

GLOBAL
EDITION



E-commerce 2020–2021

business. technology. society.

SIXTEENTH EDITION

Kenneth C. Laudon • Carol Guercio Traver



E-commerce



business. technology. society.

GLOBAL EDITION

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P R E F A C E

E-commerce 2020–2021: business. technology. society, 16E, Global Edition provides you with an in-depth introduction to the field of e-commerce. We focus on key concepts, and the latest empirical and financial data, that will help you understand and take advantage of the evolving world of opportunity offered by e-commerce, which is dramatically altering the way business is conducted and driving major shifts in the global economy. The Global Edition is aimed at students and professionals in the European Union, the Middle East, Asia-Pacific, Australia, and South Africa. Case studies reflect e-commerce firms in these regions, and figures and tables relate to these regional sources wherever possible.

Just as important as our global orientation, we have tried to create a book that is thought-provoking and current. We use the most recent data available, and focus on companies that you are likely to encounter on a daily basis in your everyday life, such as Facebook, Google, Twitter, Amazon, YouTube, Pinterest, eBay, Uber, WhatsApp, Snapchat, and many more that you will recognize, as well as some exciting startups that may be new to you. Global Edition cases include Puma, Scratch, Canva, InMobi, Spotify, Deezer, Souq, Alibaba, OVH, ASOS, MADE.COM, Brut, and Rocket Internet, among others. We also have up-to-date coverage of the key topics in e-commerce today, from privacy and piracy, to government surveillance, cyberwar, fintech, social-local-mobile marketing, Internet sales taxes, intellectual property, and more. You will find here the most up-to-date and comprehensive overview of e-commerce today.

The e-commerce concepts you learn in this book will make you valuable to potential employers. The e-commerce job market is expanding rapidly. Many employers expect new employees to understand the basics of e-commerce, online marketing, and how to develop an e-commerce presence. Every industry today is touched in at least some way by e-commerce. The information and knowledge you find in this book will be valuable throughout your career, and after reading this book, we expect that you will be able to participate in, and even lead, management discussions about e-commerce for your firm.

WHAT'S NEW IN THE 16TH EDITION

Careers in E-commerce

In this edition, at the end of every chapter, we feature a section on careers in e-commerce that examines a job posting by an online company for an entry-level position. We provide a brief overview of the field and company, some details about the position, a list of the qualifications and skills that are typically required, and then some tips about how to prepare for an interview, as well as showing how the concepts learned in each chapter can help students answer some possible interview questions.

Currency

The 16th Global Edition features all new or updated opening, closing, and “Insight on” cases. The text, as well as all of the data, figures, and tables in the book, have been updated

through February 2020, with the latest marketing and business intelligence available from eMarketer, Pew Research Center, Forrester Research, comScore, Gartner Research, and other industry and government sources.

In addition, we have added new, expanded, and/or updated material throughout the text on a number of e-commerce topics that have appeared in the headlines during 2019 and early 2020, including the following:

- The latest developments with respect to on-demand service companies such as Uber; updates on the challenges that mobile apps pose to the Web's dominance of the Internet ecosystem, including progressive web apps (PWAs), Rocket Internet's results as an e-commerce incubator and Puma's efforts to become an omni-channel retailer (Chapter 1)
- Internet access in rural India; 5G and new Wi-Fi standards; new Internet access technologies such as drones, balloons, and white space; developments in IoT, wearable computing devices such as the Apple Watch; virtual and augmented reality (including their use by IKEA and Natuzzi Italia), artificial intelligence, and intelligent assistants (Chapter 2)
- Analysis of Scratch's success as a start-up subscription service; France's OVHcloud; alternative web development methodologies such as agile development, DevOps, component-based development, and the use of web services; DHTML, AngularJS, D3; jQuery; increasing focus on online accessibility; mobile-first and responsive design, including Klook Travel; update on Dick's Sporting Goods' effort to reclaim its e-commerce infrastructure (Chapter 3)
- New cyberwarfare threats; new security threats (such as the growth of cryptojacking, malvertising, ransomware (including WannaCry), business e-mail compromise (BEC) and W-2 phishing, data breaches at Marriott; IoT botnet DDoS attacks, newly discovered software vulnerabilities, and smartphone security issues; biometric security techniques such as Apple's Face ID; FTC enforcement actions with respect to data security; mobile wallets; Bitcoin and blockchain technology; P2P (Venmo, Facebook Messenger, Zelle); and mobile payment systems including Alipay and WeChat Pay (Chapter 4)
- How Canva leveraged a successful business model; MADE.COM's crowdsourcing-based business model; use of initial coin offerings (ICOs) by startups; new issues surrounding crowdfunding; connected cars as a new platform for e-commerce; how Dollar Shave Club used a viral video and subscription-based business model to go from small startup to being acquired for \$1 billion in just five years (Chapter 5)
- Updates on InMobi's mobile advertising platform; Google search engine algorithm updates; new IAB guidelines, ad fraud, and viewability issues; the continuing rise in usage of ad blocking software; industry and FTC guidelines on cross-device tracking; Apple's Intelligent Tracking Prevention (ITP); issues with programmatic advertising (Chapter 6)

- Update on the use of Pinterest as a social marketing and social e-commerce platform; new social marketing and social e-commerce tools from Facebook, Twitter, Pinterest, Instagram, LinkedIn, and Snapchat; Accuracast (social media marketing analysis); the issues and opportunities presented by social marketing on TikTok; use of 3D mobile marketing; proximity marketing; BLE (Chapter 7)
- Update on the right to be forgotten, privacy issues associated with digital assistant devices, facial recognition, and IoT technology; issues with persistent location tracking; FTC privacy enforcement actions; new EU General Data Protection Regulation (GDPR); Apple/U.S. government iPhone privacy fight; new technological privacy protections; privacy as a business; updates on DMCA litigation; the new EU Copyright Directive; the new EU Trade Secrets Directive; online sales tax developments in the United States and Europe; net neutrality developments; online fantasy sports gambling issues; Big Tech and antitrust issues in the United States and Europe (Chapter 8)
- Update on Spotify and Deezer; industry structure convergence continues; updates on newspaper Digital First business models; native digital news sites such as France's Brut; update on e-books; streaming music and television services; the impact of Pokemon GO and emergence of e-sports (Chapter 9)
- Update on LinkedIn; use of algorithms by social networks, such as Facebook; the dark side of social networks; Facebook fake news controversy; Yahoo Japan's acquisition of Line; update on eBay (Chapter 11)
- Updates on Souq.com, Amazon, and OpenTable; ASOS's use of big date; digital native verticals (manufacturer-direct); fintech startups; the impact of phony online reviews; updates on on-demand service companies, including Bawiq and Careem in the Middle East (Chapter 10)
- Update on Alibaba; the rise of B2B sell-side marketplaces; supply chain visibility; blockchain in the food supply chain; cloud-based B2B; mobile B2B; B2B marketing; update on Walmart supply chain issues (Chapter 12)

FEATURES AND COVERAGE

Strong Conceptual Foundation: Business, Technology, Society The book emphasizes the three major driving forces that permeate all aspects of e-commerce: business development and strategy, technological innovations, and social and legal issues and impacts. In each chapter, we explore how these forces relate to the chapter's main topic, which provides students with a strong and coherent conceptual framework for understanding e-commerce.

Currency Important new developments happen almost every day in e-commerce and the Internet. We try to capture as many of these important new developments as possible in each annual edition. You will not find a more current book for 2020–2021. Many other texts are already six months to a year out of date before they even reach the printer. This text, in contrast, reflects extensive research through February 2020.

Real-World Business Firm Focus and Cases From Akamai Technologies to Google, Microsoft, Apple, and Amazon; to Facebook, Twitter, and Snapchat; to Netflix, YouTube, and Pinterest, this book contains hundreds of real-company examples and over 60 more-extensive cases that place coverage in the context of actual e-commerce businesses. You'll find these examples in each chapter, as well as in special features such as chapter-opening, chapter-closing, and "Insight on" cases. The book takes a realistic look at the world of e-commerce, describing what's working and what isn't, rather than presenting a rose-colored or purely "academic" viewpoint. We strive to maintain a critical perspective on e-commerce and avoid industry hyperbole.

In-depth Coverage of Marketing and Advertising The text includes two chapters on marketing and advertising, both traditional online marketing and social, mobile, and local marketing. Marketing concepts, including market segmentation, personalization, clickstream analysis, bundling of digital goods, long-tail marketing, and dynamic pricing, are used throughout the text.

In-depth Coverage of B2B E-commerce We devote an entire chapter to an examination of B2B e-commerce. In writing this chapter, we developed a unique and easily understood classification schema to help students understand this complex arena of e-commerce. This chapter covers e-distributors, e-procurement companies, exchanges, and industry consortia, as well as the development of private industrial networks and collaborative commerce.

Current and Future Technology Coverage Internet and related information technologies continue to change rapidly. The most important changes for e-commerce include dramatic price reductions in e-commerce infrastructure (making it much less expensive to develop a sophisticated e-commerce presence), the explosive growth in the mobile platform, and expansion in the development of social technologies, which are the foundation of online social networks. While we thoroughly discuss the current Internet environment, we devote considerable attention to describing emerging technologies and applications such as the Internet of Things, blockchain, augmented and virtual reality, and 5G, among others.

Up-to-Date Coverage of the Research Literature This text is well grounded in the e-commerce research literature. We have sought to include, where appropriate, references to and analysis of the latest e-commerce research findings, as well as many classic articles, in all of our chapters. We have drawn especially on the disciplines of economics, marketing, and information systems and technologies, as well as law journals and broader social science research journals including sociology and psychology. Figures and tables sourced to "authors' estimates" reflect analysis of data from the U.S. Department of Commerce, estimates from various research firms, historical trends, revenues of major online retailers, consumer online buying trends, and economic conditions.

Special Attention to the Social and Legal Aspects of E-commerce We have paid special attention throughout the book to the social and legal context of e-commerce. Chapter

8 is devoted to a thorough exploration of ethical dimensions of e-commerce, including information privacy, intellectual property, governance, and protecting public welfare on the Internet.

Writing That's Fun to Read Unlike some textbooks, we've been told by many students that this book is actually fun to read and easy to understand. This is not a book written by committee—you won't find a dozen different people listed as authors, co-authors, and contributors on the title page. We have a consistent voice and perspective that carries through the entire text and we believe the book is the better for it.

OVERVIEW OF THE BOOK

The book begins with an introduction to the major themes of the book. Chapter 1 defines e-commerce, distinguishes between e-commerce and e-business, and defines the different types of e-commerce. Chapter 2 traces the historical development of the Internet and thoroughly describes how the Internet, Web, and mobile platform work. Chapter 3 focuses on the steps managers need to follow in order to build an e-commerce presence. This chapter covers the process that should be followed in building an e-commerce presence; the major decisions regarding outsourcing site development and/or hosting; how to choose software, hardware, and other tools that can improve website performance; and issues involved in developing a mobile website and mobile applications. Chapter 4 focuses on e-commerce security and payments, building on the e-commerce infrastructure discussion of the previous chapter by describing the ways security can be provided over the Internet. This chapter defines digital information security, describes the major threats to security, and then discusses both the technology and policy solutions available to business managers seeking to secure their firm's sites. This chapter concludes with a section on e-commerce payment systems. We identify the various types of online payment systems (credit cards, stored value payment systems such as PayPal, digital wallets, and others), the development of mobile and social payment systems such as Alipay, WeChat Pay, Apple Pay, Venmo, Zelle, and Facebook Messenger, as well as a section on cryptocurrencies and blockchain, the technology underlying them.

The next four chapters focus directly on the business concepts and social-legal issues that surround the development of e-commerce. Chapter 5 introduces and defines the concepts of business model and revenue model, describes the major e-commerce business and revenue models for both B2C and B2B firms, and introduces the basic business concepts required throughout the text for understanding e-commerce firms including industry structure, value chains, and firm strategy. Chapter 6 focuses on e-commerce consumer behavior, the Internet audience, and introduces the student to the basics of online marketing and branding, including traditional online marketing technologies and marketing strategies. Topics include the website as a marketing platform, search engine marketing and advertising, display ad marketing, e-mail campaigns, affiliate and lead generation marketing programs, multichannel marketing, and various customer retention strategies such as personalization (including interest-based advertising, also known as behavioral targeting) and customer service tools. The

chapter also covers other marketing strategies such as pricing and long-tail marketing. Internet marketing technologies (web transaction logs, tracking files, data mining, and big data) and marketing automation and CRM systems are also explored. The chapter concludes with a section on understanding the costs and benefits of various types of online marketing, including a section on marketing analytics software. Chapter 7 is devoted to an in-depth analysis of social, mobile, and local marketing. Topics include Facebook, Twitter, Pinterest, and other social media marketing platforms such as Instagram, Snapchat, LinkedIn, and TikTok, the evolution of mobile marketing, and the growing use of geo-aware technologies to support proximity marketing. Chapter 8 provides a thorough introduction to the social and legal environment of e-commerce. Here, you will find a description of the ethical and legal dimensions of e-commerce, including a thorough discussion of the latest developments in personal information privacy, intellectual property, Internet governance, questions surrounding Big Tech and competition, jurisdiction, and public health and welfare issues such as pornography, gambling, and health information.

The final four chapters focus on real-world e-commerce experiences in retail and services, online media, auctions, portals, and social networks, and business-to-business e-commerce. These chapters take a sector approach rather than the conceptual approach used in the earlier chapters. E-commerce is different in each of these sectors. Chapter 9 explores the world of online content and digital media and examines the enormous changes in online publishing and entertainment industries that have occurred over the last two years, including streaming movies, e-books, and online newspapers and magazines. Chapter 10 explores the online world of social networks, auctions, and portals. Chapter 11 takes a close look at the experience of firms in the retail marketplace for both goods and services, as well as on-demand service companies such as Uber and Airbnb. Chapter 11 also includes an “E-commerce in Action” case that provides a detailed analysis of the business strategies and financial operating results of Amazon, which can be used as a model to analyze other e-commerce firms. Chapter 12 concentrates on the world of B2B e-commerce, describing both Net marketplaces and the less-heralded, but very large arena of private industrial networks and the movement toward collaborative commerce.

PEDAGOGY AND CHAPTER OUTLINE

The book’s pedagogy emphasizes student cognitive awareness and the ability to analyze, synthesize, and evaluate e-commerce businesses. While there is a strong data and conceptual foundation to the book, we seek to engage student interest with lively writing about e-commerce businesses and the transformation of business models at traditional firms.

Each chapter contains a number of elements designed to make learning easy as well as interesting.

Learning Objectives A list of learning objectives that highlights the key concepts in the chapter guides student study.

Chapter-Opening Cases Each chapter opens with a story about a leading e-commerce company that relates the key objectives of the chapter to a real-life e-commerce business venture.

The image shows a magazine spread. The left page has a dark blue header with the title "Everything on Demand: The 'Uberization' of E-commerce". Below the title is a sub-headline "The UberLondon family is joining the UberLondon family. Just move the slider to the far right to book your #UberTAXI". The main article begins with a large paragraph starting with "If you were asked to pick iconic examples of e-commerce in the two decades since it began in 1995, it is likely that companies such as eBay, Google, Apple, and Facebook would be high on your list. But today, a new breed of e-commerce company is muscling its way to the forefront: Uber and other firms with similar business models, such as Lyft (a ride service similar to Uber's), Airbnb (rooms for rent), Instacart (grocery shopping), TaskRabbit (movers), Deliveroo (grocery shopping), and ZipJet (laundry service), are the pioneers of an on-demand service model that is sweeping up billions of investment dollars and disrupting major industries, from transportation to hotels, real estate, house cleaning, maintenance, and grocery shopping." The right page features a photograph of a smartphone displaying the Uber app's welcome screen, which says "WELCOME #UBERTAXI" and "The iconic Black Cab is joining the UberLondon family. Just move the slider to the far right to book your #UberTAXI". Below the phone is a small copyright notice "© Lexcap Agency".

“Insight on” Cases Each chapter contains three real-world cases illustrating the themes of technology, business, and society. These cases take an in-depth look at relevant topics to help describe and analyze the full breadth of the field of e-commerce. The cases probe such issues as the ability of governments to regulate Internet content, how to design websites for accessibility, the challenges faced by luxury marketers in online marketing, and smartphone security.

Margin Glossary Throughout the text, key terms and their definitions appear in the text margin where they are first introduced.

Real-Company Examples

Drawn from actual e-commerce ventures, well over 100 pertinent examples are used throughout the text to illustrate concepts.

Chapter-Closing Case Studies Each chapter concludes with a robust case study based on a real-world organization. These cases help students synthesize chapter concepts and apply this knowledge to concrete problems and scenarios such as Dick's Sportings Goods efforts to take control of its e-commerce operations, ExchangeHunterJumper's efforts to build a brand, and the evolution of eBay.

Chapter-Ending Pedagogy Each chapter contains extensive end-of-chapter materials designed to reinforce the learning objectives of the chapter.

Key Concepts Keyed to the learning objectives, Key Concepts present the key points of the chapter to aid student study.

Review Questions Thought-provoking questions prompt students to demonstrate their comprehension and apply chapter concepts to management problem solving.

Projects At the end of each chapter are a number of projects that encourage students to apply chapter concepts and to use higher-level evaluation skills. Many make use of the Internet and require students to present their findings in an oral or electronic presentation or written report. For instance, students are asked to evaluate publicly available information about a company's financials at the SEC website, assess payment system options for companies across international boundaries, or search for the top 10 cookies on their own computer and the sites they are from.

Web Resources Web resources that can extend students' knowledge of each chapter with projects, exercises, and additional content are available at E-commerce2020global.com. The website contains the following content provided by the authors:

- Additional projects, exercises, and tutorials
- Information on how to build a business plan and revenue models
- Essays on careers in e-commerce

Puma Goes Omni

When Puma, one of the world's top sports footwear, apparel, and accessories brands, conceived its LoveFootball campaign, the goal was to create a memorable tagline in a language that would be understood across the world—pictures. In the process, the company stumbled upon the power of social marketing. Puma's ad agency, Droga5, timed a gifting-hearted commerce featuring seriously cowboyish man in a Australian pub singing love songs to their Valentines. The video went viral, garnering more than 130 million impressions and spawning hundreds of homemade response videos. Today, Puma's marketing campaigns are branded with the singer forever factor, which, according to Ruth How, Puma's Head of Marketing and Communications, is a sentiment that applies not only to its marketing message to consumers, but also to Puma's approach to marketing itself. As How notes, since so much of Puma's target market lives and breathes in the digital space, it's imperative for Puma to fuse marketing with technology.

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Welcome to the Companion Website for
E-commerce 2020–2021
business.technology.society., 16th edition

The site contains a variety of student resources, including:

- Additional projects, exercises, and tools to extend e-commerce resources
- Case studies, including a business plan and costing chart
- Interactive activities, including quizzes and games
- Power education

To access these resources, click on a chapter module on the navigation bar above.

Instructions for student resources, including individual assignments, group assignments, writing tasks, learning tools, and usage terms, please visit the [Resource Index](#) resources page for this book.

INSTRUCTOR RESOURCES

At the Instructor Resource Center, www.pearsonglobaleditions.com, instructors can easily register to gain access to a variety of instructor resources available with this text in downloadable format. If assistance is needed, our dedicated technical support team is ready to help with the media supplements that accompany this text. Visit support.pearson.com/getsupport for answers to frequently asked questions and toll-free user support phone numbers.

The following supplements are available with this text:

- **Instructor's Resource Manual**
- **Test Bank**
- **TestGen® Computerized Test Bank**
- **PowerPoint Presentation**
- **Image Library**
- **Video Cases and Learning Tracks.** The authors have created a collection of video case studies that integrate short videos, supporting case study material, and case study questions. Video cases can be used in class to promote discussion or as written assignments. There are 29 video cases for the 16th edition, all with updated supporting case study material. There is also a collection of Learning Tracks: additional essays, created by the authors, that provide instructors and students with more in-depth content on selected topics in e-commerce.

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CHAPTER

1

Introduction to E-commerce

LEARNING OBJECTIVES

After reading this chapter, you will be able to:

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

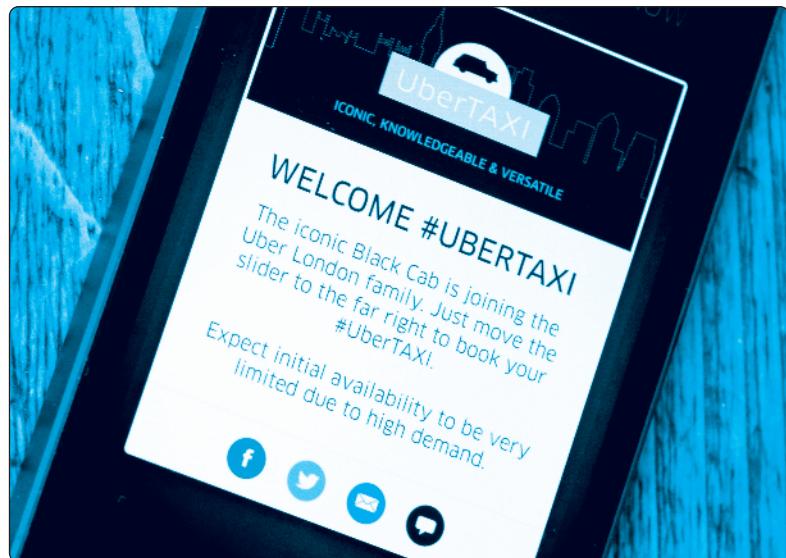
Everything on Demand:

The “Uberization” of E-commerce

If you were asked to pick iconic examples of e-commerce in the 25 years since it began in 1995, it is likely that companies such as Amazon, Google, Apple, and Facebook would be high on your list. But over the last few years, a different breed of e-commerce company has muscled its way to the forefront. Uber and other firms with similar business models, such as Taxify (a ride service similar to Uber's), Airbnb (rooms for rent), Takeaway and JustEat (food delivery), Movinga (movers), and Zipjet (laundry service), are the pioneers of an on-demand service e-commerce business model that has swept up billions of investment dollars and disrupted major industries, from transportation to hotels, real estate, house cleaning, maintenance, and grocery shopping.

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

Uber, headquartered in San Francisco, was founded in 2009 by Travis Kalanick and Garrett Camp, and has grown explosively since then to over 700 cities in 69 countries. Uber currently has almost 4 million drivers worldwide and over 90 million riders, who made over 5 billion trips in 2018. In the same year, riders spent \$50 billion on the Uber platform, generating \$11.3 billion in revenue for Uber, but it still lost \$1.8 billion, with losses in developing markets swallowing up profits being generated in North America, Europe, and elsewhere. That trend continued in 2019, with a loss of a whopping \$7.4 billion through the first three quarters of 2019. Uber's strategy has been to expand as fast as possible while forgoing short-term profits in the hope of long-term returns. In the last several years, Uber has sold



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its operations in China, Southeast Asia, and Russia, where it had been engaged in costly turf wars with other competitors, reportedly to free up capital to invest in other emerging markets such as India, Latin America, and the Middle East.

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

Uber is a poster child for “digital disruption.” It is easy to see why Uber has ignited a firestorm of opposition from existing taxi services around the world. If you've paid \$1 million for a license to drive a taxi in New York City, what is it worth now that Uber has arrived? Answer: less than \$200,000. Taxi drivers in London typically invest years learning thousands of streets and landmarks before they are able to pass the tests necessary to obtain a license to drive a black cab there, something Uber drivers are not required to do. Even governments find Uber to be a disruptive threat. Governments do not want to give up regulatory control over passenger safety, driver training, nor the healthy revenue stream generated by charging taxi firms for a taxi license and sales taxes.

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

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

Quality control should be a nightmare with almost 4 million contract drivers. But Uber relies on user reviews to identify problematic drivers and driver reviews to identify problematic passengers. Drivers are evaluated by riders on a 5-point scale. Drivers that fall below 4.5 are warned and may be dropped if they don't improve. Customers are also rated with a

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

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

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

Uber has been accused of violating public transportation laws and regulations throughout the world; abusing the personal information it has collected on users of the service; seeking to use personal information to intimidate journalists; failing to protect public safety by refusing to do adequate criminal, medical, and financial background checks on its drivers; taking clandestine actions against its chief U.S.-based competitor Lyft in order to disrupt its business; and being tone-deaf to the complaints of its own drivers against the firm's efforts to reduce driver fees. Uber has been banned in several European cities. For instance, in London, Transport for London, the regulatory body that governs taxi services in London, refused in 2017 to renew Uber's license, based, it said, on concerns about user safety. Uber was allowed to continue operating while it appealed the ruling and in June 2018 was granted a 15-month probationary license. Uber then sought a five-year renewal upon expiration of the probationary license in September 2019 but was once again unsuccessful, with Transport for London denying them a license to operate. As in 2017, Uber is appealing the ruling and continues to operate in the interim. More significantly, in 2017, the European Court of Justice, the European Union's most powerful court, ruled that Uber should be treated as a transportation service, subject to all of the existing laws and regulations of the EU member countries in which it operates that apply to such services, rather than as a digital platform not subject to such laws and regulations, as Uber had been attempting to assert. Uber claims that the ruling will not have much impact

SOURCES: "Uber Loses License to Operate in London," *Wall Street Journal*, December 6, 2019; "Uber Shares Have the Potential to Double, Barclay's Says," by Esha Day, Bloomberg.com, November 15, 2019; "Uber's Dara Khosrowshahi Is Making Some Headway," by Davey Alba, *New York Times*, November 11, 2019; "Uber Technologies, Inc. Quarterly Report for the Quarter Ended September 30, 2019," filed with the Securities and Exchange Commission, November 5, 2019; "Uber Unveils New Safety Features Amid Scathing Report," Cbsnews.com, September 26, 2019; "Culture Crossover: Uber Impact: The Cost and Disruption and Monopoly," by Somrata Sarkar, Techworld.com, May 17, 2019; "How the Promise of a \$120 Billion Uber IPO Evaporated," by Mike Isaac, Michael J. de la Merced, and Andrew Ross Sorkin, *New York Times*, May 15, 2019; "Uber Is Selling Its Southeast Asia Business

to Competitor Grab," by Johana Bhuiyan, Recode.net, March 25, 2018; "MIT Study Shows How Much Driving for Uber or Lyft Sucks," by Natasha Lomas, Yahoo.com, March 2, 2018; "Uber Deal Setback After European Court Rules It Is a Taxi Service," by Liz Alderman, *New York Times*, December 20, 2017; "Uber Request to Take Drivers' Rights Case Directly to Top UK Court Rejected," by Hannah Boland, Telegraph.co.uk, December 4, 2017; "Here's All the Shady Stuff Uber's Been Accused of So Far," by Joe McGauley, Thrillist.com, March 7, 2017; "Even Uber Couldn't Bridge the China Divide," by Farhad Manjoo, *New York Times*, August 1, 2016; "Uber Sells China Operations to Didi Chuxing," by Alyssa Abkowitz and Rick Carew, *Wall Street Journal*, August 1, 2016; "An Uber Shakedown," *Wall Street Journal*, April 24, 2016; "Uber Settlement Takes Customers for a Ride," by Rob Berger, *Forbes*, April 22, 2016; "Twisting Words to Make 'Sharing' Apps Seem Selfless," by Natasha Singer, *New York Times*, August 9, 2015; "The \$50 Billion Question: Can Uber Deliver?," by Douglas Macmillan, *Wall Street Journal*, June 15, 2015; "How Everyone Misjudges the Sharing Economy," by Christopher Mims, *Wall Street Journal*, May 25, 2015; "The On-Demand Economy Is Reshaping Companies and Careers," *The Economist*, January 4, 2015; "The On-Demand Economy: Workers on Tap," *The Economist*, January 3, 2015.

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

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

Over the last several years, Uber has been hit by a series of continuing controversies and scandals, creating a public relations nightmare for the company and culminating in the resignation of a number of board members, senior executives, and finally its co-founder and CEO, Travis Kalanick. It was charged with corporate mismanagement and misconduct (including using a secret program known as Greyball to track and evade regulators and other law enforcement officials), workplace discrimination and sexual harassment, and violation of the privacy of its customers through the use of its mobile app to track the location of those customers at all times, even when the app was not in use. In 2019, a *Washington Post* report raised serious questions about how Uber handles passenger safety.

Despite the controversy surrounding it, Uber has become entrenched in the everyday life of millions of people around the globe and continues to attract drivers, customers, and additional investors. In May 2019, Uber went public, raising over \$8 billion at a valuation of about \$82 billion, which, although a staggering amount, was well below the \$120 billion value initially floated by its investment bankers. During 2019, Uber’s stock price declined significantly, losing almost half its value since the IPO. Nonetheless, Uber’s CEO, Dara Khosrowshahi, believes Uber remains well-positioned going forward, characterizing Uber’s business model as upscale and global. Uber has stated it expects to be profitable by 2021, and as of the end of 2019, most Wall Street analysts remained positive on its prospects.

In 1994, e-commerce as we now know it did not exist. In 2019, 25 years later, over 2 billion consumers worldwide spent around \$4.3 trillion, and businesses around \$27 trillion, purchasing goods and services via a desktop computer or mobile device. There have been significant changes in the e-commerce environment during this time period.

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

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

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

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

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

Improvements in underlying information technologies and continuing entrepreneurial innovation in business and marketing promise as much change in the next decade as was seen in the previous two decades. The twenty-first century will be the age of a digitally enabled social and commercial life, the outlines of which we can still only barely perceive at this time. Analysts estimate that by 2023, consumers worldwide will be spending almost \$7.3 trillion and businesses around \$34 trillion in digital transactions. It appears likely that e-commerce will eventually impact nearly all commerce, and that most commerce will be e-commerce by the year 2050, if not sooner.

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

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

1.2 INTRODUCTION TO E-COMMERCE

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

WHAT IS E-COMMERCE?

E-commerce involves the use of the Internet, the World Wide Web (Web), and mobile apps and browsers running on mobile devices to transact business. Although the terms Internet and Web are often used interchangeably, they are actually two very different things. The *Internet* is a worldwide network of computer networks, and the *Web* is one of the Internet's most popular services, providing access to billions of web pages. An *app* (short-hand for application) is a software application. The term is typically used when referring to mobile applications, although it is also sometimes used to refer to desktop computer applications as well. A *mobile browser* is a version of web browser software accessed via a mobile device. (We describe the Internet, Web, and mobile platform more fully later in this chapter and in Chapters 2 and 3) More formally, e-commerce can be defined as digitally enabled commercial transactions between and among organizations and individuals. Each of these components of our working definition of e-commerce is important. *Digitally enabled transactions* include all transactions mediated by digital technology. For the most part, this means transactions that occur over the Internet, the Web, and/or via mobile devices. *Commercial transactions* involve the exchange of value (e.g., money) across organizational or individual boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce. Without an exchange of value, no commerce occurs.

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

e-commerce

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

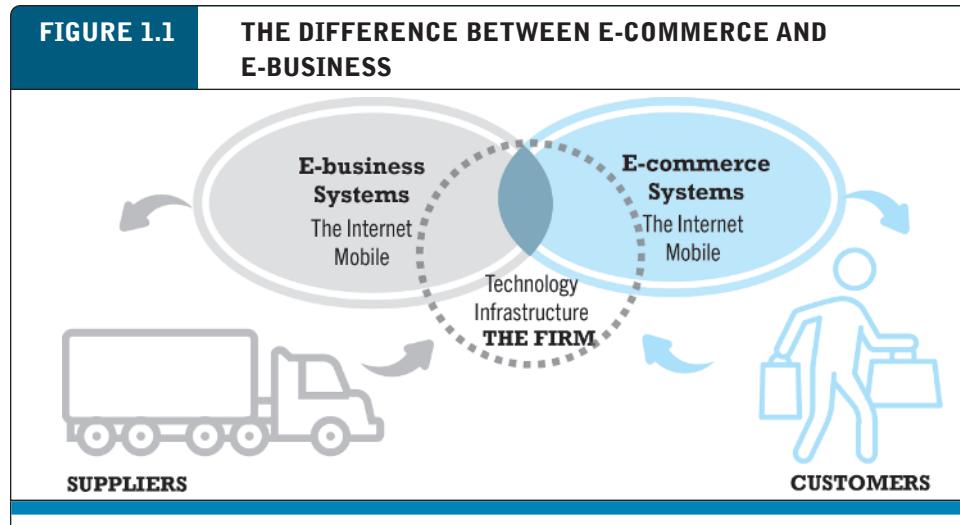
THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS

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

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

e-business

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



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

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

The technology juggernauts behind e-commerce are the Internet, the Web, and increasingly, the mobile platform. We describe the Internet, Web, and mobile platform in some detail in Chapter 2. The **Internet** is a worldwide network of computer networks built on common standards. Created in the late 1960s to connect a small number of mainframe computers and their users, the Internet has since grown into the world's largest network. It is impossible to say with certainty exactly how many computers and other mobile devices such as smartphones and tablets, as well as other Internet-connected consumer devices, such as smartwatches, connected TVs, and remotes such as Amazon's Echo are connected to the Internet worldwide at any one time, but some experts estimate that by 2019, the number had reached 22 billion, growing to an estimated 38.6 billion by 2025 (Strategy Analytics, 2019). 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 January 2019, there were more than 1 billion Internet hosts in over 245 countries, up from just 72 million in 2000 (Internet Systems Consortium, 2019).

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. In the United States, over 280 million people of all ages

Internet

worldwide network of computer networks built on common standards

(about 85% of the U.S. population) use the Internet at least once a month (eMarketer, Inc. 2019a).

The **World Wide Web (the Web)** is an information system that runs on the Internet infrastructure. The Web was the original “killer app” that made the Internet commercially interesting and extraordinarily popular. The Web was developed in the early 1990s and hence is of much more recent vintage than the Internet. We describe the Web in some detail in Chapter 2. The Web provides access to billions of web pages indexed by Google and other search engines. These pages are created in a language called *HTML (HyperText Markup Language)*. HTML pages can contain text, graphics, animations, and other objects. The Internet prior to the Web was primarily used for text communications, file transfers, and remote computing. The Web introduced far more powerful capabilities of direct relevance to commerce. In essence, the Web added color, voice, and video to the Internet, creating a communications infrastructure and information storage system that rivals television, radio, magazines, and libraries.

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

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

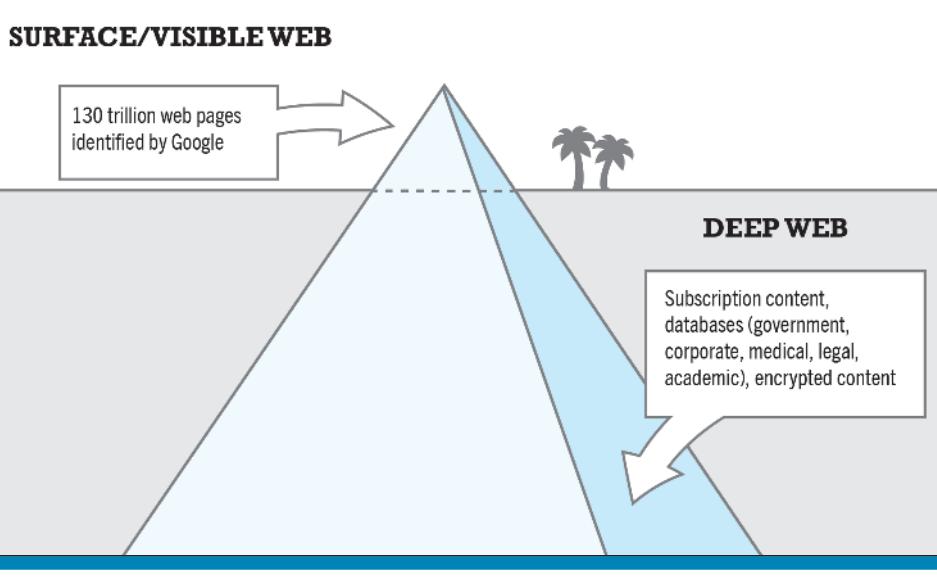
World Wide Web (the Web)

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

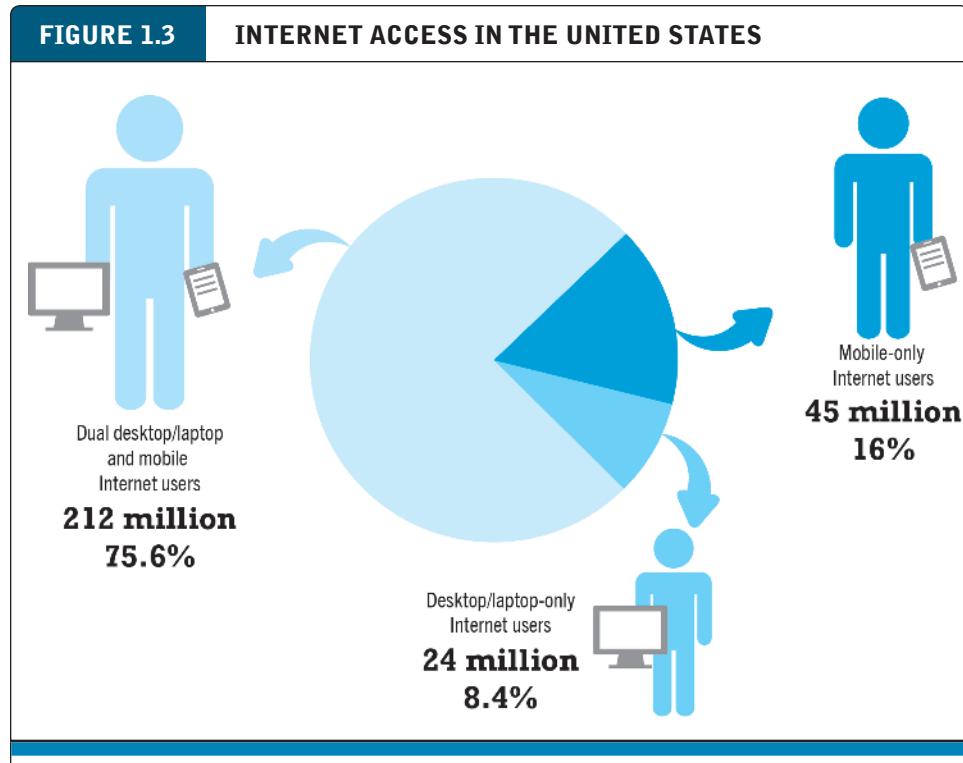
mobile platform

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

FIGURE 1.2 THE DEEP WEB



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



Over 75% of all Internet users in the United States (about 212 million people in 2018) went online using both a desktop/laptop and mobile device. Almost 16% (about 45 million) only went online by using a mobile device. Just 8.4% (about 24 million) used only a desktop or laptop computer to access the Internet.

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

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

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

MAJOR TRENDS IN E-COMMERCE

Table 1.1 on page 51 describes the major trends in e-commerce in 2019–2020 from a business, technological, and societal perspective, the three major organizing themes that we use in this book to understand e-commerce (see Section 1.6).

INSIGHT ON TECHNOLOGY

WILL APPS MAKE THE WEB IRRELEVANT?



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

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

Apps have grown into a disruptive force ever since Apple launched its App Store in 2008. The list of industries apps have disrupted is wide-ranging: communications, media and entertainment, logistics, education, healthcare, and most recently, with Uber and Airbnb, the taxi and hotel industries. Despite not even existing prior to 2008, in 2018, sales of apps accounted for over \$100 billion in revenues worldwide, and the app economy is continuing to show robust growth, with estimates that revenue will reach over \$155 billion by 2022. More of those revenues are likely to come from in-app purchases than from paid app downloads.

Although usage of apps tends to be highly concentrated, with nearly 90% of smartphone app minutes spent on an individual's top five apps, consumers are trying new apps all the time and typically use about 20 different apps per month, leaving room for new app developers to innovate and create successful apps. Users are downloading an increasing number of apps, with the number reaching over 194 billion worldwide

during 2018, according to research firm App Annie.

In 2014, for the first time ever, Americans used mobile devices more than desktop computers to access the Internet. The time U.S. adults are spending using mobile devices has exploded, now accounting for over 63% of total time spent on the Internet. Of the time spent using mobile devices, over 85% is spent using mobile apps and less than 15% using mobile browsers. In 2019, according to consulting firm eMarketer, adult mobile Internet users in the United States were expected to spend an average of almost 3 hours a day within apps on their smartphones and tablet computers compared to just over 25 minutes a day using a mobile browser.

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

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

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

(continued)



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

But there is no predictive consensus about the role of the Web in our lives in the next decade and beyond. Although apps may be more convenient than the Web in many respects, the depth of the web browsing experience trumps that of apps. The Web is a vibrant, diverse array of sites, and browsers have an openness and flexibility that apps lack. The connections between websites enhance their usefulness and value to users, and apps that instead seek to lock users in cannot offer the same experience. In addition, the size of the mobile web audience still exceeds that of the mobile app audience. And when it comes to making purchases online, using a web browser on a desktop computer still handily beats mobile devices. Retail purchases made on desktops still account for over 55% of all online retail purchases.

Other analysts who are more optimistic about the Web's chances to remain relevant in an increasingly app-driven online marketplace feel this way because of the emergence of HTML5 and progressive web apps (PWAs). HTML5 is a markup language that enables more dynamic web content and allows for browser-accessible web apps that are as appealing as device-specific apps. A PWA combines the best elements of mobile websites and native mobile apps. A PWA functions and feels like a native app, but it does not need to be downloaded

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

The shift towards apps and away from the Web is likely to have a significant impact on the fortunes of e-commerce firms. As the pioneer of apps and the market leader in apps, smartphones, and tablet computers, Apple stands to gain from a shift towards apps, and although it also faces increasing competition from other companies, including Google, the established success of the App Store will make it next to impossible to dethrone Apple. For instance, while Google's Google Play store had almost three times the number of downloads compared to Apple's App Store in 2018, the App Store still made nearly twice the amount of revenue (\$46.6 billion) than Google Play (\$24.8 billion). Google hopes that PWAs are at least a partial answer to the problem presented to it by native apps, because the more activity that occurs on native apps, which Google cannot crawl, the less data Google has access to, which impacts its web-based advertising platform.

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

SOURCES: "US Desktop/Laptop Retail Ecommerce Sales," eMarketer, Inc., October 2019; "US Time Spent with Mobile 2019: Smartphones Gain Minutes, but New Challengers Emerge," by Yoram Wormser, eMarketer, Inc., May 30, 2019; "App Store Made Almost Twice as Much as Google Play in 2018," by Killian Bell, Cultofmac.com, January 18, 2019; "The State of Mobile in 2019—The Most Important Trends to Know," Appannie.com, January 16, 2019; "2019 Report: The Global State of Mobile," comScore, Inc., 2019; "Progressive Web Apps: What They Are and Why They Matter," by Wilson Kerr, Digitalcommerce360.com, May 28, 2018; "App Market Growth Is Global as U.S. Market Stabilizes: App Annie," by Nate Swanner, Insights.dice.com, May 14, 2018; "The Data Behind 10 Years of the iOS App Store, 2018," by App Annie, May 2018; "App Annie Forecast 2017–2022," by App Annie, May 2018; "Why Progressive Web Apps Will Replace Native Mobile Apps," by Andrew Gazdecki, Forbes.com, March 9, 2018; "Mobile's Hierarchy of Needs," comScore, March 2017; "Publishers Straddle the Apple-Google, App-Web Divide," by Katie Benner and Conor Dougherty, *New York Times*, October 18, 2015; "Mobile Addicts Multiply Across the Globe," by Simon Khalaf, Flurrymobile.tumblr.com, July 15, 2015; "How Apps Won the Mobile Web," by Thomas Claburn, Informationweek.com, April 3, 2014; "Mobile Apps Overtake PC Internet Usage in U.S.," by James O'Toole, Money.cnn.com, February 28, 2014; "Is The Web Dead In the Face of Native Apps? Not Likely, But Some Think So," by Gabe Knuth, Brianmadden.com, March 28, 2012; "The Web Is Dead. Long Live the Internet," by Chris Anderson and Michael Wolff, Wired.com, August 17, 2010; "The Web Is Dead? A Debate," by Chris Anderson, Wired.com, August 17, 2010.

TABLE 1.1 MAJOR TRENDS IN E-COMMERCE, 2019–2020	
BUSINESS	<ul style="list-style-type: none">Retail e-commerce continues to grow worldwide, with a global growth rate of over 20%, and even higher in Asia-Pacific.Retail m-commerce sales skyrocket, reaching over \$2.2 trillion in 2019.The mobile app ecosystem continues to grow, with over 2.5 billion people worldwide using mobile apps in 2019.Social e-commerce, based on social networks and supported by advertising, emerges and continues to grow, generating an estimated \$16.5 billion from social commerce in the United States in 2018.Local e-commerce, the third dimension of the mobile-social-local e-commerce wave, is also growing, fueled by an explosion of interest in on-demand services such as Uber.B2B e-commerce revenues continue to expand, reaching about \$27 trillion worldwide in 2019.On-demand service firms like Uber and Airbnb attract billions in capital, garner multi-billion dollar valuations, and show explosive growth.Mobile advertising continues growing at astronomical rates, accounting for over 70% of all digital ad spending.Small businesses and entrepreneurs continue to flood into the e-commerce marketplace, often riding on the infrastructures created by industry giants such as Apple, Facebook, Amazon, Google, and eBay.
TECHNOLOGY	<ul style="list-style-type: none">A mobile computing and communications platform based on smartphones, tablet computers, wearable devices, and mobile apps becomes a reality, creating an alternative platform for online transactions, marketing, advertising, and media viewing. The use of mobile messaging services such as Facebook Messenger, WhatsApp, and Snapchat continues to expand, and these services are now used by almost two-thirds of smartphone users.Smart speakers such as Amazon Echo and Google Home become increasingly popular, providing an additional platform for e-commerce.Cloud computing completes the transformation of the mobile platform by storing consumer content and software on “cloud” (Internet-based) servers and making it available to any consumer-connected device from the desktop to a smartphone.The Internet of Things (IoT), comprised of billions of Internet-connected devices, continues to grow exponentially.As firms track the trillions of online interactions that occur each day, a flood of data, typically referred to as big data, is being produced.In order to make sense out of big data, firms turn to sophisticated software called business analytics (or web analytics) that can identify purchase patterns as well as consumer interests and intentions in milliseconds.
SOCIETY	<ul style="list-style-type: none">User-generated content, published online as social network posts, tweets, blogs, and pins, as well as video and photo-sharing, continues to grow and provides a method of self-publishing that engages millions.Social networks encourage self-revelation, threatening privacy, as Facebook comes under fire for allowing third parties such as Cambridge Analytica to mine its database of user information without user consent.The EU General Data Protection Regulation takes effect, impacting all companies that operate in any of the EU member nations.Concerns increase about the increasing market dominance of Facebook, Amazon, and Google, leading to calls for government regulation in both the European Union and United States.Conflicts over copyright management and control continue, but there is substantial agreement among online distributors and copyright owners that they need one another.Surveillance of online communications by both repressive regimes and Western democracies grows.Concerns over commercial and governmental privacy invasion increase.Online security continues to decline as major companies are hacked and lose control over customer information.Spam remains a significant problem.On-demand service e-commerce produces a flood of temporary, poorly paid jobs without benefits.

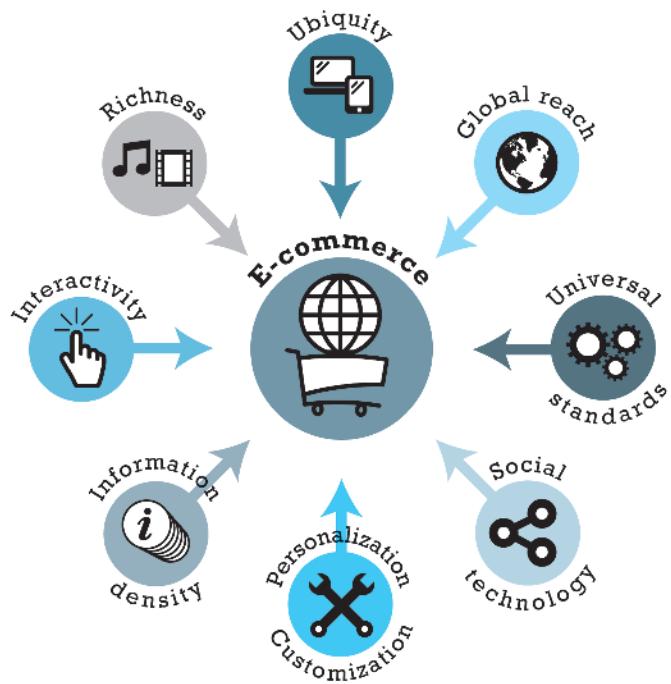
From a business perspective, one of the most important trends to note is that all forms of e-commerce continue to show very strong growth. Retail e-commerce has been growing worldwide at over 20% a year for the last few years and in 2019 reached around \$3.5 trillion. Retail m-commerce is growing at an even faster rate and increased to over \$2.2 trillion in 2019. Social networks such as Facebook, Pinterest, and Instagram are enabling social e-commerce by providing advertising, search, and Buy buttons that enable consumers to actually purchase products. Local e-commerce is being fueled by the explosion of interest in on-demand services such as Uber and Airbnb. B2B e-commerce, which dwarfs all other forms, is also continuing to strengthen and grow.

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

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

1.3 UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY

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

FIGURE 1.4**EIGHT UNIQUE FEATURES OF E-COMMERCE TECHNOLOGY**

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

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

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

information asymmetry

any disparity in relevant market information among parties in a transaction

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

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

UBIQUITY

marketplace

physical space you visit in order to transact

ubiquity

available just about everywhere, at all times

marketspace

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

reach

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

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

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

GLOBAL REACH

E-commerce technology permits commercial transactions to cross cultural, regional, and national boundaries far more conveniently and cost-effectively than is true in traditional commerce. As a result, the potential market size for e-commerce merchants is roughly equal to the size of the world's online population (over 3.8 billion in 2019) (eMarketer, Inc., 2019b). More realistically, the Internet makes it much easier for startup e-commerce merchants within a single country to achieve a national audience than was ever possible in the past. The total number of users or customers an e-commerce business can obtain is a measure of its **reach** (Evans and Wurster, 1997).

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

UNIVERSAL STANDARDS

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

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

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

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 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.

richness
the complexity and content
of a message

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

INTERACTIVITY

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

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

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

INFORMATION DENSITY

information density

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

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

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

PERSONALIZATION AND CUSTOMIZATION

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

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

With the increase in information density, a great deal of information about the consumer's past purchases and behavior can be stored and used by online merchants. The result is a level of personalization and customization unthinkable with traditional commerce technologies. For instance, you may be able to shape what you see on television by selecting a channel, but you cannot change the contents of the channel you have chosen. In contrast, the online version of the *Financial Times* 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-GENERATED CONTENT AND SOCIAL NETWORKS

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

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

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

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

1.4 TYPES OF E-COMMERCE

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

BUSINESS-TO-CONSUMER (B2C) E-COMMERCE

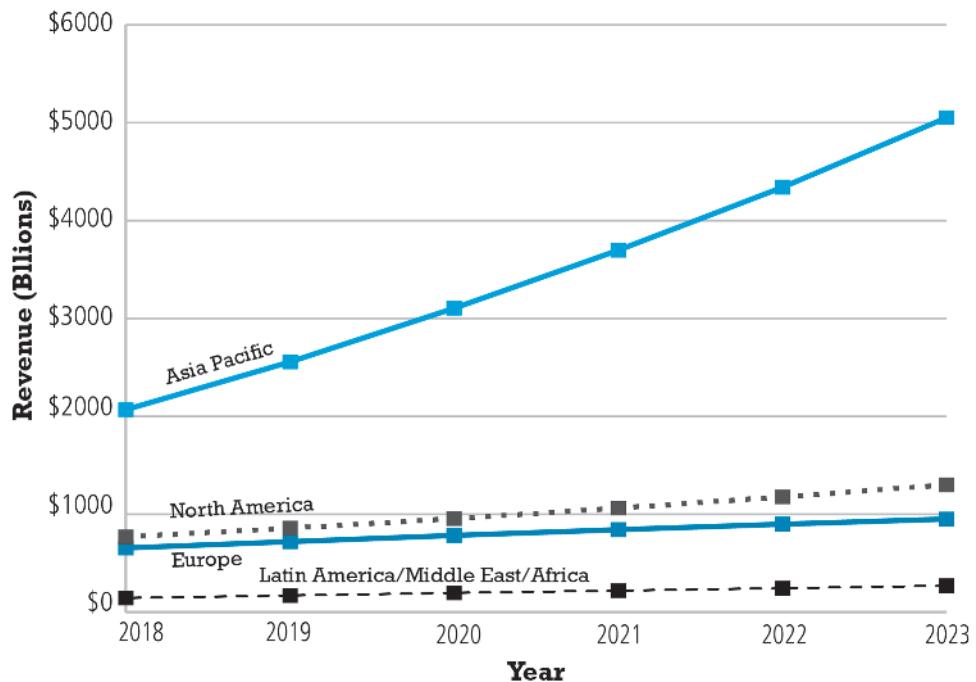
business-to-consumer (B2C) e-commerce

online businesses selling to individual consumers

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

Within the B2C category, there are many different types of business models. Chapter 5 has a detailed discussion of seven different B2C business models: online retailers, service providers, transaction brokers, content providers, community providers/social networks, market creators, and portals. Then we look at each of these business models in action. In Chapter 11, we examine online retailers, service providers, including on-demand services,

FIGURE 1.5 THE WORLDWIDE GROWTH OF B2C E-COMMERCE



B2C e-commerce is growing in all regions. Overall global growth is over 20% and is even higher in Asia-Pacific.
SOURCES: Based on data from eMarketer, Inc., 2019c; 2019d.



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

and transaction brokers. In Chapter 9, we focus on content providers. In Chapter 10, we look at community providers (social networks), market creators (auctions), and portals.

The data suggests that, over the next five years, B2C e-commerce worldwide will continue to grow by over 20% annually. There is tremendous upside potential. Today, for instance, retail e-commerce (which currently comprises the majority of B2C e-commerce revenues) is still a very small part (around 14%) of the overall \$25 trillion retail market worldwide. There is obviously much room to grow (see **Figure 1.6**). However, it's not likely that B2C e-commerce revenues will continue to expand forever at current rates. As online sales become a larger percentage of all sales, online sales growth will likely eventually decline. However, this point still appears to be a long way off. Online content sales, involving everything from music, to video, games, and entertainment, have an even longer period to grow before they hit any ceiling effects.

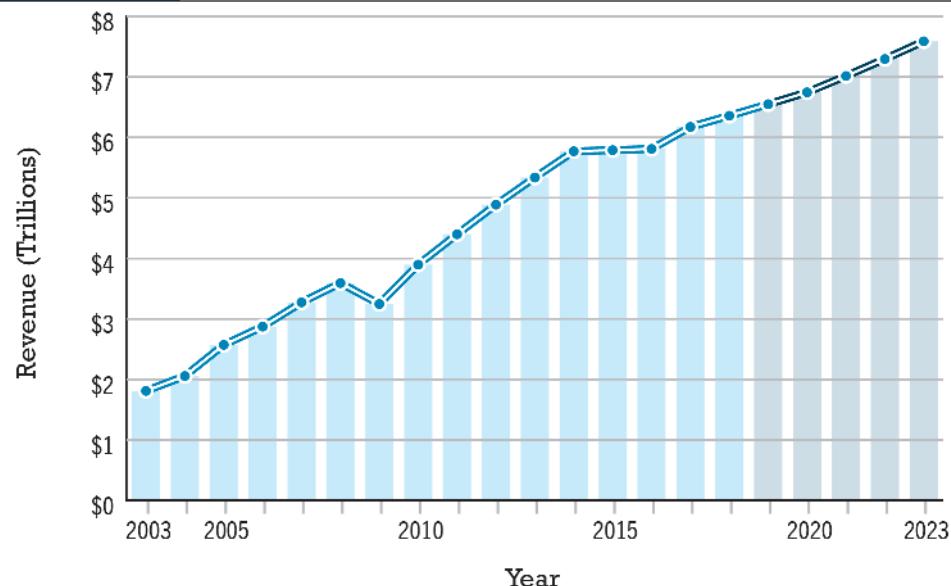
BUSINESS-TO-BUSINESS (B2B) E-COMMERCE

Business-to-business (B2B) e-commerce, in which businesses focus on selling to other businesses, is the largest form of e-commerce, with around \$6.5 trillion in transactions in the United States in 2019 (see **Figure 1.7**) and about \$27 trillion worldwide (U.S. Census Bureau, 2019; UNCTAD, 2019). This is a small portion of total B2B commerce (which remains largely non-automated), 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

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

FIGURE 1.7 THE GROWTH OF B2B E-COMMERCE IN THE UNITED STATES



B2B e-commerce in the United States is about six times the size of B2C e-commerce. In 2023, B2B e-commerce is projected to be reach around \$7.6 trillion. (Note: Does not include EDI transactions.)

SOURCES: Based on data from U.S. Census Bureau, 2019; authors' estimates.

consortia, and private industrial networks. We review various B2B business models in Chapter 5 and examine them in further depth in Chapter 12.

CONSUMER-TO-CONSUMER (C2C) E-COMMERCE

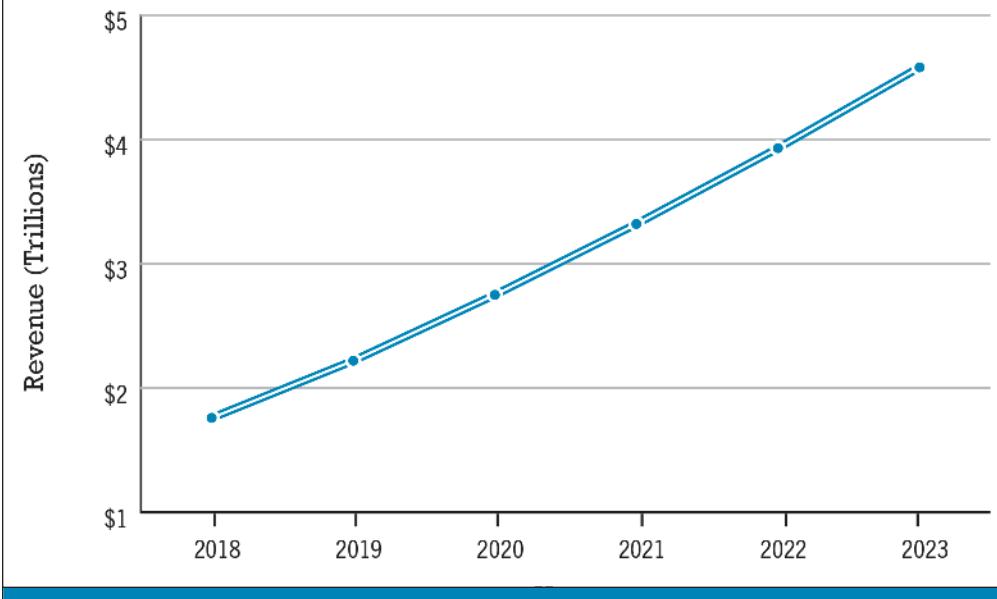
Consumer-to-consumer (C2C) e-commerce provides a way for consumers to sell to each other, with the help of an online market maker (also called a platform provider). In C2C e-commerce, the consumer prepares the product for market, places the product for auction or sale, and relies on the market maker to provide catalog, search engine, and transaction-clearing capabilities so that products can be easily displayed, discovered, and paid for. eBay, Craigslist, and Etsy were the original C2C platform provider pioneers in the United States, but today they face significant competition. For instance, third-party sales on Amazon have skyrocketed. Facebook has also entered the arena with Facebook Marketplace. There are also a number of new entrants focused on the C2C market, such as Gumtree, Quikr, Depop, and Vinted. On-demand service companies such as Uber and Airbnb can also be considered as C2C platform providers.

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

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

MOBILE E-COMMERCE (M-COMMERCE)

Mobile e-commerce (m-commerce) refers to the use of mobile devices to enable online transactions. M-commerce involves the use of cellular and wireless networks to connect

FIGURE 1.8**THE WORLDWIDE GROWTH OF RETAIL M-COMMERCE**

It is anticipated that retail m-commerce will continue to grow by over 20% a year through the next several years as consumers become more and more accustomed to using mobile devices to purchase products and services.

SOURCES: Based on data from eMarketer, Inc., 2019e.

smartphones and tablet computers to the Internet. Once connected, mobile consumers can purchase products and services, make travel reservations, use an expanding variety of financial services, access online content, and much more.

Retail m-commerce purchases reached over \$2.2 trillion worldwide in 2019 and are expected to continue to grow rapidly over the next five years (see **Figure 1.8**). Factors that are driving the growth of m-commerce include the increasing amount of time consumers are spending using mobile devices, larger smartphone screen sizes, greater use of responsive design enabling websites to be better optimized for mobile use and mobile checkout and payment, and enhanced mobile search functionality (eMarketer, Inc., 2018e). A variation of m-commerce known as *conversational commerce* involves the use of chatbots on mobile messaging apps such as Facebook Messenger, WhatsApp, Snapchat, and Slack as a vehicle for companies to engage with consumers.

SOCIAL E-COMMERCE

Social e-commerce is e-commerce that is enabled by social networks and online social relationships. Social e-commerce is often intertwined with m-commerce, particularly as more and more social network users access those networks via mobile devices. The growth of social e-commerce is being driven by a number of factors, including the increasing popularity of social sign-on (signing onto websites using your Facebook or other social network ID), network notification (the sharing of approval or disapproval of products,

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

services, and content), online collaborative shopping tools, social search (recommendations from online trusted friends), and the increasing prevalence of integrated social commerce tools such as Buy buttons, Shopping tabs, marketplace groups, and virtual shops on Facebook, Instagram, Pinterest, YouTube, and other social networks.

Social e-commerce is still in its relative infancy, but with social media and networks playing an increasingly important role in influencing purchase decisions and driving sales, it is continuing to grow. According to Policy Factory, a series produced by Think-Tanks+, a Paris-based news agency dedicated to think-thanks, social e-commerce in the United States generated about \$16.5 billion in 2018 (Policy Factory, 2019).

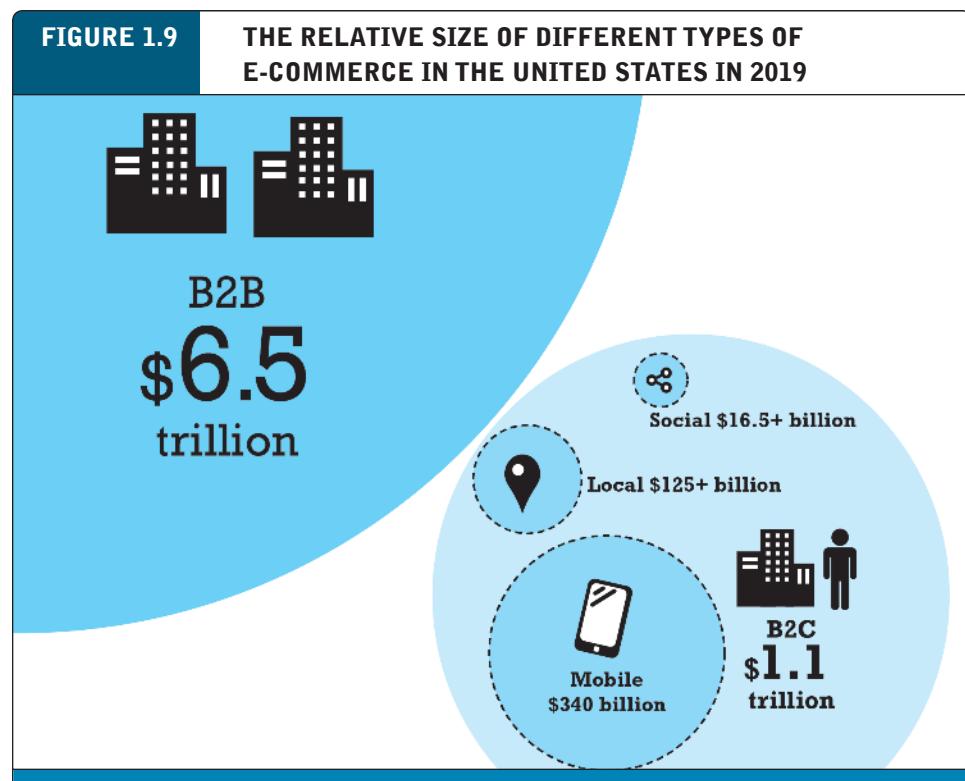
LOCAL E-COMMERCE

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 mobile-social-local e-commerce wave and is being fueled by an explosion of interest in local on-demand services such as Uber. Local e-commerce grew in the United States to over \$125 billion in 2019.

Figure 1.9 illustrates the relative size of all of the various types of e-commerce while **Table 1.3** provides examples for each type.



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.

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	Metalshub is an independent third-party marketplace that serves the paper industry.
C2C—consumer-to-consumer	Online platforms such as eBay, Etsy, and Gumtree enable consumers to sell goods directly to other consumers. Airbnb and Uber provide similar platforms for services such as room rental and transportation.
M-commerce—mobile e-commerce	Mobile devices such as tablet computers and smartphones can be used to conduct commercial transactions.
Social e-commerce	Facebook is both the leading social network and social e-commerce platform.
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.

1.5 E-COMMERCE: A BRIEF HISTORY

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 the Minitel, a French videotext system that combined a telephone with an 8-inch screen. The Minitel was first introduced in 1981, and by the mid-1980s, more than 3 million had been deployed, with more than 13,000 different services 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 in late October 1994, and the first sales of banner ad space by Netscape and Infoseek in early 1995.

Although e-commerce is not very old, it already has a tumultuous history, which can be usefully divided into three periods: 1995–2000, the period of invention; 2001–2006, the

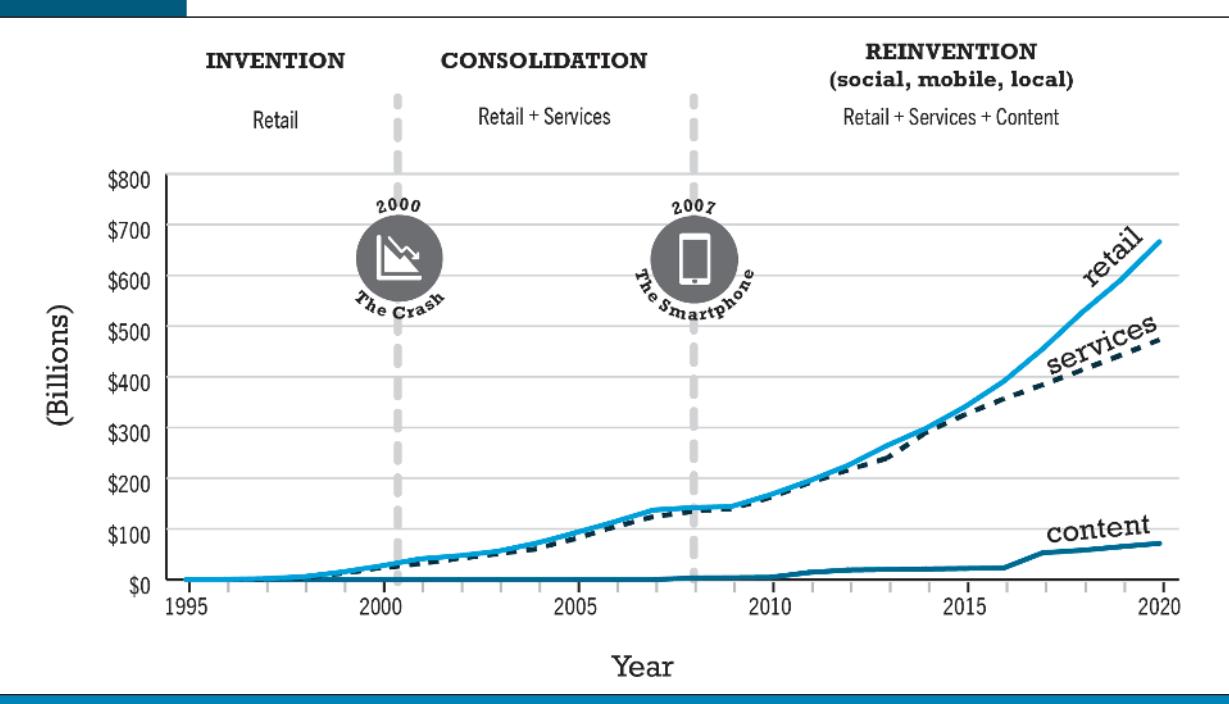
period of consolidation; and 2007–present, a period of reinvention with social, mobile, and local expansion. The following examines each of these periods briefly, while **Figure 1.10** places them in context along a timeline.

E-COMMERCE 1995–2000: INVENTION

The early years of e-commerce were a period of explosive growth and extraordinary innovation. 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 had one at all, was to have a basic static website 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 one of the most euphoric of times in 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

FIGURE 1.10 PERIODS IN THE DEVELOPMENT OF E-COMMERCE



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 online prices (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 these, 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 reduced, as would extraordinary returns on invested capital. This vision was called **friction-free commerce** (Smith et al., 2000).

For real-world entrepreneurs, their financial backers, and marketing professionals, e-commerce represented a tremendous opportunity to earn far above normal returns on investment. This is just the opposite of what economists hoped for. 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

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

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 on one platform. 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.¹

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 online visitors (“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 *disrupting* (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).

¹ 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.

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 startup firms; and traditional bank financing based on profitability returned.

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 websites, but also e-mail, display, and search engine campaigns; multiple websites 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 **Web 2.0** (a set of applications and technologies that enable user-generated content, such as that posted on online social networks, blogs, wikis, and video- and photo-sharing websites and apps; widespread adoption of mobile devices such as smartphones and tablet computers; the expansion of e-commerce to include local goods and services; and the emergence of an on-demand service economy enabled by millions of apps on mobile devices and cloud computing. This period can be seen as both a sociological, as well as a technological and business phenomenon.

Web 2.0

set of applications and technologies that enable user-generated content

The defining characteristics of this period are often characterized as the “social, mobile, local” online world. Entertainment content has developed as a major source of e-commerce revenues and mobile devices have become entertainment centers, as well as on-the-go shopping devices for retail goods and services. Marketing has been 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 have greatly expanded their online presence by moving beyond static web pages to social networks such as Facebook, Twitter, Pinterest, and Instagram in an attempt to surround the online consumer with coordinated marketing messages. These social networks share many common characteristics. First, they rely on user-generated content. “Regular” people (not just experts or professionals) are creating, sharing, and broadcasting content to huge audiences. They are inherently highly interactive, creating new opportunities for people to socially connect to others. They attract extremely large audiences (over 2 billion

TABLE 1.4 EVOLUTION OF E-COMMERCE		
1995–2000 INVENTION	2001–2006 CONSOLIDATION	2007–PRESENT REINVENTION
Technology driven	Business driven	Mobile technology enables social, local, and mobile e-commerce
Revenue growth emphasis	Earnings and profits emphasis	Audience and social network connections emphasis
Venture capital financing	Traditional financing	Return of venture capital financing; buy-outs of startups by large firms
Ungoverned	Stronger regulation and governance	Extensive government surveillance
Entrepreneurial	Large traditional firms	Entrepreneurial social, mobile, 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

users worldwide as of December 2019 in the case of Facebook). These audiences present marketers with extraordinary opportunities for targeted marketing and advertising.

More recently, the reinvention of e-commerce has resulted in a set of on-demand, personal service businesses such as Uber, Airbnb, Instacart, and Deliveroo. These businesses have been able to tap into a large reservoir of unused assets (cars, spare rooms, and personal spare time) and to create lucrative markets based on the mobile platform infrastructure. The *Insight on Business* case, *Rocket Internet*, takes a look at Rocket Internet, which has invested in and mentored a number of startups.

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

ASSESSING E-COMMERCE: SUCCESSES, SURPRISES, AND FAILURES

Looking back at the evolution of e-commerce, it is apparent that e-commerce has been a stunning technological success, ramping up from a few thousand to trillions of e-commerce transactions per year. In 2019 it generated about \$4.2 trillion in retail and travel

INSIGHT ON BUSINESS

ROCKET INTERNET



By now most people have all heard the story of Mark Zuckerberg dropping out of college to start Facebook. These days, tech startup founders are less likely to build businesses on their own, and instead often seek the help of an incubator. Incubators have become essential in helping new tech startups grow from the kernel of a great idea into an established, vibrant business. Rocket Internet is one such incubator.

Founded in 2007 by German entrepreneurs Oliver Samwer and his brothers Alexander and Marc, Rocket Internet launches e-commerce and other Internet startups in emerging markets, with the goal of becoming the world's largest Internet platform outside the United States and China. Headquartered in Berlin and with offices around the globe, Rocket Internet has launched over 200 companies with more than 42,000 employees in 120 countries. In 2014, Rocket went public on the Frankfurt Stock Exchange in the largest German technology IPO in the past decade. The initial pricing valued the company at around €6.5 billion. Since its IPO, the company's stock price has steadily fallen from a high of nearly €60 before settling in at approximately €23 per share for most of 2019, and the company's market capitalization is now down to about €3.6 billion. Rocket's struggles illustrate the perils of chasing growth at all costs above profitability.

Rocket bills itself as more than a venture capital firm or typical incubator. Rocket has a variety of teams that work closely with each of its ventures, including teams focused on engineering and product development, online marketing, CRM, business intelligence, operations, HR, and finance. Rocket also helps its startups by providing access to centralized logistics and other back-office functions to help them cut down on operational costs. Rocket also handles the acquisition of venture

capital on behalf of its startup companies, freeing them to focus on rapidly growing the business. Rocket is a data-driven company and its startups collect and analyze as much data as possible on their markets and customers, allowing them to quickly make changes to spur growth. In many emerging markets, the most talented workers end up in established industries, but Rocket is ensuring that e-commerce also captures top talent in those regions. Prominent companies launched via Rocket Internet include Germany's Zalando, India's Jabong, Russia's Lamoda, Australia's The Iconic and Zanui, Pakistan's Daraz, and Southeast Asia's Zalora.

However, critics of Rocket Internet claim that the company is less concerned with innovation than it is with launching clones of successful United States-based businesses in other markets. Rocket counters that it improves upon established businesses by refining their business processes and by localizing them to better fit specific areas. Investors have also long been concerned about the profitability of Rocket's portfolio. Many of Rocket's companies have market-leader status in their respective areas, but few of them are profitable. Rocket has contended that by focusing on growth in emerging markets first, profits would come in time. In 2018, the company finally made good on that promise, recording a net profit of €196 million for the year, up dramatically from a loss of €6 million in 2017. It continued in that vein in 2019, generating a profit of over €548 million for the first six months of the year. However, those profits were largely due to the successful IPOs of a number of its most prominent startups, including food delivery companies Delivery Hero and HelloFresh; home goods retailers Home24 and WestWing; African e-commerce retailer Jumia; and Global Fashion Group. For

(continued)



investors seeking exposure to e-commerce startup companies in emerging markets, opportunities can be scarce, since most of those companies are privately held. Rocket represents one of the few opportunities to invest in a portfolio dominated by these types of companies.

Rocket has had the most success launching companies modeled after established businesses in emerging markets and then selling these ventures to those established businesses. eBay's acquisition of Germany's leading auction site, Alando, where the Samwers got their start, is an example, and the company sold a controlling stake in Southeast Asian Amazon clone Lazada to Alibaba for \$1 billion in 2016, a price exceeding investor valuations of the company and representing a profit of over 20 times its initial investment. In 2017, Rocket sold half of its shares of Delivery Hero for €660 million, as well as Germany-based beauty retailer Glossybox and Dubai-based fashion retailer Namshi. These sales and the IPOs have helped Rocket stay afloat as it continues to support its other businesses. In 2019, the company had a massive €3.3 billion in cash on hand. Many investors are still betting that with time and growth, more

of Rocket's portfolio of companies will become profitable. In 2018, Rocket announced its plans to use its cash on hand to buy back up to €150 million of its own stock as well as to make more traditional investments in other startup companies. In the future, Rocket may begin to resemble something closer to a typical venture capital firm.

Rocket still understands that above all, it needs more of its stable of companies to become profitable. To that end, Rocket is focusing more on sustainable companies and less on selling their companies to market leaders. Oliver Samwer believes that in the past, it may have sold some businesses, such as Alando, too early, but that it was necessary in order for Rocket to build a track record. Now that it has one, it can afford to take a longer-term view. Rocket is increasingly liquidating many of its smaller companies, especially in food delivery, with the sale of companies at a loss in Spain, Italy, Brazil, and Mexico. Rocket's Airbnb clone, Wimdu, closed down at the end of 2018 as well. Still, as the global economy continues to rely more on the Internet and Internet-based services, accelerators like Rocket Internet will have a prominent role in markets around the world.

SOURCES: "Rocket Internet Sits on \$3.3 Billion Cash Pile after IPOs," by Stefan Nicola, Bloomberg.com, September 19, 2019; "Rocket Internet Set to Find More Companies in 2019," Reuters.com, April 4, 2019; "Rocket Internet Annual Report 2018," Rocket-internet.com, April 4, 2019; "Rocket Internet: Organizing a Startup Factory," by Oliver Baumann et al., Link.springer.com, December 2018; "Wimdu, Rocket Internet's Airbnb Clone, To Shut Down This Year 'Facing Significant Business Challenges,'" by Ingrid Lunden, Techcrunch.com, September 27, 2018; "Cash-flush Rocket Internet Lifted by \$175 Million Buyback Plan," by Emma Thomasson, Reuters.com, September 20, 2018; "Rocket Internet CEO Samwer Looks at Crafting New Strategies for Success," by Stefan Nicola, Bloomberg, August 27, 2018; "Rocket Internet – Providing Access to Up and Coming Companies in the Emerging Markets," by Kevin Carter, Seekingalpha.com, June 10, 2018; "Rocket Internet's Spectacular Display," by Leila Abboud, Bloomberg.com, September 28, 2017; "Start-ups Giant Rocket Internet Offloads Glossybox to UK Rival," by Mark Kleinman, News.sky.com, August 14, 2017; "Rocket Internet's Trajectory Shift," by Leila Abboud, Bloomberg.com, November 23, 2016; "German Tech Incubator Rocket Internet to Focus on Biggest Companies," Nasdaq.com, November 16, 2016; "Rocket Internet Leaves Us Groping in the Dark," by Leila Abboud, Bloomberg.com, October 12, 2016; "Inside Rocket Internet's Ailing Startup Factory," by Jeremy Kahn, et al., Bloomberg.com, October 7, 2016; "Rocket Internet's Deal with Alibaba Validates Its Opaque, Unproven Model," by Joon Ian Wong, Qz.com, April 13, 2016; "Rocket Internet Drops 13% in Debut," by Chase Gummer, Wall Street Journal, October 2, 2014; "Rocket Internet's Marc Samwar on Cloning: We Make Business Models Better Because We Localize," by Leena Rao, Techcrunch.com, October 28, 2013; "eBay Acquires Germany's Leading Online Person-to-Person Trading Site – Alando.de AG," Prnewswire.com, June 22, 2013.

B2C revenues from over 2 billion online buyers worldwide and around \$27 trillion in B2B revenues. 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.

From a business perspective, though, the early years of e-commerce were a mixed success, and offered many surprises. Only a very small percentage of dot-coms formed in those early years have survived as independent companies. Yet online retail sales of goods and services are still growing very rapidly. Contrary to economists' hopes, however, online sales are increasingly concentrated. For instance, according to the *Internet Retailer Top 1000 Report*, in the United States, the top 1000 retailers accounted for almost 90% of all U.S. online retail sales in 2018. No one foresaw that Google and Facebook would dominate the online advertising marketplace, accounting for over 60% of U.S. digital advertising revenues, or that one firm, Amazon, would account for 37% of all U.S. online sales via direct sales and sales by third-party sellers using Amazon's platform, as well as more than 45% of the growth of U.S. e-commerce retail sales in 2018 (Digitalcommerce360.com, 2019; eMarketer, Inc., 2019f; Pymnts, 2019).

So thousands of firms have failed, and those few that have survived dominate the market. The idea of thousands of suppliers competing on price has been replaced by a market dominated by giant firms. Consumers use the Web as a powerful source of information about products they often actually purchase through other channels, such as at a traditional bricks-and-mortar store, a practice sometimes referred to as "webrooming," "ROBO" (research online, buy offline), or O2O (online-to-offline). One survey found that 80% of consumers said they had webroomed in the past 12 months. This is especially true of expensive consumer durables such as automobiles, appliances, and electronics (Net-sertive, 2018). This offline "Internet-influenced" commerce is very difficult to estimate, but definitely significant. For instance, Forrester Research estimates that half of all U.S. retail sales in 2018 were influenced by consumers' use of digital devices prior to or during a physical shopping trip and expects this percentage to grow to almost 60% by 2023 (Forrester Research, 2018). The "commerce" in e-commerce is basically very sound, at least in the sense of attracting a growing number of customers and generating revenues and profits for large e-commerce players.

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 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. In some cases, online prices are higher than those of local merchants, as consumers are willing to pay a small premium for the convenience of buying online (Cavallo, 2016). Consumers are less price sensitive than expected; surprisingly, the websites 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). In a study of 50,000 goods in the United Kingdom and the United States, researchers found Internet prices were sticky even in the face of large changes in demand, online merchants did not alter prices significantly more than offline merchants, and price dispersion across online sellers was somewhat greater than traditional brick and mortar stores (Gorodnichenko et al., 2014). 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. 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); and 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 and they are willing to pay for it (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 online.

Finally, intermediaries have not disappeared as predicted. Although many manufacturers do sell online directly to consumers, they typically also make use of major e-commerce marketplaces, such as Amazon, eBay, Walmart, Jet, and Wish.com. If anything, e-commerce has created many opportunities for middlemen to aggregate content, products, and services and thereby introduce themselves as the “new” intermediaries. Third-party travel sites such as Travelocity, Orbitz, and Expedia are an example of this kind of intermediary.

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 companies, albeit some of them extremely well-known, such as Google, Facebook, Amazon, and others. Getting big fast sometimes works, but often not. 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 e-commerce as well. Many e-commerce first movers, such as eToys, FogDog (sporting goods), Webvan (groceries), and Eve.com (beauty products), failed. 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 and mobile app 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 startup costs can be staggering. Attempting to achieve or enhance profitability by raising prices has often led to large customer defections. From the e-commerce merchant's perspective, the "e" in e-commerce does not stand for "easy."

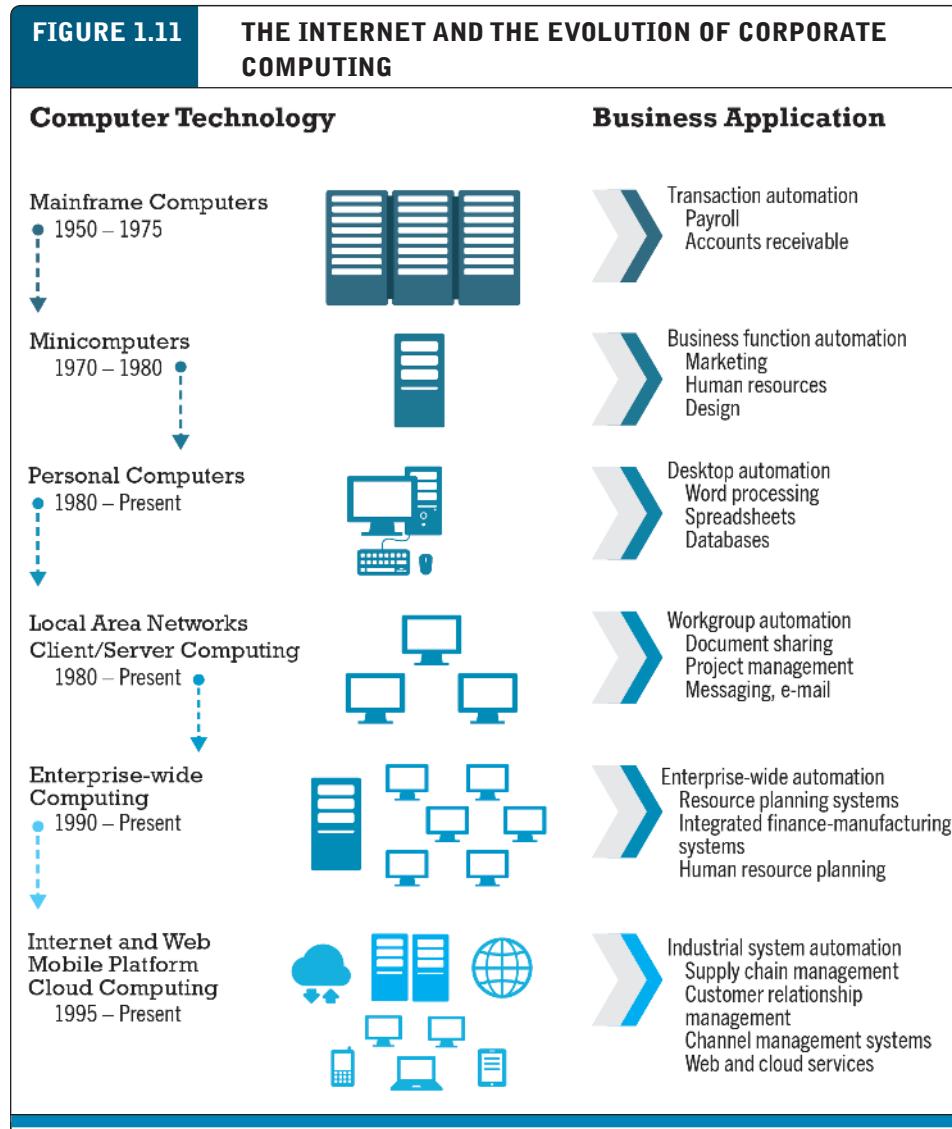
On the other hand, there have been some extraordinary and unanticipated surprises in the evolution of e-commerce. Few predicted the impact of the mobile platform. Few anticipated the rapid growth of social networks or their growing success as advertising platforms based on a more detailed understanding of personal behavior than even Google has achieved. And few, if any, anticipated the emergence of on-demand e-commerce, which enables people to use their mobile devices to order up everything from taxis, to groceries, to laundry service.

1.6 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 a number of 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, and society is forced to respond to them.

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 2. Underlying these technologies are a host of complementary technologies: cloud computing, desktop 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 information 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,



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.

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 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 chapters 2–4.

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. 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 5, 6, 7, and 9 through 12.

SOCIETY: TAMING THE JUGGERNAUT

With around 3.8 billion people worldwide now using the Internet, many for e-commerce purposes, 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 policy.

Because 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

INSIGHT ON SOCIETY

FACEBOOK AND THE AGE OF PRIVACY



Ever play a game or fill out a form or survey on Facebook or sign into a website with your Facebook credentials? When you did or used any of several million apps on the

Facebook platform between 2007 and 2015, you probably were not aware that Facebook was giving unfettered access to both your own and your friends' personal information to third-party app developers and websites. The third-party developers could do whatever they wanted with that information. Although Facebook cut off that kind of third-party access in 2015, it recently revealed that it had lost control of that information and was unable to track how it had been used by third-party developers. The privacy preferences of users were ignored. Surprised? You shouldn't be: it's been standard business practice at Facebook for many years.

In a 2010 interview, Mark Zuckerberg, the founder of Facebook, proclaimed that the age of privacy had to come to an end. According to Zuckerberg, people were no longer so worried about sharing their personal information with friends, friends of friends, or even the online universe. Supporters of Zuckerberg's viewpoint believed that the twenty-first century would be 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. Today, Zuckerberg's remarks are haunting Facebook as the company faces its largest existential crisis in its brief history precisely over the issue of privacy.

Facebook's business model is based on building a database of billions of users who are encouraged, or even perhaps deceived, into relinquishing control over personal information, which is then sold to advertisers and other third-party developers who use the Facebook platform to sell services. The less privacy Facebook's users want or have, the more Facebook profits. Eliminating personal information privacy is built into Facebook's DNA and business model.

Third-party developers, advertisers, and Facebook employees and executives have known for years of Facebook's practice of sharing deep personal information with whomever would pay, but little of this was known by the public until the so-called Cambridge Analytica scandal that first came to light in early 2018. Cambridge Analytica was a political consulting and data analytics firm that obtained data on several hundred thousand Facebook users from Aleksandr Kogan, a psychology professor at Cambridge University. Kogan had obtained permission from Facebook to use the personal information of Facebook users as part of a research project on psychological profiles. Kogan used a personality quiz app that was downloaded by around 300,000 participants to collect the data, which included not only information about the participants, but also their friends, as well as their friends' friends. The result was a database of usable profiles of over 87 million Facebook users! Cambridge Analytica then used these profiles from Kogan to target political ads, initially in 2015 to support Senator Ted Cruz's presidential campaign, and later to support Donald Trump's campaign.

These revelations led to congressional hearings in which Zuckerberg and other executives apologized for Facebook's failure to enforce its own privacy policies, its failure to recognize the massive drain of personal information on 87

million users, and its failure to protect the privacy of its users. It was a mistake, the company said, and a breach of Facebook policies. Millions of users joined the Delete Facebook movement as a result of these revelations, although this has not had significant impact on Facebook's revenues. Facebook for its part has initiated a number of large-scale internal efforts to clarify its policies, restrict unlimited access to user information by advertisers and third-party developers, and make it easier for users to control how their personal information is used and by whom. No one knows if these efforts will succeed, and there are many skeptics given Facebook's past promises related to user privacy that have largely gone unfulfilled.

The Cambridge Analytica affair seriously damaged Facebook's long-standing claims that it would protect users' personal information from abuse by third-party developers. It also appears to violate the terms of a 2011 settlement with the U.S. Federal Trade Commission that required Facebook to obtain user consent before overriding their privacy preferences, stop making false statements about how much information was shared with third-party developers, stop falsely claiming users could restrict sharing of data to limited audiences, such as only a user's friends, and stop falsely claiming that it did not share deep personal information with advertisers.

Public confidence in Facebook's claims that it would protect users' privacy was further shaken in 2018 when Facebook revealed that it also had data-sharing agreements with at least 60 phone and device makers, including Apple,

Amazon, BlackBerry, Microsoft, and Samsung, that allowed these firms access to virtually all the personal information on Facebook users. These agreements allowed device makers to offer their customers Facebook features such as Like buttons, games, address books and calendars, and messaging. In addition, the personal data on users' friends was also shared, even when these friends had explicitly chosen not to have their data shared using Facebook's privacy controls. According to Facebook, these device manufacturers are not considered third parties, but rather as device partners, and their use of this information is regulated by so-called strict agreements. In 2018 a *New York Times* reporter tested a BlackBerry app called The Hub that lets users view all of their messages and social media counts in one location. After connecting, the Hub app retrieved detailed data on the reporter and 556 of her friends, and 294,000 friends of the reporter's friends. So one user account generated data on hundreds of thousands of other Facebook users without their consent and without regard to their privacy settings in Facebook. The BlackBerry Hub app was able to access more than 50 types of personal information about users and friends. The data is stored on the device provider's servers. Spokespersons for the device makers either declined to comment or claimed they used the information solely to provide an effective user experience. Facebook claims it is reducing this program, but it is unclear what information, if any, will continue to be shared.

SOURCES: "Facebook's Latest Problem: It Can't Track Where Much of the Data Went," by Deepa Seetharaman, *Wall Street Journal*, June 27, 2018; "Facebook Gave Device Makers Deep Access to Data on Users and Friends," by Gabriel Dance, Nicholas Confessore, and Michael LaForgian, *New York Times*, June 3, 2018; "Facebook Says Cambridge Analytica Harvested Data of Up to 87 Million Users," by Cecilia Kang and Sheera Frenkel, *New York Times*, April 24, 2018; "Facebook Introduces Central Page for Privacy and Security Settings," by Sheera Frenkel and Natasha Singer, *New York Times*, March 28, 2018; "FTC Probing Facebook Over Data Use by Cambridge Analytica," by John D. McKinnon, *New York Times*, March 20, 2018; "Facebook's Role in Data Misuse Sets Off Storms on Two Continents," by Matthew Rosenberg and Sheera Frenkel, *New York Times*, March 18, 2018; "How Trump Consultants Exploited the Facebook Data of Millions," by Matthew Rosenberg, Nicholas Confessore, and Carole Cadwalladr, *New York Times*, March 17, 2018; "Experimental Evidence of Massive-scale Emotional Contagion Through Social Networks," by Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock, *Proceedings of the National Academy of Sciences*, March 25, 2014; "Facebook Settles FTC Charges That It Deceived Consumers By Failing to Keep Privacy Promises," Federal Trade Commission, November 29, 2011.

New York State resident from a website in California, shipped from a center in Illinois, and 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 by streaming endless movies 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.

1.7

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. Operations 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. The information systems discipline spans the technical and behavioral approaches. Technical groups within the information systems specialty focus on data mining, search engine design, and artificial intelligence.

BEHAVIORAL APPROACHES

From a behavioral perspective, information systems researchers are primarily interested in e-commerce because of its implications for firm and industry value chains, industry structure, corporate strategy, and online consumer behavior. 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.

1.8 CAREERS IN E-COMMERCE

At the beginning of this chapter, in Section 1.1, we explained why studying e-commerce can help you take advantage of future opportunities. The digital Internet/e-commerce economy is growing rapidly, and is expected to continue to do so, and prospects for employment are promising. Employers in this sector are looking for a wide variety of skills, and having a familiarity with the vocabulary, as well as the concepts, underlying e-commerce can help you as you interview, as well as on the job.

To illustrate, we will conclude each chapter with a section that examines a job posting by an Internet/e-commerce company for an entry-level position. We will give you a brief overview of the company, some details about the position, a list of the qualifications and skills that are typically required, and then give you some tips about how to prepare for an interview, as well as show you how concepts you've learned in the chapter can help you answer some possible interview questions. In this chapter, we'll look at a job posting from one of the most familiar types of e-commerce companies: an online retailer.

THE COMPANY

The company is a large global retailer that is rapidly expanding its online and mobile operations. The company is seeking to develop omni-channel e-commerce capabilities based on world-class pricing technology, automated warehouses, and an advanced fulfillment program that combines its retail stores with online and mobile sales. The company has hundreds of different product categories and operates multiple branded websites.

POSITION: CATEGORY SPECIALIST IN THE E-COMMERCE RETAIL PROGRAM

You will manage the performance of your category of products across the firm's websites and apps. More specifically, you will:

- Manage and monitor the introduction of new products, and establish processes to ensure they are available at stores and online.
- Improve the online user experience browsing and searching for products.
- Manage item and category pages including graphics, customer reviews, and content. Find new ways in which our customers can discover products online.
- Optimize pricing of our products and benchmark competitor prices.
- Analyze product performance, identify key trends, and suggest how the firm can improve its revenues, customer service, and margins.
- Work with cross-functional teams in marketing, customer relationship management, and supply chain management to execute initiatives to optimize category performance.

QUALIFICATIONS/SKILLS

- Bachelor's degree with a strong academic background
- An entrepreneurial attitude
- Strong attention to detail
- Strong communication and teamwork skills
- Strong analytical and critical thinking skills
- Ability to work in an ambiguous environment, face challenges, and solve problems
- Negotiation and persuasion skills
- Fast learner, with an ability to absorb information and experiences and apply them

PREPARING FOR THE INTERVIEW

The first step in preparing for an interview is to do some background research about the company you will be interviewing with, as well as the industry in general. Visit their websites, apps, and social media presence. It would also be helpful to review Sections 1.2 and 1.3, so that you can demonstrate an understanding of the basic concepts underlying e-commerce, and show that you know about some of the major trends that will be impacting e-commerce in the coming year, and that you have a familiarity with the basic features underlying e-commerce technology. Being able to converse about the different types of e-commerce, covered in Section 1.4, especially the growing importance of m-commerce, should also be helpful. Before the interviews, you should also think about where your background such as courses taken, outside activities, and personal interests can be useful to the company's business objectives. Re-read the position description and identify where you may have unique skills.

POSSIBLE FIRST INTERVIEW QUESTIONS

1. We hope to build an omni-channel web presence where consumers can buy our products online or in physical stores, which will also have in-store kiosks where customers can explore and order products. What challenges do you think you will face when introducing products to an omni-channel store?

You can prepare for this type of question by visiting national retail stores that already have an omni-channel presence and be prepared to report on your experience as a consumer. Some of the key challenges include providing a consistent customer experience across channels, coordinating pricing, and integrating physical store sales teams with efforts from online marketing teams.

2. Based on what you already know about our online presence, how do you think we should expand our online activities?

You could reference the explosive growth in smartphones and m-commerce, as well as the growth in social networks, and suggest the firm expand its mobile and social network presence.

3. We're finding that quite a few of our customers come to our website to see our offerings and then buy on Amazon. How do you think our firm can respond to this situation?

You could approach this question by explaining why so many people use Amazon: great product search engine, an interface that's easy to use, convenient payment, Prime shipping, and low prices. This suggests that the firm should develop websites and a mobile app that match Amazon's features.

4. How can our company use social networks such as Facebook, Twitter, and Pinterest to expand our business?

You could respond to this by noting that social networks are excellent branding and product introduction tools, but purchases are more likely to take place on the company's website.

5. We gather a tremendous amount of personal information about our online customers. What kinds of issues do you think this poses for our company?

You could address this question by referencing the concerns that people have that their private communications, online transactions, and postings be kept private, unless they grant permission for the release of this personal information. You may have had some personal experiences online where you felt your privacy was being invaded. Talk about these experiences.

6. Our online sales have grown at about 20% a year for several years. Yet many of our customers also buy from our retail stores located in malls, sometimes based on what they see online. And vice versa: some come to our websites and apps and then try it out and buy in the stores. Do you think our e-commerce channel will continue expanding at this rate in the future?

You can address this question by pointing out that e-commerce currently is a very small part of total retail commerce, and therefore you believe there is plenty of room for e-commerce to keep growing rapidly in the future. The firm's online presence will likely drive in-store purchases.

7. Have you worked on the development of a website or app for a business or started an online business yourself? How did it work out?

Here, you will have to draw on your personal experiences, or those of friends, in using the web to promote a business. If you've had some experience you can share, be prepared to identify what made these efforts successful, as well as what the challenges were, and the mistakes you made. Failure is a valuable experience to share with interviewers. It shows you tried. If you have no experience, you can talk about an idea for an e-commerce company that you have thought about, and how you would turn it into a successful business.

1.9

CASE STUDY

Puma

Goes Omni

When Puma, one of the world's top sports footwear, apparel, and accessories brands, conceived its Love=Football campaign, the goal was to create a memorable tagline in a language that would be understood the world over—pictures. In the process, the company stumbled upon the power of social marketing. Puma's ad agency, Droga5, filmed a light-hearted commercial featuring scruffy everyday men in a Tottenham pub singing love songs to their Valentines. The video went viral, garnering more than 130 million impressions and spawning hundreds of homemade response videos. Today, Puma's marketing campaigns are branded with the slogan "Forever Faster," which, according to Ruth How, Puma's Head of Marketing and Communications at Puma UK, Ireland & Benelux, is a sentiment that applies not only to its marketing message to consumers but also to Puma's approach to marketing itself. As How notes, since so much of Puma's target market lives and breathes in the digital space, it is imperative for Puma to fuse marketing with technology to reach those consumers.



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Puma maintains an extensive presence on Facebook, Twitter, Instagram, Pinterest, Snapchat, and YouTube and closely integrates its social strategy with its other marketing channels to deepen its engagement with consumers. It uses social media in part to better understand the different regional and sub-brand audiences within the over 120 countries in which it operates. Not all content is suitable for every one of its over 20 million global Facebook fans. Dedicated sport, country, region, and product category pages were created for each social network. For several years, Puma took a trial-and-error approach, focusing on building its follower base. Today, Puma uses a data-driven approach, geo-targeting posts tailored to specific social network audiences at the appropriate times of the day to maximize fan engagement and generate the right mix of online content to best drive sales. The company also sends personalized messages based on customers' website activity, using items abandoned in shopping carts and other information to generate customized messages and surveys. This integration of channels into a cohesive customer acquisition strategy is in fact a key element of the emerging world of omni-channel retailing.

The advent of the term "omni-channel" signals the evolution of multi-channel or cross-channel retailing to encompass all digital and social technologies. The idea is that customers can examine, access, purchase, and return goods from any channel, even change channels during the process, and receive timely and relevant product information at each step along the way and in each channel. The rise of social networks and the personalized retail it engenders is a primary driver of omni-channel—the complete integration of the shopping and brand experience. Marketing efforts combine offline events, sales and online promotions and brand building across all available channels. For a company like Puma, with e-commerce sites in the United States, Russia, Canada, China, India, Malaysia Switzerland, Germany, France, the United Kingdom, and a European site that serves multiple countries in multiple languages, this presents quite a challenge.

To meet that challenge, Puma, aided by Astound Commerce, a leading e-commerce consultancy firm, undertook a complete restructuring of its e-commerce business. One hundred team members working on the project for nine months completed the restructuring, which included coordinating warehouses, PayPal, and credit card companies with all of Puma's different localized sites. Puma felt it needed to shake things up to compete with Adidas, Nike, and other sports apparel companies in a global market that was rapidly shifting away from mature Western markets and desktop commerce. To coordinate market rollouts and ensure a unified brand image, a command center took over brand strategy and investment decisions, leaving daily operational and locality-based decision-making to the regional teams. One central website, powered by Salesforce Commerce Cloud, Puma's main e-commerce platform, was used to simplify managing global e-commerce operations from a central digital platform, and the company now uses Informatica database technology to manage its 20,000 products centrally, reducing costs and streamlining inventory management. Puma also began to use the AutoStore inventory automation system in some of its warehouses. The system uses a series of bins and robotic handlers to improve storage density, energy efficiency, and the capability to ship items same-day to customers. Puma's goal was to overhaul its e-commerce operations from the ground up to ensure that all of its teams were on the same page and that it was using top-end technology in every area to power its business.

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Puma assigned the overhaul of its websites to Viget, a web design firm. It created templates to unite several Puma sites into one and unify the look across numerous categories and content types. Puma also modeled its physical stores after the design updates made to its websites, laying out items in similar arrangements. A dozen category sites now complement Puma.com, with a custom-built content management system (CMS) ensuring that consistent Puma branding and navigation are maintained across all sub-sites and pages. Category managers can customize home pages outside of the template layout. The flexibility to roll out local, regional, and global campaigns is thus built into the website design. What's more, the CMS integrates with a language translation tool, a Storefinder tool that helps visitors locate Puma stores, and Puma's product inventory manager. These design changes improved site visualization and navigation, prompting customers to spend twice as much time on the site and raising the order rate. Other features like the ability to design Puma shoes from the ground up using a built-in web app across all of its sites have made Puma's online presence even more compelling.

Puma then turned to the mobile platform, first incorporating Storefinder into its mobile site interface. Using the GPS capability of the mobile device, Puma stores nearest to the user can be located along with address and contact information. Puma's mobile sites were rebuilt using responsive design features, enabling users to experience the same content and appearance as on a desktop or laptop, managed by the same CMS. Puma also incorporated mobile into its omni-channel marketing strategy. In fact, whereas most mobile sites are scaled down from the desktop version, Puma's sites are the opposite—the desktop site is an enlarged version of the mobile site, which has all the functionality of a typical desktop site, including speed. Puma also developed PUMATRAC, a mobile app that automatically analyzes environmental conditions to give runners feedback on how these variables impact their performance. The app offers multiple options to share statistics and routes with other runners. Puma has since overhauled its mobile sites in 24 separate markets, customizing features for each one, ensuring that mobile customers can access items they place in their shopping cart on other platforms, and allowing its web and mobile sites to load 69% faster than previous iterations. Puma's mobile traffic accounts for 70% of all site traffic in many markets, and all of Puma's sites can now handle large traffic spikes when new products hit the market. Overall, Puma has seen its mobile conversion rates improve from less than 1% to approximately 1.5%; though this sounds modest, the increase has resulted in a significant increase in sales and profits for the company.

In addition to focusing on unifying its branding efforts and e-commerce websites, Puma has also streamlined its e-commerce teams. In the past, Puma maintained nine independent e-commerce teams on five continents. Currently, it has teams divided into the three major segments that comprise the majority of its sales—North America, Europe, and Asia-Pacific—as well as a global unit that operates at a level above these regional segments. At the same time, the company is also pursuing a strategy that is flexible and focused on the precise local needs in individual markets, despite reducing the number of individual e-commerce teams. For example, Puma found that in the Asia-Pacific region, traditional paid media advertising was very ineffective compared to social marketing, particularly social media ads featuring compelling influencers like Selena Gomez, whom the company partnered with in 2018, and 2018 World Cup stars like Romelu Lukaku.

Over the past several years, Puma has gained invaluable omni-channel experience and laid the groundwork for resurgent success. In 2019, Puma opened its first-ever North American flagship store in New York City. The digital-centric store is intensely focused on delivering an innovative, interactive, and personalized customer experience using augmented reality and Internet of Things technologies.

Puma's ability to adapt its strategy to individual areas has also helped the company advance into India, where it was given the right to sell to customers directly as well as via popular e-commerce portal Flipkart, and China, a growing market where Puma has traditionally had minimal presence. Puma believes that India will become one of the company's top five markets in the near future. Puma entered the market for NBA player endorsements in 2018, both because the NBA culture meshes well with Puma's and because the NBA is extremely popular in China. Many top young NBA players inked agreements to wear Puma footwear during games in 2019 and beyond.

Implementing a successful omni-channel strategy is a monumental task. Puma's fortunes did not improve overnight. Puma CEO Bjorn Gulden believes that 2015 represented a turning point for the Puma brand back to profitability. By 2018, Puma's e-commerce sales had risen to more than 15 times what they had been in 2012. The company's stock price has more than tripled over the past three years, and its sales have continued to grow across all of its segments, leading to sales growth of over 17% and a significant gain in net earnings from €136 million in 2017 to €188 million in 2018. The company's credits its e-commerce strategy as the main driver of its turnaround and continued success.

Case Study Questions

1. What is the purpose of Puma's content management system?
2. Why did Puma build a single centralized website rather than continue with multiple websites serving different countries and regions?
3. What social media sites does Puma use, and what do they contribute to Puma's marketing effort?

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1.10 REVIEW

KEY CONCEPTS

Understand why it is important to study e-commerce.

- The next five years hold out exciting opportunities—as well as risks—for new and traditional businesses to exploit digital technology for market advantage. It is important to study e-commerce in order to be able to perceive and understand these opportunities and risks that lie ahead.

- Define e-commerce, understand how e-commerce differs from e-business, identify the primary technological building blocks underlying e-commerce, and recognize major current themes in e-commerce.
 - E-commerce involves digitally enabled commercial transactions between and among organizations and individuals.
 - 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, unlike e-commerce, e-business does not involve commercial transactions across organizational boundaries where value is exchanged.
 - The technology juggernauts behind e-commerce are the Internet, the Web, and increasingly, the mobile platform.
 - From a business perspective, one of the most important trends to note is that all forms of e-commerce continue to show very strong growth. From a technology perspective, the mobile platform has finally arrived with a bang, driving astronomical growth in mobile advertising and making true mobile e-commerce a reality. At a societal level, major issues include privacy and government surveillance, protection of intellectual property, online security, and governance of the Internet.
- 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.

- Describe the major types of e-commerce.

There are six 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 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 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.

- 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, desktop 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, this includes computer science, operations management, and information systems.
- On the behavioral side, it includes information systems as well as sociology, economics, finance and accounting, management, and marketing.

QUESTIONS

1. What does omni-channel mean in terms of e-commerce presence?
2. What is the deep Web?
3. What are some of the unique features of e-commerce technology?
4. What are some of the factors driving the growth of social e-commerce?
5. Why is it likely that the Internet and e-commerce are entering a period of closer regulatory oversight?
6. How does the ubiquity of e-commerce impact consumers?
7. What impact does the increased interactivity provided by e-commerce technologies have on business?
8. What difficulties are presented in trying to measure the number of web pages in existence?
9. Why is the mobile platform not just a hardware phenomenon?
10. What is conversational commerce and how does it relate to m-commerce?
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 is the difference between a PWA and a regular app?
14. What is driving the growth of social e-commerce?
15. Discuss the ways in which the early years of e-commerce can be considered both a success and a failure.
16. What are five of the major differences between the early years of e-commerce and today's e-commerce?
17. How do the Internet and the Web fit into the development of corporate computing?
18. Why is the term "sharing economy" a misnomer?
19. What are those who take a technical approach to studying e-commerce interested in?
20. What have been some of the surprises that have occurred in the evolution of e-commerce?

PROJECTS

1. Choose an e-commerce company 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 company 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.
2. Search online for an example of each of the major types of e-commerce described in Section 1.4 and listed in Table 1.3. Create a presentation or written report describing each company (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. Given the development and history of e-commerce in the years 1995–2019, 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 presentation or written report to explain your vision of what e-commerce will look like in 2024.
4. Prepare a brief report or presentation on how companies are using Instagram or another company of your choosing as a social e-commerce platform.
5. Follow up on events at Uber since December 2019 (when the opening case was prepared). Prepare a short report on your findings.

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CHAPTER 2

E-commerce Infrastructure

LEARNING OBJECTIVES

After reading this chapter, you will be able to:

- Discuss the origins of, and the key technology concepts behind, the Internet.
- Explain the current structure of the Internet.
- Understand how the Web works.
- Describe how Internet and web features and services support e-commerce.
- Understand the impact of mobile applications.

Tech Titans Target a Prize:

Bringing Internet Access to Rural India

Half of the world's population does not have access to the Internet. India is arguably among the least Internet-connected populations, with the majority of its citizens living in widely dispersed rural areas largely without Internet service. Among the 500 million Indian Internet users (mostly in large urban areas), over 460 million use mobile phones to access the Internet. Most continent-size countries have difficulties serving their rural populations. In China, for instance, about 40% of its estimated 1.4 billion people, living mostly in dispersed rural regions, have no Internet access. Of China's estimated 870 million Internet users, 90% use their mobile phones for access, relying on Wi-Fi hotspots provided by telecommunications companies.

While Internet growth in the industrial world has reached a saturation point, with limited prospects for rapid expansion, India represents an untapped potential growth asset for telecommunications and technology providers. India has one of the fastest-growing Internet and smartphone populations in the world.

In 2014, the government of India launched its Digital India project with the objective of building high-speed networks and improving digital literacy in rural areas. A part of this program was called Digital Village, an effort to connect an estimated 1,000 of 250,000 rural villages to the Internet by expanding existing private Wi-Fi networks as well as government-developed networks. In 2019, the Indian government announced plans to expand the project. However, connecting all of the rural villages in India would be a massive task from a financial perspective and also hampered by the limits of current Wi-Fi technology. Wi-Fi hotspots, which use radio signals, have a limited reach of about 100 meters (300 feet), making them suitable for individual buildings, but not for large regions. WiMax (Worldwide Interoperability for Microwave Access) using microwave line of sight frequencies has a range of only 30 miles.

Other technologies are needed that can cover a continent and yet provide affordable service to a rural population. One solution is something that flies above the rural areas and provides both upload and download of Internet access requests. Geosynchronous satellites would be ideal, but they are very expensive to build and launch, and it would take 10 to 15 such satellites to cover India's land mass.

Enter the tech giants from Silicon Valley looking for new audiences to support their advertising models: Google, Facebook, and Microsoft. Both Facebook and Google have



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