



CHAPTER

1

The Revolution Is Just Beginning

LEARNING OBJECTIVES

After reading this chapter, you will be able to:

- Understand why it is important to study e-commerce.
- Define e-commerce, understand how e-commerce differs from e-business, identify the primary technological building blocks underlying e-commerce, and recognize major current themes in e-commerce.
- Identify and describe the unique features of e-commerce technology and discuss their business significance.
- Describe the major types of e-commerce.
- Understand the evolution of e-commerce from its early years to today.
- Describe the major themes underlying the study of e-commerce.
- Identify the major academic disciplines contributing to e-commerce.

Everything on Demand:

The “Uberization” of E-commerce

If you were asked to pick iconic examples of e-commerce in the two decades since it began in 1995, it is likely that companies such as eBay, Google, Apple, and Facebook would be high on your list. But today, a new breed of e-commerce company is muscling its way to the forefront. Uber and other firms with similar business models, such as Lyft (a ride service similar to Uber’s), Airbnb (rooms for rent), Instacart (grocery shopping), and Grubhub (restaurant food delivery), are the pioneers of an on-demand service e-commerce business model that is sweeping up billions of investment dollars and disrupting major industries, from transportation to hotels, real estate, house cleaning, maintenance, and grocery shopping.

Uber is perhaps the most well-known, as well as the most controversial, company that uses the on-demand service model. Uber offers a variety of different services. The two most common are UberX, which uses compact sedans and is the least expensive, and UberBlack, which provides higher-priced town car service. UberPool is a ride-sharing service that allows users to share a ride with another person who happens to be going to the same place. Uber is also attempting to leverage its business model by expanding into several related areas, with UberRush, a same-day delivery service; UberCargo, a trucking service; and UberEats, a food delivery service.

Uber, headquartered in San Francisco, was founded in 2009 by Travis Kalanick and Garrett Camp, and has grown explosively since then to over 600 cities in 65 countries. Uber currently has over 3 million drivers worldwide and 75 million riders who made 4 billion trips in 2017. In 2017, riders spent \$37 billion on the Uber platform, generating \$7.5 billion in revenue for Uber, but it still lost \$4.5 billion, with losses in developing markets swallowing up profits being generated in North America, Europe, and elsewhere. That trend has continued in 2018, with a reported loss of \$2 billion through the first three quarters of 2018. Uber’s strategy has been to expand as fast as possible while foregoing short-term profits in the hope of long-term returns. As of November 2018, Uber has raised over \$24 billion from venture capital investors. Uber is currently valued at around \$72 billion, more than all of its



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competitors combined, and its investment bankers have suggested that it might be worth as much as \$120 billion in an initial public offering, which is expected to occur in 2019. In the last several years, Uber has sold its operations in China, Southeast Asia, and Russia, where it had been engaged in costly turf wars with other competitors, reportedly to free up capital to invest in other emerging markets such as India, Latin America, and the Middle East.

Despite the fact that it is not yet operating at a profit, Uber offers a compelling value proposition for both customers and drivers. Customers can sign up for free, request a pickup using his or her smartphone, and nearly instantly (under the best of circumstances) Uber finds a provider and notifies the customer of the estimated time of arrival and price. Riders can accept the price or find an alternative. No need to stand on a street corner frantically waving, competing with others, or waiting endlessly for an available cab to drive by, without knowing when that might happen. With UberPool ride-sharing, the cost of a ride is even less, making it cost-competitive with owning a car in an urban area, according to Uber. Uber's value proposition for drivers is that it allows them to set their own hours, work when they like, and put their own cars to use generating revenue.

Uber is the current poster child for "digital disruption." It is easy to see why Uber has ignited a firestorm of opposition from existing taxi services both in the United States and around the world. If you've paid \$1 million for a license to drive a taxi in New York City, what is it worth now that Uber has arrived? Answer: less than \$200,000. Even governments find Uber to be a disruptive threat. Governments do not want to give up regulatory control over passenger safety, driver training, nor the healthy revenue stream generated by charging taxi firms for a taxi license and sales taxes.

Uber's business model differs from traditional retail e-commerce. Uber doesn't sell goods. Instead it has created a smartphone-based platform that enables people who want a service—like a taxi—to find a provider with the resources, such as a personal automobile and a driver with available time, to fill the demand. It's important to understand that although Uber and similar firms are often called "sharing economy" companies, this is a misnomer. Uber drivers are selling their services as drivers and the temporary use of their car. Uber itself is not in the sharing business either: it charges a 25% commission on every transaction on its platform. Uber is not an example of true "peer-to-peer" e-commerce because Uber transactions involve an online intermediary: a third party that provides a platform for, and takes a cut of, all transactions.

Uber has disrupted the traditional taxi business model because it offers a superior, fast, convenient taxi-hailing service when compared to traditional taxi companies. With a traditional taxi service, there is no guarantee you will find a cab. Uber significantly reduces that uncertainty. Uber's business model is also much more efficient than a traditional taxi firm. Uber does not own taxis and has no maintenance and financing costs. Uber calls its drivers "independent contractors," not employees. Doing so enables Uber to avoid costs for workers' compensation, minimum wage requirements, driver training, health insurance, and commercial licensing.

Quality control would seem to be a nightmare with over 3 million contract drivers. But Uber relies on user reviews to identify problematic drivers and driver reviews to identify problematic passengers. Drivers are evaluated by riders on a 5-point scale. Drivers that fall below 4.5 are warned and may be dropped if they don't improve. Customers are also rated

with a 5-point system. Drivers can refuse to pick up troublesome customers, and the Uber server can delay service to potential customers with low ratings or ban them entirely. Uber does not publicly report how many poorly rated drivers or passengers there are in its system. Academic articles have found that in similar on-demand companies, such as Airbnb, there is a built-in bias for both sellers and buyers to give good reviews regardless of the actual experience. If you routinely give low reviews to sellers (drivers), they will think you are too demanding and not service you in the future. If a driver gives low reviews to passengers, they might not rate you highly in return.

Rather than having a dispatcher in every city, Uber has an Internet-based app service running on cloud servers located throughout the world. It does not provide radios to its drivers, who instead must use their own smartphones and cell service, which the drivers pay for. It does not provide insurance or maintenance for its drivers' cars. Uber has shifted the costs of running a taxi service entirely to the drivers. Uber charges prices that vary dynamically with demand: the higher the demand, the greater the price of a ride. Therefore, it is impossible using public information to know if Uber's prices are lower than traditional taxis. Clearly, in high-demand situations they are higher, sometimes ten times higher, than a regulated taxi. There is no regulatory taxi commission setting uniform per-mile fares. Consumers do face some traditional uncertainties regarding availability: during a rain storm, a convention, or a sports event, when demand peaks, not enough drivers may be available at any price.

If Uber is the poster child for the new on-demand service economy, it's also an iconic example of the social costs and conflicts associated with this kind of e-commerce. Uber has been charged in many countries with misclassifying its drivers as contractors as opposed to employees, thereby denying the drivers the benefits of employee status, such as minimum wages, social security, workers' compensation, and health insurance. Uber has also been the target of numerous lawsuits filed on behalf of its drivers, accusing the company of mistreatment, lack of due process, underpayment, and violation of state employment laws.

Uber has been accused of violating public transportation laws and regulations throughout the world; abusing the personal information it has collected on users of the service; seeking to use personal information to intimidate journalists; failing to protect public safety by refusing to do adequate criminal, medical, and financial background checks on its drivers; taking clandestine actions against its chief competitor Lyft in order to disrupt its business; and being tone-deaf to the complaints of its own drivers against the firm's efforts to reduce driver fees. Uber has been banned in several European cities. For instance, in London, Transport for London, the regulatory body that governs taxi services in London, refused in September 2017 to renew Uber's license, based, it said, on concerns about user safety. Uber was allowed to continue operating while it appealed the ruling, and in June 2018 was granted a 15-month probationary license, during which time authorities will review its operation to determine if the company is living up to its promises to change its behavior. More significantly, in December 2017, the European Court of Justice, the European Union's most powerful court, ruled that Uber should be treated as a transportation service, subject to all of the existing laws and regulations of the EU member countries in which it operates that apply to such services, rather than as a digital platform not subject to such laws and regulations, as Uber had been attempting to assert. Uber claims that the ruling will not have much impact

SOURCES: "Uber Could Be Valued at \$120 Billion in Possible IPO: Report," by Molly Schuetz, *Time.com*, October 16, 2018; "Toyota to Invest \$500 Million in Uber at Reported Valuation of \$72 Billion," by Sara Salinas, *Cnbc.com*, August 27, 2018; "Uber Granted New London License by U.K. Court," by Sam Schechner and Kiley Roache, *Wall Street Journal*, June 26, 2018; "Uber's Raising Up to \$600M in a Secondary Round at \$62B Valuation, Q1 Sales Grew to \$2.5B," by Megan Rose Dickey and Ingrid Lunden, *Techcrunch.com*, May 23, 2018; "Uber Is Selling Its Southeast Asia Business to Competitor Grub," by Johana Bhuiyan, *Recode.net*, March 25, 2018; "MIT Study Shows How Much Driving for Uber or Lyft Sucks," by Natasha Lomas, *Yahoo.com*, March 2, 2018; "Uber Dealt Setback After European Court Rules It Is a Taxi Service," by Liz Alderman, *New York Times*, December 20, 2017; "Uber Request to Take Drivers' Rights Case Directly to Top UK Court Rejected," by Hannah Boland, *Telegraph.co.uk*, December 4, 2017; "Uber Ban: Firm to Continue Operating in London After Filing Appeal," by Josie Cox, *Telegraph.co.uk*, October 13, 2017; "One Way to Fix Uber: Think Twice Before Using It," by Farhad Manjoo, *New York Times*, June 14, 2017; "Here's All the Shady Stuff Uber's Been Accused of So Far," by Joe McGauley, *Thrillist.com*, March 7, 2017; "Uber's Value to Riders Is Clear. To Investors, It May Prove More Elusive," by Richard Beales, *New York Times*, December 22, 2016; "Even Uber Couldn't Bridge the China Divide," by Farhad Manjoo, *New York Times*, August 1, 2016; "Uber Sells China Operations to Didi Chuxing," by Alyssa Abkowitz and Rick Carew, *Wall Street Journal*, August 1, 2016; "Why Uber Keeps Raising Billions," by Andrew Ross Sorkin, *New York Times*, June 20, 2016; "Uber Points to Profits in All Developed Markets," by Leslie Hook, *FT.com*, June 16, 2016; "An Uber Shake-down," *Wall Street Journal*, April 24, 2016; "Uber Settlement Takes Customers for a Ride," by Rob Berger, *Forbes*, April 22, 2016; "Twisting Words to Make 'Sharing' Apps Seem Selfless," by Natasha

Singer, *New York Times*, August 9, 2015; "The \$50 Billion Question: Can Uber Deliver?," by Douglas Macmillan, *Wall Street Journal*, June 15, 2015; "How Everyone Misjudges the Sharing Economy," by Christopher Mims, *Wall Street Journal*, May 25, 2015; "The On-Demand Economy Is Reshaping Companies and Careers," *The Economist*, January 4, 2015; "The On-Demand Economy: Workers on Tap," *The Economist*, January 3, 2015.

on it, however, as it claims that it now operates in accordance with transportation laws and regulations of most European countries in which it does business.

Critics also fear the long-term impact of on-demand service firms, because of their potential for creating a society of part-time, low-paid, temp work, displacing traditionally full-time, secure jobs—the so-called “uberization” of work. As one critic put it, Uber is not the Uber for rides so much as it is the Uber for low-paid jobs. A recent study by the MIT Center for Energy and Environmental Policy Research found that after taking into account costs such as fuel, insurance, maintenance, and repairs, Uber drivers’ median profit was only \$3.37/hour. Uber responds to this fear by claiming that it is lowering the cost of transportation, making better use of spare human and financial resources, expanding the demand for ride services, and expanding opportunities for car drivers, whose pay it claims is about the same as other taxi drivers.

In 2017, Uber was hit by a series of continuing controversies and scandals, creating a public relations nightmare for the company and culminating in the resignation of a number of board members, senior executives, and finally its co-founder and CEO, Travis Kalanick. It was charged with corporate mismanagement and misconduct (including using a secret program known as Greyball to track and evade regulators and other law enforcement officials), workplace discrimination and sexual harassment, and violation of the privacy of its customers by using its mobile app to track the location of those customers at all times, even when the app was not in use. In 2018, the bad news for Uber continued, with a self-driving car that it was testing in Phoenix, Arizona killing a pedestrian.

But despite the controversy surrounding it, Uber continues to attract drivers, customers, and additional investors. Although its ridership did decline somewhat at the end of 2017 in response to a campaign by critics to get customers to use competitors, that decline appears to have been short-lived, and its gross bookings increased by almost 50% in the first half of 2018. Uber apparently has become entrenched in the everyday life of millions of people around the globe. Can it evolve past the win-at-all-costs ethos that has powered its success, but also its misdeeds?

In 1994, e-commerce as we now know it did not exist. In 2018, less than 25 years later, around 190 million American consumers are expected to spend almost \$1 trillion, and businesses around \$6.1 trillion, purchasing goods, services, and digital content via a desktop computer or mobile device. A similar story has occurred throughout the world. There have been significant changes in the e-commerce environment during this time period.

The early years of e-commerce, during the late 1990s, were a period of business vision, inspiration, and experimentation. It soon became apparent, however, that establishing a successful business model based on those visions would not be easy. There followed a period of retrenchment and reevaluation, which led to the stock market crash of 2000–2001, with the value of e-commerce, telecommunications, and other technology stocks plummeting. After the bubble burst, many people were quick to write off e-commerce. But they were wrong. The surviving firms refined and honed their business models, and the technology became more powerful and less expensive, ultimately leading to business firms that actually produced profits. Between 2002–2007, retail e-commerce grew at more than 25% per year.

Then, in 2007, Apple introduced the first iPhone, a transformative event that marked the beginning of yet another new era in e-commerce. In the last ten years, mobile devices, such as smartphones and tablet computers, and mobile apps have supplanted the traditional desktop/laptop platform and web browser as the most common method for consumers to access the Internet. Facilitated by technologies such as cellular networks, Wi-Fi, and cloud computing, mobile devices have become advertising, shopping, reading, and media viewing machines, and in the process, have transformed consumer behavior yet again. During the same time period, social networks such as Facebook, Twitter, YouTube, Pinterest, Instagram, and Snapchat, which enable users to distribute their own content (such as videos, music, photos, personal information, commentary, blogs, and more), rocketed to prominence. The mobile platform infrastructure also gave birth to another e-commerce innovation: on-demand services that are local and personal. From hailing a taxi, to food delivery, to washing your clothes, on-demand services have created a marketplace that enables owners of resources such as cars, spare bedrooms, and spare time to find a market of eager consumers looking to buy a service in a few minutes using their smartphones. Uber, profiled in the opening case, is a leading example of these on-demand service firms that are disrupting traditional business models. Today, mobile, social, and local are the driving forces in e-commerce.

But while the evolution of e-commerce technology and business over the past quarter-century has been a powerful and mostly positive force in our society, it is becoming increasingly apparent that it also has had, and continues to have, a serious societal impact, from promoting the invasion of personal privacy, aiding in the dissemination of false information, enabling widespread security threats, and facilitating the growth of business titans, such as Amazon, Google, and Facebook, that dominate their fields, leading to a decimation of effective competition. As a result, it is likely that the Internet and e-commerce are entering a period of closer regulatory oversight that may have a significant impact on the conduct of e-commerce as it enters its second quarter-century.

1.1 THE FIRST THIRTY SECONDS: WHY YOU SHOULD STUDY E-COMMERCE

The rapid growth and change that has occurred in the first quarter-century of e-commerce represents just the beginning—what could be called the first 30 seconds of the e-commerce revolution. Technology continues to evolve at exponential rates. This underlying ferment presents entrepreneurs with opportunities to create new business models and businesses in traditional industries and in the process, disrupt, and in some instances, destroy existing business models and firms. The rapid growth of e-commerce is also providing extraordinary growth in career and employment opportunities, which we describe throughout the book.

Improvements in underlying information technologies and continuing entrepreneurial innovation in business and marketing promise as much change in the next decade as was seen in the previous two decades. The twenty-first century will be the age of a digitally enabled social and commercial life, the outlines of which we can still only barely perceive at this time. Analysts estimate that by 2022, consumers will be spending around \$1.5 trillion and businesses around \$7.3 trillion in digital transactions. It appears likely that e-commerce will eventually impact nearly all commerce, and that most commerce will be e-commerce by the year 2050, if not sooner.

Business fortunes are made—and lost—in periods of extraordinary change such as this. The next five years hold exciting opportunities—as well as risks—for new and traditional businesses to exploit digital technology for market advantage. For society as a whole, the next few decades offer the possibility of significant gains in social welfare, as well as significant challenges, as the digital revolution works its way through larger and larger segments of the world's economy.

It is important to study e-commerce in order to be able to perceive and understand the opportunities and risks that lie ahead. By the time you finish this book, you will be able to identify the technological, business, and social forces that have shaped, and continue to shape, the growth of e-commerce, and be ready to participate in, and ultimately guide, discussions of e-commerce in the firms where you work. More specifically, you will be able to analyze an existing or new idea for an e-commerce business, identify the most effective business model to use, and understand the technological underpinnings of an e-commerce presence, including the security and ethical issues raised, as well as how to optimally market and advertise the business, using both traditional e-marketing tools and social, mobile, and local marketing.

1.2 INTRODUCTION TO E-COMMERCE

In this section, we'll first define e-commerce and then discuss the difference between e-commerce and e-business. We will also introduce you to the major technological building blocks underlying e-commerce: the Internet, Web, and mobile platform. The section concludes with a look at some major current trends in e-commerce.

WHAT IS E-COMMERCE?

E-commerce involves the use of the Internet, the World Wide Web (Web), and mobile apps and browsers running on mobile devices to transact business. Although the terms Internet and Web are often used interchangeably, they are actually two very different things. The *Internet* is a worldwide network of computer networks, and the *Web* is one of the Internet's most popular services, providing access to billions of web pages. An *app* (short-hand for application) is a software application. The term is typically used when referring to mobile applications, although it is also sometimes used to refer to desktop computer applications as well. A *mobile browser* is a version of web browser software accessed via a mobile device. (We describe the Internet, Web, and mobile platform more fully later in this chapter and in Chapters 3 and 4.) More formally, e-commerce can be defined as digitally enabled commercial transactions between and among organizations and individuals. Each of these components of our working definition of e-commerce is important. *Digitally enabled transactions* include all transactions mediated by digital technology. For the most part, this means transactions that occur over the Internet, the Web, and/or via mobile devices. *Commercial transactions* involve the exchange of value (e.g., money) across organizational or individual boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce. Without an exchange of value, no commerce occurs.

The professional literature sometimes refers to e-commerce as digital commerce. For our purposes, we consider e-commerce and digital commerce to be synonymous.

THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS

There is a debate about the meaning and limitations of both e-commerce and e-business. Some argue that e-commerce encompasses the entire world of electronically based organizational activities that support a firm's market exchanges—including a firm's entire information system infrastructure. Others argue, on the other hand, that e-business encompasses the entire world of internal and external electronically based activities, including e-commerce.

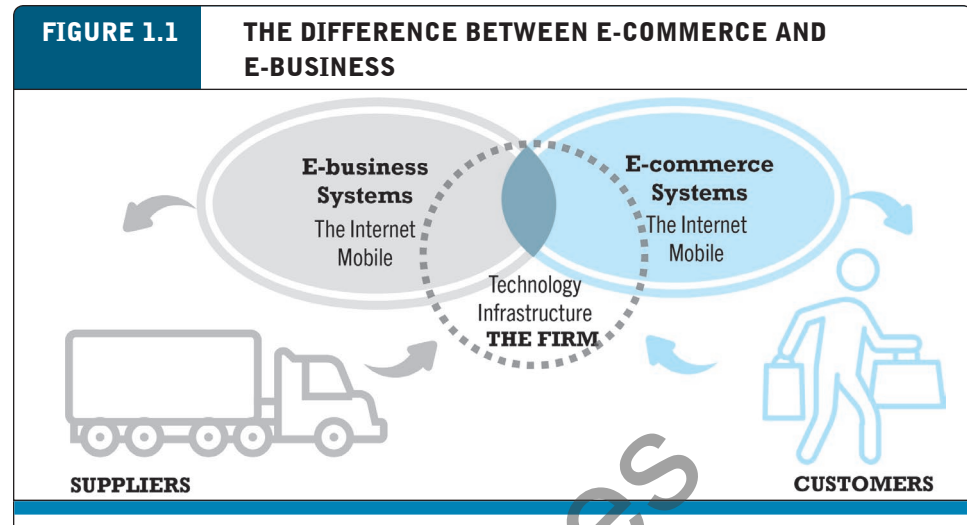
We think it is important to make a working distinction between e-commerce and e-business because we believe they refer to different phenomena. E-commerce is not "anything digital" that a firm does. For purposes of this text, we will use the term **e-business** to refer primarily to the digital enabling of transactions and processes *within* a firm, involving information systems under the control of the firm. For the most part, in our view, e-business does not include commercial transactions involving an exchange of value across organizational boundaries. For example, a company's online inventory control mechanisms are a component of e-business, but such internal processes do not directly generate revenue for the firm from outside businesses or consumers, as e-commerce, by definition, does. It is true, however, that a firm's e-business infrastructure provides support for online e-commerce exchanges; the same infrastructure and skill sets are involved in both e-business and e-commerce. E-commerce and e-business systems blur together at the business firm boundary, at the point where internal business systems link up with suppliers or customers (see **Figure 1.1**). E-business applications turn into e-commerce precisely when an exchange of value occurs. We will examine this intersection further in Chapter 12.

e-commerce

the use of the Internet, the Web, and mobile apps and browsers running on mobile devices to transact business. More formally, digitally enabled commercial transactions between and among organizations and individuals

e-business

the digital enabling of transactions and processes within a firm, involving information systems under the control of the firm



E-commerce primarily involves transactions that cross firm boundaries. E-business primarily involves the application of digital technologies to business processes within the firm.

TECHNOLOGICAL BUILDING BLOCKS UNDERLYING E-COMMERCE: THE INTERNET, WEB, AND MOBILE PLATFORM

The technology juggernauts behind e-commerce are the Internet, the Web, and increasingly, the mobile platform. We describe the Internet, Web, and mobile platform in some detail in Chapter 3. The **Internet** is a worldwide network of computer networks built on common standards. Created in the late 1960s to connect a small number of mainframe computers and their users, the Internet has since grown into the world's largest network. It is impossible to say with certainty exactly how many computers and other mobile devices such as smartphones and tablets, as well as other Internet-connected consumer devices, such as smartwatches, connected TVs, and remotes such as Amazon's Echo are connected to the Internet worldwide at any one time, but some experts estimate that in 2018, the number will exceed 23 billion (IHS Markit, 2017). The Internet links businesses, educational institutions, government agencies, and individuals together, and provides users with services such as e-mail, document transfer, shopping, research, instant messaging, music, videos, and news.

One way to measure the growth of the Internet is by looking at the number of Internet hosts with domain names. (An *Internet host* is defined by the Internet Systems Consortium as any IP address that returns a domain name in the in-addr.arpa domain, which is a special part of the DNS namespace that resolves IP addresses into domain names.) In July 2018, there were more than 1 billion Internet hosts in over 245 countries, up from just 72 million in 2000 (Internet Systems Consortium, 2018).

The Internet has shown extraordinary growth patterns when compared to other electronic technologies of the past. It took radio 38 years to achieve a 30% share of U.S. households. It took television 17 years to achieve a 30% share. It took only 10 years for the Internet/Web to achieve a 53% share of U.S. households once a graphical user interface was invented for the Web in 1993. Today, in the United States, around 280 million people

Internet

worldwide network of computer networks built on common standards

of all ages (about 85% of the U.S. population) use the Internet at least once a month (eMarketer, Inc. 2018a).

The **World Wide Web (the Web)** is an information system that runs on the Internet infrastructure. The Web was the original “killer app” that made the Internet commercially interesting and extraordinarily popular. The Web was developed in the early 1990s and hence is of much more recent vintage than the Internet. We describe the Web in some detail in Chapter 3. The Web provides access to billions of web pages indexed by Google and other search engines. These pages are created in a language called *HTML (HyperText Markup Language)*. HTML pages can contain text, graphics, animations, and other objects. The Internet prior to the Web was primarily used for text communications, file transfers, and remote computing. The Web introduced far more powerful capabilities of direct relevance to commerce. In essence, the Web added color, voice, and video to the Internet, creating a communications infrastructure and information storage system that rivals television, radio, magazines, and libraries.

There is no precise measurement of the number of web pages in existence, in part because today’s search engines index only a portion of the known universe of web pages. Google has identified over 130 trillion individual web pages, up from 30 trillion in 2013, although many of these pages do not necessarily contain unique content (Schwartz, 2016). In addition to this “surface” or “visible” Web, there is also the so-called deep Web that is reportedly 500 to 1,000 times greater than the surface Web. The deep Web contains databases and other content that is not routinely identified by search engines such as Google (see **Figure 1.2**). Although the total size of the Web is not known, what is indisputable is that web content has grown exponentially since 1993.

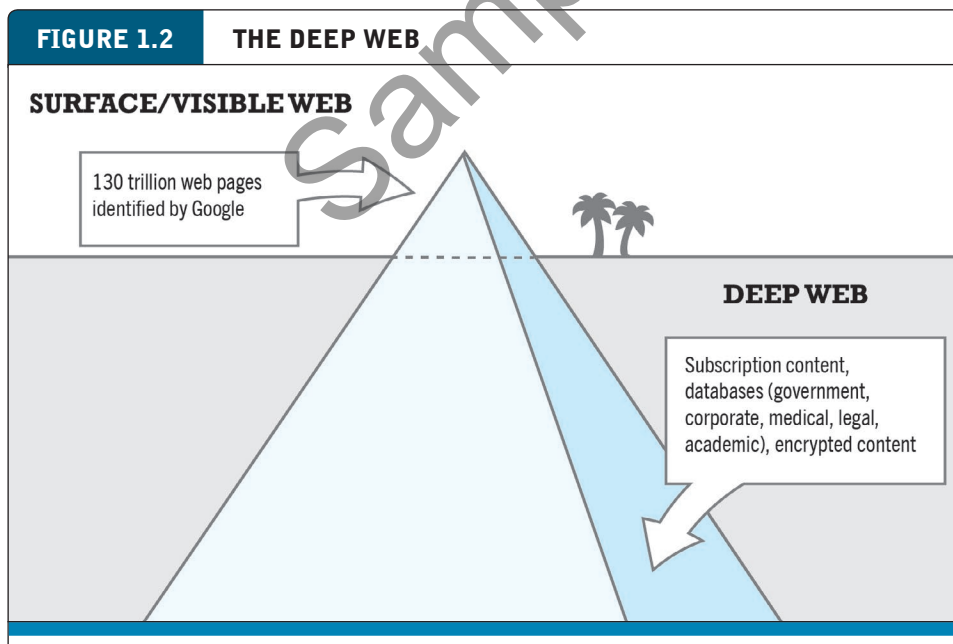
The mobile platform has become a significant part of Internet infrastructure. The **mobile platform** provides the ability to access the Internet from a variety of mobile

World Wide Web (the Web)

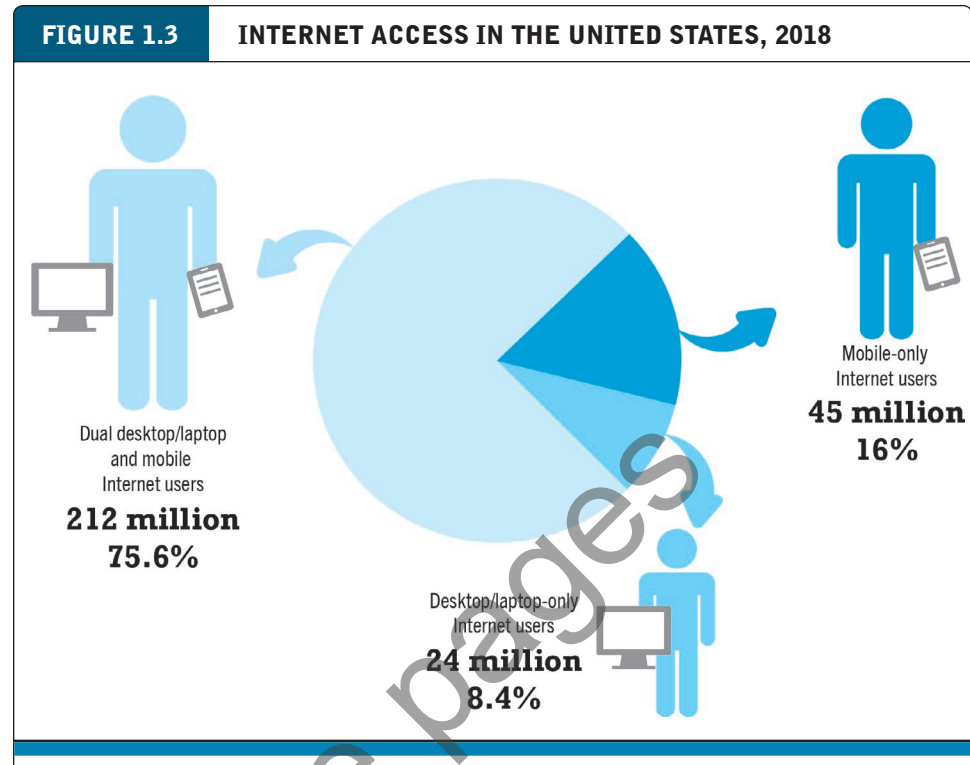
an information system running on Internet infrastructure that provides access to billions of web pages

mobile platform

provides the ability to access the Internet from a variety of mobile devices such as smartphones, tablets, and other ultra-lightweight laptop computers



The surface web is only a small part of online content.



Over 75% of all Internet users in the United States (about 212 million people) go online using both a desktop/laptop and mobile device. Almost 16% (about 45 million) only go online by using a mobile device. Just 8.4% (about 24 million) use only a desktop or laptop computer to access the Internet.

SOURCE: Based on data from eMarketer, Inc., 2018a.

devices such as smartphones, tablets, and laptop computers via wireless networks or cell phone service. Mobile devices are playing an increasingly prominent role in Internet access. In 2018, over 91% of Americans who access the Internet use a mobile device to do so at least some of the time (eMarketer, Inc., 2018a). **Figure 1.3** illustrates the variety of devices used by Americans to access the Internet in 2018.


The mobile platform is not just a hardware phenomenon. The introduction of the Apple iPhone in 2007, followed by the Apple iPad in 2010, has also ushered in a sea-change in the way people interact with the Internet from a software perspective. In the early years of e-commerce, the Web and web browsers were the only game in town. Today, in contrast, more Americans access the Internet via a mobile app on a mobile device than by using a desktop computer and web browser. *Insight on Technology: Will Apps Make the Web Irrelevant?* examines the challenge that apps and the mobile platform pose to the Web's dominance of the Internet ecosphere in more depth.

MAJOR TRENDS IN E-COMMERCE

Table 1.1 on page 15 describes the major trends in e-commerce in 2018–2019 from a business, technological, and societal perspective, the three major organizing themes that we use in this book to understand e-commerce (see Section 1.6).

INSIGHT ON TECHNOLOGY

WILL APPS MAKE THE WEB IRRELEVANT?



Nowadays, it's hard to recall a time before the Web. How did we get along without the ability to go online to search for an item, learn about a topic, play a game, or watch a video?

Though the Web has come a remarkably long way from its humble beginnings, some experts think that the Web's best days are behind it. Opinions vary about the future role of the Web in a world where apps have become a dominant force in the Internet ecosystem. In 10 years, will the Web be a forgotten relic? Or will the Web and apps coexist peacefully as vital cogs in the Internet ecosystem? Will the app craze eventually die down as users gravitate back toward the Web as the primary way to perform online tasks?

Apps have grown into a disruptive force ever since Apple launched its App Store in 2008. The list of industries apps have disrupted is wide-ranging: communications, media and entertainment, logistics, education, healthcare, and most recently, with Uber and Airbnb, the taxi and hotel industries. Despite not even existing prior to 2008, in 2018, sales of apps are expected to account for over \$105 billion in revenues worldwide, and the app economy is continuing to show robust growth, with estimates that revenue will reach over \$155 billion by 2022. More of those revenues are likely to come from in-app purchases than from paid app downloads.

Although usage of apps tends to be highly concentrated, with nearly 90% of smartphone app minutes spent on an individual's top five apps, consumers are trying new apps all the time and typically use about 20 different apps per month, leaving room for new app developers to innovate and create successful apps. Users are downloading an increasing number of apps, with the number reaching over 27 billion worldwide during the first

quarter of 2018, according to research firm App Annie.

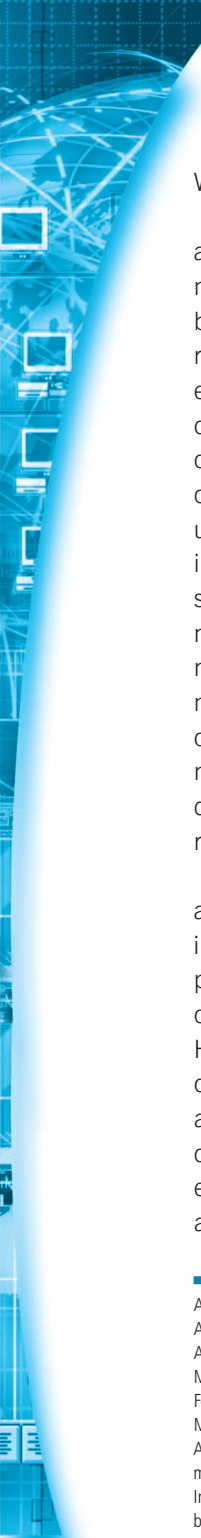
In 2014, for the first time ever, Americans used mobile apps more than desktop computers to access the Internet. The time U.S. adults are spending using mobile apps has exploded, now accounting for 62% of total digital minutes spent; time spent on the desktop now accounts for just 29%, and mobile browsers just 9%. In 2018, according to consulting firm eMarketer, adult mobile Internet users in the United States are expected to spend an average of almost 3 hours a day within apps on their smartphones and tablet computers compared to just over 25 minutes a day using a mobile browser.

Consumers have gravitated to apps for several reasons. First, smartphones and tablet computers enable users to use apps anywhere, instead of being tethered to a desktop or having to lug a heavy laptop around. Of course, smartphones and tablets enable users to use the Web too, but apps are often more convenient and boast more streamlined, elegant interfaces than mobile web browsers.

Not only are apps more appealing in certain ways to consumers, they are much more appealing to content creators and media companies. Apps are much easier to control and monetize than websites, not to mention they can't be crawled by Google or other services. On the Web, the average price of ads per thousand impressions is falling, and many content providers are still mostly struggling to turn the Internet into a profitable content delivery platform. Much of software and media companies' focus has shifted to developing mobile apps for this reason.

In the future, some analysts believe that the Internet will be used to transport data, but individual app interfaces will replace the web

(continued)



browser as the most common way to access and display content. Even the creator of the Web, Tim Berners-Lee, feels that the Web as we know it is being threatened.

But there is no predictive consensus about the role of the Web in our lives in the next decade and beyond. Although apps may be more convenient than the Web in many respects, the depth of the web browsing experience trumps that of apps. The Web is a vibrant, diverse array of sites, and browsers have an openness and flexibility that apps lack. The connections between websites enhance their usefulness and value to users, and apps that instead seek to lock users in cannot offer the same experience. In addition, the size of the mobile web audience still exceeds that of the mobile app audience. And when it comes to making purchases online, using a web browser on a desktop computer still handily beats mobile devices. Retail purchases made on desktops still account for over 60% of all online retail purchases.

Other analysts who are more optimistic about the Web's chances to remain relevant in an increasingly app-driven online marketplace feel this way because of the emergence of HTML5 and progressive web apps (PWAs). HTML5 is a markup language that enables more dynamic web content and allows for browser-accessible web apps that are as appealing as device-specific apps. A PWA combines the best elements of mobile websites and native mobile apps. A PWA functions and feels like a native

app, but it does not need to be downloaded from an app store, and so does not take up any of the mobile device's memory. Instead, it runs directly in a mobile web browser, but is able to load instantly, even in areas of low connectivity. Some people think that a good PWA can ultimately function as a total replacement for a company's mobile website, native app, and even possibly its desktop website.

The shift towards apps and away from the Web is likely to have a significant impact on the fortunes of e-commerce firms. As the pioneer of apps and the market leader in apps, smartphones, and tablet computers, Apple stands to gain from a shift towards apps, and although it also faces increasing competition from other companies, including Google, the established success of the App Store will make it next to impossible to dethrone Apple. For instance, while Google's Google Play store had more than double the number of downloads compared to Apple's App Store in 2017, the App Store still made nearly twice the amount of revenue (\$42.5 billion) than Google Play (\$22 billion). Google hopes that PWAs are at least a partial answer to the problem presented to it by native apps, because the more activity that occurs on native apps, which Google cannot crawl, the less data Google has access to, which impacts its web-based advertising platform.

Ultimately, most marketers see the future as one in which the Web and mobile apps work together, with each having an important role in serving different needs.

SOURCES: "Mobile Time Spent 2018: Will Smartphones Remain Ascendant," by Yoram Wormser, eMarketer, Inc., June 18, 2018; "Progressive Web Apps: What They Are and Why They Matter," by Wilson Kerr, Digitalcommerce360.com, May 28, 2018; "App Market Growth Is Global as U.S. Market Stabilizes: App Annie," by Nate Swanner, Insights.dice.com, May 14, 2018; "The Data Behind 10 Years of the iOS App Store, 2018," by App Annie, May 2018; "App Annie Forecast 2017–2022," by App Annie, May 2018; "Why Progressive Web Apps Will Replace Native Mobile Apps," by Andrew Gazdecki, Forbes.com, March 9, 2018; "Global Digital Future in Focus: 2018 International Edition," by comScore, March 6, 2018; "US Retail Mcommerce Sales," by eMarketer, Inc., February 2018; "2017 Retrospective: A Monumental Year for the App Economy," by App Annie, January 17, 2018; "Mobile's Hierarchy of Needs," comScore, March 2017; "Publishers Straddle the Apple-Google, App-Web Divide," by Katie Benner and Conor Dougherty, *New York Times*, October 18, 2015; "Mobile Addicts Multiply Across the Globe," by Simon Khalaf, Flurrymobile.tumblr.com, July 15, 2015; "How Apps Won the Mobile Web," by Thomas Claburn, *Informationweek.com*, April 3, 2014; "Mobile Apps Overtake PC Internet Usage in U.S.," by James O'Toole, *Money.cnn.com*, February 28, 2014; "Is The Web Dead In The Face of Native Apps? Not Likely, But Some Think So," by Gabe Knuth, *Brianmadden.com*, March 28, 2012; "The Web Is Dead. Long Live the Internet," by Chris Anderson and Michael Wolff, *Wired.com*, August 17, 2010; "The Web Is Dead? A Debate," by Chris Anderson, *Wired.com*, August 17, 2010.

TABLE 1.1 MAJOR TRENDS IN E-COMMERCE, 2018–2019**BUSINESS**

- Retail e-commerce in the United States continues double-digit growth (over 15%), with global growth rates even higher in emerging markets in Asia-Pacific, the Middle East, and Africa.
- Mobile e-commerce (both retail and travel sales) explodes and is estimated to reach almost \$280 billion in the United States in 2018.
- The mobile app ecosystem continues to grow, with over 220 million Americans using smartphone apps and about 140 million using tablet computer apps in 2018.
- Social e-commerce, based on social networks and supported by advertising, emerges and continues to grow, with the top 500 retailers generating an estimated \$6.5 billion from social commerce in 2017.
- Local e-commerce, the third dimension of the mobile, social, local e-commerce wave, also is growing in the United States, fueled by an explosion of interest in on-demand services such as Uber, to around \$115 billion in 2018.
- B2B e-commerce revenues in the United States are expected to reach \$6.1 trillion.
- On-demand service firms like Uber and Airbnb attract billions in capital, garner multi-billion dollar valuations, and show explosive growth.
- Mobile advertising continues growing at astronomical rates, accounting for over 70% of all digital ad spending.
- Small businesses and entrepreneurs continue to flood into the e-commerce marketplace, often riding on the infrastructures created by industry giants such as Apple, Facebook, Amazon, Google, and eBay.

TECHNOLOGY

- A mobile computing and communications platform based on smartphones, tablet computers, wearable devices, and mobile apps becomes a reality, creating an alternative platform for online transactions, marketing, advertising, and media viewing. The use of mobile messaging services such as Facebook Messenger, WhatsApp, and Snapchat continues to expand, and these services are now used by almost two-thirds of smartphone users.
- Smart speakers such as Amazon Echo and Google Home become increasingly popular, providing an additional platform for e-commerce.
- Cloud computing completes the transformation of the mobile platform by storing consumer content and software on “cloud” (Internet-based) servers and making it available to any consumer-connected device from the desktop to a smartphone.
- The Internet of Things (IoT), comprised of billions of Internet-connected devices, continues to grow exponentially.
- As firms track the trillions of online interactions that occur each day, a flood of data, typically referred to as big data, is being produced.
- In order to make sense out of big data, firms turn to sophisticated software called business analytics (or web analytics) that can identify purchase patterns as well as consumer interests and intentions in milliseconds.

SOCIETY

- User-generated content, published online as social network posts, tweets, blogs, and pins, as well as video and photo-sharing, continues to grow and provides a method of self-publishing that engages millions.
- Social networks encourage self-revelation, while threatening privacy, as Facebook comes under fire for allowing third parties such as Cambridge Analytica to mine its database of user information without user consent.
- Concerns increase about increasing market dominance of Facebook, Amazon, and Google, leading to calls for government regulation.
- Conflicts over copyright management and control continue, but there is substantial agreement among online distributors and copyright owners that they need one another.
- The U.S. Supreme Court rules that online businesses must collect state sales tax, raising costs for individuals and small businesses that sell online.
- Surveillance of online communications by both repressive regimes and Western democracies grows.
- Concerns over commercial and governmental privacy invasion increase.
- Online security continues to decline as major companies are hacked and lose control over customer information.
- Spam remains a significant problem despite legislation and promised technology fixes.
- On-demand service e-commerce produces a flood of temporary, poorly paid jobs without benefits.

From a business perspective, one of the most important trends to note is that all forms of e-commerce continue to show very strong growth. Retail e-commerce has been growing at over 15% a year for the last few years, and by 2019, is expected to reach almost \$605 billion. M-commerce (both retail and travel sales) is growing at an even faster rate (over 30% a year) and is anticipated to increase to over \$345 billion by 2019. Social networks such as Facebook, Pinterest, and Instagram are enabling social e-commerce by providing advertising, search, and Buy buttons that enable consumers to actually purchase products. Local e-commerce is being fueled by the explosion of interest in on-demand services such as Uber and Airbnb. B2B e-commerce, which dwarfs all other forms, also is continuing to strengthen and grow.

From a technology perspective, the mobile platform based on smartphones and tablet computers has finally arrived with a bang, driving astronomical growth in mobile advertising and making true mobile e-commerce a reality. The use of mobile messaging services such as Facebook Messenger, WhatsApp, and Snapchat has created an alternative communications platform that is beginning to be leveraged for commerce as well. Cloud computing is inextricably linked to the development of the mobile platform by enabling the storage of consumer content and software on cloud (Internet-based) servers, and making it available to mobile devices as well as desktops. Other major technological trends include the increasing ability of companies to track and analyze the flood of online data (typically referred to as big data) being produced. The Internet of Things (IoT), comprised of billions of Internet-connected devices, continues to grow exponentially, and will only add to this flood of data in the years to come.

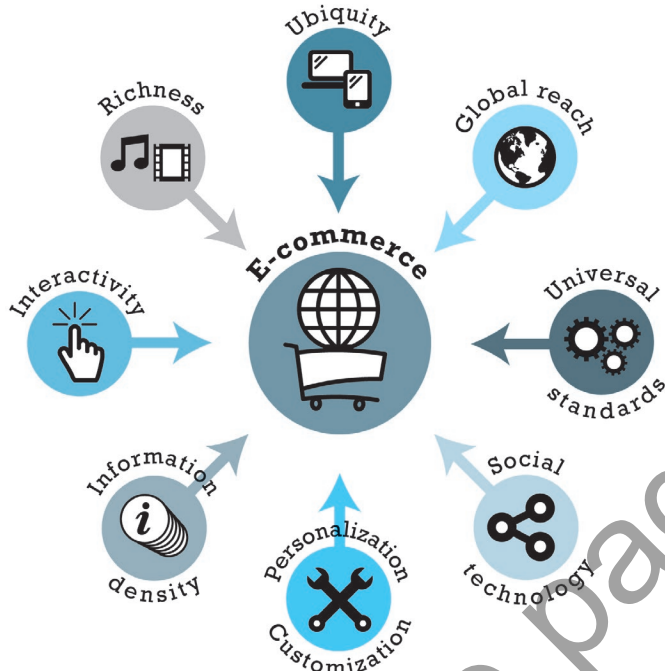
At the societal level, other trends are apparent. The Internet and mobile platform provide an environment that allows millions of people to create and share content, establish new social bonds, and strengthen existing ones through social network, photo- and video-posting, and blogging sites and apps, while at the same time creating significant privacy issues. Privacy seems to have lost some of its meaning in an age when millions create public online personal profiles, while at the same time concerns over commercial and governmental privacy invasion continue to increase. The major digital copyright owners have increased their pursuit of online piracy with mixed success, while reaching agreements with the big technology players such as Apple, Amazon, and Google to protect intellectual property rights. Governments have successfully moved toward taxation of e-commerce sales. Sovereign nations have expanded their surveillance of, and control over, online communications and content as a part of their anti-terrorist activities and their traditional interest in law enforcement. Online security, or lack thereof, remains a significant issue, as new stories about security breaches, malware, hacking, and other attacks emerge seemingly daily.

1.3 UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY

Figure 1.4 illustrates eight unique features of e-commerce technology that both challenge traditional business thinking and help explain why we have so much interest in e-commerce. These unique dimensions of e-commerce technologies suggest many new possibilities for marketing and selling—a powerful set of interactive, personalized, and rich messages are available for delivery to segmented, targeted audiences.

FIGURE 1.4

EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY



E-commerce technologies provide a number of unique features that have impacted the conduct of business.

Prior to the development of e-commerce, the marketing and sale of goods was a mass-marketing and salesforce-driven process. Marketers viewed consumers as passive targets of advertising campaigns and branding “blitzes” intended to influence their long-term product perceptions and immediate purchasing behavior. Companies sold their products via well-insulated channels. Consumers were trapped by geographical and social boundaries, unable to search widely for the best price and quality. Information about prices, costs, and fees could be hidden from the consumer, creating profitable information asymmetries for the selling firm. **Information asymmetry** refers to any disparity in relevant market information among parties in a transaction. It was so expensive to change national or regional prices in traditional retailing (what are called *menu costs*) that one national price was the norm, and dynamic pricing to the marketplace (changing prices in real time) was unheard of. In this environment, manufacturers prospered by relying on huge production runs of products that could not be customized or personalized.

E-commerce technologies make it possible for merchants to know much more about consumers and to be able to use this information more effectively than was ever true in the past. Online merchants can use this information to develop new information asymmetries, enhance their ability to brand products, charge premium prices for high-quality service, and segment the market into an endless number of subgroups, each receiving a different price. To complicate matters further, these same technologies also

information asymmetry

any disparity in relevant market information among parties in a transaction

make it possible for merchants to know more about other merchants than was ever true in the past. This presents the possibility that merchants might collude on prices rather than compete and drive overall average prices up. This strategy works especially well when there are just a few suppliers (Varian, 2000a). We examine these different visions of e-commerce further in Section 1.4 and throughout the book.

Each of the dimensions of e-commerce technology illustrated in Figure 1.4 deserves a brief exploration, as well as a comparison to both traditional commerce and other forms of technology-enabled commerce.

UBIQUITY

In traditional commerce, a **marketplace** is a physical place you visit in order to transact. For example, television and radio typically motivate the consumer to go someplace to make a purchase. E-commerce, in contrast, is characterized by its **ubiquity**: it is available just about everywhere, at all times. It liberates the market from being restricted to a physical space and makes it possible to shop from your desktop, at home, at work, or even from your car, using mobile e-commerce. The result is called a **marketspace**—a marketplace extended beyond traditional boundaries and removed from a temporal and geographic location.

From a consumer point of view, ubiquity reduces *transaction costs*—the costs of participating in a market. To transact, it is no longer necessary that you spend time and money traveling to a market. At a broader level, the ubiquity of e-commerce lowers the cognitive energy required to transact in a marketspace. *Cognitive energy* refers to the mental effort required to complete a task. Humans generally seek to reduce cognitive energy outlays. When given a choice, humans will choose the path requiring the least effort—the most convenient path (Shapiro and Varian, 1999; Tversky and Kahneman, 1981).

GLOBAL REACH

E-commerce technology permits commercial transactions to cross cultural, regional, and national boundaries far more conveniently and cost-effectively than is true in traditional commerce. As a result, the potential market size for e-commerce merchants is roughly equal to the size of the world's online population (an estimated 3.6 billion in 2018) (eMarketer, Inc., 2018b). More realistically, the Internet makes it much easier for startup e-commerce merchants within a single country to achieve a national audience than was ever possible in the past. The total number of users or customers an e-commerce business can obtain is a measure of its **reach** (Evans and Wurster, 1997).

In contrast, most traditional commerce is local or regional—it involves local merchants or national merchants with local outlets. Television, radio stations, and newspapers, for instance, are primarily local and regional institutions with limited but powerful national networks that can attract a national audience. In contrast to e-commerce technology, these older commerce technologies do not easily cross national boundaries to a global audience.

UNIVERSAL STANDARDS

One strikingly unusual feature of e-commerce technologies is that the technical standards of the Internet, and therefore the technical standards for conducting e-commerce, are

marketplace

physical space you visit in order to transact

ubiquity

available just about everywhere, at all times

marketspace

marketplace extended beyond traditional boundaries and removed from a temporal and geographic location

reach

the total number of users or customers an e-commerce business can obtain

universal standards—they are shared by all nations around the world. In contrast, most traditional commerce technologies differ from one nation to the next. For instance, television and radio standards differ around the world, as does cell phone technology.

The universal technical standards of e-commerce greatly lower *market entry costs*—the cost merchants must pay just to bring their goods to market. At the same time, for consumers, universal standards reduce *search costs*—the effort required to find suitable products. And by creating a single, one-world marketplace, where prices and product descriptions can be inexpensively displayed for all to see, *price discovery* becomes simpler, faster, and more accurate (Banerjee et al., 2016; Bakos, 1997; Kambil, 1997). Users, both businesses and individuals, also experience *network externalities*—benefits that arise because everyone uses the same technology. With e-commerce technologies, it is possible for the first time in history to easily find many of the suppliers, prices, and delivery terms of a specific product anywhere in the world, and to view them in a coherent, comparative environment. Although this is not necessarily realistic today for all or even most products, it is a potential that will be exploited in the future.

RICHNESS

Information **richness** refers to the complexity and content of a message (Evans and Wurster, 1999). Traditional markets, national sales forces, and retail stores have great richness: they are able to provide personal, face-to-face service using aural and visual cues when making a sale. The richness of traditional markets makes them a powerful selling or commercial environment. Prior to the development of the Web, there was a trade-off between richness and reach: the larger the audience reached, the less rich the message.

E-commerce technologies have the potential for offering considerably more information richness than traditional media such as printing presses, radio, and television because they are interactive and can adjust the message to individual users. Chatting with an online sales person, for instance, comes very close to the customer experience in a small retail shop. The richness enabled by e-commerce technologies allows retail and service merchants to market and sell “complex” goods and services that heretofore required a face-to-face presentation by a sales force to a much larger audience.

INTERACTIVITY

Unlike any of the commercial technologies of the twentieth century, with the possible exception of the telephone, e-commerce technologies allow for **interactivity**, meaning they enable two-way communication between merchant and consumer and among consumers. Traditional television or radio, for instance, cannot ask viewers questions or enter into conversations with them, or request that customer information be entered into a form.

Interactivity allows an online merchant to engage a consumer in ways similar to a face-to-face experience. Comment features, community forums, and social networks with social sharing functionality such as Like and Share buttons all enable consumers to actively interact with merchants and other users. Somewhat less obvious forms of interactivity include responsive design elements, such as websites that change format depending on what kind of device they are being viewed on, product images that change as a mouse hovers over them, the ability to zoom in or rotate images, forms that notify the user of a problem as they are being filled out, and search boxes that autofill as the user types.

universal standards
standards that are shared
by all nations around the
world

richness
the complexity and content
of a message

interactivity
technology that allows for
two-way communication
between merchant and
consumer

information density

the total amount and quality of information available to all market participants

INFORMATION DENSITY

E-commerce technologies vastly increase **information density**—the total amount and quality of information available to all market participants, consumers and merchants alike. E-commerce technologies reduce information collection, storage, processing, and communication costs. At the same time, these technologies greatly increase the currency, accuracy, and timeliness of information—making information more useful and important than ever. As a result, information becomes more plentiful, less expensive, and of higher quality.

A number of business consequences result from the growth in information density. One of the shifts that e-commerce is bringing about is a reduction in information asymmetry among market participants (consumers and merchants). Prices and costs become more transparent. *Price transparency* refers to the ease with which consumers can find out the variety of prices in a market; *cost transparency* refers to the ability of consumers to discover the actual costs merchants pay for products. Preventing consumers from learning about prices and costs becomes more difficult with e-commerce and, as a result, the entire marketplace potentially becomes more price competitive (Sinha, 2000). But there are advantages for merchants as well. Online merchants can discover much more about consumers; this allows merchants to segment the market into groups willing to pay different prices and permits them to engage in *price discrimination*—selling the same goods, or nearly the same goods, to different targeted groups at different prices. For instance, an online merchant can discover a consumer's avid interest in expensive exotic vacations, and then pitch expensive exotic vacation plans to that consumer at a premium price, knowing this person is willing to pay extra for such a vacation. At the same time, the online merchant can pitch the same vacation plan at a lower price to more price-sensitive consumers. Merchants also have enhanced abilities to differentiate their products in terms of cost, brand, and quality.

PERSONALIZATION AND CUSTOMIZATION

E-commerce technologies permit **personalization**: merchants can target their marketing messages to specific individuals by adjusting the message to a person's name, interests, and past purchases. Today this is achieved in a few milliseconds and followed by an advertisement based on the consumer's profile. The technology also permits **customization**—changing the delivered product or service based on a user's preferences or prior behavior. Given the interactive nature of e-commerce technology, much information about the consumer can be gathered in the marketplace at the moment of purchase.

With the increase in information density, a great deal of information about the consumer's past purchases and behavior can be stored and used by online merchants. The result is a level of personalization and customization unthinkable with traditional commerce technologies. For instance, you may be able to shape what you see on television by selecting a channel, but you cannot change the contents of the channel you have chosen. In contrast, the online version of the *Wall Street Journal* allows you to select the type of news stories you want to see first, and gives you the opportunity to be alerted when certain events happen. Personalization and customization allow firms to precisely identify market segments and adjust their messages accordingly.

personalization

the targeting of marketing messages to specific individuals by adjusting the message to a person's name, interests, and past purchases

customization

changing the delivered product or service based on a user's preferences or prior behavior

SOCIAL TECHNOLOGY: USER-GENERATED CONTENT AND SOCIAL NETWORKS

In a way quite different from all previous technologies, e-commerce technologies have evolved to be much more social by allowing users to create and share content with a worldwide community. Using these forms of communication, users are able to create new social networks and strengthen existing ones.

All previous mass media in modern history, including the printing press, used a broadcast model (one-to-many): content is created in a central location by experts (professional writers, editors, directors, actors, and producers) and audiences are concentrated in huge aggregates to consume a standardized product. The telephone would appear to be an exception but it is not a mass communication technology. Instead the telephone is a one-to-one technology. E-commerce technologies have the potential to invert this standard media model by giving users the power to create and distribute content on a large scale, and permit users to program their own content consumption. E-commerce technologies provide a unique, many-to-many model of mass communication.

Table 1.2 provides a summary of each of the unique features of e-commerce technology and their business significance.

TABLE 1.2 BUSINESS SIGNIFICANCE OF THE EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY	
E-COMMERCE TECHNOLOGY DIMENSION	BUSINESS SIGNIFICANCE
Ubiquity —E-commerce technology is available everywhere: at work, at home, and elsewhere via mobile devices, anytime.	The marketplace is extended beyond traditional boundaries and is removed from a temporal and geographic location. "Marketspace" is created; shopping can take place anywhere. Customer convenience is enhanced, and shopping costs are reduced.
Global reach —The technology reaches across national boundaries, around the earth.	Commerce is enabled across cultural and national boundaries seamlessly and without modification. "Marketspace" includes potentially billions of consumers and millions of businesses worldwide.
Universal standards —There is one set of technology standards.	There is a common, inexpensive, global technology foundation for businesses to use.
Richness —Video, audio, and text messages are possible.	Video, audio, and text marketing messages are integrated into a single marketing message and consuming experience.
Interactivity —The technology works through interaction with the user.	Consumers are engaged in a dialog that dynamically adjusts the experience to the individual and makes the consumer a co-participant in the process of delivering goods to the market.
Information density —The technology reduces information costs and raises quality.	Information processing, storage, and communication costs drop dramatically, while currency, accuracy, and timeliness improve greatly. Information becomes plentiful, cheap, and accurate.
Personalization/Customization —The technology allows personalized messages to be delivered to individuals as well as groups.	Enables personalization of marketing messages and customization of products and services based on individual characteristics.
Social technology —User-generated content and social networks.	Enables user content creation and distribution and supports development of social networks.

1.4 TYPES OF E-COMMERCE

There are a number of different types of e-commerce and many different ways to characterize them. For the most part, we distinguish different types of e-commerce by the nature of the market relationship—who is selling to whom. Mobile, social, and local e-commerce can be looked at as subsets of these types of e-commerce.

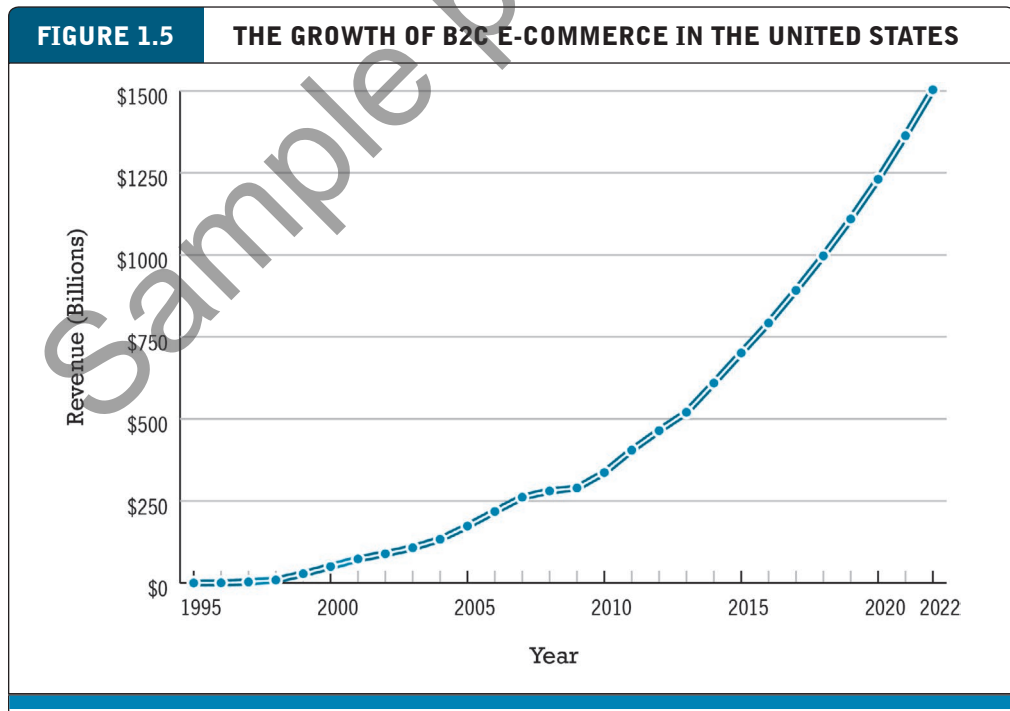
BUSINESS-TO-CONSUMER (B2C) E-COMMERCE

business-to-consumer (B2C) e-commerce
online businesses selling to individual consumers

The most commonly discussed type of e-commerce is **business-to-consumer (B2C) e-commerce**, in which online businesses attempt to reach individual consumers. B2C e-commerce includes purchases of retail goods, travel, financial, real estate, and other types of services, and online content. B2C has grown exponentially since 1995 and is the type of e-commerce that most consumers are likely to encounter (see **Figure 1.5**).

Within the B2C category, there are many different types of business models. Chapter 2 has a detailed discussion of seven different B2C business models: online retailers, service providers, transaction brokers, content providers, community providers/social networks, market creators, and portals. Then, in Part 4, we look at each of these business models in action. In Chapter 9, we examine online retailers, service providers, including on-demand services, and

FIGURE 1.5 THE GROWTH OF B2C E-COMMERCE IN THE UNITED STATES



In the early years, B2C e-commerce was doubling or tripling each year. Although B2C e-commerce growth in the United States slowed in 2008–2009 due to the economic recession, it resumed growing at about 13% in 2010 and since then, has continued to grow at double-digit rates. In 2018, revenues from B2C e-commerce are expected to reach almost \$1 trillion.

SOURCES: Based on data from eMarketer, Inc., 2018c, 2018d; U.S. Census Bureau, 2018a; authors' estimates.