CHAPTER 1

The Revolution Is Just Beginning

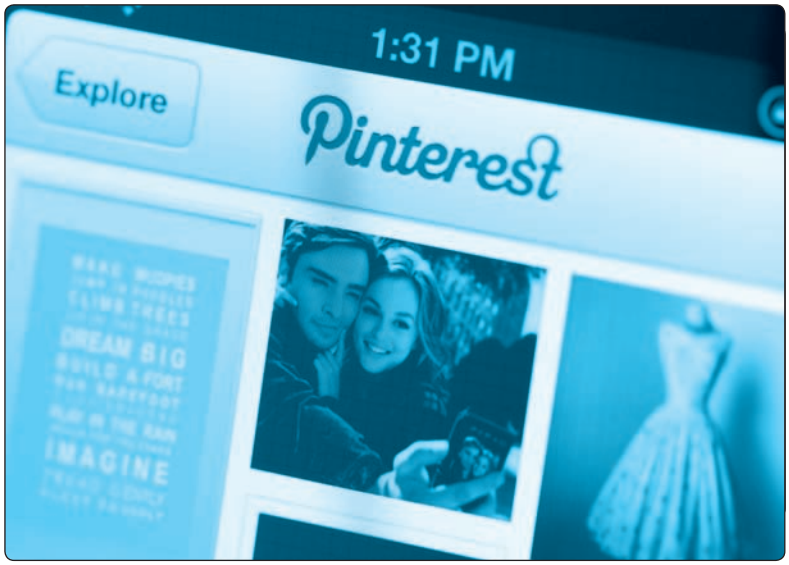
LEARNING OBJECTIVES

After reading this chapter, you will be able to:

- Define e-commerce and describe how it differs from e-business.
- Identify and describe the unique features of e-commerce technology and discuss their business significance.
- Recognize and describe Web 2.0 applications.
- Describe the major types of e-commerce.
- Understand the evolution of e-commerce from its early years to today.
- Identify the factors that will define the future of e-commerce.
- Describe the major themes underlying the study of e-commerce.
- Identify the major academic disciplines contributing to e-commerce.

Pinterest:

A Picture Is Worth a Thousand Words



Like all of the most successful e-commerce companies, Pinterest taps into a simple truth. In Pinterest's case, the simple truth is that people love to collect things, and show off their collections to others. And like other Internet firms that have goals of global scope, such as Google, Facebook, and Amazon, Pinterest also has a global mission: to connect everyone in the world through the things they find interesting. How? Founded in 2009 by Ben Silbermann, Evan Sharp, and Paul Sciarra and launched in March 2010, Pinterest allows you to create virtual scrapbooks of images, video, and other content that you "pin" to a virtual bulletin board or pin board on the Web site. Categories range from Animals to Videos, with Food & Drink, DIY & Crafts, and Women's Fashion among the most popular. Find something that you particularly like? In addition to "liking" and perhaps commenting on it, you can re-pin it to your own board, or follow a link back to the original source. Find someone whose taste you admire or who shares your passions? You can follow one or more of that pinner's boards to keep track of everything she or he pins.

Reportedly the fastest Web site in history to reach 10 million users, Pinterest currently has more than 50 million users, more than double from the previous year. According to some tracking services, it is now the third most visited social network in the United States, behind Facebook and Twitter. It is also one of the "stickiest" sites on the Web—according to comScore, users spend an average of 80 minutes per session on Pinterest, and almost 60% of users with accounts visit once or more a week. Jeff Jordan, a partner at Andreessen Horowitz, a venture capital firm and investor in Pinterest, says he has seen only one other site with similar numbers—Facebook. And like Facebook before it, Pinterest has begun a transition toward monetizing that appeal. The first step, in November 2012, was to offer business accounts that provide additional resources for brands. Currently, there is no charge for a business account, but that clearly may change in the future. In March 2013, Pinterest introduced a new Web analytics tool, also currently free, that helps Web site owners understand how people are using pinned material that has originated from their Web sites. Shortly thereafter,

it began a revamp of its look, in an effort to help users discover new content more effectively and interact with it and other Pinterest users. In May 2013, it introduced its first localized site, for the United Kingdom, with another localized site for France reportedly in the wings.

Whole Foods, the natural foods supermarket chain, was one of the first companies to develop a presence on Pinterest, and now has more than 120,000 followers. It doesn't use Pinterest to advertise its own products in an overt way. Instead, it uses Pinterest as a way to communicate Whole Foods' core values through carefully curating and presenting images relevant to those values. Pinterest is also having an impact on the magazine world. For instance, Time Inc.'s *Real Simple,* also an early adopter, is one of the most-followed brands on Pinterest, with more than 300,000 followers. Pinterest has become a leading source of traffic to the Real Simple Web site, providing twice as many referrals as Facebook and Twitter combined. Other publishers are experiencing similar results.

For consumers, Pinterest can function both as a source of inspiration and aspiration. It has proven to be very popular for creating shopping wish lists and a great way to get ideas. Retailers, in particular, have taken notice and for good reason: several reports have shown that Pinterest helps drive shoppers to make purchases. For example, a study of 25,000 online stores using the Shopify e-commerce platform found there was as much traffic originating from Pinterest as from Twitter, and that Pinterest users spent an average of $80 each time they made an online purchase, twice the amount of Facebook users. Bizrate Insights found that almost a third of online shoppers surveyed had made a purchase based on what they had seen on Pinterest and other image-sharing sites; an even higher percentage (37%) had seen items they wanted to buy but had not yet purchased. There clearly remains room for growth, however. According to *Internet Retailer*, almost half of the retailers it surveyed in 2013 did not yet have a presence on Pinterest.

Pinterest's Web site was created using Django, an open source Web 2.0 framework that uses the Python programming language, which enables rapid development and reusability of components, coupled with elegant design. As with Facebook and Twitter, many third-party developers have also joined the party, with additional apps, browser extensions, and other third-party content that leverage off of the Pinterest platform. For instance, Zoomingo offers both a Web site and a mobile shopping app that allows you to find and get sale alerts for items you and others have pinned. Pinterest is also aggressive about leveraging ties to other social networks such as Facebook and Twitter—when you register, you can do so via Facebook, Twitter, or e-mail. Once you've registered, you can easily add Pinterest to your Facebook Timeline or link to your Twitter account.

On the mobile front, Pinterest introduced its own iPhone app in March 2011 and has frequently updated it since then, and an iPad app is also available. However, rather than develop additional stand-alone apps for Android, BlackBerry, or Windows smartphones, Pinterest chose a different route: to create a mobile version of its Web site using HTML5. Unlike an app, Pinterest Mobile runs inside the smartphone's browser rather than as a stand-alone program, and is able to serve multiple platforms.

Despite all the good news for Pinterest, there are some significant issues lurking just behind the scenes that may cloud its future; chief among them is copyright infringement. The basis of Pinterest's business model involves users potentially violating others'

SOURCES: "Stick with Pinterest," by Thad Rueter, Internet-Retailer.com, May 22, 2013; "Pinterest (Officially) Jumps the Pond," by Zak Stambor, Internet-Retailer.com, May 10, 2013; "Why Is Pinterest a $2.5 Billion Company? An Early Investor Explains," by J.J. Colao, Forbes.com, May 8, 2013; "Pinterest Gets a New Look," by Zac Stambor, InternetRetailer.com, March 19, 2013; "Introducing Pinterest Web Analytics," blog.Pinterest.com, March 12, 2013; "Meet Django," Djangoproject.com, accessed August 13, 2012; "Going Mobile with Pinterest," Pinterestinvite.org, accessed August 13, 2012; "Pinterest Gives Copyright Credit to Etsy, Kickstarter, SoundCloud," by Sarah Kessler, Mashable.com, July 19, 2012;"Whole Foods: The King of Pinterest?," by Vicky Garza, *Austin Business Journal,* July 13, 2012; "Pinterest on Wish List of Rakuten, Japan's Amazon," by Evelyn M. Rusli, *New York Times*, July 12, 2012; "A Mobile Shopping App Takes an Interest in Pinterest," by Katie Deatsch, InternetRetailer.com, July 11, 2012;"Pinterest Tops Tumblr in National Popularity?," by Stephanie Mlot, *PC Magazine*, June 28, 2012; "Pinterest Whets Consumer Desire with Images that Turn Window Shoppers into Online Buyers," by Matt Butter, *Forbes*, June 6, 2012; "Gemvara Raises $25 Million," by Stefany Moore, InternetRetailer.com, June 5, 2012; "Pinterest Raises $100 Million with $1.5 Billion Valuation," by Pui-Wing Tam, *Wall Street Journal*, May 17, 2012; "Japanese E-commerce Company Rakuten Invests in Pinterest," by Zak Stambor, InternetRetailer.com, May 17, 2012; "Now on Pinterest: Scams," by Riva Richmond, *New York Times*, May 16, 2012; "Real Simple is First Print Mag to Reach 100K Pinterest Followers," *Advertising Age*, May 11, 2012; "Pinterest Plagued by More Scams, Fake Android Apps," by Fahmida Y. Rashid, PCMag.com, April 30, 2012; "Nearly 1/3 Online Shoppers Have Made Purchases from What They've Seen on Pinterest," by Zak Stambor, InternetRetailer.com, April 25, 2012; "E-commerce Giants Amazon and eBay Add Pinterest Buttons," by Kate Kaye,

copyrights by posting images without permission and/or attribution. Although Pinterest's Terms of Service puts the onus on its users to avoid doing so, the site knowingly facilitates such actions by, for example, providing a "Pin it" tool embedded in the user's browser toolbar. Much of the content on the site reportedly violates its Terms of Service. Pinterest has provided an opt-out code to enable other sites to bar its content from being shared on Pinterest, but some question why they should have to take action when Pinterest is creating the problem. Further, the code does not necessarily resolve the issue, since it does not prevent someone from downloading an image and then uploading it to Pinterest. Another thing Pinterest has done to try to ameliorate the problem is to automatically add citations (attribution) to content coming from certain specified sources, such as Flickr, YouTube, Vimeo, Etsy, Kickstarter, and SlideShare, among others. It also complies with the Digital Millenium Copyright Act, which requires sites to remove images that violate copyright, but this too requires the copyright holder to be proactive and take action to demand the images be removed. Although no major copyright cases have been filed against it so far, how Pinterest resolves this issue may have a major impact on its ultimate success.

Pinterest is also not immune to the spam and scams that plague many e-commerce initiatives. Security analysts believe Pinterest will have to adapt its systems to deal with scammers and warn users to be wary of requests to pin content before viewing it and to be suspicious of "free" offers, surveys, and links with questionable titles. Pinterest has acknowledged the problem and has promised to improve its technology.

Another issue facing Pinterest is competition. Will Pinterest be like MySpace, destined to be eclipsed by a later entrant? Although some similar firms preceded Pinterest into the "visual collection" space, such as Polyvore and StyleCaster, Pinterest can be considered a first mover and as such has some significant advantages. However, other competitors have sprung up, such as Juxtapost (which allows private boards), Manteresting (aimed at the male demographic), Wanelo, and Fancy. Fancy has a revenue model based on linking its users to transactions, taking a 10% cut of purchases in the process, and has backing from co-founders of both Twitter and Facebook. The Fancy could become a formidable rival to Pinterest.

ClickZ.com, April 11, 2012; "Many Magazines Racing to Capitalize on Pinterest," *Advertising Age*, April 2, 2012; Interest in Pinterest Skyrockets," by Zak Stambor, InternetRetailer.com, March 23, 2012; "Is Pinterest the Next Napster?" by Therese Poletti, *Wall Street Journal*, March 14, 2012; "A Site That Aims to Unleash the Scrapbook Maker in All of Us," by Jenna Wortham, *New York Times*, March 11, 2012; "What Marketers Can Learn from Whole Foods' Organic Approach to Pinterest," by Lauren Drell, Mashable.com, February 23, 2012; "Pinterest Releases Optional Code to Prevent Unwanted Image Sharing," by Andrew Webster, Theverge.com, February 20, 2012; "A Scrapbook on the Web Catches Fire," by David Pogue, *New York Times*, February 15, 2012.

In 1994, e-commerce as we now know it did not exist. In 2013, less than 20 years later, around 155 million American consumers are expected to spend about $419 billion, and businesses more than $4.8 trillion, purchasing goods and services online or via a mobile device. A similar story has occurred throughout the world. And in this short period of time, e-commerce has been reinvented not just once, but twice.

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, ultimately leading to models that actually produced profits. Between 2002–2008, retail e-commerce grew at more than 25% per year.

Today, we are in the middle of yet another transition: a new and vibrant social, mobile, and local model of e-commerce growing alongside the more traditional e-commerce retail sales model exemplified by Amazon. Social network sites such as Facebook, Twitter, YouTube, and Pinterest, which enable users to distribute their own content (such as videos, music, photos, personal information, blogs, and software applications), have rocketed to prominence. Spurred by the explosive growth in smartphones such as iPhones and Androids, tablet computers, and ultra-lightweight laptops, a new e-commerce platform has emerged called "social e-commerce" that is closely intertwined with social networks, mobile computing, and heretofore private social relationships. Never before in the history of media have such large audiences been aggregated and made so accessible. Businesses are grappling with how best to approach this audience from an advertising and marketing perspective. Governments, private groups, and industry players are trying to understand how to protect privacy on this new e-commerce platform. Social networks and user-generated content sites are also examples of technology that is highly disruptive of traditional media firms. The movement of eyeballs towards these sites means fewer viewers of cable and broadcast television and Hollywood movies, and fewer readers of printed newspapers and magazines, and so those industries are also facing a transition. It's probably safe to predict that this will not be the last transition for e-commerce, either.

1.1 E-COMMERCE: THE REVOLUTION IS JUST BEGINNING

Table 1.1 describes the major trends in e-commerce in 2013–2014. Social networks have become a new e-commerce platform rivaling traditional e-commerce platforms by providing search, advertising, and payment services to vendors and customers. Who needs Google when you can have a swarm of friends recommend music, clothes, cars, and videos on a social network site where you spend most of your time online? The mobile platform based on smartphones and tablet computers has also finally arrived with a bang, making true mobile e-commerce a reality.

TABLE 1.1 MAJOR TRENDS IN E-COMMERCE 2013–2014

BUSINESS

- Retail e-commerce in the United States continues double-digit growth (over 15%), with global growth rates even higher in Europe and emerging markets such as China, India, and Brazil.
- A new "social e-commerce" platform, based on social networks and supported by advertising, emerges, growing to an estimated $5 billion in 2013 in the United States, and $8 billion worldwide.
- Mobile retail e-commerce explodes, and is estimated to reach almost $40 billion in the United States in 2013.
- A new app-based online economy grows alongside traditional Internet e-commerce, generating an estimated $25 billion in revenue worldwide in 2013.
- Local e-commerce, the third dimension of the social, mobile, local e-commerce wave, also is growing in the United States, to an estimated $4.4 billion in 2013.
- Facebook continues to grow, with more than 1.1 billion active users worldwide.
- Twitter continues to grow, with more than 200 million active users worldwide.
- Search engine marketing continues to challenge traditional marketing and advertising media.
- Social and mobile advertising platforms show strong growth and begin to challenge search engine marketing.
- The number of people of all ages online in the United States continues to increase, to an estimated 243 million, although the rate of growth is slowing.
- The global population using the Internet continues to expand, to over 2.5 billion, with around 33% of the world's population now online.
- Online businesses continue to strengthen profitability by refining their business models and leveraging the capabilities of the Internet.
- The breadth of e-commerce offerings grows, especially in entertainment, retail apparel, luxury goods, appliances, and home furnishings.
- 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.
- Brand extension through the Internet continues to grow as large firms such as Walmart and Target pursue integrated, multi-channel bricks-and-clicks strategies.
- B2B e-commerce in the United States continues to strengthen and grow beyond the $4.7 trillion mark.

TECHNOLOGY

- A mobile computing and communications platform based on smartphones and tablet computers (the "new client") becomes a reality and begins to rival the PC platform.
- More than 1.5 million apps in Apple's and Google's app stores create a new platform for online transactions, marketing, and advertising.
- Computing and networking component prices continue to fall dramatically.
- 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.

TABLE 1.1 MAJOR TRENDS IN E-COMMERCE 2013–2014 (CONT.)

- 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.
- Cloud computing completes the transformation of the mobile platform by storing consumer content and software on Internet servers and making it available to any consumer-connected device from the desktop to a smartphone.

SOCIETY

- Consumer- and user-generated content, and syndication in the form of social networks, tweets, blogs, and wikis, continue to grow and provide an entirely new self-publishing forum that engages millions of consumers.
- The amount of data the average American consumes (estimated to be more than 34 gigabytes per day) continues to increase.
- Social networks encourage self-revelation, while threatening privacy.
- Participation by adults in social networks on the Internet increases; Facebook becomes ever more popular in all demographic categories.
- E-books finally gain wide acceptance and today account for about half of all book sales.
- Conflicts over copyright management and control continue, but there is substantial agreement among Internet distributors and copyright owners that they need one another.
- Explosive growth continues in online and mobile viewing of video and television programs.
- Taxation of Internet sales becomes more widespread and accepted by large online merchants.
- Surveillance of Internet communications by both repressive regimes and Western democracies grows.
- Concerns over commercial and governmental privacy invasion increase as firms provide government agencies with access to private personal information.
- Internet security continues to decline as major sites are hacked and lose control over customer information.
- Spam remains a significant problem despite legislation and promised technology fixes.
- Invasion of personal privacy expands as marketers extend their capabilities to track users.

More and more people and businesses are using the Internet to conduct commerce; smaller, local firms are learning how to take advantage of the Internet as Web services and Web site tools become very inexpensive. New e-commerce brands emerge while traditional retail brands such as Walmart and Target further extend their multi-channel, bricks-and-clicks strategies and retain their dominant retail positions by strengthening their Internet operations. At the societal level, other trends are apparent. The Internet has created a platform for millions of people to create and share content, establish new social bonds, and strengthen existing ones through social networks, blogging, and photo- and video-posting sites. These

same social networks have created significant privacy issues. The major digital copyright owners have increased their pursuit of online file-swapping services with mixed success, while reaching broad agreements with the big technology players like Apple, Amazon, and Google to protect intellectual property rights. States have successfully moved toward taxation of Internet sales, while Internet gaming sites have been severely curtailed through criminal prosecutions in the United States. Sovereign nations have expanded their surveillance of, and control over, Internet communications and content as a part of their anti-terrorist activities and their traditional interest in snooping on citizens. Privacy seems to have lost some of its meaning in an age when millions create public online personal profiles.

THE FIRST 30 SECONDS

It is important to realize that the rapid growth and change that has occurred in the first 19 years 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 new opportunities to both create new businesses and new business models in traditional industries, and also to destroy old businesses. Business change becomes disruptive, rapid, and even destructive, while offering entrepreneurs new opportunities and resources for investment.

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 last decade. The twenty-first century will be the age of a digitally enabled social and commercial life, the outlines of which we can barely perceive at this time. Analysts estimate that by 2017, consumers will be spending about $637 billion and businesses about $6.6 trillion in online transactions. By 2020, some industry analysts believe e-commerce may account for 20% of all retail sales (eMarketer, Inc., 2013a). It appears likely that e-commerce will eventually impact nearly all commerce, and that most commerce will be e-commerce by the year 2050.

Can e-commerce continue to grow indefinitely? It's possible that at some point, e-commerce growth may slow simply as a result of overload: people may just not have the time to watch yet another online video, open another e-mail, or read another blog, tweet, or Facebook update. However, currently, there is no foreseeable limit to the continued rapid development of Internet and e-commerce technology, or limits on the inventiveness of entrepreneurs to develop new uses for the technology. Therefore, for now at least, it is likely that the disruptive process will continue.

Business fortunes are made—and lost—in periods of extraordinary change such as this. The next five years hold out extraordinary 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 extraordinary gains in social wealth as the digital revolution works its way through larger and larger segments of the world's economy, offering the possibility of high rates of productivity and income growth in an inflation-free environment.

As a business or technology student, this book will help you perceive and understand the opportunities and risks that lie ahead. By the time you finish, you

will be able to identify the technological, business, and social forces that have shaped the growth of e-commerce and extend that understanding into the years ahead.

WHAT IS E-COMMERCE?

e-commerce
the use of the Internet, the Web, and apps to transact business. More formally, digitally enabled commercial transactions between and among organizations and individuals

Our focus in this book is **e-commerce**—the use of the Internet, the World Wide Web (Web), and mobile apps 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. (We describe the Internet, Web, and apps more fully later in this chapter and in Chapters 3 and 4.) More formally, we focus on 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 apps. *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" in part to reflect the fact that in 2013, apps account for a growing amount of e-commerce revenues. For our purposes, we consider "e-commerce" and "digital commerce" to be synonymous.

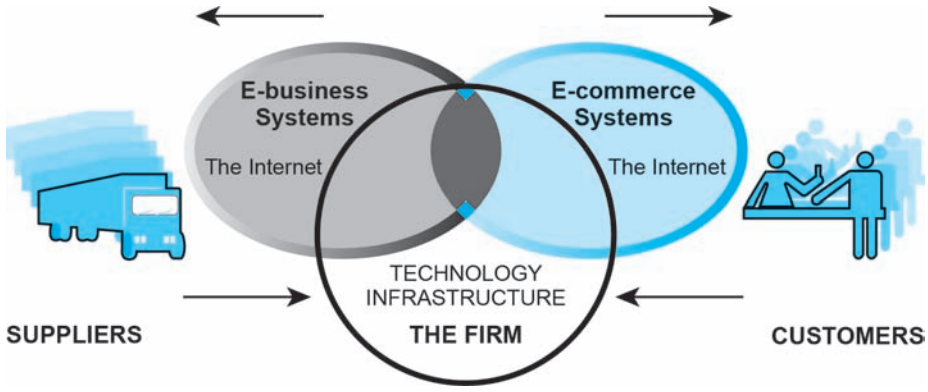
THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS

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's infrastructure (Rayport and Jaworski, 2003). Others argue, on the other hand, that e-business encompasses the entire world of internal and external electronically based activities, including e-commerce (Kalakota and Robinson, 2003).

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

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

FIGURE 1.1 THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS



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

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 (see Mesenbourg, U.S. Department of Commerce, 2001, for a similar view). We will examine this intersection further in Chapter 12.

WHY STUDY E-COMMERCE?

Why are there college courses and textbooks on e-commerce when there are no courses or textbooks on "TV Commerce," "Radio Commerce," "Railroad Commerce," or "Highway Commerce," even though these technologies had profound impacts on commerce in the twentieth century and account for far more commerce than e-commerce?

The reason for the interest specifically in e-commerce is that e-commerce technology (discussed in detail in Chapters 3 and 4) is different and more powerful than any of the other technologies we have seen in the past century. E-commerce technologies—and the digital markets that result—have brought about some fundamental, unprecedented shifts in commerce. While these other technologies transformed economic life in the twentieth century, the evolving Internet and other information technologies are shaping the twenty-first century.

Prior to the development of e-commerce, the marketing and sale of goods was a mass-marketing and sales force–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

information asymmetry
any disparity in relevant market information among parties in a transaction

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 let alone to individuals in 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. One of the shifts that e-commerce is bringing about is a reduction in information asymmetry among market participants (consumers and merchants). Preventing consumers from learning about costs, price discrimination strategies, and profits from sales becomes more difficult with e-commerce, and the entire marketplace potentially becomes highly price competitive. At the same time, online merchants gain considerable market power over consumers by using consumer personal information in ways inconceivable 10 years ago to maximize their revenues.

EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY

Figure 1.2 illustrates eight unique features of e-commerce technology that both challenge traditional business thinking and 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. 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 new 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 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 1.2 and throughout the book.

Each of the dimensions of e-commerce technology illustrated in Figure 1.2 deserves a brief exploration, as well as a comparison to both traditional commerce and other forms of technology-enabled commerce.

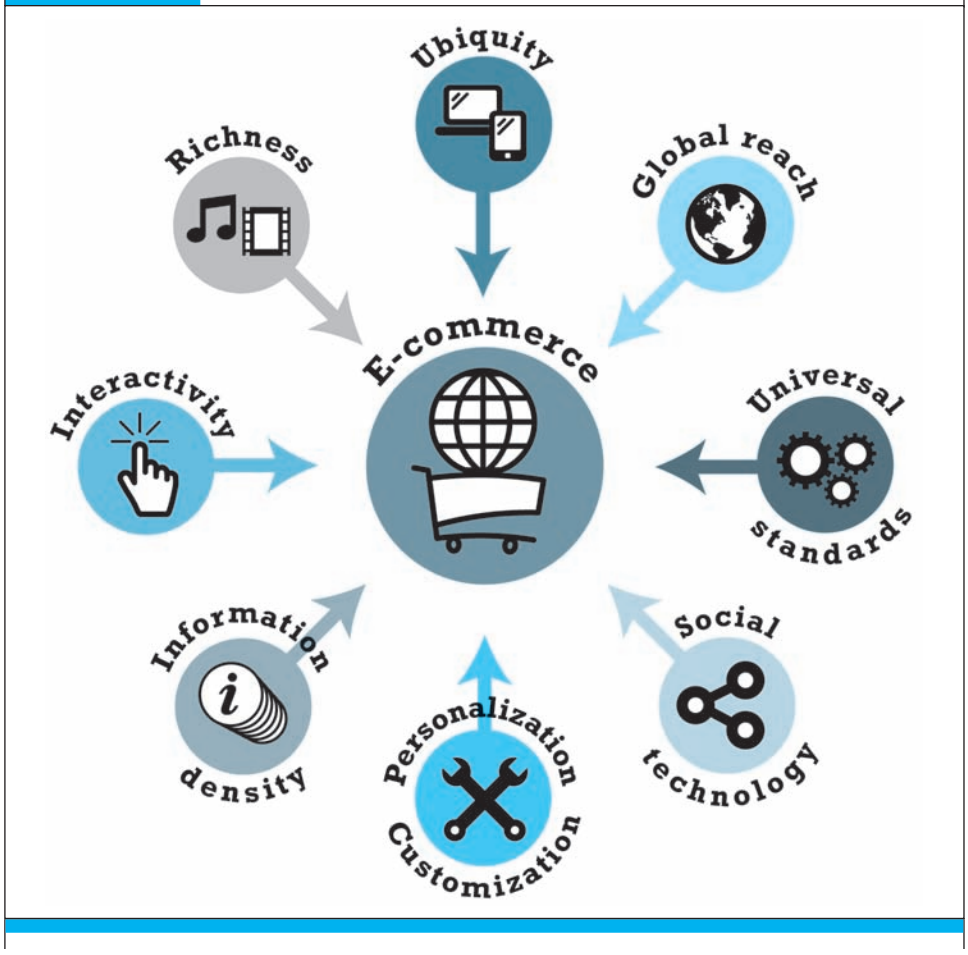
Ubiquity

marketplace
physical space you visit in order to transact

ubiquity
available just about everywhere, at all times

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

FIGURE 1.2 EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY



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

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).

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

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 2.56 billion in 2013) (eMarketer, Inc., 2013b). More realistically, the Internet makes it much easier for start-up online 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).

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

In contrast, most traditional commerce is local or regional—it involves local merchants or national merchants with local outlets. Television and 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 **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 the Internet and 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 marketspace, where prices and product descriptions can be inexpensively displayed for all to see, *price discovery* becomes simpler, faster, and more accurate (Banerjee, et al., 2005; Bakos, 1997; Kambil, 1997). Users of the Internet, 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 many products, it is a potential that will be exploited in the future.

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

Richness

Information **richness** refers to the complexity and content of a message (Evans and Wurster, 1999). Traditional markets, national sales forces, and small 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. The Internet has the potential for offering considerably more information richness than traditional media such as printing presses, radio, and television because it is interactive and can adjust the message to individual users. Chatting with an online sales person, for instance, comes very close to the customer

richness
the complexity and content of a message

experience in a small retail shop. The richness enabled by the Internet 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, for instance, cannot ask viewers questions or enter into conversations with them, or request that customer information be entered into a form. In contrast, all of these activities are possible on an e-commerce site and are now commonplace with smartphones, social networks, and Twitter. Interactivity allows an online merchant to engage a consumer in ways similar to a face-to-face experience.

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

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.

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

A number of business consequences result from the growth in information density. In e-commerce markets, 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 (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/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

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

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.

Social Technology: User Content Generation and Social Networking

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, use a broadcast model (one-to-many) where 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. The Internet and 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. The Internet provides 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.

WEB 2.0: PLAY MY VERSION

Web 2.0
a set of applications and technologies that allows users to create, edit, and distribute content; share preferences, bookmarks, and online personas; participate in virtual lives; and build online communities

Many of the unique features of e-commerce technology and the Internet come together in a set of applications and social media technologies referred to as **Web 2.0**. The Internet started out as a simple network to support e-mail and file transfers among remote computers. The Web started out as a way to use the Internet to display simple pages and allow the user to navigate among the pages by linking them together electronically. You can think of this as Web 1.0. By 2007 something else was happening. The Internet and the Web had evolved to the point where users could create, edit, and distribute content to others; share with one another their preferences, bookmarks, and online personas; participate in virtual lives; and build online communities. This "new" Web is called by many Web 2.0, and while it draws heavily on the "old" Web 1.0, it is nevertheless a clear evolution from the past.

TABLE 1.2 BUSINESS SIGNIFICANCE OF THE EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY

E-COMMERCE TECHNOLOGY DIMENSION	BUSINESS SIGNIFICANCE
Ubiquity—Internet/Web 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, namely Internet 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.	Personalization of marketing messages and customization of products and services are based on individual characteristics.
Social technology—User content generation and social networks.	New Internet social and business models enable user content creation and distribution, and support social networks.

Let's take a quick look at some examples of Web 2.0 applications and sites:

- Twitter is a social network/micro-blogging service that encourages users to enter 140-character messages ("tweets") in answer to the question "What are you doing?" Twitter has more than 200 million active users worldwide, sending around 400 million tweets per day and more than 12 billion tweets a month. Twitter has begun to monetize its subscribers by developing an ad platform and providing marketing services to firms that want to stay in instant contact with their customers.

- YouTube, owned by Google after a $1.65 billion purchase, is the world's largest online consumer-generated video-posting site. YouTube is now morphing into a premium video content distributor and video producer, offering feature-length movies, television series, and its own original content. In March 2013, YouTube had over 150 million unique viewers in the United States, and more than 1 billion a month worldwide. According to Google, 72 hours of video are posted to the site every minute! YouTube reportedly streams more than 4 billion videos per day, including more than 600 million a day on mobile devices (YouTube, 2013; comScore, 2013a).
- Instagram is a mobile photo-sharing application that allows users to easily apply a variety of different photo filters and borders, and then post the photos to social networks such as Facebook, Twitter, Foursquare, Tumblr, and Flickr. Launched in November 2010, Instagram quickly attracted more than 50 million users and in April 2012 was purchased by Facebook for $1 billion (Buck, 2012).
- Wikipedia allows contributors around the world to share their knowledge and in the process has become the most successful online encyclopedia, far surpassing "professional" encyclopedias such as Encarta and Britannica. Wikipedia is one of the largest collaboratively edited reference projects in the world, with more than 4.2 million articles available in English and more than 26 million in total, in 286 languages. Wikipedia relies on volunteers, makes no money, and accepts no advertising. Wikipedia is consistently ranked as one of the top 10 most visited sites on the Web (Wikipedia.org, 2013; Wikimedia Foundation, 2011; comScore, 2013b).
- Tumblr is a combination of blog platform and social network. It allows users to easily post text, photos, links, music, videos and more. As of May 2013, Tumblr hosts almost 110 million blogs, containing over 50 billion posts. On a typical day, users make over 70 million posts (Tumblr.com, 2013). Tumblr has more than doubled in size since September 2011.

What do these Web 2.0 applications and sites have in common? First, they rely on user- and consumer-generated content. "Regular" people (not just experts or professionals) are creating, sharing, modifying, and broadcasting content to huge audiences. Second, easy search capability is a key to their success. Third, they are inherently highly interactive, creating new opportunities for people to socially connect to others. They are "social" sites because they support interactions among users. Fourth, they rely on broadband connectivity. Fifth, many of them are currently only marginally profitable, and their business models are unproven despite considerable investment. Nevertheless, the potential monetary rewards for social sites with huge audiences is quite large. Sixth, they attract extremely large audiences when compared to traditional Web 1.0 applications, exceeding in many cases the audience size of national broadcast and cable television programs. These audience relationships are intensive and long-lasting interactions with millions of people. In short, they attract eyeballs in very large numbers. Hence, they present marketers with extraordinary opportunities for targeted marketing and advertising. They also present consumers with the opportunity to rate and review products, and entrepreneurs with ideas for future business ventures. Last,

these sites act as application development platforms where users can contribute and use software applications for free. Briefly, it's a whole new world from what has gone before.

TYPES OF E-COMMERCE

There are several different types of e-commerce and many different ways to characterize them. **Table 1.3** lists the major types of e-commerce discussed in this book.[1] For the most part, we distinguish different types of e-commerce by the nature of the market relationship—who is selling to whom. Social, mobile, and local e-commerce can be looked at as subsets of these types of e-commerce.

Business-to-Consumer (B2C) E-commerce

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 commerce includes purchases of retail goods, travel services, and online content. Even though B2C is comparatively small (about $419 billion in 2013 in the United States),

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

TABLE 1.3 MAJOR TYPES OF E-COMMERCE

TYPE OF E-COMMERCE	EXAMPLE
B2C—business-to-consumer	Amazon is a general merchandiser that sells consumer products to retail consumers.
B2B—business-to-business	Go2Paper.com is an independent third-party marketplace that serves the paper industry.
C2C—consumer-to-consumer	On a large number of auction sites such as eBay, and listing sites such as Craigslist, consumers can auction or sell goods directly to other consumers.
Social e-commerce	Facebook is both the leading social network and social e-commerce site.
M-commerce—mobile e-commerce	Mobile devices such as tablet computers and smartphones can be used to conduct commercial transactions.
Local e-commerce	Groupon offers subscribers daily deals from local businesses in the form of "Groupons," discount coupons that take effect once enough subscribers have agreed to purchase.

[1] For the purposes of this text, we subsume business-to-government (B2G) e-commerce within B2B e-commerce, viewing the government as simply a form of business when it acts as a procurer of goods and/or services.

it has grown exponentially since 1995, and is the type of e-commerce that most consumers are likely to encounter (see **Figure 1.3**). Within the B2C category, there are many different types of business models. Chapter 2 has a detailed discussion of seven different B2C business models: portals, online retailers, content providers, transaction brokers, market creators, service providers, and community providers.

Business-to-Business (B2B) E-commerce

business-to-business (B2B) e-commerce
online businesses selling to other businesses

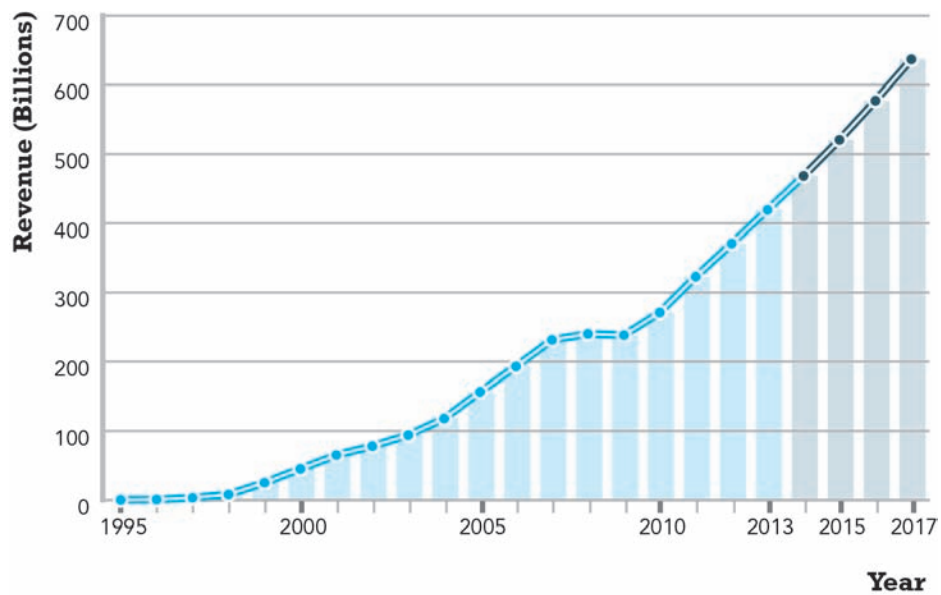
Business-to-business (B2B) e-commerce, in which businesses focus on selling to other businesses, is the largest form of e-commerce, with about $4.7 trillion in transactions in the United States in 2013 (see **Figure 1.4**). There is an estimated $12.9 trillion in business-to-business exchanges of all kinds, online and offline, suggesting that B2B e-commerce has significant growth potential. The ultimate size of B2B e-commerce is potentially huge. There are two primary business models used within the B2B arena: Net marketplaces, which include e-distributors, e-procurement companies, exchanges and industry consortia, and private industrial networks.

consumer-to-consumer (C2C) e-commerce
consumers selling to other consumers

Consumer-to-Consumer (C2C) E-commerce

Consumer-to-consumer (C2C) e-commerce provides a way for consumers to sell to each other, with the help of an online market maker such as eBay or Etsy, or the

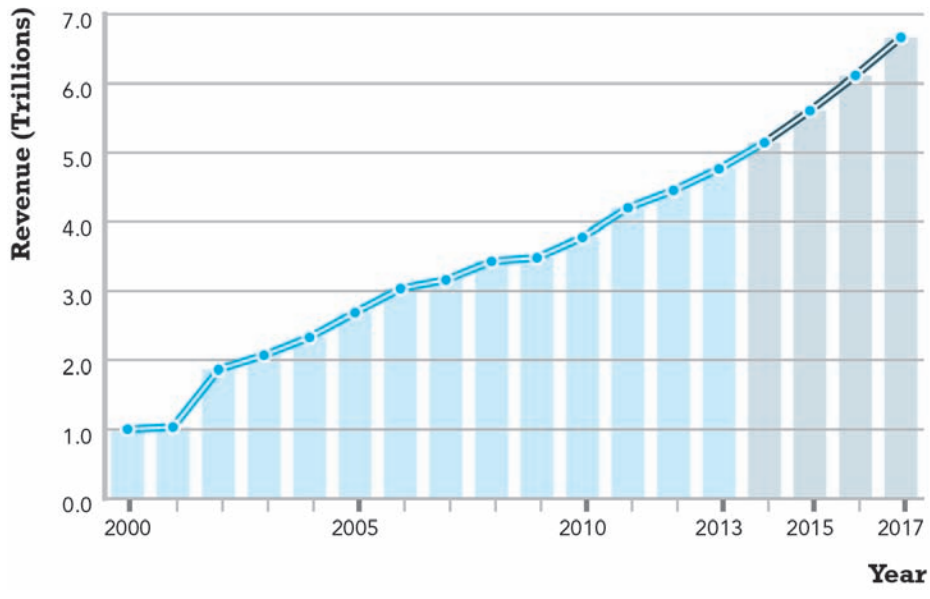
FIGURE 1.3 THE GROWTH OF B2C E-COMMERCE IN THE UNITED STATES



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.

SOURCES: Based on data from eMarketer, Inc., 2013a; authors' estimates.

FIGURE 1.4 THE GROWTH OF B2B E-COMMERCE IN THE UNITED STATES



B2B e-commerce in the United States is about 10 times the size of B2C e-commerce. In 2017, B2B e-commerce is projected to be about $6.6 trillion. (Note: Does not include EDI transactions.)

SOURCES: Based on data from U.S. Census Bureau, 2013; authors' estimates.

classifieds site Craigslist. Given that in 2013, eBay is likely to generate around $75 billion in gross merchandise volume around the world, it is probably safe to estimate that the size of the global C2C market in 2013 is more than $90 billion (eBay, 2013). In C2C e-commerce, the consumer prepares the product for market, places the product for auction or sale, and relies on the market maker to provide catalog, search engine, and transaction-clearing capabilities so that products can be easily displayed, discovered, and paid for.

Social E-commerce

Social e-commerce is e-commerce that is enabled by social networks and online social relationships. It is sometimes also referred to as Facebook commerce, but in actuality is a much larger phenomenon that extends beyond just Facebook. The growth of social e-commerce is being driven by a number of factors, including the increasing popularity of social sign-on (signing onto Web sites using your Facebook or other social network ID), network notification (the sharing of approval or disapproval of products, services, and content via Facebook's Like button or Twitter tweets), online collaborative shopping tools, and social search (recommendations from online trusted friends). Social e-commerce is still in its infancy, but is estimated to generate about $5 billion in the United States in 2013, and about $8 billion in the rest of the world (eMarketer, Inc., 2012a).

social e-commerce
e-commerce enabled by social networks and online social relationships

Mobile E-commerce (M-commerce)

mobile e-commerce (m-commerce)
use of mobile devices to enable online transactions

Mobile e-commerce, or m-commerce, refers to the use of mobile devices to enable online transactions. Described more fully in Chapter 3, m-commerce involves the use of cellular and wireless networks to connect laptops, smartphones such as the iPhone, Android, and BlackBerry, and tablet computers such as the iPad to the Internet. Once connected, mobile consumers can conduct transactions, including stock trades, in-store price comparisons, banking, travel reservations, and more. Mobile retail purchases are expected to reach almost $40 billion in 2013 (almost double that of 2012) and to grow rapidly in the United States over the next five years (eMarketer, Inc., 2013a).

Local E-commerce

local e-commerce
e-commerce that is focused on engaging the consumer based on his or her current geographic location

Local e-commerce, as its name suggests, is a form of e-commerce that is focused on engaging the consumer based on his or her current geographic location. Local merchants use a variety of online marketing techniques to drive consumers to their stores. Local e-commerce is the third prong of the social, mobile, local e-commerce wave, and is expected to grow in the United States from $3.6 billion in 2011 to an estimated $4.4 billion in 2013 (eMarketer, Inc., 2012b).

Figure 1.5 illustrates the relative size of all of the various types of e-commerce.

GROWTH OF THE INTERNET, WEB, AND MOBILE PLATFORM

Internet
worldwide network of computer networks built on common standards

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 wireless access devices such as smartphones are connected to the Internet worldwide at any one time, but the number is clearly more than 1 billion. 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.

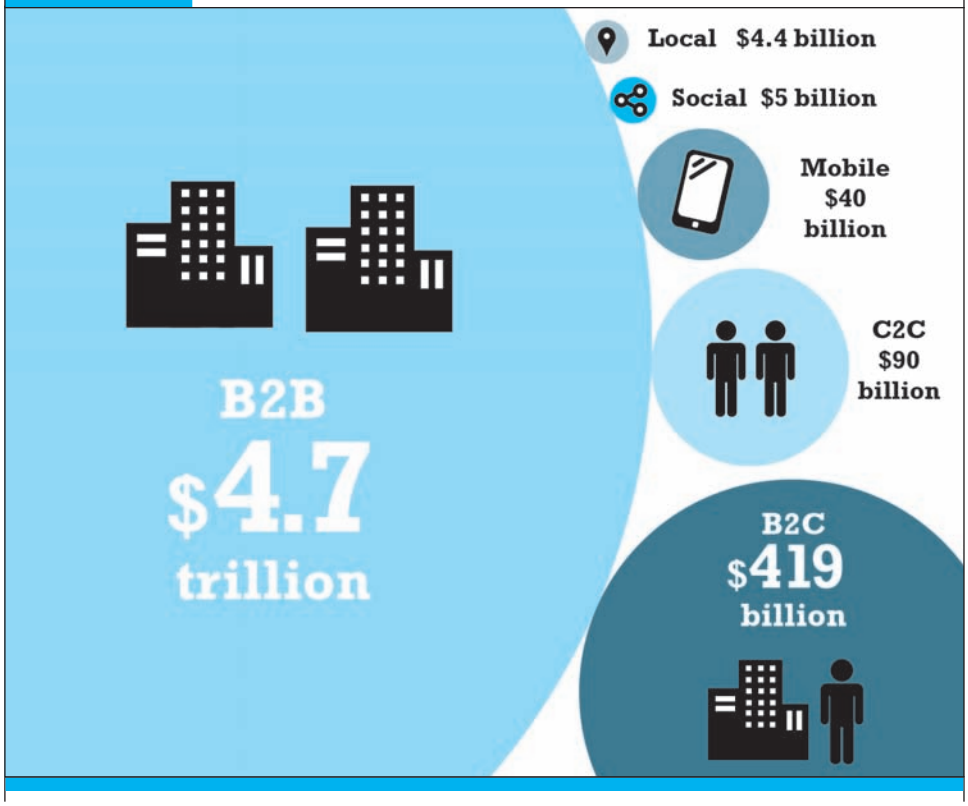
One way to measure the growth of the Internet is by looking at the number of Internet hosts with domain names. (An *Internet host* is defined by the Internet Systems Consortium as any IP address that returns a domain name in the in-addr.arpa domain, which is a special part of the DNS namespace that resolves IP addresses into domain names.) In July 2013, there were almost 1 billion Internet hosts in over 245 countries, up from just 70 million in 2000 (Internet Systems Consortium, 2013).

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.

World Wide Web (the Web)
provides easy access to Web pages

The **World Wide Web (the Web)** is one of the most popular services that runs on the Internet infrastructure. The Web was the original "killer app" that made the

FIGURE 1.5 **THE RELATIVE SIZE OF DIFFERENT TYPES OF E-COMMERCE**



B2B e-commerce dwarfs all other forms of e-commerce; mobile, social, and local e-commerce, although growing rapidly, are still relatively small in comparison to "traditional" e-commerce.

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. You can find an exceptionally wide range of information on Web pages, ranging from the entire collection of public records from the Securities and Exchange Commission, to the card catalog of your local library, to millions of music tracks and videos. The Internet prior to the Web was primarily used for text communications, file transfers, and remote computing. The Web introduced far more powerful and commercially interesting, colorful multimedia 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 even 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, and also because the size of the Web universe is unknown. Google has identified over 30 trillion unique URLs, up from 1 trillion in 2008, although many of these pages do not necessarily contain unique content. Today, it is likely that Google indexes at least 120 billion Web pages, if not more. In addition to this "surface" or "visible" Web, there is also the so-called "deep Web" that is reportedly 1,000 to 5,000 times greater than the surface Web. The deep Web contains databases and other content that is not routinely indexed by search engines such as Google. Although the total size of the Web is not known, what is indisputable is that Web content has grown exponentially since 1993.

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

The mobile platform is the newest "latest and greatest" development in Internet infrastructure. The **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 via wireless networks or cell phone service. In 2013, there are over 363 million mobile devices in the United States that can be connected to the Internet (more than 1 device for each person in the United States), and that number is expected to grow to almost 400 million by 2017 (eMarketer, Inc., 2013b). **Figure 1.6** illustrates the rapid growth of mobile Internet access.

Read *Insight on Technology*: *Will Apps Make the Web Irrelevant?* for a look at the challenge that apps and the mobile platform pose to the Web's dominance of the Internet ecosphere.

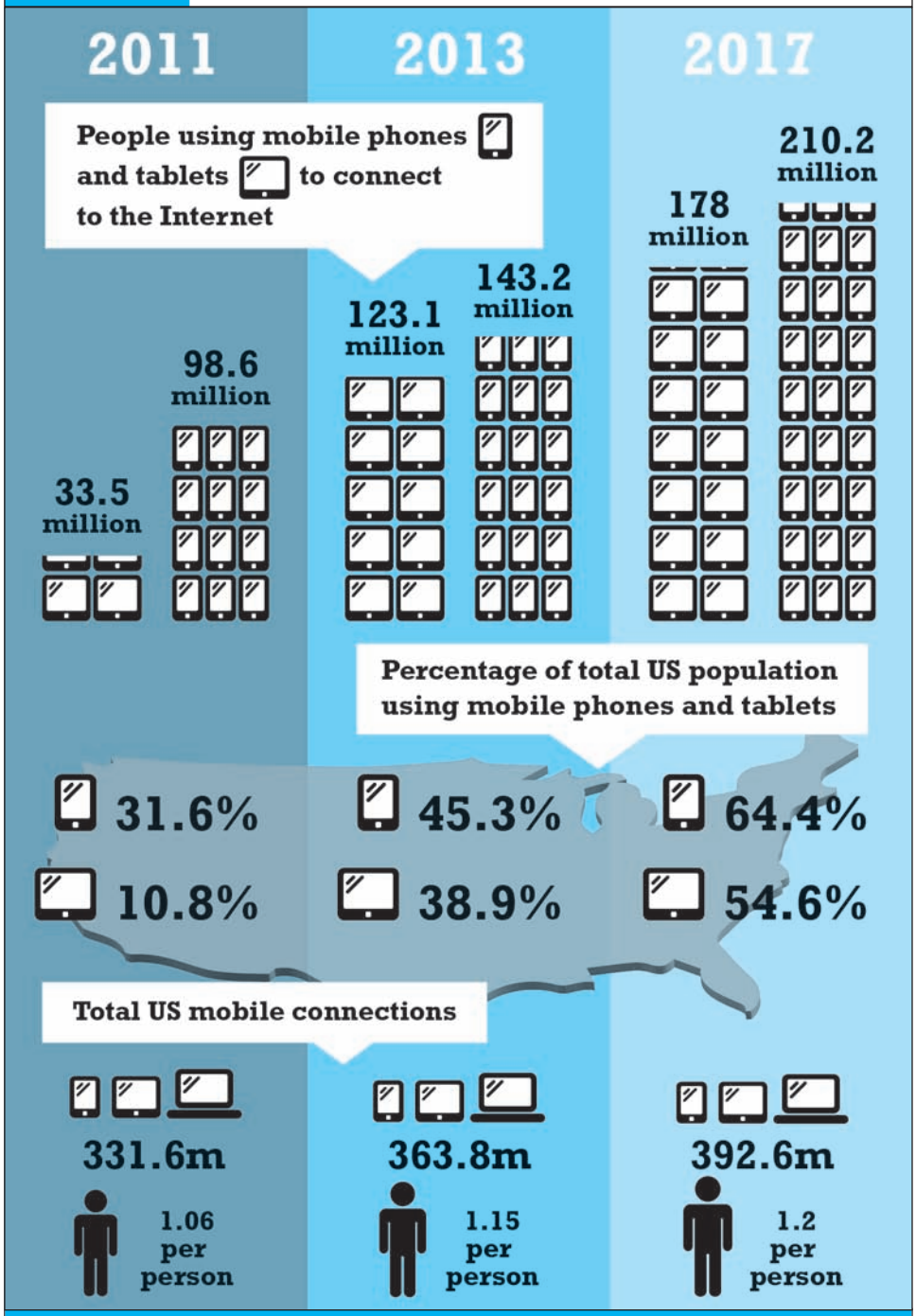
ORIGINS AND GROWTH OF E-COMMERCE

It is difficult to pinpoint just when e-commerce began. There were several precursors to e-commerce. In the late 1970s, a pharmaceutical firm named Baxter Healthcare initiated a primitive form of B2B e-commerce by using a telephone-based modem that permitted hospitals to reorder supplies from Baxter. This system was later expanded during the 1980s into a PC-based remote order entry system and was widely copied throughout the United States long before the Internet became a commercial environment. The 1980s saw the development of Electronic Data Interchange (EDI) standards that permitted firms to exchange commercial documents and conduct digital commercial transactions across private networks.

In the B2C arena, the first truly large-scale digitally enabled transaction system was deployed in France in 1981. The Minitel was a French videotext system that combined a telephone with an 8-inch screen. By the mid-1980s, more than 3 million Minitels were deployed, and more than 13,000 different services were available, including ticket agencies, travel services, retail products, and online banking. The Minitel service continued in existence until December 31, 2006, when it was finally discontinued by its owner, France Telecom.

However, none of these precursor systems had the functionality of the Internet. Generally, when we think of e-commerce today, it is inextricably linked to the Internet. For our purposes, we will say e-commerce begins in 1995, following the appearance of the first banner advertisements placed by AT&T, Volvo, Sprint, and others on Hotwired.com in late October 1994, and the first sales of banner ad space by Netscape and Infoseek in early 1995. Since then, e-commerce has been the fastest growing form of commerce in the United States.

FIGURE 1.6 **MOBILE INTERNET ACCESS IN THE UNITED STATES**



Continued growth in the number of people using mobile phones and tablets to connect to the Internet will provide a significant stimulus to mobile e-commerce.

SOURCES: Based on data from eMarketer, Inc., 2013c, 2013d, 2013e.

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 pull up a Web browser and search for any item, learn about any topic, or play just about any type of game? Though the Web has come a remarkably long way from its humble beginnings, many experts claim that the Web's best days are behind it, and that there's a new sheriff in town: apps. Opinions vary widely over the future role of the Web in a world where apps have become an ever larger portion of the Internet marketspace. In 10 years, will Web browsers be forgotten relics, as we rely entirely on apps to do both our work and our play on the Internet? Will the Web and apps coexist peacefully as vital cogs in the Internet ecosystem? Or will the app craze eventually die down as tech users gravitate back towards the Web as the primary way to perform Internet-related 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, and healthcare. The average U.S. consumer spends over 2 and a half hours per day on smartphones and tablets, 80% of which is spent within apps. Despite not even existing prior to 2008, apps account for $25 billion in revenues, and the app economy is continuing to show robust growth, suggesting it is nowhere near saturated. Not only that, but the growth is not coming from more users trying the same small number of apps. Consumers are trying new apps all the time, leaving plenty of room for new app developers to innovate and create best-selling apps.

In June 2011, the amount of time users spent on apps overtook the amount of time users spent on desktops and the mobile Web for the first time. 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 Web sites, 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 after twenty years, 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.

These trends are why some pundits boldly proclaim that "the Web is dead," and that the shift from the Web to apps has only just started. These analysts believe that the Internet will be used to transport data, but individual app interfaces will replace the Web 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. That's not a good sign.

But there is no predictive consensus about the role of the Web in our lives in the next decade and beyond. Many analysts believe the demise of the Web has been greatly exaggerated, and that

(continued)

the Web boasts many advantages over today's apps that users will be unwilling to relinquish. 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 Web sites enhance their usefulness and value to users, and apps that instead seek to lock users in cannot offer the same experience.

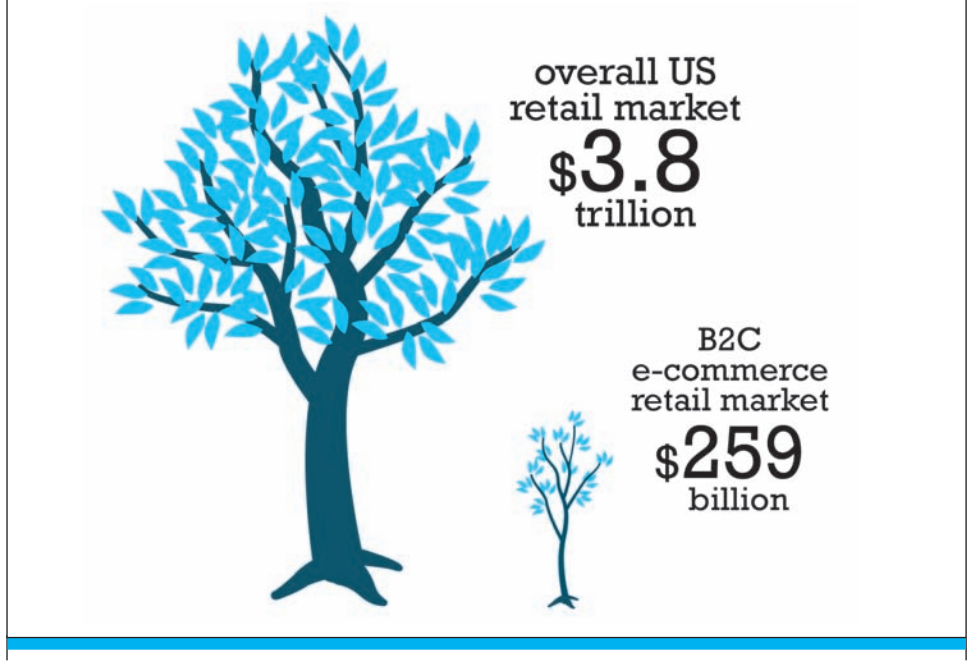
Other analysts who are more optimistic about the Web's chances to remain relevant in an increasingly app-driven online marketplace feel this way because of the emergence of HTML5. HTML5 is a new markup language that will enable more dynamic Web content and allow for browser-accessible Web apps that are as appealing as device-specific apps. In fact, there is another group of analysts who believe that apps and the Web are going to come together, with HTML5 bringing the best of the app experience to the Web, and with apps developing new Web-like capabilities. Already, work is underway to create more "smart" apps that handle a wider array of tasks than today's apps can handle, such as Google Glasses or apps with Siri integration.

A shift towards apps and away from the Web would have a ripple effect on 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 they will also face increasing opposition from other companies, including Google, the established success of the App Store will make it next to impossible to dethrone them. Google's search business is likely to suffer from all of the "walled garden" apps that it cannot access, but it also has a major stake in the world of smartphones, tablets, and apps itself with its fleet of Android-equipped devices. Facebook has already seen its members make the transition from using its site on the Web to using its mobile app, but it has yet to determine how it will monetize the app platform effectively. Web-based companies that fail to find an answer to this problem may eventually fall by the wayside. The one sure bet is that nobody knows for sure exactly what the future holds for apps, the Web, and the Internet.

SOURCES: "Convergence of User Experiences," Savas.me, April 4, 2013; Simon Khalaf, "Flurry Five-Year Report: It's an App World. The Web Just Lives in It," Flurry.com, April 3, 2013; Eric Jackson, "Here's Why Google and Facebook Might Completely Disappear in the Next 5 Years," Forbes.com, April 30, 2012; Gabe Knuth, "Is The Web Dead In the Face of Native Apps? Not Likely, But Some Think So," Brianmadden.com, March 28, 2012; Janna Quitney Anderson and Lee Rainie, "Imagining the Internet," Pew Internet and American Life Project, March 23, 2012; Chris Anderson and Michael Wolff, "The Web is Dead. Long Live the Internet," Wired.com, August 17, 2010; Chris Anderson, "The Web is Dead? A Debate," Wired.com, August 17, 2010.

The data suggests that, over the next five years, B2C e-commerce in the United States will grow by about 14% annually, much faster than traditional retail sales (which are growing at only about 4% a year). There is tremendous upside potential. Today, for instance, B2C retail e-commerce is still a very small part (around 6–7%) of the overall $3.8 trillion retail market in the United States, and under current projections, will still be less than Walmart's fiscal 2013 revenue ($466 billion) in 2017. There is obviously much room to grow (see **Figure 1.7**). However, it's not likely that B2C e-commerce revenues will continue to expand forever at double-digit rates. As online sales become a larger percentage of all sales, online sales growth will likely eventually decline to that growth level. This point still appears to be a long way off. Online content sales, everything from

FIGURE 1.7 ROOM TO GROW



The B2C e-commerce retail market is still just a small part of the overall U.S. retail market, but with much room to grow in the future.

SOURCES: Bureau of Economic Analysis, U.S. Department of Commerce, 2013; eMarketer, Inc., 2013a.

music, to video, medical information, games, and entertainment, have an even longer period to grow before they hit any ceiling effects.

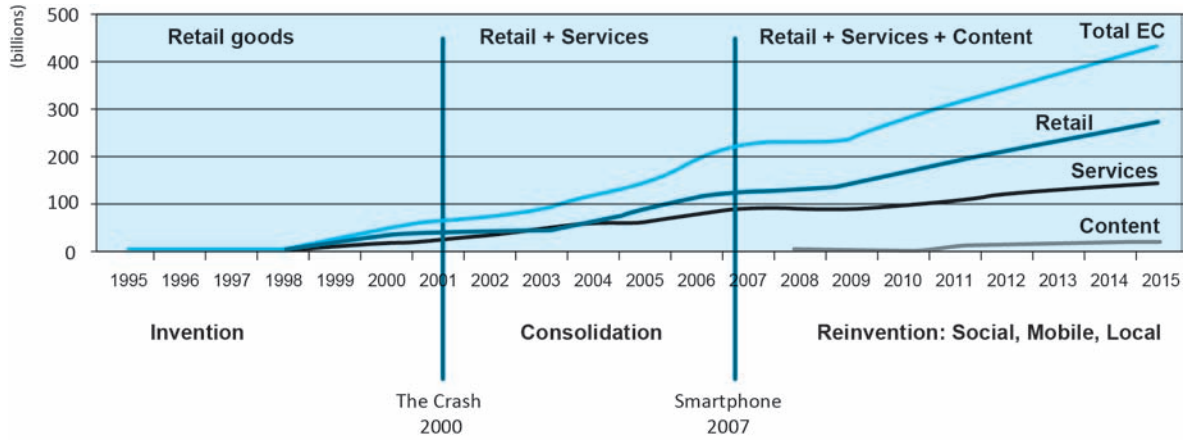
1.2 E-COMMERCE: A BRIEF HISTORY

Although e-commerce is not very old, it already has a tumultuous history. The history of e-commerce can be usefully divided into three periods: 1995–2000, the period of invention; 2001–2006, the period of consolidation; and 2007–present, a period of reinvention with social, mobile, and local expansion. The following examines each of these periods briefly, while **Figure 1.8** places them in context along a timeline.

E-COMMERCE 1995–2000: INVENTION

The early years of e-commerce were a period of explosive growth and extraordinary innovation, beginning in 1995 with the first widespread use of the Web to advertise products. During this Invention period, e-commerce meant selling retail goods, usually quite simple goods, on the Internet. There simply was not enough bandwidth for more complex products. Marketing was limited to unsophisticated static display ads and not very powerful search engines. The Web policy of most large firms, if they

FIGURE 1.8 PERIODS IN THE DEVELOPMENT OF E-COMMERCE



had one at all, was to have a basic static Web site depicting their brands. The rapid growth in e-commerce was fueled by over $125 billion in venture capital. This period of e-commerce came to a close in 2000 when stock market valuations plunged, with thousands of companies disappearing (the "dot-com crash").

The early years of e-commerce were also one of the most euphoric of times in American commercial history. It was also a time when key e-commerce concepts were developed. For computer scientists and information technologists, the early success of e-commerce was a powerful vindication of a set of information technologies that had developed over a period of 40 years—extending from the development of the early Internet, to the PC, to local area networks. The vision was of a universal communications and computing environment that everyone on Earth could access with cheap, inexpensive computers—a worldwide universe of knowledge stored on HTML pages created by hundreds of millions of individuals and thousands of libraries, governments, and scientific institutes. Technologists celebrated the fact that the Internet was not controlled by anyone or any nation, but was free to all. They believed the Internet—and the e-commerce that rose on this infrastructure—should remain a self-governed, self-regulated environment.

For economists, the early years of e-commerce raised the realistic prospect of a nearly perfect competitive market: where price, cost, and quality information are equally distributed, a nearly infinite set of suppliers compete against one another, and customers have access to all relevant market information worldwide. The Internet would spawn digital markets where information would be nearly perfect—something that is rarely true in other real-world markets. Merchants in turn would have equal direct access to hundreds of millions of customers. In this near-perfect information marketspace, transaction costs would plummet because search costs—the cost of searching for prices, product descriptions, payment settlement, and order fulfillment—would all fall drastically (Bakos, 1997). For merchants, the cost of

searching for customers would also fall, reducing the need for wasteful advertising. At the same time, advertisements could be personalized to the needs of every customer. Prices and even costs would be increasingly transparent to the consumer, who could now know exactly and instantly the worldwide best price, quality, and availability of most products. Information asymmetry would be greatly reduced. Given the instant nature of Internet communications, the availability of powerful sales information systems, and the low cost involved in changing prices on a Web site (low menu costs), producers could dynamically price their products to reflect actual demand, ending the idea of one national price, or one suggested manufacturer's list price. In turn, market middlemen—the distributors and wholesalers who are intermediaries between producers and consumers, each demanding a payment and raising costs while adding little value—would disappear (**disintermediation**). Manufacturers and content originators would develop direct market relationships with their customers. The resulting intense competition, the decline of intermediaries, and the lower transaction costs would eliminate product brands, and along with it, the possibility of *monopoly profits* based on brands, geography, or special access to factors of production. Prices for products and services would fall to the point where prices covered costs of production plus a fair, "market rate" of return on capital, plus additional small payments for entrepreneurial effort (that would not last long). Unfair competitive advantages (which occur when one competitor has an advantage others cannot purchase) would be eliminated, as would extraordinary returns on invested capital. This vision was called **friction-free commerce** (Smith et al., 2000).

disintermediation
displacement of market middlemen who traditionally are intermediaries between producers and consumers by a new direct relationship between producers and consumers

friction-free commerce
a vision of commerce in which information is equally distributed, transaction costs are low, prices can be dynamically adjusted to reflect actual demand, intermediaries decline, and unfair competitive advantages are eliminated

first mover
a firm that is first to market in a particular area and that moves quickly to gather market share

For real-world entrepreneurs, their financial backers, and marketing professionals, e-commerce represented an extraordinary opportunity to earn far above normal returns on investment. The e-commerce marketspace represented access to millions of consumers worldwide who used the Internet and a set of marketing communications technologies (e-mail and Web pages) that was universal, inexpensive, and powerful. These new technologies would permit marketers to practice what they always had done—segmenting the market into groups with different needs and price sensitivity, targeting the segments with branding and promotional messages, and positioning the product and pricing for each group—but with even more precision. In this new marketspace, extraordinary profits would go to **first movers**—those firms who were first to market in a particular area and who moved quickly to gather market share. In a "winner take all" market, first movers could establish a large customer base quickly, build brand name recognition early, create an entirely new distribution channel, and then inhibit competitors (new entrants) by building in *switching costs* for their customers through proprietary interface designs and features available only at one site. The idea for entrepreneurs was to create near monopolies online based on size, convenience, selection, and brand. Online businesses using the new technology could create informative, community-like features unavailable to traditional merchants. These "communities of consumption" also would add value and be difficult for traditional merchants to imitate. The thinking was that once customers became accustomed to using a company's unique Web interface and feature set, they could not easily be switched to competitors. In

the best case, the entrepreneurial firm would invent proprietary technologies and techniques that almost everyone adopted, creating a network effect. A **network effect** occurs where all participants receive value from the fact that everyone else uses the same tool or product (for example, a common operating system, telephone system, or software application such as a proprietary instant messaging standard or an operating system such as Windows), all of which increase in value as more people adopt them.[2]

network effect
occurs where users receive value from the fact that everyone else uses the same tool or product

To initiate this process, entrepreneurs argued that prices would have to be very low to attract customers and fend off potential competitors. E-commerce was, after all, a totally new way of shopping that would have to offer some immediate cost benefits to consumers. However, because doing business on the Web was supposedly so much more efficient when compared to traditional "bricks-and-mortar" businesses (even when compared to the direct mail catalog business) and because the costs of customer acquisition and retention would supposedly be so much lower, profits would inevitably materialize out of these efficiencies. Given these dynamics, market share, the number of visitors to a site ("eyeballs"), and gross revenue became far more important in the earlier stages of an online firm than earnings or profits. Entrepreneurs and their financial backers in the early years of e-commerce expected that extraordinary profitability would come, but only after several years of losses.

Thus, the early years of e-commerce were driven largely by visions of profiting from new technology, with the emphasis on quickly achieving very high market visibility. The source of financing was venture capital funds. The ideology of the period emphasized the ungoverned "Wild West" character of the Web and the feeling that governments and courts could not possibly limit or regulate the Internet; there was a general belief that traditional corporations were too slow and bureaucratic, too stuck in the old ways of doing business, to "get it"—to be competitive in e-commerce. Young entrepreneurs were therefore the driving force behind e-commerce, backed by huge amounts of money invested by venture capitalists. The emphasis was on *deconstructing* (destroying) traditional distribution channels and disintermediating existing channels, using new pure online companies who aimed to achieve impregnable first-mover advantages. Overall, this period of e-commerce was characterized by experimentation, capitalization, and hypercompetition (Varian, 2000b).

E-COMMERCE 2001–2006: CONSOLIDATION

In the second period of e-commerce, from 2000 to 2006, a sobering period of reassessment of e-commerce occurred, with many critics doubting its long-term prospects. Emphasis shifted to a more "business-driven" approach rather than being technology driven; large traditional firms learned how to use the Web to strengthen their market positions; brand extension and strengthening became more important than creating new brands; financing shrunk as capital markets shunned start-up firms; and traditional bank financing based on profitability returned.

[2] The network effect is quantified by Metcalfe's Law, which argues that the value of a network grows by the square of the number of participants.

During this period of consolidation, e-commerce changed to include not just retail products but also more complex services such as travel and financial services. This period was enabled by widespread adoption of broadband networks in American homes and businesses, coupled with the growing power and lower prices of personal computers that were the primary means of accessing the Internet, usually from work or home. Marketing on the Internet increasingly meant using search engine advertising targeted to user queries, rich media and video ads, and behavioral targeting of marketing messages based on ad networks and auction markets. The Web policy of both large and small firms expanded to include a broader "Web presence" that included not just Web sites, but also e-mail, display, and search engine campaigns; multiple Web sites for each product; and the building of some limited community feedback facilities. E-commerce in this period was growing again by more than 10% a year.

E-COMMERCE 2007—PRESENT: REINVENTION

Beginning in 2007 with the introduction of the iPhone, to the present day, e-commerce has been transformed yet again by the rapid growth of online social networks, widespread adoption of consumer mobile devices such as smartphones and tablet computers, and the expansion of e-commerce to include local goods and services. The defining characteristics of this period are often characterized as the "social, mobile, local" online world. In this period, entertainment content begins to develop as a major source of e-commerce revenues and mobile devices become entertainment centers, as well as on-the-go shopping devices for retail goods and services. Marketing is transformed by the increasing use of social networks, word-of-mouth, viral marketing, and much more powerful data repositories and analytic tools for truly personal marketing. Firms' online policies expand in the attempt to build a digital presence that surrounds the online consumer with coordinated marketing messages based on their social network memberships, use of search engines and Web browsers, and even their personal e-mail messages, social networks, the mobile platform, and local commerce. This period is as much a sociological phenomenon as it is a technological or business phenomenon. Not many of the social, mobile, and local e-commerce companies have been able to monetize their huge audiences into profitable operations yet, but many eventually will. The *Insight on Business* case, *Start-up Boot Camp*, takes a look at Y-Combinator, which has mentored a number of these new social, mobile, and local e-commerce ventures.

Table 1.4 summarizes e-commerce in each of these three periods.

ASSESSING E-COMMERCE: SUCCESSES, SURPRISES, AND FAILURES

Looking back at the early years of e-commerce, it is apparent that e-commerce has been, for the most part, a stunning technological success as the Internet and the Web ramped up from a few thousand to billions of e-commerce transactions per year, and this year will generate an estimated $419 billion in total B2C revenues and around $4.7 trillion in B2B revenues, with around 155 million online buyers in the United States. With enhancements and strengthening, described in later chapters, it is clear that e-commerce's digital infrastructure is solid enough to sustain significant growth in e-commerce during the next decade. The Internet scales well. The "e" in e-commerce has been an overwhelming success.

INSIGHT ON BUSINESS

START-UP BOOT CAMP

By now we've all heard the story of some lines of code written by Mark Zuckerberg in a Harvard dorm room blossoming into a multi-billion dollar business. These days, it's harder than ever to keep track of all the tech start-ups being bought for millions and even billions of dollars, often even without a cent of revenue to show for themselves. A number of them have something in common—they have been nurtured, and in some cases, whipped into shape, with the help of an "incubator."

As entrepreneurs continue to launch a growing number of e-commerce companies, incubators have come to occupy a vital role in Silicon Valley, helping new businesses move from little more than a great idea to an established, vibrant business. Founded in 2005 by programmer and venture capitalist Paul Graham, Y Combinator is Silicon Valley's best known incubator. Twice a year the company provides a three-month boot camp, complete with seed funding and mentorship from an extensive network of highly regarded tech entrepreneurs, like Gmail creator Paul Buchheit. Every boot camp ends with a demonstration day, known as "D Day," where all of the entrepreneurs, known as "founders," pitch their fledgling businesses to a group of wealthy venture capitalists hoping to unearth the next Facebook or Google.

When companies are admitted to Y Combinator after a rigorous selection progress, they are given $100,000 or more in exchange for a 7% stake in the company. Founders have regular meetings with Y Combinator partners, and have free access to technical advice, emotional support, and lessons in salesmanship. Through 2013, Y Combinator has helped launch 511 start-up companies, which together have a net worth of $11.5 billion. Y Combinator proudly touts that the average value of a company that it helps launch is about $22.4 million, but these numbers are inflated by Y Combinator's biggest successes: Dropbox and Airbnb. Dropbox, an increasingly popular file hosting service, is worth approximately $4 billion, and Airbnb, an online vacation rental marketplace, comes in at $2.5 billion. Other well-known graduates include Reddit, a social news site, and Stripe, which offers Web-based credit card payment software. Another somewhat surprising success from a recent boot camp is Teespring. Started in 2012 by two students at Brown University, Teespring is a crowdfunding Web site that sells custom-made T-shirts and hoodies. Teespring raised $1.3 million in early 2013.

Not every company that makes it through Y Combinator's boot camps is this successful, or successful at all. Companies that fail to attract sufficient investor interest at D Day can try again with a different company, go their own way and "grow organically," which is practically a death sentence in today's Silicon Valley, or resign themselves to work at Google or Facebook. Y Combinator has had to reduce its class sizes from over 80 to less than 50 because the quality of companies had been less appealing to investors. Still, that number is likely to increase again, and there is no shortage of entrepreneurs with visions of guiding their companies to becoming the next billion dollar business. A Y Combinator company with a successful pitch on D Day is likely to garner at least $1 million in investment money.

The most recent spate of incredibly lucrative start-up companies have been social media-related services. The image hosting service Instagram was purchased by Facebook for a cool billion dollars, despite not having any revenue. Other similar companies include TweetDeck (bought by Twitter for $40 million), GroupMe (bought by Skype, $85

(continued)

million), and Siri (bought by Apple, $200 million). Pinterest is likely to be next, and it already carries a $2.5 billion valuation from early 2013. These companies have such enormous valuations not because of their current revenues, which are often nonexistent, but because they are perceived as having some small, but realistic, chance of becoming the next Facebook or Google. As one venture capital investor explained it, a company with a 1% chance of being a hundred-billion company might be worth a billion dollars.

Social network fever appears to be dying down somewhat, however. After the lukewarm reception to the IPOs of Groupon, Zynga, and Facebook, social media start-ups are no longer in as high demand. The demographics of Y Combinator's latest class reflects this change. In past years, start-ups focused on developing sweeping projects to attract billions of eyeballs without much concern about revenue, but more recent Y Combinator participants are focused on revenue charts instead of eyeballs, and on services and technology that solve concrete, even 'boring' problems. Examples include CircuitLab, a digital service that helps people design electrical circuits, Thalmic Labs, maker of a device that allows people to use physical gestures to control technology, and Wevorce, a technology platform that helps couples navigate amicable divorce.

Some skeptics believe that incubators like Y Combinator might not be the best idea for every start-up. For start-ups with solid, but not eye-popping peripherals, Y Combinator's D Day might actually hurt their chances of getting funding. Having to compete against an extremely qualified field of start-up companies diminishes the appeal for less flashy businesses. Once you've failed at acquiring funding at Y Combinator, other prospective investors might become concerned. There is also the concern that many companies raise too much money early on, and grow to a size that makes it more difficult to develop the product. Lastly, some tech investors worry that Y Combinator relies too much on Graham for its success, and would struggle to duplicate its results without him.

Graham dismisses these concerns, and both enrollment and investment numbers indicate that Y Combinator and its fledgling companies are becoming more and more successful. Though Dropbox and Airbnb are its biggest success stories, 37 other companies that Y Combinator has funded have a current valuation of over $40 million, which is good news both for those companies and for Y Combinator, which owns a stake in all of them. As the business world continues its shift towards technology, Y Combinator and other incubators stand ready to ease the transition.

SOURCES: Joshua Reeves, "Don't Raise Capital Until You Know How to Spend It," *Wall Street Journal*, June 3, 2013; Cromwell Schubarth, "Y Combinator Tally: 511 Startups, $11.5B Valuation," bizjournals.com, May 28, 2013; Leena Rao, "Paul Graham: 37 Y Combinator Companies Have Valuations of or Sold for At Least $40M," *TechCrunch*, May 26, 2013; Rebecca Grant, "Y Combinator Adds Five New Partners to Guide Its Startups Towards Success," *VentureBeat*, May 16, 2013; Nathaniel Rich, "Silicon Valley's Start-up Machine," *New York Times*, May 2, 2013; Charles Moldow, "For Y Combinator Graduates, Timing Should Be Everything," allthingsd.com, April 30, 2013; Amir Efrati, "At Y Combinator, Social is Out, Revenue is In," *Wall Street Journal*, March 26, 2013; Drew Hansen, "What's the Secret Behind Y Combinator's Success?" www.forbes.com, February 18, 2013

From a business perspective, though, the early years of e-commerce were a mixed success, and offered many surprises. Only about 10% of dot-coms formed since 1995 have survived as independent companies in 2013. Only a very tiny percentage of these survivors are profitable. Yet online B2C sales of goods and services are still growing. Consumers have learned to use the Web as a powerful source of information about products they actually purchase through other channels, such as at a traditional bricks-and-mortar store. This is especially true of expensive consumer durables such

TABLE 1.4 EVOLUTION OF E-COMMERCE

1995–2000 INVENTION	2001–2006 CONSOLIDATION	2007–PRESENT RE-INVENTION
Technology driven	Business driven	Mobile technology enables social, local, and mobile commerce
Revenue growth emphasis	Earnings and profits emphasis	Audience and social network connections emphasis
Venture capital financing	Traditional financing	Smaller VC investments; early small-firm buyouts by large online players
Ungoverned	Stronger regulation and governance	Extensive government surveillance
Entrepreneurial	Large traditional firms	Entrepreneurial social and local firms
Disintermediation	Strengthening intermediaries	Proliferation of small online intermediaries renting business processes of larger firms
Perfect markets	Imperfect markets, brands, and network effects	Continuation of online market imperfections; commodity competition in select markets
Pure online strategies	Mixed "bricks-and-clicks" strategies	Return of pure online strategies in new markets; extension of bricks-and-clicks in traditional retail markets
First-mover advantages	Strategic-follower strength; complementary assets	First-mover advantages return in new markets as traditional Web players catch up
Low-complexity retail products	High-complexity retail products and services	Retail, services, and content

as appliances, automobiles, and electronics. This "Internet-influenced" commerce is very difficult to estimate, but is believed to have been somewhere around $1.3 trillion in 2013 (Forrester Research, 2012). Altogether then, B2C retail e-commerce (both actual purchases and purchases influenced by online shopping but actually buying in a store) are expected to amount to over $1.5 trillion in 2013, or over 45% of total retail sales in the United States. The "commerce" in e-commerce is basically very sound, at least in the sense of attracting a growing number of customers and generating revenues.

Although e-commerce has grown at an extremely rapid pace in customers and revenues, it is clear that many of the visions, predictions, and assertions about e-commerce developed in the early years have not have been fulfilled. For instance, economists' visions of "friction-free" commerce have not been entirely realized. Prices are sometimes lower online, but the low prices are sometimes a function of entrepreneurs selling products below their costs. Consumers are less price sensitive than expected; surprisingly,

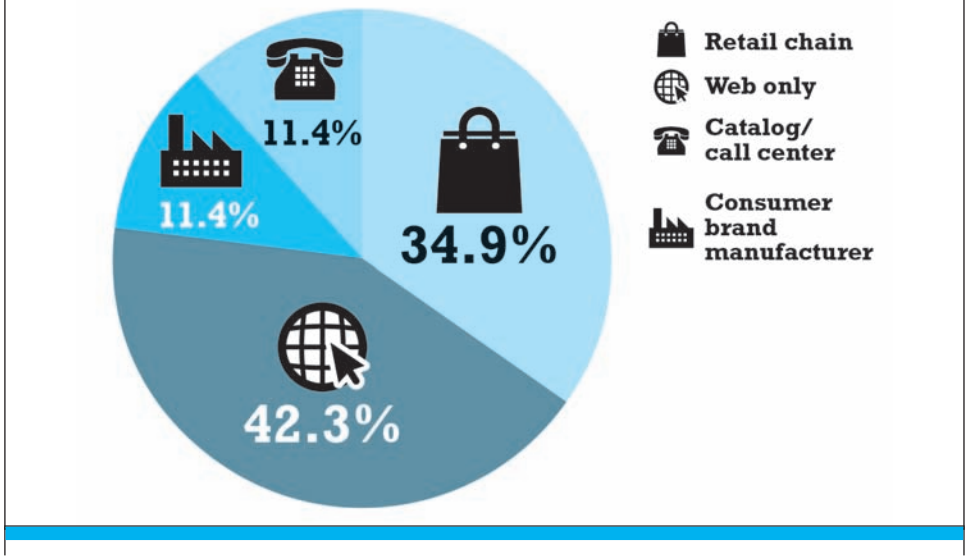
the Web sites with the highest revenue often have the highest prices. There remains considerable persistent and even increasing price dispersion: online competition has lowered prices, but price dispersion remains pervasive in many markets despite lower search costs (Levin, 2011; Ghose and Yao, 2010). The concept of one world, one market, one price has not occurred in reality as entrepreneurs discover new ways to differentiate their products and services. While for the most part Internet prices save consumers about 20% on average when compared to in-store prices, sometimes online prices are higher than for similar products purchased offline, especially if shipping costs are considered. For instance, prices on books and CDs vary by as much as 50%, and prices for airline tickets as much as 20% (Alessandria, 2009; Aguiar and Hurst, 2008; Baye, 2004; Baye et al., 2004; Brynjolfsson and Smith, 2000; Bailey, 1998a, b). Merchants have adjusted to the competitive Internet environment by engaging in "hit-and-run pricing" or changing prices every day or hour (using "flash pricing" or "flash sales") so competitors never know what they are charging (neither do customers); by making their prices hard to discover and sowing confusion among consumers by "baiting and switching" customers from low-margin products to high-margin products with supposedly "higher quality." Finally, brands remain very important in e-commerce—consumers trust some firms more than others to deliver a high-quality product on time (Rosso and Jansen, 2010).

The "perfect competition" model of extreme market efficiency has not come to pass. Merchants and marketers are continually introducing information asymmetries. Search costs have fallen overall, but the overall transaction cost of actually completing a purchase in e-commerce remains high because users have a bewildering number of new questions to consider: Will the merchant actually deliver? What is the time frame of delivery? Does the merchant really stock this item? How do I fill out this form? Many potential e-commerce purchases are terminated in the shopping cart stage because of these consumer uncertainties. Some people still find it easier to call a trusted catalog merchant on the telephone than to order on a Web site. Finally, intermediaries have not disappeared as predicted. Most manufacturers, for instance, have not adopted the Dell model of online sales (direct sales by the manufacturer to the consumer), and Dell itself has moved towards a mixed model heavily reliant on in-store sales where customers can "kick the tires" by trying the keyboard and viewing the screen. Apple stores are among the most successful stores in the world, with sales of about $5,600 per square foot, about 20 times the average for retail stores. People still like to shop in a physical store.

If anything, e-commerce has created many opportunities for middlemen to aggregate content, products, and services into portals and search engines and thereby introduce themselves as the "new" intermediaries. Yahoo, MSN, and Amazon, along with third-party travel sites such as Travelocity, Orbitz and Expedia, are all examples of this kind of intermediary. As illustrated in **Figure 1.9**, e-commerce has not driven existing retail chains and catalog merchants out of business, although it has created opportunities for entrepreneurial Web-only firms to succeed.

The visions of many entrepreneurs and venture capitalists for e-commerce have not materialized exactly as predicted either. First-mover advantage appears to have succeeded only for a very small group of sites. Historically, first movers have been long-term losers, with the early-to-market innovators usually being displaced by established "fast-follower" firms with the right complement of financial, marketing, legal, and production assets needed to develop mature markets, and this has proved true for

FIGURE 1.9 **SHARE OF ONLINE RETAIL SALES BY TYPE OF COMPANY**



Web-only firms account for the largest share of online retail sales, followed closely by online sales by traditional retail chain stores.

SOURCE: Based on data from Internet Retailer, 2013.

e-commerce as well. Many e-commerce first movers, such as eToys, FogDog (sporting goods), Webvan (groceries), and Eve.com (beauty products) are out of business. Customer acquisition and retention costs during the early years of e-commerce were extraordinarily high, with some firms, such as E*Trade and other financial service firms, paying up to $400 to acquire a new customer. The overall costs of doing business online—including the costs of technology, site design and maintenance, and warehouses for fulfillment—are often no lower than the costs faced by the most efficient bricks-and-mortar stores. A large warehouse costs tens of millions of dollars regardless of a firm's online presence. The knowledge of how to run the warehouse is priceless, and not easily moved. The start-up costs can be staggering. Attempting to achieve or enhance profitability by raising prices has often led to large customer defections (as can be seen from Netflix's recent experience). From the e-commerce merchant's perspective, the "e" in e-commerce does not stand for "easy."

PREDICTIONS FOR THE FUTURE: MORE SURPRISES

Given that e-commerce has changed greatly in the last several years, its future cannot be predicted except to say "Watch for more surprises." There are several factors that will help define the future of e-commerce. First, there is little doubt that the technology of e-commerce—the Internet, the Web, and the growing number of mobile devices, including smartphones and tablet computers—will continue to propagate through all commercial activity. The overall revenues from e-commerce (goods and services) in the United States rose in 2012 by around 16% and are expected to continue to rise, most likely at an annualized rate of about 14% per year through 2017. The number of products and

services sold online and the size of the average purchase order both will continue to grow at near double-digit rates. The number of online shoppers in the United States will also continue to grow, although at a much more modest rate of about 1% per year. There has also been a significant broadening of the online product mix compared to the early years when books, computer software, and hardware dominated e-commerce (see **Figure 1.10**). This trend will continue. (See Chapter 9 for changes in retail products and services.)

Second, traditional, well-endowed, experienced Fortune 500 companies will continue to play a dominant role in e-commerce, while new start-up ventures will quickly gain large online audiences for new products and services not dominated by the large players. There will also be a continuation of audience consolidation on the Internet in general, with the top 100 sites garnering over 80% of all online

FIGURE 1.10 ONLINE RETAIL SALES BY CATEGORY, 2012

The mix of products sold online has significantly broadened, although computers and other electronics remain the leading category, with $56.8 billion in sales.

SOURCES: Based on data from U.S. Department of Commerce, 2013; eMarketer, Inc., 2013a; Internet Retailer, 2013; authors' estimates.

TABLE 1.5 TOP 15 ONLINE RETAILERS RANKED BY ONLINE SALES

ONLINE RETAILER	ONLINE SALES (2012) (IN BILLIONS)
Amazon	$61.1
Staples	$10.3
Apple	$8.8
Walmart	$7.7
Liberty Interactive (QVC, etc.)	$4.3
Sears	$4.2
Office Depot	$4.1
Dell	$3.9
Netflix	$3.6
Best Buy	$3.3
OfficeMax	$3.2
Macy's	$3.2
CDW	$3.1
Newegg	$2.8
W.W. Grainger	$2.7

SOURCES: Based on data from Internet Retailer, 2013; company reports on Form 10-K filed with the Securities and Exchange Commission.

sales (Internet Retailer, 2013). **Table 1.5** lists the top 15 online retailers, as ranked by 2012 online sales. The table shows an unmistakable trend toward well-known, traditional brands from strong traditional retail chains, with Staples, Walmart, Office Depot, Sears, Best Buy, OfficeMax, and Macy's all in the top 15.

Third, the number of successful purely online companies will remain smaller than integrated online/offline stores that combine traditional sales channels such as physical stores and printed catalogs with online efforts. For instance, traditional catalog sales firms such as L.L.Bean have transformed themselves into integrated online and direct mail firms with more than half of their sales coming from the online channel.

The future of e-commerce will include the continued growth of regulatory activity both in the United States and worldwide. Governments around the world have challenged the early vision of computer scientists and information technologists that the Internet should be a self-regulating and self-governing phenomenon. The Internet and e-commerce have been so successful and powerful, so all-pervasive, that they directly involve the social, cultural, and political life of entire nations and cultures. Throughout history, whenever technologies have risen to this level of social importance, power, and visibility, they become the target of efforts to regulate and control the technology to ensure that positive social benefits result from their use and to guarantee the public's health and welfare. Radio, television, automobiles, electricity, and railroads are all the subject of regulation and legislation. Likewise, with e-commerce. In the U.S. Congress, there have already been a number of bills passed (as well as hundreds proposed) to

control various facets of the Internet and e-commerce, from consumer privacy to pornography, gambling, and encryption. We can expect these efforts at regulation in the United States and around the world to increase as e-commerce extends its reach and importance.

A relatively new factor that will influence the growth of e-commerce is the cost of energy, in particular gasoline and diesel. As fuel costs rise, traveling to shop at physical locations can be very expensive. Buying online can save customers time and energy costs. There is growing evidence that shoppers are changing their shopping habits and locales because of fuel costs, and pushing the sales of online retailers to higher levels.

In summary, the future of e-commerce will be a fascinating mixture of traditional retail, service, and media firms extending their brands to online markets; early-period e-commerce firms such as Amazon and eBay strengthening their financial results and dominant positions; and a bevy of entirely new entrepreneurial firms with the potential to rocket into prominence by developing huge new audiences in months. Firms that fit this pattern include Facebook, Twitter, Pinterest, and Tumblr.

1.3 UNDERSTANDING E-COMMERCE: ORGANIZING THEMES

Understanding e-commerce in its totality is a difficult task for students and instructors because there are so many facets to the phenomenon. No single academic discipline is prepared to encompass all of e-commerce. After teaching the e-commerce course for several years and writing this book, we have come to realize just how difficult it is to "understand" e-commerce. We have found it useful to think about e-commerce as involving three broad interrelated themes: technology, business, and society. We do not mean to imply any ordering of importance here because this book and our thinking freely range over these themes as appropriate to the problem we are trying to understand and describe. Nevertheless, as in previous technologically driven commercial revolutions, there is a historic progression. Technologies develop first, and then those developments are exploited commercially. Once commercial exploitation of the technology becomes widespread, a host of social, cultural, and political issues arise.

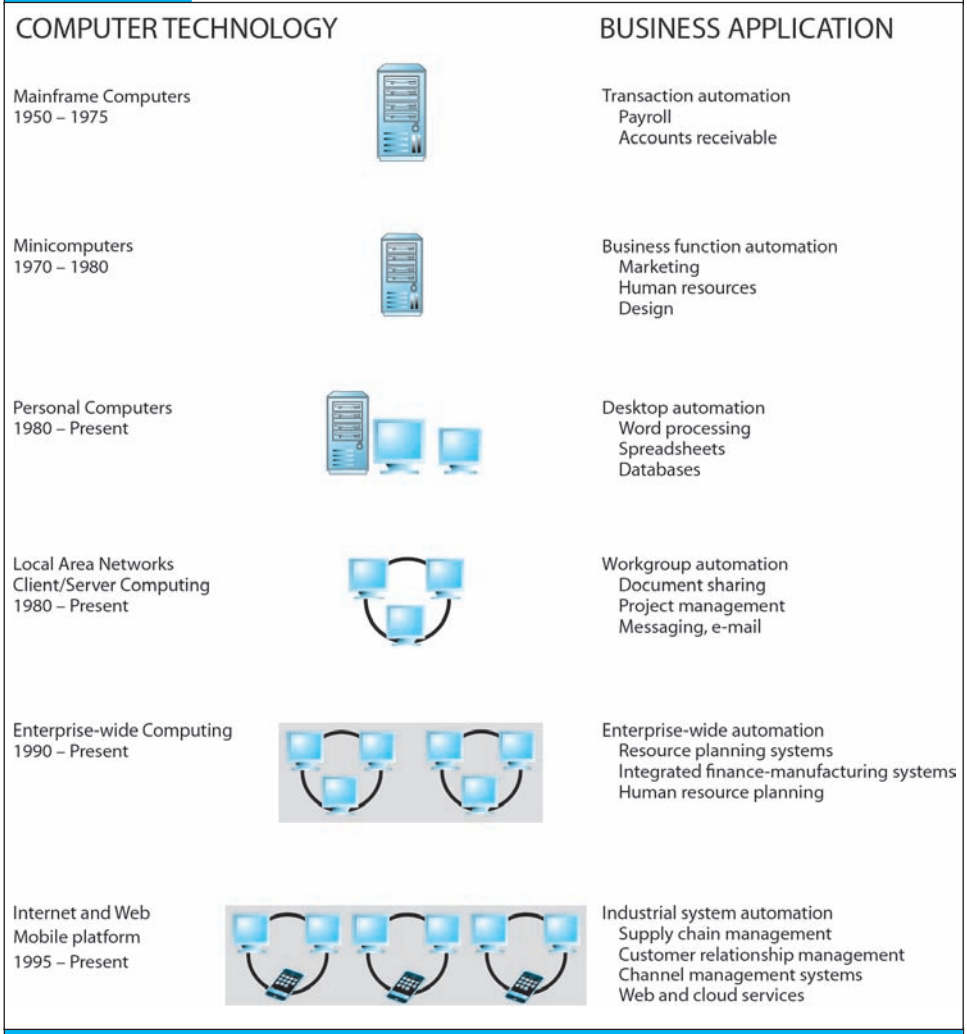
TECHNOLOGY: INFRASTRUCTURE

The development and mastery of digital computing and communications technology is at the heart of the newly emerging global digital economy we call e-commerce. To understand the likely future of e-commerce, you need a basic understanding of the information technologies upon which it is built. E-commerce is above all else a technologically driven phenomenon that relies on a host of information technologies as well as fundamental concepts from computer science developed over a 50-year period. At the core of e-commerce are the Internet and the Web, which we describe in detail in Chapter 3. Underlying these technologies are a host of complementary technologies: cloud computing, personal computers, smartphones, tablet computers, local area networks, relational and non-relational databases, client/server computing, data mining, and fiber-optic switches, to name just a few. These technologies lie at the heart of sophisticated business computing applications such as enterprise-wide computing systems, supply chain management systems, manufacturing resource

planning systems, and customer relationship management systems. E-commerce relies on all these basic technologies—not just the Internet. The Internet, while representing a sharp break from prior corporate computing and communications technologies, is nevertheless just the latest development in the evolution of corporate computing and part of the continuing chain of computer-based innovations in business. **Figure 1.11** illustrates the major stages in the development of corporate computing and indicates how the Internet and the Web fit into this development trajectory.

To truly understand e-commerce, you will need to know something about packet-switched communications, protocols such as TCP/IP, client/server and cloud

FIGURE 1.11 THE INTERNET AND THE EVOLUTION OF CORPORATE COMPUTING



The Internet and Web, and the emergence of a mobile platform held together by the Internet cloud, are the latest in a chain of evolving technologies and related business applications, each of which builds on its predecessors.

computing, mobile digital platforms, Web servers, HTML5, CSS, and software programming tools such as Flash and JavaScript on the client side, and Java, PHP, Ruby on Rails, and ColdFusion on the server side. All of these topics are described fully in Part 2 of the book (Chapters 3–5).

BUSINESS: BASIC CONCEPTS

While technology provides the infrastructure, it is the business applications—the potential for extraordinary returns on investment—that create the interest and excitement in e-commerce. New technologies present businesses and entrepreneurs with new ways of organizing production and transacting business. New technologies change the strategies and plans of existing firms: old strategies are made obsolete and new ones need to be invented. New technologies are the birthing grounds where thousands of new companies spring up with new products and services. New technologies are the graveyard of many traditional businesses, such as record stores. To truly understand e-commerce, you will need to be familiar with some key business concepts, such as the nature of digital markets, digital goods, business models, firm and industry value chains, value webs, industry structure, digital disruption, and consumer behavior in digital markets, as well as basic concepts of financial analysis. We'll examine these concepts further in Chapters 2, 6, 7, and 9 through 12.

SOCIETY: TAMING THE JUGGERNAUT

With more than 243 million Americans now using the Internet, many for e-commerce purposes, and more than 2.5 billion users worldwide, the impact of the Internet and e-commerce on society is significant and global. Increasingly, e-commerce is subject to the laws of nations and global entities. You will need to understand the pressures that global e-commerce places on contemporary society in order to conduct a successful e-commerce business or understand the e-commerce phenomenon. The primary societal issues we discuss in this book are individual privacy, intellectual property, and public welfare policy.

Since the Internet and the Web are exceptionally adept at tracking the identity and behavior of individuals online, e-commerce raises difficulties for preserving privacy—the ability of individuals to place limits on the type and amount of information collected about them, and to control the uses of their personal information. Read the *Insight on Society* case, *Facebook and the Age of Privacy,* to get a view of some of the ways e-commerce sites use personal information.

Because the cost of distributing digital copies of copyrighted intellectual property—tangible works of the mind such as music, books, and videos—is nearly zero on the Internet, e-commerce poses special challenges to the various methods societies have used in the past to protect intellectual property rights.

The global nature of e-commerce also poses public policy issues of equity, equal access, content regulation, and taxation. For instance, in the United States, public telephone utilities are required under public utility and public accommodation laws to make basic service available at affordable rates so everyone can have telephone service. Should these laws be extended to the Internet and the Web? If goods are purchased by a New York State resident from a Web site in California, shipped from a center in Illinois, and

INSIGHT ON SOCIETY

FACEBOOK AND THE AGE OF PRIVACY

In a January 2010 interview, Mark Zuckerberg, the founder of Facebook, proclaimed that the "age of privacy" had to come to an end. According to Zuckerberg, social norms had changed and people were no longer worried about sharing their personal information with friends, friends of friends, or even the entire Web. This view is in accordance with Facebook's broader goal, which is, according to Zuckerberg, to make the world a more open and connected place. Supporters of Zuckerberg's viewpoint believe the twenty-first century is an age of "information exhibitionism," a new era of openness and transparency.

However, not everyone is a true believer. Privacy—limitations on what personal information government and private institutions can collect and use—is a founding principle of democracies. A decade's worth of privacy surveys in the United States show that well over 80% of the American public fear the Internet is a threat to their privacy.

With more than 1.1 billion users worldwide, and about 230 million in North America, Facebook's privacy policies are going to shape privacy standards on the Internet for years to come. The economic stakes in the privacy debate are quite high, involving billions in advertising and transaction dollars. Social network sites such as Facebook use a model based on building a database of hundreds of millions of users who post personal information, preferences, and behaviors, and who are encouraged, or deceived, into relinquishing control over their information, which is then sold to advertisers and outside third parties. The less privacy Facebook's users want or have, the more Facebook profits.

Facebook's current privacy policies are quite a flip-flop from its original policy in 2004, which promised users near complete control over who could see their personal profile. Only immediate friends whom you invited were given access. Other users in your network could not get much information about you at all. People outside that network could find nothing about you. However, every year since 2004, Facebook has attempted to extend its control over user information and content, usually without notice.

For instance, in 2007, Facebook introduced the Beacon program, which was designed to broadcast users' activities on participating Web sites to their friends. After a public outcry, Facebook terminated the Beacon program in 2009, and paid $9.5 million to settle a host of class action lawsuits.

In 2009, undeterred by the Beacon fiasco, Facebook unilaterally decided that it would publish users' basic personal information on the public Internet, and announced that whatever content users had contributed belonged to Facebook, and that its ownership of that information never terminated. However, as with the Beacon program, Facebook's efforts to take permanent control of user information resulted in users joining online resistance groups and it was ultimately forced to withdraw this policy as well.

In 2009, Facebook also introduced the Like button, and in 2010 extended it to third-party Web sites to alert Facebook users to their friends' browsing and purchases. In 2011, it began publicizing users' "likes" of various advertisers in Sponsored Stories (i.e., advertisements) that included the users' names and profile pictures without their explicit consent, without paying them, and without giving them a way to opt out. This resulted in yet another class action lawsuit, which Facebook settled for $20 million in June 2012. As part of the settlement, Facebook agreed to make it clear to users that information like

(continued)

their names and profile pictures might be used in Sponsored Stories. In 2011, Facebook enrolled all Facebook subscribers into its facial recognition program without notice. This too raised the privacy alarm, forcing Facebook to make it easier for users to opt out. In 2012, Facebook, under pressure from European regulators, promised that it would not use the "tag suggestion" feature, which allows photos to be automatically matched with particular users.

In May 2012, Facebook went public, creating even more pressure to increase revenues and profits to justify its stock market value. Shortly thereafter, Facebook announced that it was launching a mobile advertising product that pushes ads to the mobile news feeds of users based on the apps they use through the Facebook Connect feature, without explicit permission from the user to do so. It also announced Facebook Exchange, a program that allows advertisers to serve ads to Facebook users based on their browsing activity while not on Facebook. Privacy advocates have raised the alarm yet again and more lawsuits have been filed by users who claim that Facebook has invaded their privacy by tracking their Internet use even after they have logged off from Facebook. Although Facebook is not yet combining this data with its own database of user personal information, there are concerns that it may do so in the future. In February 2013, Facebook agreed to partner with Acxiom, Epsilon, and Datalogix—all data marketing companies that deliver targeted ads based on offline data. The firms will reportedly provide customer lists to Facebook, who will match them to its users. In June 2013, Facebook also announced it was introducing searchable hashtags, whose use has been popularized by Twitter, Tumblr, and other social media sites. This is just one further step moving Facebook away from its initial origins as a place for friends to connect and toward a public platform where what one posts becomes part of a public conversation.

In June 2013, a further threat became apparent, this time emanating from a somewhat different source. The National Security Agency's PRISM program allegedly required Facebook and many other online service providers to give it access to data on users for investigations into national security issues. An uproar ensued, pushing Internet privacy issues to the forefront of the national consciousness.

It appears that Zuckerberg's proclamation that the age of privacy is over was premature. Instead, privacy issues may turn out to be an enduring headache and perhaps ultimately Facebook's Achilles heel. As Facebook itself noted in its S-1 filing with the Securities and Exchange Commission, if it adopts "policies or procedures related to areas such as sharing or user data that are perceived negatively by our users or the general public," its revenue, financial results, and business may be significantly harmed. And this, more than anything else, may be the savior for privacy at Facebook.

SOURCES: "Facebook Introduces Hashtags, Moving Away From Friends," by Bianca Bosker, HuffingtonPost.com, June 16, 2013; "Facebook Shares Numbers on Government Data Requisitions In Response to PRISM Reports," HuffingtonPost.com, June 15, 2013; "Facebook To Partner With Data Brokers," by Bob Sullivan, Redtape.NBCNews.com, February 26, 2013; "Facebook Seeks Dismissal of $15 Billion Privacy Suit," by Joel Rosenblatt, Bloomberg.com, October 5, 2012; "Facebook Can ID Faces, But Using Them Grows Tricky," by Somini Sengupta and Kevin J. O'Brien, *New York Times*, September 12, 2012; "Facebook to Face Senate Hearing on Facial Recognition," by Katy Bachman, AdWeek.com, July 16, 2012; "Facebook to Target Ads Based on App Usage," by Shayndi Raice, *Wall Street Journal*, July 6, 2012; "Facebook's Facial-Recognition Acquisition Raises Privacy Concerns," by Samantha Murphy, Mashable.com, June 25, 2012; "Facebook Exchange Ads Raise Privacy Concerns," by Mikal E. Belicove, CNBC.com, June 21, 2012; "Facebook About to Launch Facebook Exchange, Real-Time Ad Bidding," by Jessica Guynn, *Los Angeles Times*, June 13, 2012; "Facebook Suit Over Subscriber Tracking Seeks $15 Billion," by Kit Chellel and Jeremy Hodges, Bloomberg.com, May 19, 2012; Facebook Inc. Form S-1/A filed with the Securities and Exchange Commission, May 16, 2012; "Facebook and Your Privacy," by Consumer Reports Staff, ConsumerReports.org, May 3, 2012; "Facebook Offers More Disclosure to Users," by Kevin J. O'Brien, *New York Times*, April 12, 2012; "German State to Sue Facebook over Facial Recognition Feature," by Emil Protalinski, ZDnet.com, November 10, 2011;"Facebook Aims to Simplify Privacy Settings," by Somini Sengupta, *New York Times*, August 23, 2011; "Facebook Again in Spotlight on Privacy," by Geoffrey Fowler, *Wall Street Journal*, June 8, 2011; "Facebook Redesigns Privacy Controls," by Ben Worthen, *Wall Street Journal*, May 27, 2010; "How Facebook Pulled a Privacy Bait and Switch," by Dan Tynan, *PC World*, May 2010.

delivered to New York, what state has the right to collect a sales tax? Should some heavy Internet users who consume extraordinary amounts of bandwidth be charged extra for service, or should the Internet be neutral with respect to usage? What rights do nation-states and their citizens have with respect to the Internet, the Web, and e-commerce? We address issues such as these in Chapter 8, and also throughout the text.

ACADEMIC DISCIPLINES CONCERNED WITH E-COMMERCE

The phenomenon of e-commerce is so broad that a multidisciplinary perspective is required. There are two primary approaches to e-commerce: technical and behavioral.

Technical Approaches

Computer scientists are interested in e-commerce as an exemplary application of Internet technology. They are concerned with the development of computer hardware, software, and telecommunications systems, as well as standards, encryption, and database design and operation. Management scientists are primarily interested in building mathematical models of business processes and optimizing these processes. They are interested in e-commerce as an opportunity to study how business firms can exploit the Internet to achieve more efficient business operations.

Behavioral Approaches

In the behavioral area, information systems researchers are primarily interested in e-commerce because of its implications for firm and industry value chains, industry structure, and corporate strategy. The information systems discipline spans the technical and behavioral approaches. For instance, technical groups within the information systems specialty also focus on data mining, search engine design, and artificial intelligence. Economists have focused on online consumer behavior, pricing of digital goods, and on the unique features of digital electronic markets. The marketing profession is interested in marketing, brand development and extension, online consumer behavior, and the ability of e-commerce technologies to segment and target consumer groups, and differentiate products. Economists share an interest with marketing scholars who have focused on e-commerce consumer response to marketing and advertising campaigns, and the ability of firms to brand, segment markets, target audiences, and position products to achieve above-normal returns on investment.

Management scholars have focused on entrepreneurial behavior and the challenges faced by young firms who are required to develop organizational structures in short time spans. Finance and accounting scholars have focused on e-commerce firm valuation and accounting practices. Sociologists—and to a lesser extent, psychologists—have focused on general population studies of Internet usage, the role of social inequality in skewing Internet benefits, and the use of the Web as a social network and group communications tool. Legal scholars are interested in issues such as preserving intellectual property, privacy, and content regulation.

No one perspective dominates research about e-commerce. The challenge is to learn enough about a variety of academic disciplines so that you can grasp the significance of e-commerce in its entirety.

1.4 CASE STUDY

The Pirate Bay:

Searching for a Safe Haven

The Pirate Bay (TPB) is one of the world's most popular pirated music and content sites, offering free access to millions of copyrighted songs and thousands of copyrighted Hollywood movies. It claims it is the world's largest BitTorrent tracker. In June 2013, TPB reported that it had over 6 million registered users. It is in the top 500 Web sites in the world in terms of global traffic, with about 20% of the visitors coming from the United States. It even has a Facebook page and Twitter feed. This despite the fact that TPB has been subjected to repeated legal efforts to shut it down. In fact, the authorities pursuing TPB must feel as if they are engaged in a never-ending game of Whack-a-mole, as each time they "whack" TPB, it somehow manages to reappear. But the battle is far from over. The Internet is becoming a tough place for music and video pirates to make a living in part because of enforcement actions, but more importantly because of new mobile and wireless technologies that enable high-quality content to be streamed for just a small fee.

TPB is part of a European social and political movement that opposes copyrighted content and demands that music, videos, TV shows, and other digital content be free

and unrestricted. TPB does not operate a database of copyrighted content. Neither does it operate a network of computers owned by "members" who store the content, nor does it create, own, or distribute software (like BitTorrent and most other so-called P2P networks) that permit such networks to exist in the first place. Instead, TPB simply provides a search engine that responds to user queries for music tracks, or specific movie titles, and generates a list of search results that include P2P networks around the world where the titles can be found. By clicking on a selected link, users gain access to the copyrighted content, but only after downloading software and other files from that P2P network.

TPB claims it is merely a search engine providing pointers to existing P2P networks that it does not itself control. It says that it cannot control what content users ultimately find on those P2P networks, and that it is no different from any other search engine, such as Google or Bing, which are not held responsible for the content found on sites listed in search results. From a broader standpoint, TPB's founders also claim that copyright laws in general unjustly interfere with the free flow of information on the Internet, and that in any event, they were not violating Swedish copyright law, which they felt should be the only law that applied. And they further claimed they did not encourage, incite, or enable illegal downloading. Nevertheless, the defendants have never denied that theirs was a commercial enterprise. Despite all the talk calling for the free, unfettered spread of culture, TPB was a money-making operation from the beginning, designed to produce profits for its founders, with advertising as the primary source of revenue.

However, the First Swedish Court in Stockholm declared TPB's four founders guilty of violating Swedish copyright law, and sentenced each to one year in prison and payment of $3.5 million in restitution to the plaintiffs, all Swedish divisions of the major record firms (Warner Music, Sony, and EMI Group among them). The court found that the defendants had incited copyright infringement by providing a Web site with search functions, easy uploading and storage possibilities, and a tracker. The court also said that the four defendants had been aware of the fact that copyrighted material was shared with the help of their site and that the defendants were engaged in a commercial enterprise, the basis of which was encouraging visitors to violate the copyrights of owners. In fact, the primary purpose of TPB was to violate copyrights in order to make money for the owners (commercial intent).

Meanwhile, the U.S. government pressured the Swedish government to strengthen its copyright laws to discourage rampant downloading. In Sweden, downloading music and videos from illegal sites was very popular, engaged in by 43% of the Swedish Internet population. To strengthen its laws, Sweden adopted the European Union convention on copyrights, which allows content owners to receive from Internet providers the names and addresses of people suspected of sharing pirated files. In France, participating in these pirate sites will result in banishment from the Internet for up to three years. As a result, Internet traffic in Sweden declined by 40%, and has stayed there.

TPB has appealed the court judgment, has paid no fine, and its founders have, as yet, never spent a night in jail. TPB continues to operate much as before. Well, almost. In 2011, the firm moved its servers into caves in Sweden, and dispersed multiple

SOURCES: "The Pirate Bay Moves to .SX as Prosecutor Files Motion to Seize Domains," Torrentfreak.com, April 30, 2013; thepiratebay.sx, accessed May 25, 2013; alexa.com/siteinfo/thepiratebay.sx, May 25, 2013; "Pirate Bay Founder Submits Emotional Plea for Pardon," by Ernesto, TorrentFreak, July 7, 2012; "The Pirate Bay Evades ISP Blockade with IPv6, Can Do It 18 Quintillion More Times," by Sebastian Anthony, Extremetech.com, June 8, 2012; "World's Biggest Ad Agency Keelhauls 2,000 Pirate Sites," by Natalie Apostolu, *The Register*, June 14, 2011; "Internet Piracy and How to Stop It," *New York Times*, June 8, 2011; "The Pirate Bay: Five Years After the Raid," by Ernesto, Torrentfreak.com, May 31, 2011; "Why Google Would Defend Pirate Bay?," by Parmy Olson, *Forbes*, May 19, 2011; "The Protect IP Act: COICA Redux," by Abigail Phillips, Electronic Frontier Foundation, May 12, 2011; "Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property (Protect IP Act) of 2011," United States Senate, 112th Congress, 1st Session, 2011; "Pirate Bay Keeps Sinking: Another Law Suit Coming," by Stan Schroeder, mashable.com, June 22, 2010; "Idea Man of LimeWire at a Crossroads," by Joseph Plambeck, *New York Times*, May 23, 2010; "Pirate Bay Sunk by Hollywood Injunction For Now," by Charles Arthur, *The Guardian*, May 17, 2010; "British Put Teeth in Anti-Piracy Proposal," by Eric Pfanner, *New York Times*, March 14, 2010.

copies of its program to other countries just in case Swedish police tried to confiscate its servers again. Since then, like the fight against the original Caribbean pirates of the seventeenth century, global forces continue to marshal against TPB. Not the British Navy this time, but a loose coalition of a number of European countries and the United States. The firm has been hounded by lawsuits, police raids, and confiscation of servers in France, Finland, Italy, Germany, Denmark, Ireland, the U.K., and Greece. These countries have in some cases refused to allow Internet service providers in their countries to host TPB, or link to TPB, no matter where in the world its servers are located, although TPB has in some cases been able to circumvent this by frequently changing its IP address. In 2013, authorities shut down TPB's top-level domains in Sweden, Greenland, and Iceland. For the time being at least, it has found a safe haven in the the Caribbean island Saint Maarten, a fitting location for a latter-day pirate organization.

TPB has caused England, France, Malaysia, Finland, and most recently the United States to consider strong intellectual property protection laws that will prevent domestic search engines and ISPs from linking to infringing sites, or resolving their domain names. Meanwhile, the world's largest advertising agency, GroupM, keelhauled TPB and 2,000 other sites worldwide in 2011 by putting the sites on its blacklist of copyright infringing sites where it will not buy advertising space. Pirating intellectual property is, above all, about the money, as any good pirate knows.

The TPB case is just the latest in a saga of court cases involving the record industry, which wants to preserve its dominance of copyrighted music, and Internet users who want free music. In 2005, after several years of heated court battles, the case of *Metro-Goldwyn-Mayer Studios v. Grokster, et al.* finally reached the U.S. Supreme Court. In June 2005, the Court handed down its unanimous decision: Internet file-sharing services such as Grokster, StreamCast, BitTorrent, and Kazaa could be held liable for copyright infringement because they intentionally sought to induce, enable, and encourage users to share music that was owned by record companies. Indeed, it was their business model: steal the music, gather a huge audience, and monetize the audience by advertising or through subscription fees. Since the court ruling, Kazaa, Morpheus, Grokster, BearShare, iMesh, and many others have either gone out of business or settled with the record firms and converted themselves into legal file-sharing sites by entering into relationships with music industry firms. In May 2010, Mark Gorton, founder of the largest U.S. pirate site, LimeWire, lost a copyright infringement case. In May 2011, admitting his guilt ("I was wrong"), and having facilitated the mass piracy of billions of songs over a 10-year period, Gorton and his file-sharing company agreed to compensate the four largest record labels by paying them $105 million.

These legal victories, and stronger government enforcement of copyright laws, have not proven to be the magic bullet that miraculously solves all the problems facing the music industry. The music industry has had to drastically change its business model and decisively move towards digital distribution platforms. They have made striking progress, and, for the first time, in 2011 sales of music in a purely digital format accounted for more revenue than sales of music in a physical format. To do so, the music industry employed a number of different business models and online delivery

platforms, including Apple's iTunes pay-per-download model, subscription models, streaming models and now music in the cloud.

In each of these new media delivery platforms, the copyright owners—record companies, artists, and Hollywood studios—have struck licensing deals with the technology platform owners and distributors (Apple, Amazon, and Google). These new platforms offer a win-win solution. Consumers are benefitted by having near instant access to high-quality music tracks and videos without the hassle of P2P software downloads. Content owners get a growing revenue stream and protection for their copyrighted content. And the pirates? TPB and other pirate sites may not be able to compete with new and better ways to listen to music and view videos. Like the real pirates of the Caribbean, who are now just a footnote in history books, technology and consumer preference for ease of use may leave them behind.

Case Study Questions

1. Why did TPB believe it was not violating copyright laws? What did the Swedish court rule?
2. How has TPB managed to continue operating despite being found in violation of copyright laws?
3. How has the music industry reacted to the problems created by pirates like TPB?

1.5 REVIEW

KEY CONCEPTS

■ **Define e-commerce and describe how it differs from e-business.**

- E-commerce involves digitally enabled commercial transactions between and among organizations and individuals. Digitally enabled transactions include all those mediated by digital technology, meaning, for the most part, transactions that occur over the Internet, the Web, and/or via mobile apps. Commercial transactions involve the exchange of value (e.g., money) across organizational or individual boundaries in return for products or services.
- E-business refers 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, e-business does not involve commercial transactions across organizational boundaries where value is exchanged.

■ **Identify and describe the unique features of e-commerce technology and discuss their business significance.**

There are eight features of e-commerce technology that are unique to this medium:

- *Ubiquity*—available just about everywhere, at all times, making it possible to shop from your desktop, at home, at work, or even from your car.

- *Global reach*—permits commercial transactions to cross cultural and national boundaries far more conveniently and cost-effectively than is true in traditional commerce.
- *Universal standards*—shared by all nations around the world, in contrast to most traditional commerce technologies, which differ from one nation to the next.
- *Richness*—enables an online merchant to deliver marketing messages in a way not possible with traditional commerce technologies.
- *Interactivity*—allows for two-way communication between merchant and consumer and enables the merchant to engage a consumer in ways similar to a face-to-face experience, but on a much more massive, global scale.
- *Information density*—is the total amount and quality of information available to all market participants. The Internet reduces information collection, storage, processing, and communication costs while increasing the currency, accuracy, and timeliness of information.
- *Personalization* and *customization*—the increase in information density allows merchants to target their marketing messages to specific individuals and results in a level of personalization and customization unthinkable with previously existing commerce technologies.
- *Social technology*—provides a many-to-many model of mass communications. Millions of users are able to generate content consumed by millions of other users. The result is the formation of social networks on a wide scale and the aggregation of large audiences on social network platforms.

■ Recognize and describe Web 2.0 applications.

- A set of applications has emerged on the Internet, loosely referred to as Web 2.0. These applications attract huge audiences and represent significant opportunities for e-commerce revenues. Web 2.0 applications such as social networks, photo- and video-sharing sites, and blog platforms support very high levels of interactivity compared to other traditional media.

■ Describe the major types of e-commerce.

There are five major types of e-commerce:

- *B2C e-commerce* involves businesses selling to consumers and is the type of e-commerce that most consumers are likely to encounter.
- *B2B e-commerce* involves businesses selling to other businesses and is the largest form of e-commerce.
- *C2C e-commerce* is a means for consumers to sell to each other. In C2C e-commerce, the consumer prepares the product for market, places the product for auction or sale, and relies on the market maker to provide catalog, search engine, and transaction clearing capabilities so that products can be easily displayed, discovered, and paid for.
- *Social e-commerce* is e-commerce that is enabled by social networks and online social relationships.
- *M-commerce* involves the use of wireless digital devices to enable online transactions.
- *Local e-commerce* is a form of e-commerce that is focused on engaging the consumer based on his or her current geographic location.

■ Understand the evolution of e-commerce from its early years to today.

E-commerce has gone through three stages: innovation, consolidation, and reinvention. The early years of e-commerce were a period of explosive growth, beginning in 1995 with the first widespread use of the Web to advertise products and ending in 2000 with the collapse in stock market valuations for dot-com ventures.

- The early years of e-commerce were a technological success, with the digital infrastructure created during the period solid enough to sustain significant growth in e-commerce during the next decade, and a mixed business success, with significant revenue growth and customer usage, but low profit margins.
- E-commerce during its early years did not fulfill economists' visions of perfect friction-free commerce, or fulfill the visions of entrepreneurs and venture capitalists for first-mover advantages, low customer acquisition and retention costs, and low costs of doing business.
- E-commerce entered a period of consolidation beginning in 2001 and extending into 2006.
- E-commerce entered a period of reinvention in 2007 with the emergence of the mobile digital platform, social networks, and Web 2.0 applications that attracted huge audiences in a very short time span.

■ Identify the factors that will define the future of e-commerce.

Factors that will define the future of e-commerce include the following:

- E-commerce technology (the Internet, the Web, and the mobile platform) will continue to propagate through all commercial activity, with overall revenues from e-commerce and the number of products and services sold all rising.
- Traditional well-endowed and experienced Fortune 500 companies will continue to play a dominant role.
- The number of successful purely online companies will continue to decline, and most successful e-commerce firms will adopt an integrated, multi-channel bricks-and-clicks strategy.
- Regulation of the Internet and e-commerce by government will grow both in the United States and worldwide.

■ Describe the major themes underlying the study of e-commerce.

E-commerce involves three broad interrelated themes:

- *Technology*—To understand e-commerce, you need a basic understanding of the information technologies upon which it is built, including the Internet, the Web, and mobile platform, and a host of complementary technologies—cloud computing, personal computers, smartphones, tablet computers, local area networks, client/server computing, packet-switched communications, protocols such as TCP/IP, Web servers, HTML, and relational and non-relational databases, among others.
- *Business*—While technology provides the infrastructure, it is the business applications—the potential for extraordinary returns on investment—that create the interest and excitement in e-commerce. Therefore, you also need to understand some key business concepts such as electronic markets, information goods, business models, firm and industry value chains, industry structure, and consumer behavior in digital markets.

- *Society*—Understanding the pressures that global e-commerce places on contemporary society is critical to being successful in the e-commerce marketplace. The primary societal issues are intellectual property, individual privacy, and public policy.

■ Identify the major academic disciplines contributing to e-commerce.

There are two primary approaches to e-commerce: technical and behavioral. Each of these approaches is represented by several academic disciplines. On the technical side:

- Computer scientists are interested in e-commerce as an application of Internet technology.
- Management scientists are primarily interested in building mathematical models of business processes and optimizing them to learn how businesses can exploit the Internet to improve their business operations.
- Information systems professionals are interested in e-commerce because of its implications for firm and industry value chains, industry structure, and corporate strategy.
- Economists have focused on online consumer behavior and on the features of digital electronic markets.

On the behavioral side:

- Sociologists have focused on studies of Internet usage, the role of social inequality in skewing Internet benefits, and the use of the Web as a personal and group communications tool.
- Finance and accounting scholars have focused on e-commerce firm valuation and accounting practices.
- Management scholars have focused on entrepreneurial behavior and the challenges faced by young firms that are required to develop organizational structures in short time spans.
- Marketing scholars have focused on consumer response to online marketing and advertising campaigns, and the ability of firms to brand, segment markets, target audiences, and position products to achieve higher returns on investment.

QUESTIONS

1. What is e-commerce? How does it differ from e-business? Where does it intersect with e-business?
2. What is information asymmetry?
3. What are some of the unique features of e-commerce technology?
4. What is a marketspace?
5. What are three benefits of universal standards?
6. Compare online and traditional transactions in terms of richness.
7. Name three of the business consequences that can result from growth in information density.
8. What is Web 2.0? Give examples of Web 2.0 sites and explain why you included them in your list.
9. Give examples of B2C, B2B, C2C, and social, mobile, and local e-commerce besides those listed in the chapter materials.

10. How are e-commerce technologies similar to or different from other technologies that have changed commerce in the past?
11. Describe the three different stages in the evolution of e-commerce.
12. Define disintermediation and explain the benefits to Internet users of such a phenomenon. How does disintermediation impact friction-free commerce?
13. What are some of the major advantages and disadvantages of being a first mover?
14. Discuss the ways in which the early years of e-commerce can be considered both a success and a failure.
15. What are five of the major differences between the early years of e-commerce and today's e-commerce?
16. What factors will help define the future of e-commerce over the next five years?
17. Why is a multidisciplinary approach necessary if one hopes to understand e-commerce?

PROJECTS

1. Define "social e-commerce" and describe why it is a new form of advertising, search, and commerce.

2. Search the Web for an example of each of the major types of e-commerce described in Section 1.1. Create an electronic slide presentation or written report describing each Web site (take a screenshot of each, if possible), and explain why it fits into the category of e-commerce to which you have assigned it.

3. Choose an e-commerce Web site and assess it in terms of the eight unique features of e-commerce technology described in Table 1.2. Which of the features does the site implement well, and which features poorly, in your opinion? Prepare a short memo to the president of the company you have chosen detailing your findings and any suggestions for improvement you may have.

4. Given the development and history of e-commerce in the years from 1995–2013, what do you predict we will see during the next five years of e-commerce? Describe some of the technological, business, and societal shifts that may occur as the Internet continues to grow and expand. Prepare a brief electronic slide presentation or written report to explain your vision of what e-commerce will look like in 2017.

5. Follow up on events at Pinterest since June 2013 (when the opening case was prepared). Prepare a short report on your findings.