E-commerce 2021

business. technology. society.

SIXTEENTH EDITION

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E-commerce

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PREFACE

E-commerce 2021: business.technology.society 16th 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.

Just as important, 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. 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 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 October 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 on a number of e-commerce topics that have appeared in the headlines during 2020, including the following:

- The significant impact of the Covid-19 pandemic on e-commerce (throughout and also as specifically noted in the following list).
- The expansion of on-demand services such as Uber (including the impact of the Covid-19 pandemic on Uber); challenges that mobile apps pose to the Web's dominance of the Internet ecosphere, including progressive web apps (PWAs); the continuing success of Y Combinator's startup boot camp, the privacy-related challenges facing Facebook (including the recent record-breaking fine and stipulations imposed by the Federal Trade Commission in the wake of the Cambridge Analytica scandal); Pinterest's pivot to a business model focused on visual search (Chapter 1).
- How small businesses are shifting their business models to e-commerce to survive the Covid-19 pandemic (new opening case); changes in Foursquare's business model and how it is coping with a more privacy-conscious business environment; how startups are using crowdfunding to raise funds during the pandemic (new *Insight on Business* case); connected cars as a new platform for e-commerce; Twitter's continued efforts to find a workable business model in the midst of a challenging social and political environment (new end-of-chapter case study) (Chapter 2).
- The impact of the pandemic on Internet infrastructure and whether it could break the Internet (new opening case); edge computing; enhanced versions of various Internet protocols; 5G and new Wi-Fi standards such as Wi-Fi 5 and 6; BLE and the use of Bluetooth for contact tracing apps; increasing tech giant ownership of Internet backbones; increasing concern about the necessity for broadband access heightened by the pandemic (digital divide); new Internet access technologies such as drones, balloons, and white space; developments in IoT; the increased importance on videoconferencing as a result of the pandemic (new *Insight on Technology* case on Zoom); wearable computing devices such as the Apple Watch; virtual and augmented reality (including new mixed reality devices and applications); artificial intelligence and intelligent assistants (Chapter 3).
- Walmart's success in its efforts to better compete with Amazon by redesigning its website and mobile apps; website development tools to quickly develop an e-commerce presence, such as Weebly, Wix, WooCommerce, and Shopify; alternative web development methodologies such as agile development, DevOps, component-based development, and the use of web services (including SOA and microservices); dynamic page generation tools such as DHTML and Node.js, tools for interactivity and active content such as React, Vue, AngularJS, D3, jQuery, and TypeScript; e-commerce personalization tools; increasing focus on online accessibility, including the impact of the latest legal decisions; mobile-first and responsive design tools (including Flutter and React Native); the development of Doulingo's leading language-learning mobile app (new *Insight on Technology* case); Dick's Sporting Goods' effort to reclaim its e-commerce infrastructure and how that effort may aid it in coping with the pandemic (Chapter 4).

- Cyberwarfare threats, including the recent cyberattack on Iran's nuclear facilities; increased security threats from exploit kits, malvertising, ransomware attacks on small and medium-sized businesses and municipal governments, Trojans such as Emotet and Trickbot, cryptojacking, Covid-related phishing scams, Nigerian e-mail and business e-mail compromise (BEC) phishing, zoombombing, data breaches and credential stuffing attacks, DDoS attacks, insider attacks, newly discovered software vulnerabilities, social network security issues, smartphone security issues, IoT security issues and software supply chain attacks; technologies for enhanced security including more secure protocols (TLS, HTTPS, and WPA3), multifactor authentication and biometric security techniques, and the use of the zero trust cybersecurity framework; new security legislation such as NY's SHIELD Act; alternative online payment systems; mobile payment systems (proximity and P2P) and technologies (NFC and QR code); cryptocurrencies and blockchain technology (Chapter 5).
- YouTube and online video advertising; impact of the Covid-19 pandemic; visual and voice search; ad fraud and viewability issues; new IAB guidelines; updates to Apple's Intelligent Tracking Prevention (ITP); issues with programmatic advertising, including brand safety (Chapter 6).
- Hubble's success in building a microbrand with social media marketing; influencers and influencer marketing; new social marketing tools from, and campaigns on, Facebook, Twitter, Pinterest, Instagram, TikTok, Snapchat, and LinkedIn; Trek Bicycles and the Chicago Bulls use of Sprout Social's social marketing analytics; social marketing challenges, including advertiser boycotts; new COPPA regulations and lawsuits; growth of 3-D mobile marketing; privacy challenges facing location-based proximity marketing (Chapter 7).
- The right to be forgotten in Europe and the United States; the California Consumer Privacy Act goes into effect; privacy issues associated with facial recognition; impact of EU General Data Protection Regulation (GDPR) and recent invalidation of Privacy Shield; new technological privacy protections, including new versions of Apple's ITP; privacy as a business; issues with respect to law enforcement and government surveillance including a new *Insight on Technology* case on contact tracing apps and the tension they pose between privacy and public health; updates on DMCA legislation and litigation, including a new lawsuit against the Internet Archive for making digital copies of its entire library widely available during the pandemic; EU copyright legislation; the Supreme Court's *Booking.com* trademark decision; WIPO's domain name dispute resolution process; the impact of the Supreme Court's *Wayfair* decision on online sales taxes; net neutrality developments; issues with respect to CDA Section 230; online fantasy sports gambling issues; Big Tech and antitrust issues, including recent investigations and record-breaking fines (Chapter 8).
- Dramatic challenges posed by the Covid-19 pandemic for online retail and services, particularly travel services; updates on Blue Nile, Amazon, Stitch Fix, Instacart, Grubhub, Airbnb, and OpenTable; growth of digital native verticals (manufacturer-direct); growth of social e-commerce including Facebook Shops; success of fintech startups; growth of social, mobile, and remote recruiting; updates on on-demand service companies (Chapter 9).

- Use of the "Internet Broadcasting System" (streaming subscription services) surges during the pandemic; industry structure convergence continues; updates on online newspaper industry business models, including deals with the new Facebook News; native digital news sites; Apple News magazine and news aggregation app; update on e-books, including Kindle Unlimited; streaming home entertainment (television and movies) and music services; the impact of Pokemon GO and emergence of e-sports, including a new *Insight on Technology* case on Twitch (Chapter 10).
- LinkedIn; impact of the pandemic on social network usage; new social networks, including TikTok and MeWe; social networks "fails" and issues; continuing controversy over Facebook algorithms and echo chamber effect; decline in popularity of online auctions; Verizon pivots its portal strategy (new *Insight on Business* case); update on eBay (Chapter 11).
- Amazon Business; the impact of the Covid-19 pandemic on supply chains, including a new *Insight on Society* case on supply chain disruption; blockchain in the supply chain; cloud-based B2B; mobile B2B; B2B marketing; Walmart supply chain and performance (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 a course offered for the 2021 academic year. 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 October 2020, just weeks before the book hits the press.

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 Dick's Sporting Goods, 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-commerce supply chains, 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, artificial intelligence, augmented and virtual reality, and 5G and Wi-Fi 6, among many 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 is organized into four parts.

Part 1, "Introduction to E-commerce," provides 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 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 2 also includes a section on the important topic of e-commerce technology and business model disruption.

Part 2, "Technology Infrastructure for E-commerce," focuses on the technology infrastructure that forms the foundation for all e-commerce. Chapter 3 traces the historical development of the Internet and thoroughly describes how the Internet, Web, and mobile platform work. Chapter 4 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 5 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 Apple Pay, Venmo, Zelle, and Facebook Messenger, as well as a section on cryptocurrencies and blockchain, the technology underlying cryptocurrencies.

Part 3, "Business Concepts and Social Issues," focuses directly on the business concepts and social-legal issues that surround the development of e-commerce. 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, TikTok, and LinkedIn, 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.

Part 4, "E-commerce in Action," focuses 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 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 9 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 10 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 online newspapers and magazines, e-books, streaming home entertainment, movies, and music, and online games and e-sports. Chapter 11 explores the online world of social networks, auctions, and portals. Chapter 12 concentrates on the world of B2B e-commerce, describing e-commerce supply chains, and various types of B2B business models, including different types of Net marketplaces as well as 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 or topic that relates the key objectives of the chapter to a real-life e-commerce business venture or issue.

Everything on Demand:

The "Uberization" of E-commerce

If you were asked to pick iconic examples of e-commerce in the two decades since it began in 1995, it is likely that companies such as Amazon, Google, Apple, and Facebook would be high on your list. But over the last few years, a new breed of e-commerce company has muscled its way to the forefront. Uber and other firms with similar business models, such as Lyft (a ride service similar to Uber's), Airbnb (rooms for rent), Instacart (grocery shopping), and DoorDash (restaurant food delivery), 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. Its Uber Rides segment offers consumers a way to get from Point A to Point B, ranging from UberX, which uses compact sedans and is the least expensive, to Uber Black, which provides higher-priced town car service. Its Uber Eats segment focuses on food delivery services. Its Uber Freight segment offers long-haul trucking services.

Uber, headquartered in San Francisco, was founded in 2009 by Travis Kalanick and Garrett Camp, and has grown explosively since then to over 900 major cities and thousands of smaller ones in 69 countries. In 2019, Uber had 3.9 million drivers worldwide and over 110 million monthly active riders who made 6.9 billion trips during the year. In 2019, those riders spent $65 billion on the Uber platform, generating $14.1 billion in revenue for Uber, but it still lost a whopping $8.5 billion (although $4.6 billion of that loss was due to stock-based compensation expense). Uber's strategy in the past has been to expand as fast as possible while foregoing short-term profits in the hope of long-term returns.

Despite the fact that, as of yet, it 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

"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.


2.6 CASE STUDY

Weathering the Storm:
Twitter Tweaks Its Business Model

Twitter, the social network originally based on 140-character text messages, continues in the long tradition of Internet developments that emerged seemingly out of nowhere to take the world by storm. Twitter's basic idea was to marry short text messaging on cell phones with the Web and its ability to create social groups.

Twitter has since expanded beyond simple text messages to article previews, photographs, videos, and animated images, and in April 2020, had over 185 million daily active users worldwide. The 5,000 tweets a day that it began with in 2006 has turned into a deluge of around 6,000 tweets per second and 500 million per day worldwide. Special events, such as the Super Bowl and Academy Awards, tend to generate an explosion of tweets. Some celebrities, such as the pop star Justin Bieber, have millions of followers (in Bieber's case, around 110 million).

Twitter has a number of important assets, such as user attention, significant audience size (uniquevisitors), and its searchable database of tweets, which contain the real-time comments, observations, and opinions of its audience. Twitter has become essential in modern society as a media platform for the instant distribution of news that many in the

Chapter-Closing Case Studies Each chapter concludes with a robust case study based on real-world organizations. These cases help students synthesize chapter concepts and apply this knowledge to concrete problems and scenarios such as Dick's Sporting 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.


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Welcome to the Companion Website for
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Web Resources Web resources that can extend students' knowledge of each chapter with projects, exercises, and additional content are available at E-commerce2021.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

INSTRUCTOR RESOURCES

At the Instructor Resource Center, www.pearsonhighered.com/irc, 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** 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 32 video cases for the 16th edition, all with updated supporting case study material.

  Chapter 1
  1.1 The Importance of the Internet for E-commerce
  1.2 The Growth of the On-Demand Economy

  Chapter 2
  2.1 Glossier
  2.2 Angel Investing

  Chapter 3
  3.1 How Freshdesk Uses Amazon Web Services
  3.2 Compare.com Turns to Microsoft Azure and the Cloud
  3.3 Facebook's Data Centers
  3.4 Smart Speakers: Amazon Echo and Google Home

  Chapter 4
  4.1 E-commerce Platforms: Salesforce Commerce Cloud
  4.2 National Kidney Registry Turns to Rackspace for Managed Hosting
  4.3 Building a Mobile App

  Chapter 5
  5.1 The Rise of Cyberwarfare
  5.2 Understanding Bitcoin

  Chapter 6
  6.1 To Ad Block or Not to Ad Block
  6.2 Pandora's Recommendation System
  6.3 Verizon Media

  Chapter 7
  7.1 Pinterest
  7.2 The Full Value of Mobile Marketing
  7.3 Yelp

Chapter 8
8.1 The Right to Be Forgotten
8.2 Facebook Privacy
8.3 What Net Neutrality Means for You

Chapter 9
9.1 Walmart Takes On Amazon
9.2 Etsy: A Marketplace and a Community

Chapter 10
10.1 YouTube: Secrets of Successful Content Creators
10.2 Vox Media
10.3 ESPN: Sports Broadcasting Evolves
10.4 Disney+

Chapter 11
11.1 Instagram
11.2 Small Businesses Find a Home on eBay

Chapter 12
12.1 Elementum
12.2 Mechan Groep Streamlines with Sana Commerce

- **Learning Tracks** These additional essays, created by the authors, provide instructors and students with more in-depth content on selected topics in e-commerce.

Chapter 1
1.1 Global E-commerce Europe
1.2 Global E-commerce Latin America
1.3 Global E-commerce China

Chapter 6
6.1 Basic Marketing Concepts
6.2 Consumer Behavior: Cultural, Social, and Psychological Background Factors
6.3 Social Media Marketing—Blogging

Chapter 7
7.1 Social Media Marketing: Facebook
7.2 Social Media Marketing: Twitter

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CHAPTER 1

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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

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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 Amazon, Google, Apple, and Facebook would be high on your list. But over the last few years, a new breed of e-commerce company has muscled its way to the forefront. Uber and other firms with similar business models, such as Lyft (a ride service similar to Uber's), Airbnb (rooms for rent), Instacart (grocery shopping), and DoorDash (restaurant food delivery), 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. Its Uber Rides segment offers consumers a way to get from Point A to Point B, ranging from UberX, which uses compact sedans and is the least expensive, to Uber Black, which provides higher-priced town car service. Its Uber Eats segment focuses on food delivery services. Its Uber Freight segment offers long-haul trucking services.

Uber, headquartered in San Francisco, was founded in 2009 by Travis Kalanick and Garrett Camp, and has grown explosively since then to over 900 major cities and thousands of smaller ones in 69 countries. In 2019, Uber had 3.9 million drivers worldwide and over 110 million monthly active riders who made 6.9 billion trips during the year. In 2019, those riders spent $65 billion on the Uber platform, generating $14.1 billion in revenue for Uber, but it still lost a whopping $8.5 billion (although $4.6 billion of that loss was due to stock-based compensation expense). Uber's strategy in the past has been to expand as fast as possible while foregoing short-term profits in the hope of long-term returns.

Despite the fact that, as of yet, it 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. 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. Even governments find Uber to be a disruptive threat. Governments do not want to give up regulatory control over passenger safety, driver training, nor the healthy revenue stream generated by charging taxi firms for a taxi license and sales taxes.

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

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

Quality control would seem to be a nightmare with 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 10 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 rainstorm, 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. In California, the California State Assembly Bill 5 (AB5), which provides a mechanism for determining whether workers are employees or independent contractors, went into effect in January 2020 and is expected to fuel an increased number of claims that Uber is misclassifying its drivers as independent contractors. 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 it a license to operate. As in 2017, Uber is appealing the ruling and continues to operate in the interim. More significantly, in 2017, the Court of Justice of the European Union (EU), 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 on it, however, as it claims that it now operates in accordance with transportation laws and regulations of most European counties 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

SOURCES: "Uber Acquires Food Delivery Service Postmates for $2.65B," by Stephanie Mlot, Pcmag.com, July 6, 2020; "Uber's Re-evaluation of Freight Follows Steep Losses," by Jennifer Smith, *Wall Street Journal*, May 18, 2020; "Uber Cuts 3,000 More Jobs, Shuts 45 Offices in Coronavirus Crunch," by Preetika Rana, *Wall Street Journal*, May 18, 2020; "Uber Sees Path to Profitability After Blow from Coronavirus," by Robert Wall, *Wall Street Journal*, May 7, 2020; "Form 10-Q for the Quarterly Period ended March 31, 2020;" Uber Technologies, Inc., Sec.gov, May 8, 2020; "Form 10-K for the Fiscal Year Ended December 31, 2019," Uber Technologies, Inc., Sec.gov, March 2, 2020; "Uber Announces Results for Fourth Quarter and Full Year 2019," Uber Technologies, Inc., Investor.uber.com, February 6, 2020; "Uber Loses License to Operate in London," *Wall Street Journal*, December 6, 2019; "Uber

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 by using 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.

But despite the controversy surrounding it, Uber 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. Then came the Covid-19 pandemic. In May 2020, Uber cut almost a quarter of its workforce, announced sweeping cost cutting measures, and braced for a very different future than it had anticipated. One bright spot was its Uber Eats division, which experienced a 50% increase in gross bookings in the first quarter. Seeking to expand on that opportunity, in July 2020, Uber entered into an agreement to purchase on-demand food delivery service Postmates for $2.65 billion, after its previous efforts to purchase GrubHub did not come to fruition. It also said it remains committed to growing its Uber Freight business, which despite losses, had been in expansion mode prior to the pandemic, following a similar playbook to that which Uber had successfully used to grow its core Uber Rides segment. Although the pandemic has interrupted Uber's previously announced goal to reach profitability by the end of 2020, chief executive office Dhara Khosrowshahi remains hopeful that that goal can still be achieved in 2021.

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; "MIT Study Shows How Much Driving for Uber or Lyft Sucks," by Natasha Lomas, Yahoo.com, March 2, 2018; "Uber Dealt Setback After European Court Rules It Is a Taxi Service," by Liz Alderman, *New York Times*, December 20, 2017; "Uber Ban: Firm to Continue Operating in London After Filing Appeal," by Josie Cox, Telegraph.co.uk, October 13, 2017; "Here's All the Shady Stuff Uber's Been Accused of So Far," by Joe McGauley, Thrillist.com, March 7, 2017; "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.

In 1994, e-commerce as we now know it did not exist. In 2020, just over 25 years later, around 205 million American consumers are expected to spend about $1.16 trillion, and businesses almost $8 trillion, purchasing goods, services, and digital content via a desktop computer or mobile device. A similar story has occurred throughout the world. There have been significant changes in the e-commerce environment during this time period.

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

Then, in 2007, Apple introduced the first iPhone, a transformative event that marked the beginning of yet another new era in e-commerce. In the last 10 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 2024, consumers will be spending around $1.8 trillion and businesses around $9.8 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 significant risks—for new and traditional businesses to exploit digital technology for market advantage, particularly in the wake of the Covid-19 pandemic, which is expected to have a broad and lasting impact on many aspects of life, ranging from how businesses operate, to consumer behavior, to social and cultural life.

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* (shorthand for application) is a software application. The term is typically used when referring to mobile applications, although it is also sometimes used to refer to desktop computer applications as well. A *mobile browser* is a version of web browser software accessed via a mobile device. (We describe the Internet, Web, and mobile platform more fully later in this chapter and in Chapters 3 and 4.) More formally, e-commerce can be defined as digitally enabled commercial transactions between and among organizations and individuals. Each of these components of our working definition of e-commerce is important. *Digitally enabled transactions* include all transactions mediated by digital technology. For the most part, this means transactions that occur over the Internet, the Web, and/or via mobile devices. *Commercial transactions* involve the exchange of value (e.g., money) across organizational or individual boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce. Without an exchange of value, no commerce occurs.

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

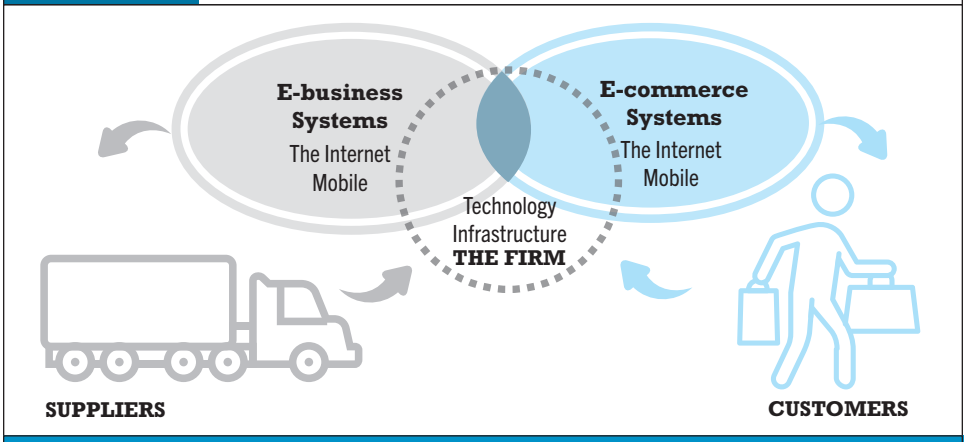
THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS

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

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

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

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



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

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

Internet
worldwide network of computer networks built on common standards

The technology juggernauts behind e-commerce are the Internet, the Web, and increasingly, the mobile platform. We describe the Internet, Web, and mobile platform in some detail in Chapter 3. The **Internet** is a worldwide network of computer networks built on common standards. Created in the late 1960s to connect a small number of mainframe computers and their users, the Internet has since grown into the world's largest network. It is impossible to say with certainty exactly how many computers and other mobile devices, such as smartphones and tablets, as well as other Internet-connected consumer devices, such as smartwatches, connected TVs, and smart speakers such as Amazon's Echo, are connected to the Internet worldwide at any one time, but some experts estimate that as of 2019, there were anywhere from around 10 billion to 25 billion connected devices already installed (Fuscaldo, 2020; Maayan, 2020). 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 2019, there were more than 1 billion Internet hosts in over 245 countries, up from just 72 million in 2000 (Internet Systems Consortium, 2020).

The Internet has shown extraordinary growth patterns when compared to other electronic technologies of the past. It took radio 38 years to achieve a 30% share of U.S. households. It took television 17 years to achieve a 30% share. It took only 10 years for the Internet/Web to achieve a 53% share of U.S. households once a graphical user interface was invented for the Web in 1993. Today, in the United States, around 290 million

people of all ages (about 87% of the U.S. population) use the Internet at least once a month (eMarketer, Inc. 2020a).

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

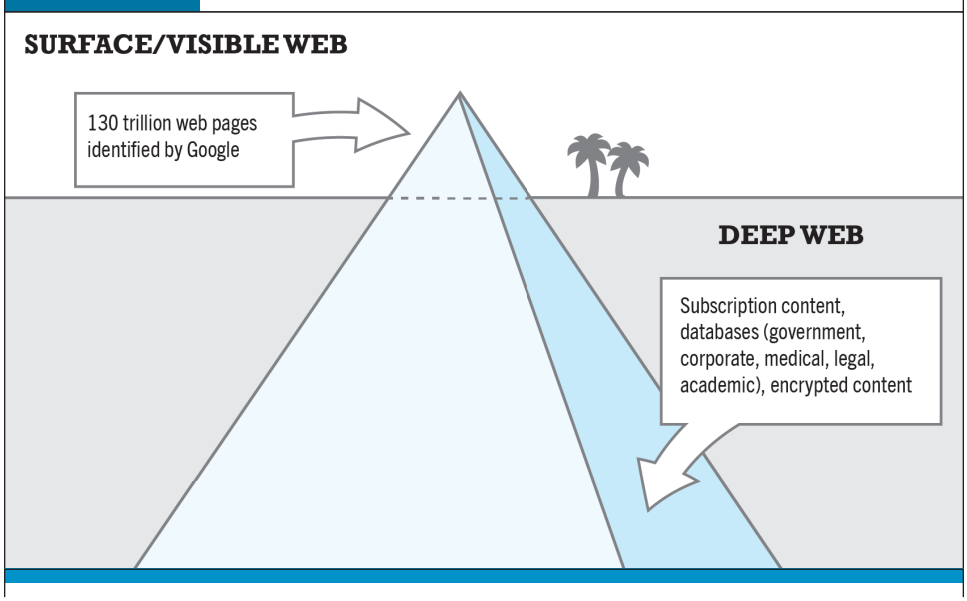
World Wide Web (the Web)
an information system running on Internet infrastructure that provides access to billions of web pages

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

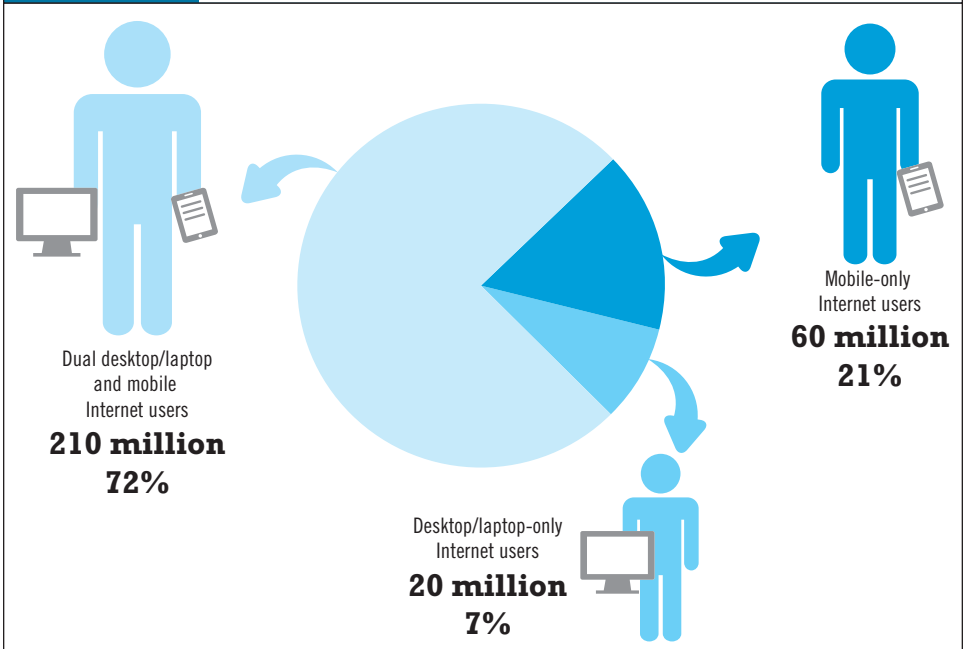
mobile platform
provides the ability to access the Internet from a variety of mobile devices such as smartphones, tablets, and other ultra-lightweight laptop computers

FIGURE 1.2 THE DEEP WEB



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

FIGURE 1.3 INTERNET ACCESS IN THE UNITED STATES, 2020



Over 72% of all Internet users in the United States (about 210 million people) go online using both a desktop/laptop and mobile device. About 21% (about 60 million) only go online by using a mobile device. Just 7% (about 20 million) use only a desktop or laptop computer to access the Internet.

SOURCE: Based on data from eMarketer, Inc., 2020a, 2020c, 2020d.

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 2020, about 93% of Americans who access the Internet use a mobile device to do so at least some of the time (eMarketer, Inc., 2020b). **Figure 1.3** illustrates the variety of devices used by Americans to access the Internet in 2020.

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

MAJOR TRENDS IN E-COMMERCE

Table 1.1 on page 15 describes the major trends in e-commerce in 2020–2021 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 2019, sales of apps accounted for over $120 billion in revenues worldwide, and the app economy is continuing to show robust growth.

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 240 billion worldwide in 2019, 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 about four hours a day. Of the time spent using mobile devices, almost 90% is spent using mobile apps and only about 10% using mobile browsers. In 2020, according to consulting firm eMarketer, adult mobile Internet users in the United States are expected to spend an average of three-and-a-half hours a day within apps on their smartphones and tablet computers compared to just 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/laptops still account for almost 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 toward 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 toward apps, and although it also faces increasing competition from other companies, including Google, the established success of the App Store will make it next to impossible to dethrone Apple. For instance, while Google's Google Play store had more than double the number of downloads compared to Apple's App Store in 2019, the App Store still made nearly twice the amount of revenue ($54 billion) than Google Play ($29 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 Mobile Time Spent 2020," by Yoram Wurmser, eMarketer, Inc., June 4, 2020; "Desktop/Laptop Retail Ecommerce Sales," eMarketer, Inc., May 2020; "App Stores Saw Record 204 Billion App Downloads in 2019, Consumer Spend of $120 Billion," by Sarah Perez, Techcrunch.com, January 15, 2020; "State of Mobile 2020," by App Annie, January 15, 2020; "Apple's App Store and Google Play Users Spent Over $83 Billion on Mobile Apps in the Last 12 Months, Globally," by Saima Salim, Digitalinformationworld.com, January 9, 2020; "2019 Global State of Mobile," Comscore, Inc., December 2019; "Why Progressive Web Apps Are the Future of the Mobile Web: 2020 Research," by Jason Rzutkiewicz and Jeremy Lockhorn, Ymedialabs.com, September 19, 2020 "Progressive Web Apps: What They Are and Why They Matter," by Wilson Kerr, Digitalcommerce360.com, May 28, 2018; "Why Progressive Web Apps Will Replace Native Mobile Apps," by Andrew Gazdecki, Forbes.com, March 9, 2018; "Publishers Straddle the Apple-Google, App-Web Divide," by Katie Benner and Conor Dougherty, *New York Times*, October 18, 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, 2020–2021

BUSINESS

- The Covid-19 pandemic fuels a surge in retail e-commerce and m-commerce.
- The mobile app ecosystem continues to grow, with over 235 million Americans using smartphone apps and over 145 million using tablet computer apps in 2020.
- Social e-commerce, based on social networks and supported by advertising, emerges and continues to grow, and is estimated to generate about $30 billion in 2020.
- Local e-commerce, the third dimension of the mobile, social, local e-commerce wave, also is growing in the United States, fueled by an explosion of interest in on-demand services such as Uber, Instacart, DoorDash, and others.
- B2B e-commerce revenues in the United States are expected to reach almost $8 trillion.
- On-demand service firms attract billions in capital, garner multi-billion dollar valuations, and show explosive growth. Although companies operating in the travel industry, such as Uber and Airbnb, are severely impacted by the Covid-19 pandemic, others, such as Instacart and DoorDash, which operate in the grocery and restaurant delivery areas, grow.
- Mobile advertising continues growing at astronomical rates, accounting for almost 70% of all digital ad spending.
- Small businesses and entrepreneurs continue to flood into the e-commerce marketplace, often riding on the infrastructures created by industry giants such as Apple, Facebook, Amazon, Google, and eBay.

TECHNOLOGY

- A mobile computing and communications platform based on smartphones, tablet computers, wearable devices, and mobile apps becomes a reality, creating an alternative platform for online transactions, marketing, advertising, and media viewing. The use of mobile messaging services such as Facebook Messenger, WhatsApp, and Snapchat continues to expand, and these services are now used by almost 45% of the U.S. population.
- Smart speakers such as Amazon Echo and Google Home become increasingly popular, providing an additional platform for e-commerce.
- Cloud computing completes the transformation of the mobile platform by storing consumer content and software on "cloud" (Internet-based) servers and making it available to any consumer-connected device from the desktop to a smartphone.
- The Internet of Things (IoT), comprised of billions of Internet-connected devices, continues to grow exponentially.
- As firms track the trillions of online interactions that occur each day, a flood of data, typically referred to as big data, is being produced.
- In order to make sense out of big data, firms turn to sophisticated software called business analytics (or web analytics) that can identify purchase patterns as well as consumer interests and intentions in milliseconds.

SOCIETY

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

From a business perspective, one of the most important trends to note is that all forms of e-commerce continue to show very strong growth. Retail e-commerce has been growing at over 15% a year for the last few years, and in 2020, is expected to reach almost $710 billion. Retail m-commerce is growing at an even faster rate (over 25% a year) and is anticipated to increase to about $315 billion in 2020. 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. B2B e-commerce, which dwarfs all other forms, also is continuing to strengthen and grow. The Covid-19 pandemic which emerged in the first quarter of 2020 is expected to result in an increased and lasting shift to e-commerce.

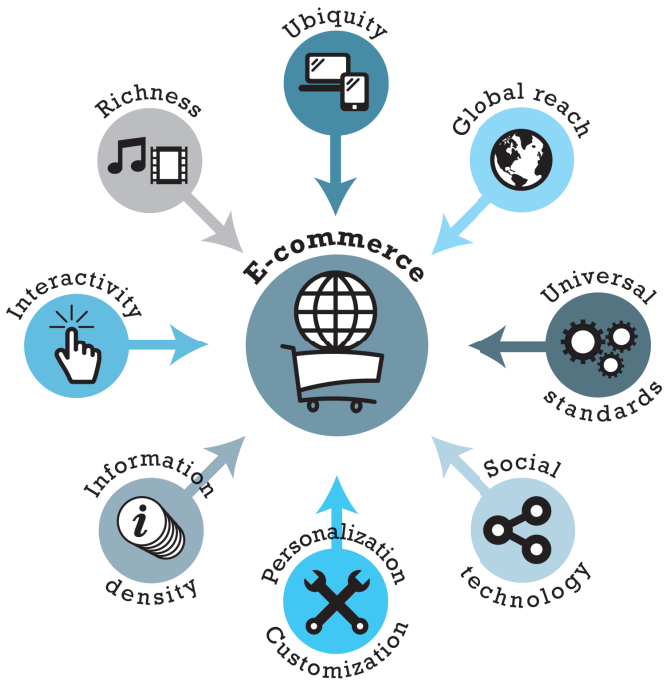
From a technology perspective, the mobile platform based on smartphones and tablet computers has finally arrived with a bang, driving astronomical growth in mobile advertising, and making true mobile e-commerce a reality. The use of mobile messaging services such as Facebook Messenger, WhatsApp, and 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.

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

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

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

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

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

GLOBAL REACH

E-commerce technology permits commercial transactions to cross cultural, regional, and national boundaries far more conveniently and cost-effectively than is true in traditional commerce. As a result, the potential market size for e-commerce merchants is roughly equal to the size of the world's online population (an estimated 4 billion in 2020) (eMarketer, Inc., 2020e). 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).

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

In contrast, most traditional commerce is local or regional—it involves local merchants or national merchants with local outlets. Television, 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,