transfer money to family and friends through their mobile devices. The mobile payments volume in China has passed the \$9 trillion mark in a market dominated by Alibaba’s Alipay and Tencent’s Tenpay platforms. As the Chinese market matures, both Alibaba and Tencent are targeting emerging markets where merchants lack point-of-sale machines that can process payments using conventional credit cards or mobile apps such as Apple Pay and Android Pay. In India, for example, Alibaba has provided financing for the Paytm mobile-payments platform, which has benefited

"We think e-sports can have truly global appeal. There isn't anything inherently sociocultural that would make it appeal more in one region than another."⁵²

Chris Hopper, head of league operations, Riot Games

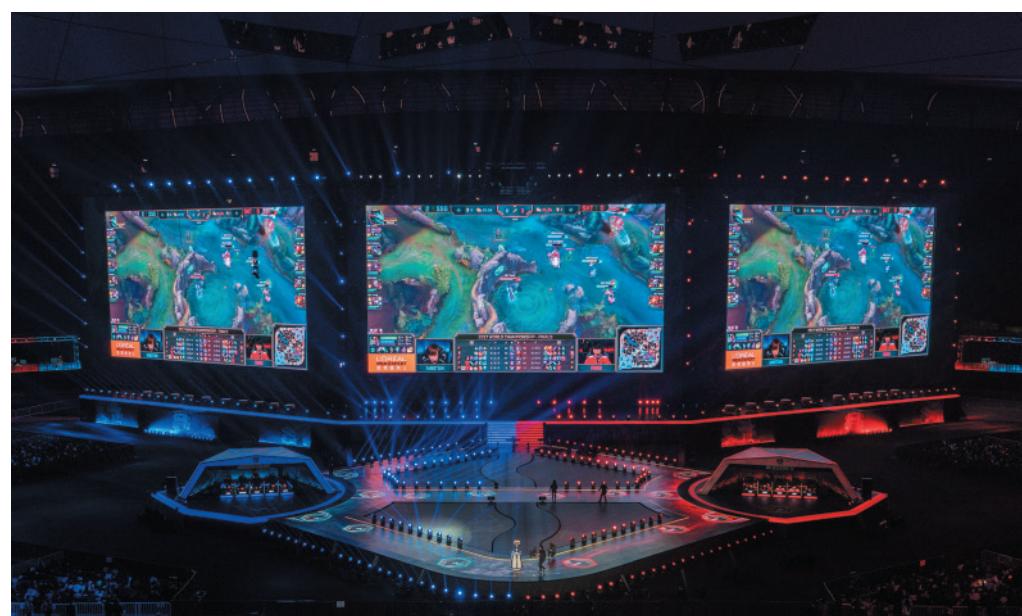


Exhibit 15-10 E-sports are exploding in popularity as thousands of fans pack arenas to watch competitive video gaming.

Source: STR/AFP/Getty Images.

greatly from the Indian government's currency reforms (see Chapter 2); Paytm relies on QR code technology.⁵³

\$1.3 billion

Number of people who tune into YouTube each day

5 billion

Number of videos viewed on YouTube each day

300

Number of hours of new content uploaded to YouTube every minute

Streaming Video

Global penetration of broadband Internet service has fueled the growing popularity of global digital video services such as YouTube. Other players operating in this space include Facebook, Instagram, Twitter, and, as discussed in the “Global Startup” sidebar, Netflix. One recent innovation is Meerkat, a streaming app that allows users to stream live video using their Twitter accounts. Some industry observers predict that Meerkat and similar apps will lead to major changes in the way people consume news and live events such as sports.

Internet Phone Service

For the telecommunications industry, Internet telephone service is the “next big thing.” **Voice over Internet Protocol (VoIP)** technology allows the human voice to be digitized and broken into data packets that can be transmitted over the Internet and then converted back into normal speech. If a call is placed to a conventional phone, it must be switched from the Internet to a traditional phone network; local telephone companies generally own the lines into residences and businesses. In contrast, if the call is made between two subscribers to the same VoIP provider, it bypasses the traditional network altogether. The implications are clear: VoIP has the potential to render the current telecommunications infrastructure—consisting primarily of twisted copper and fiber-optic cable—obsolete.

Currently, VoIP accounts for only a small percentage of global calls. Nevertheless, it has the potential to be a disruptive innovation that will upset the balance of power in the telecommunications industry. The promise of a global growth market has resulted in soaring stock values for startups. In Europe, Niklas Zennström, cofounder of the Kazaa music file-sharing service, started Skype Ltd. to offer Internet telephone service. As hundreds of thousands of new users—many in China, India, and Sweden—joined each day, Skype became a global phenomenon. In 2005, eBay acquired Skype for \$2.6 billion. However, eBay struggled to create synergies between the communication system and the company’s core auction business. In 2009, eBay spun off Skype as a separate company; two years later, Microsoft bought Skype for \$8.6 billion.

Digital Books and Electronic Reading Devices

The digital revolution has had a dramatic impact on traditional print media such as newspapers and magazines. Publishers are experiencing dramatic downturns in readership as people spend more time online. At the same time, the global recession has forced many companies to cut back on print advertising. Caught in a squeeze, magazines are folding and newspapers are declaring bankruptcy. However, electronic readers (e-readers), such as Amazon.com’s Kindle, Barnes & Noble’s Nook, and Apple’s iPad, may help lure subscribers back.

Amazon.com sold the first Kindle for \$359; prices for the latest-generation Kindle Fire HD start at \$99 (see Exhibit 15-11). Amazon.com has taken the Kindle global with the launch of a smaller, less expensive version that can be used in more than 100 countries. Apple launched the iPad in March 2010; by the end of the year, 15 million units had been sold. By mid-2014, Apple had sold more than 200 million of the devices.

Industry observers think that colleges and universities will be instrumental in building awareness and encouraging adoption of e-readers and e-books. The reason is simple: Electronic versions of textbooks represent a huge market opportunity. For example, the textbook you are reading right now is available directly from the publisher in the form of an electronic “subscription” at www.coursesmart.com. The online version requires users to be connected to the Internet; the text can be accessed from an unlimited number of computers. Buyers can use the e-book for 180 days before the subscription expires. The price is approximately half of what bookstores charge for a new copy of the physical textbook. Usually, students can print as many as 10 pages at a time; it is also possible to cut and paste content, highlight items, and take notes directly on the computer.



Exhibit 15-11 Amazon.com founder and CEO Jeff Bezos unveils the Kindle Fire, the latest version of his company's wireless reading device. Amazon.com's e-book sales recently overtook sales of titles in traditional paperback and hardback formats. Bezos is hoping that the Kindle will gain acceptance among college students.

Source: ZUMA Press, Inc./Alamy Stock Photo.

As is the case with music and movies, digital piracy is a growing problem with e-books. A number of Web sites and file-sharing services distribute unauthorized copies of popular copyrighted material. What do authors themselves think of the problem? Some view digital piracy as a way to gain new readers. Others simply want fair compensation for their work. A third camp includes authors who don't think pursuing the pirates is worth the effort. As best-selling author Stephen King once remarked, "The question is, how much time and energy do I want to spend chasing these guys? And to what end? My sense is that most of them live in basements floored with carpeting remnants, living on Funions and discount beer."⁵⁴

Wearables

When supermodel Karolina Kurkova attended the Metropolitan Museum of Art's Met Gala in 2016, she made quite a fashion statement. Her "cognitive dress," by high-end womenswear brand Marchesa, was connected to IBM's Watson supercomputer. When people attending the gala tweeted, the dress changed colors! Some observers noted that the event marked a moment when wearable technology—including fitness bands, the Apple Watch, and other products and brands—reached a tipping point in terms of fashionability and sales growth. Technology research firm IDC predicts that annual sales of such products will reach 113 million units by 2018, up from 6 million units in 2013.

It is perhaps no surprise that new strategic partnerships, such as the collaboration between Marchesa and IBM, are key to turning these dreams into reality. For example, Google has partnered with Levi's "Eureka" innovation lab to create a smart denim cycling jacket (see Exhibit 15-12). As Paul Dillinger, head of global product innovation at Levi's, commented wryly, "We are not very good at technology and they [Google] are not very good at garments."⁵⁵

Exhibit 15-12 The Eureka Lab is an initiative by venerable Levi Strauss to rethink how denim jeans are made.
Source: Matt Edge/The New York Times/Redux.



Summary

The *digital revolution* has created a global electronic marketplace. This revolution has gained momentum over the course of 75-plus years, during which time technological breakthroughs included the digital mainframe computer; the *transistor*; the *integrated circuit (IC)*; the *personal computer (PC)*; the *spreadsheet*; the *PC operating system*; and the *Internet*, which originated as an initiative of the *Defense Advanced Research Projects Agency (DARPA)*. Three key innovations by Tim Berners-Lee—*URLs*, *HTTP*, and *HTML*—led to the creation in the early 1990s of the *World Wide Web*.

The digital revolution has resulted in a process known as *convergence*, in which previously separate industries and markets come together. In this environment, the *innovator's dilemma* means that company management must decide whether to invest in current technologies or try to develop new technologies. Although leading firms in an industry often develop *sustaining technologies* that result in improved product performance, the revolution has also unleashed a wave of *disruptive technologies* that are creating new markets and reshaping industries and *value networks*.

E-commerce is growing in importance for both consumer and industrial goods marketers. Generally, commercial Web sites can have a domestic or a global focus; in addition, they can be classified as *promotion sites*, *content sites*, or *transaction sites*. Global marketers must take care when designing Web sites. Country-specific domain names must be registered and local-language sites developed. In addition to addressing issues of technology and functionality, content must reflect local culture, customs, and aesthetic preferences. *Cybersquatting* can hinder a company's effort to register its corporate name as an Internet destination.

The Internet is a powerful tool for advertisers; *click-through rates* are one measure of effectiveness. Another Internet-related trend is *paid search advertising*. New products and services spawned by the digital revolution include *broadband*, which permits transmission of *streaming media* over the Internet; *mobile commerce (m-commerce)*, which is made possible by *Wi-Fi*, *Bluetooth*, and other forms of wireless connectivity; *global positioning systems (GPS)*; and *short message service (SMS)*. *Smartphones* are creating new markets for *mobile music* downloads and streaming; these devices can also be used for mobile gaming and Internet phone service using *VoIP*.

Discussion Questions

- 15-1. Briefly review the key innovations that culminated in the digital revolution. What is the basic technological process that made the revolution possible?
- 15-2. What is convergence? How is convergence affecting Sony? Kodak? Nokia?
- 15-3. What is the innovator's dilemma? What is the difference between a sustaining technology and a disruptive technology? Briefly review Christensen's five principles of disruptive innovation.
- 15-4. Explain some of the main issues involved in setting up a global e-commerce business.
- 15-5. Review the key products and services that have emerged during the digital revolution. What are some new products and services that are not mentioned in the chapter?
- 15-6. Disruptive technologies and business models continue to have a huge impact on markets. What are the current trends and predictions?
- 15-7. The digital revolution may lead to the creation of cashless societies where payments are conducted digitally using smartphones. Discuss some of the benefits and problems of a cashless payment system in relation to global marketing.

CASE 15-1 (Continued refer to page 493)

How Do You Like Your Reality: Virtual? Augmented? Mixed?

VR technology was developed decades ago; in fact, a computer engineer and author named Jeron Lanier coined the term "virtual reality" in 1987. That was two years after Lanier left his job at Atari to start VPL Research, the first company to manufacture and sell VR goggles.

The early user experience with VR was not satisfactory for a mainstream consumer product: Users often experienced motion sickness and nausea. Those issues do not concern Hollywood filmmakers, however. *Minority Report*, Tom Cruise's 2002 movie based on a novel by sci-fi writer Philip K. Dick, provided one tantalizing glimpse of the future (Jeron Lanier served as advisor to the authors of the screenplay). In the film, Cruise uses hand gestures to interface with large virtual video screens. More than a decade later, Steven Spielberg's 2018 film *Ready Player One* envisioned a dystopia in which a VR world called the Oasis offers respite for beleaguered citizens in the year 2045.

The future depicted by sci-fi visionaries is still a long way off. Today, however, anticipating strong demand, software developers are rushing to create VR applications to harness the potential of the hardware. VRTIFY ("the world's first and largest virtual & mixed reality music platform") is a social network that specializes in rock concerts. Liquor brands, concert promotion company Live Nation, and iHeartMedia are just a few of the companies partnering with artists such as Deadmau5, Duran Duran, U2, the Weeknd and others to produce 360-degree concert videos.

More mundane applications of VR technology are also possible. For example, real estate agents can provide their clients with virtual tours of property listings. Retailers such as home-improvement specialist Lowe's can use VR to help customers overcome the "fear of the unknown." The problem: Potential do-it-yourselfers have trouble visualizing the results of a home renovation, so they never start the project. No project, no sale! Lowe's appeals to those customers by inviting them to "design your home" using VR.

Despite the growing number of uses for VR, critics such as University of Southern California professor Dmitri Williams point out that the current generation of headsets is bulky and expensive, requires a cable connection to a powerful hardware unit, and isolates the users. In general, detractors suggest that "VR 1.0" is unlikely to

achieve mass-market consumer adoption because it does not provide a seamless, frictionless user experience.

Make Room for Augmented Reality

As it turns out, augmented reality (AR) technology addresses the isolation issue. AR allows users to see the real world around them on lightweight headsets or mobile screens with an added layer of digital graphics. One well-known application is PokéMon GO; Microsoft's HoloLens headset running Windows Holographic software is another. The early AR headsets are wireless and lightweight, and respond to both hand and voice commands. One application: anatomy labs for medical students.

Facebook CEO Mark Zuckerberg is one person who anticipates a future in which AR has myriad uses. In 2014, Zuckerberg paid \$3 billion to acquire Oculus, a VR headset company started in a garage by a teenager named Palmer Luckey. Although Zuckerberg made an expensive bet with the acquisition, he is convinced that AR will become a mainstream communication technology even sooner than VR. The reason is simple: In contrast to the equipment purchases associated with VR, AR users can take advantage of a piece of gear they already own—namely, their smartphones.

Most of today's AR applications are relatively primitive, including filters and frames in the images. Nevertheless, some, such as the Nike+ Run Club smartphone app, show the technology's potential. Zuckerberg envisions that comfortable, lightweight eyeglass frames will eventually feature lenses that overlay various types of virtual content and information on whatever part of the physical world the wearer is looking at.

China's Alibaba is showing how AR and VR have the potential to transform retail. In 2016, the 11.11 Global Shopping Festival incorporated a number of innovations on the Tmall and Taobao platforms. For example, in the weeks leading up to the event, AR was used to drive foot traffic to offline, brick-and-mortar retailers. Tens of thousands of retailers, including KFC and Starbucks, participated in a "Catch the Tmall Cat" AR game. On the VR side, consumers were able to "sample" and purchase items from retailers in various parts of the

world. Alibaba created a special Buy+ shopping channel; participating retailers included Target, Macy's, and CostCo.

Meanwhile, given the relatively high costs associated with VR equipment for home use, media and tech companies have been grappling with some basic new-product marketing issues. For one thing, traditional television and print advertising is not a good vehicle for conveying the essence of the VR experience. Also, how can marketers give potential customers the opportunity to try before they buy?

With these and other issues in mind, companies are migrating the VR experience to new locations outside the home, such as shopping malls and movie theaters. That, in turn, is good news for theater operators such as IMAX, which are seeking ways to increase foot traffic in the era of instant Amazon downloads, streaming video, overnight home deliveries, and decreasing consumer interest in visiting shopping malls.

The Void, Dreamscape, and other startups are partnering with theater operators to open VR centers in select cities such as New York and Los Angeles. There, customers are provided with full-body sensors, headsets, and computers; they can engage with other users in virtual space. That functionality is reminiscent of the virtual mall shopping sequence in the 2017 French sci-fi extravaganza *Valerian* and addresses one of the basic drawbacks of VR—namely, the sense of isolation. As Walter Parkes, cofounder of Dreamscape, explains, “We are social animals and we consume entertainment socially. If you are isolated in virtual space, it will never become a mainstream entertainment form.”

The VR “arcade” experience, as it has been called, has proved especially popular in Japan. In Great Britain, a company called Other Worlds VR is sponsoring arcade pop-ups in London and other cities; its arcades are equipped with HTC Vive hardware.

What about Mixed Reality?

VR pioneers have discovered that sound is critical for maintaining the immersive experience. Also, there is considerable excitement about taking top-quality VR and incorporating the real world into it. Imagine, for example, entering a purpose-built entertainment site based

on a TV show where live actors interact with VR users. Instead of “replacing” reality, which VR does, or “augmenting” it (AR), this new mixed reality (MR) experience creates a purpose-built, custom-tailored space.

One recent project involved the popular FX Network cable show *Legion*. In the show, David Haller (played by Dan Stevens) can absorb other peoples’ consciousness. (Spoiler alert: David is the undocumented son of Professor Xavier of X-Men fame!) FX Networks partnered with Microsoft HoloLens and the Moving Picture Company (MPC) to create an MR experience based *Legion*.

The event was staged at the 2017 San Diego Comic-Con International in San Diego. Participants were treated to an immersive, 15-minute experience during which the actors triggered events from iPads. Thanks to the HoloLens goggles and directional audio sound design, participants felt that they could stop time with their minds and make things levitate. In other words, they got inside David Haller’s head! Justin Denton of VR production company Here Be Dragons directed *Sessions: The Legion Mixed Reality Experience*. The goal, he said, was to “hit all of your senses at once in a curated way.”

Discussion Questions

- 15-8. What are the differences between VR, AR, and VR?
- 15-9. Which technology do you think will be the first to reach mass-market acceptance: VR, AR, or MR?
- 15-10. What experiences have you had with VR? AR?

Sources: Justin Denton, Tim Dillon, Lucas Matney, and Jacqueline Bosnjak, “The Next Phase of VR: Moving to MR,” Panel Discussion, SXSW Interactive, Film and Music Conference (March 15, 2018); Tim Bradshaw and Peter Wells, “VR Returns to Malls and Movies for Mass Launch,” *Financial Times* (September 28, 2017), p. 16; Jessica Guyunn, “Inside Mark Zuckerberg’s Vision for Your Facebook Augmented Reality,” *USA Today* (April 19, 2017), pp. 1B, 2B; Brooks Barnes, “Virtual Reality’s Next Trick,” *The New York Times* (February 20, 2017), pp. B1, B3; Gregory Schmidt, “Virtual Reality Waits for the Music to Catch Up,” *The New York Times* (July 26, 2016), p. C3; Jack Nicas and Cat Zakrzewski, “Augmented Reality Beyond PokéMon,” *The Wall Street Journal* (July 14, 2016), pp. B1, B4; Tim Bradshaw, “Virtual Reality in Search for Killer Gaming App,” *Financial Times* (September 26–27, 2015), p. 14.

CASE 15-2 Africa 3.0

H ave you heard of the Cheetah generation? Here’s a hint: It’s the opposite of the Hippo generation. As you might infer, we are talking about Africa, a continent with 54 countries and a population of 1.03 billion. According to Ghanaian economist George Ayittey, the Cheetah generation is composed of fast-moving African citizens who don’t accept corruption and who believe that democracy and transparency lead to better governance. Cell phones are powerful tools for the Cheetahs; notes Michael Joseph, founder and former CEO of Kenya’s Safaricom, “The mobile phone has revolutionized lives and transformed society.”

Deregulation of the telecommunications sector has been driving that transformation, and market liberalization helps explain why Africa’s gross domestic product (GDP) growth rate is averaging between 5 and 6 percent. Overall, there are more than 650 million mobile phone subscribers in Africa; between 2000 and 2011, mobile use grew at an

average annual rate of 41 percent. This explosive growth is easy to understand: Cell phones make life easier. In villages that lack running water and electricity, a cell phone is a person’s most important possession (see Exhibit 15-13). Improved communication has also led to increased economic activity; for example, a peasant farmer can check crop prices to determine where and when to sell his harvest. Africa’s widespread adoption of the cell phone and the explosive growth of the telecom sector there have also corrected a common misperception among global marketers—namely, that the market opportunity in Africa is limited because the people are “too poor” and it is “too risky to do business there.”

Investment in telecommunications and other sectors in Africa is being driven by a variety of factors, including demographic trends. For example, nearly half the population is younger than the age of 15. The World Bank reports that half the population lives on \$1.25 per day.

Exhibit 15-13 Africa's economy has rebounded from the global financial crisis faster than the economies in the developed world. This is particularly true in sub-Saharan Africa, where the widespread adoption of cell phones has spawned mobile-banking networks and other innovations.

Source: Trevor Snapp/Bloomberg via Getty Images.



However, according to a study by the African Development Bank, Africa's middle class now includes 34 percent of the population, some 313 million people in all. The report defines "middle class" as those who spend between \$2 and \$20 per day; a narrower definition would include the 120 million people (21 percent) who spend between \$4 and \$20 per day.

Demand from this emerging middle class has been a boon to telecommunications companies. Between 2006 and 2010, compound revenue growth in the sector averaged 40 percent. Kenya, for example, is home to more than 21 million active phone numbers among a total population of 40 million people. In most parts of Africa, mobile networks suffer service interruptions. As a result, many people use more than one cell phone and have multiple providers.

Key industry players include Safaricom, Kenya's leading mobile phone service provider and the largest, most profitable company in East Africa. South Africa's MTN Group is the continent's leading mobile provider in terms of subscribers. MTN gained prominence in 2010 when it became the first African company to have a sponsorship for World Cup soccer. Globacon is a major service provider in Nigeria.

One of the biggest African success stories involves Celtel International, a telecom created by Sudanese businessman Mo Ibrahim. In 2005, Ibrahim sold the company to Zain, based in Kuwait, for \$3.4 billion. In 2010, India's Bharti Airtel paid \$10.7 billion for Zain's African assets. Zain has operations in 15 African countries, including Malawi, Chad, and Zambia. The acquisition makes Bharti the world's largest mobile provider—165 million subscribers in all—with operations only in emerging markets.

Not surprisingly, the market opportunity afforded by Africa is also attracting investment from other global telecom operators. For example, France Telecom has tens of millions of users in 22 countries in Africa and the Middle East. Executives are extending the company's African reach to span the entire continent; the goal is to become the "champion of rural Africa" by rolling out a range of new, low-cost mobile services under the Orange brand. For example, France Telecom's E-Recharge service lets users exchange credits via text messaging. Price discounts of up to 99 percent for off-peak calls are also very popular.

Kenya has become a key battleground for mobile telecommunications, as service providers cut prices to attract customers. Airtel Kenya has

squared off against Safaricom, Orange Kenya, and other rivals; the company recently cut its rates by 50 percent, to \$0.03 per minute for voice calls and \$0.01 for text messages. Parent company Bharti Airtel had previously used this tactic in India, where customers are making longer calls because airtime is less expensive. Despite the competition, Safaricom is the dominant player in Kenya, with nearly 75 percent market share in mobile.

Going forward, Safaricom CEO Robert Collymore says his company will focus on data and mobile banking services. Collymore is planning for cross-border expansion both to the east and the west. Ethiopia, with a population of 100 million people and the largest economy (GDP of \$73 billion) in the region, represents an appealing market opportunity. Safaricom's e-commerce platform, Masoko, is modeled after Alibaba. It is intended to serve as an e-commerce hub for both B2B and B2C transactions.

Perhaps the biggest mobile innovation in Africa is M-Pesa (M for "mobile"; pesa is Swahili for "money"). M-Pesa is a mobile phone-based money transfer service developed by Safaricom Kenya and Vodafone, with backing from Britain's Department for International Development. In 2014, Safaricom partnered with KCB, Kenya's biggest bank.

Today, M-Pesa is the dominant mobile money platform and a case study of the way telecommunications companies are transforming the banking industry in Africa. Safaricom has data on the 19 million Kenyans who use M-Pesa regularly, and whose daily transactions add up to tens of millions of dollars. For example, Kenyans use M-Pesa to get cash and make payments for bills, school fees, and airline tickets. Safaricom's service boasts a network of more than 100,000 agents. As competitors across the continent enter the mobile payments space, interoperability between service providers will increase in importance.

Just a decade ago, many mainstream banks would not have found it feasible to do business with low-income customers; the meager returns did not justify opening branch networks or setting up ATMs. As a result, a person with a city job would have to give money to a friend or a bus driver to deliver to relatives at home. Needless to say, highway robbery was a constant threat.

Today, banks can work with shopkeepers and bar owners who dispense or collect cash and then credit or debit a customer's mobile phone account. The target market is the "unbanked"—that is, people who do not have bank accounts. In Kenya alone, the majority of adults have access to financial services today, compared with only 5 percent in 2006. In Nigeria, a country of 150 million people, only 20 percent of the population has a bank account. Nigeria's Central Bank (CBN) is taking the lead in reaching out to the unbanked members of this population, by creating a system in which telecommunications companies will provide the infrastructure for offering financial services. This approach is necessary because there are several dominant cell phone service providers in Nigeria.

Price wars are just one of the challenges of doing business on the continent. Africa is at the bottom of the World Bank's "Ease of Doing Business" rankings. Widespread corruption is part of the problem. As Sudanese telecom magnate Ibrahim puts it, "There is a crisis of leadership and governance in Africa and we must face it." Moreover, he notes, "These guys know that millions of children are going to bed without dinner. The blood of those children is on the hands of those who spend the money on arms and private jets."

Data compiled by Global Financial Integrity, a nongovernmental organization, support Ibrahim's assessment of the business environment. According to a recent report, more than \$350 billion flowed out of Africa as a result of corruption and illicit deals.

Discussion Questions

- 15-11.** The United States and Latin America have been far slower than countries in Africa and Europe in adopting mobile payments technology. Why is this the case?

15-12. Further economic liberalization in Africa depends, in part, on government leaders overcoming suspicions that foreign companies want to exploit Africa. How quickly is this likely to happen?

15-13. If marketers "think local and act local," what are some of the new products and services that are likely to emerge from Africa in the next few years?

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Notes

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PART FIVE

STRATEGY AND LEADERSHIP IN THE TWENTY-FIRST CENTURY

16

Strategic Elements of Competitive Advantage

LEARNING OBJECTIVES

- 16-1** Identify the forces that shape competition in an industry, and illustrate each force with a specific company or industry example.
- 16-2** Define *competitive advantage* and identify the key conceptual frameworks that guide decision makers in the strategic planning process.
- 16-3** Explain how a nation can achieve competitive advantage, and list the forces that may be present in a national “diamond.”
- 16-4** Define *hypercompetitive industry* and list the key arenas in which dynamic strategic interactions take place.



CASE 16-1 IKEA

When IKEA founder Ingvar Kamprad passed away in early 2018 at the age of 91, the world lost a retailing legend and an icon of entrepreneurship. IKEA has been called “one of the most extraordinary success stories in the history of postwar European business.” As an enterprising teenager in rural Sweden, Kamprad sold pencils and other merchandise by mail. He later bought an abandoned factory and began making furniture. The next step was opening a showroom in the town of Almhult. By the time of Kamprad’s death, IKEA had evolved from its humble beginnings as a mail-order business into a \$38 billion global furniture powerhouse with more than 400 stores in 49 countries (see Exhibit 16-1).

Today, the company’s Billy bookcases, Ektorp sofas, and Hemnes bedroom suites are bestsellers, popular with students, young families, and other budget-conscious shoppers. Thrifty by nature, Kamprad flew economy class and took public transportation when he traveled. IKEA’s success reflects Kamprad’s “social ambition” of selling a wide range of stylish, functional home furnishings at prices so low that the majority of people can afford to buy them.

Kamprad’s frugal ways also applied to the company’s finances. To minimize tax liabilities, he split the company into two parts: Inter Ikea owns the brand and the concept, while Ikea Group runs the retailing operations. Both units are now headquartered in the Netherlands rather than Sweden, where taxes are higher. Ikea Group pays Inter Ikea a royalty fee for use of the brand; this somewhat unorthodox arrangement has attracted the attention of the European Commission’s tax authorities.

The essence of marketing strategy is successfully relating the strengths of an organization to its environment. As the horizons of marketers have expanded from domestic to regional and global, so,